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Chapter 25: Selected issues in financial instruments

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A. Introduction

- 25.1 This chapter provides additional details on specific financial instruments, as a supplement to chapters 12, 13 and 14. It also touches on issues related to the recording of flows associated with financial assets and liabilities in the broader sequence of economic accounts.
- 25.2 The chapter first covers guarantees, discussing both the concept and treatment as well as discussing some common types of guarantees. It then provides an exposition on financial derivatives, focusing on the definitions, conventions, classification, as well as valuation of these instruments, followed by a section on employee stock options. Lastly, this chapter provides some guidance on the recording of flows in financial instruments. This includes transactions as well as other changes in assets and liabilities.

B. The treatment of standardized guarantees

1. Overview of guarantees

- 25.3 A guarantee is an arrangement whereby one party, the guarantor, undertakes to protect asset holders and/or debtors in the case of events (sometimes unforeseen) such as one party's financial impairment. Often a fee is payable for the provision of a guarantee, though the form of this varies by type.
- 25.4 As a simple example, a loan guarantee is normally an arrangement whereby the guarantor undertakes to a lender that if a borrower defaults, the guarantor will make good the loss the lender would otherwise suffer. In other words, the guarantor will compensate the creditor for the loss of the principal amount and any accrued interest with respect to the loan balance in default. Sometimes the guarantor will acquire some rights over the defaulting borrower. Other types of guarantees with similar characteristics may be offered in respect of other financial instruments, including deposits. This section refers to guarantees on different financial instruments.
- 25.5 Guarantees have a significant impact on the behaviour of economic agents, both by influencing their decisions on production, income, investment or saving and by modifying the lending and borrowing conditions on financial markets. Some borrowers and depositors might have no access to loans or be willing to make deposits in the absence of guarantees. Guarantees are particularly significant for the general government sector and for the public sector as government activities are often linked to the issuance or activation of guarantees.

Classes of guarantees

- 25.6 Three classes of guarantees are recognized. No special treatment is proposed for guarantees in the form of manufacturers' warranties or other form of guarantee. (The cost of replacing defective merchandise is an intermediate cost of the manufacturer.)
- 25.7 The first class of guarantees is composed of those guarantees provided by means of a financial derivative, such as a credit default swap. These derivatives are actively traded on financial markets. The derivative is based on the risk of default of a reference instrument or item. This sort of financial derivative is discussed later in this chapter.
- 25.8 The second class of guarantees are one-off guarantees. These consist of those where the loan or the security, or the events giving rise to the guarantee, are so particular that it is not possible for the degree of risk associated with the debt to be calculated with any degree of accuracy. In most cases, the granting of a one-off guarantee is considered a contingency and is not recorded as a financial asset/liability. If a fee is charged, this is recorded as a payment for a service at the time of payment. If a call is made under a guarantee, a capital transfer is recorded from the guarantor to the guarantee holder at the time of default or, in cases where the guarantor obtains an effective claim on the guarantee holder, a financial transaction (including increases in

equity participation) is recorded.

- 25.9 A specific type of one-off guarantee is the implicit guarantee that can occur in times of financial instability (e.g., the financial crisis, the pandemic), where governments may decide that one or more financial institutions are “too large to fail”. These are a type of one-off guarantees granted by governments to corporations in certain well defined financially distressed situations and with a very high likelihood of being called. The implicit guarantees are called when the financial distress is recognized and are then treated similarly to other one-off guarantees. One-off guarantees are discussed in more detail in Chapter 30 on the general government and public sector.
- 25.10 The third class of guarantees, standardized guarantees, is the focus of this section. These are comprised of the sorts of guarantees that are issued in large numbers, usually for fairly small amounts, along identical lines. There are three parties involved in these arrangements, the debtor, the creditor, and the guarantor. Either the debtor or creditor may contract with the guarantor to repay the creditor if the debtor defaults. Here, although it is not possible to establish the likelihood of any one debtor defaulting, it is standard practice to estimate how many out of a batch of similar debts will default. In this sense, the general probability of default can be established. Such guarantees can be generically defined as arrangements whereby the guarantor has an obligation to pay a third-party beneficiary when another institutional unit fails to perform certain contractual obligations.
- 25.11 If the guarantor is working on purely commercial lines, they will expect all the fees paid, plus the investment income earned on the fees and any reserves, to cover the expected defaults along with the costs and leave a profit. This is the same approach as for non-life insurance and a similar treatment is adopted for these guarantees, described as “standardized guarantees”. This involves including transactions and balance sheet items in the same way as those for non-life insurance, including the generation of output and payments of a fee supplement and a service fee by those taking out the guarantees.
- 25.12 Standardized guarantees are to be distinguished from one-off guarantees based on two criteria. First, they are characterized by often repeated transactions with similar features and pooling of risks; and second, guarantors can estimate the average loss based on available statistics by using a probability-weighted concept.
- 25.13 The treatment of standardized guarantees follows.

2. Standardized guarantee schemes

Basic concepts

- 25.14 Standardized guarantees may be provided by a financial institution, including but not confined to insurance corporations. They may also be provided by government units. It is unlikely that non-financial corporations may provide these sorts of guarantees. It is also unlikely that they would be initially provided by any unit to a non-resident unit, although with student loans the borrower may relocate abroad upon completion of their studies. In certain instances, transnational organizations may be involved in standardized guarantees. As indicated above, standardized guarantee schemes have much in common with non-life insurance. In the general case, similar recording is recommended as described below.
- 25.15 When a unit offers standardized guarantees, it generally accepts fees (for exceptions, see paragraphs 25.30-25.33) and incurs liabilities to meet the call on the guarantee. The value of the liabilities in the accounts of the guarantor is equal to the present value of the expected calls under existing guarantees, net of any recoveries the guarantor expects to receive. The liability is entitled provisions for calls under standardized guarantees.
- 25.16 Standardized guarantees can be limited or unlimited. If unlimited, it ensures that the party benefiting from the guarantees receives full compensation in the event of a default. If the guarantee is limited, the guarantor has only insured for a loss up to a certain amount.
- 25.17 The nature of the standardized guarantee scheme is that there are many guarantees of the same type, though not all for exactly the same time period nor all starting and finishing on the same dates. A guarantee may cover a multiyear period, with a fee payable annually or upfront. In principle, the fee should represent charges earned in each year the guarantee holds with the liability decreasing as the period gets shorter. As a result,

the same sort of recording should be followed here as for annuities, with the fee paid earned as the future liability decreases. This is the preferred approach but, in practice, some units operating guarantees may have data only on a cash basis. While the ideal approach in such cases would be to recognize the guarantee fee over multiple periods, a cash accounting approach is acceptable in case it is possible to apply the preferred approach. Further, unless there is reason to suppose that there is a major change in the nature of the guarantee holders over time, using cash-based data should not introduce significant error.

- 25.18 The guarantors would record a liability for “provisions for calls under standardized guarantees schemes” on its balance sheet account (see paragraph 25.15), and this amount would evolve over time. The corresponding asset would be reflected on the books of the guarantee holder. Conceptually, it could be argued that the total value of the instruments under guarantee on the balance sheet should be reduced by the extent of provisions for standardized guarantees which are estimates of the amount of debt that will be in default. However, this approach undermines the interpretation of stated balance sheet values, as the debtor remains contractually obliged to pay the full amount unless the debt is either forgiven or written off. In any case, this amount in provisions is not likely to be significant compared with the total value of the instrument holdings concerned.
- 25.19 Altogether, six sets of transactions need to be recorded in respect of standardized guarantee schemes: two relating to the measurement of the production and consumption of the guarantee service, three relating to redistribution and one in the financial account. The value of the output of the activity, the investment income to be attributed to the guarantee holder (whether creditor or debtor) and the value of the service charge are calculated in the manner described above for non-life insurance with the concepts of fees replacing premiums and calls under a standardized guarantee scheme replacing claims.
- 25.20 The production and consumption transactions are as follows: The output is recorded in the production account of the sector or subsector to which the guarantor belongs. The service may be paid for by either the borrower or the lender of the debt being guaranteed. When non-financial corporations, financial corporations, general government or non-profit institutions pay fees to obtain this sort of guarantee, the service part of the fees constitute intermediate consumption, recorded in their production account. The corresponding expenses for such guarantees payable by households are part of final consumption expenditure, recorded in the use of income accounts.
- 25.21 The redistributive transactions cover investment income attributed to guarantee holders in respect of standardized guarantee schemes, net fees, and calls under standardized guarantee schemes.
- a. Investment income associated with the provision for calls under a standardized guarantee scheme is recorded as payable by the guarantor and as receivable by the unit paying the fee. Both payables and receivables are recorded in the allocation of primary income account.
 - b. Net fees are calculated as fees receivable plus fee supplements equal to the investment income attributed to the unit paying the fee for the guarantee less the value of the services consumed. They exclude administrative and other costs. These net fees are payable by all sectors of the economy and receivable by the sector of the guarantor.
 - c. Calls under standardized guarantee schemes are payable by the guarantor and receivable by the lender of the debt under guarantee, regardless of whether the fee was paid by the lender or the borrower. Both net fees and calls are recorded in the secondary distribution of income account.
- 25.22 In the financial account of the relevant parties, the transactions entries for the instrument provisions for calls under standardized guarantee schemes show the difference between receipt/payment of fees for new guarantees and calls made under existing guarantees.

Some common types of standardized guarantees

- 25.23 As noted above, standardized guarantees can be offered by private sector entities or public sector entities. For the former, these are most often insurance companies, although it may also concern related corporations such as a parent/affiliate or holding company in the same economy (usually for providing guarantees on instruments like trade receivables). For the latter, guarantors are either government bodies themselves or public corporations. Each of these types of units may offer various standardized guarantees. What types of such guarantees are offered can differ across countries, based on demand, financial stability concerns, or

more general public policy.

- 25.24 Export credit insurance is a standardized guarantee that functions to ensure that exporters receive payment for goods shipped abroad in the event of foreign customer default, thus reducing business risks. This helps promote domestic economy exports, and it may also lead to more competitive prices for exporters. Such an agency is typically a public sector unit (export development agency).
- 25.25 There are various types of potential loan guarantees, applicable on different loan instruments and offered by public or private sector guarantors. Please refer to the UN ECB Handbook Financial Production, Flows and Stocks in the System of National Accounts for a detailed example of loan guarantees.
- 25.26 Guarantees on loans can protect the creditor and support the debtor, but these contracts can be structured in different ways to meet policy or income objectives. This can include insurance on consumer or business installment loans, primary mortgages and on home equity lines of credit, the latter being a second mortgage. This type of insurance can be optional or mandatory. Two examples may provide further clarification. First, in some economies, there may be mortgage insurance arrangements to promote home ownership with public sector units involved (and there may be an approved list of lenders); or, such insurance arrangements may competitively emerge in the mortgage market. Essentially, the guarantor assumes the responsibility for the debt if the owner defaults, but the guarantor may also have a residual claim on the property in case of default. Such arrangements may involve situations where a prospective homeowner has a smaller down payment than normally required by the lender. The lender typically pays a premium to the guarantor (based on mortgage size and/or the down payment), while passing the cost onto the borrower.
- 25.27 Second, there can also be standardized guarantees associated with homeowners drawing on the value of their home equity for various purposes. These include home equity lines of credit where minimum monthly payments of principal and interest are required. In these instances, it is more likely that the guarantor is a private insurance corporation, and the fees are paid by the borrower as part of the regular payments and are tied to the current outstanding balance of debt.
- 25.28 In some countries, with the objective of promoting higher education, student loans from private lenders are supported by standardized guarantees. In these instances, usually a government unit assumes the role of guarantor.
- 25.29 In some economies, debt securities can also be subject to standardized guarantees, where the timely principal and interest payments are guaranteed by a third party in the case of issuer default. The guarantor can be a government unit in the case of guaranteed debt securities of entities such as with public corporations, municipal governments, universities, or hospitals. Although less common, guarantors can also be private insurance companies, depository corporations or affiliated companies. These types of arrangements make for safer investments and can help to secure favourable terms for issuers.
- 25.30 Deposit insurance acts to ensure trust in the banking system, thus helping to promote a sound financial system. This is another type of standardized guarantee that is offered in many economies and/or regions. The provision of deposit insurance has expanded since the financial crisis that began in 2007. Such standardized guarantees are usually offered by a public corporation or agency, sometimes associated with a central bank, but can also be offered by transnational institutions. Deposit insurance offers limited (up to a certain deposit amount or restricted to certain types of depository instruments) or unlimited protection to depositors in the case of a failure of a deposit-taking institution. In this case, the member depository corporation is typically responsible for the annual premium on insured deposits payable to the guarantor (in some economies, the fee may be deemed to be a tax). Member institutions may be classified by risk (e.g., liquidity) by the guarantor for premium establishment purposes, as part of assessing the statistical likelihood of calls. In this sense, it is somewhat different from other types of standardized guarantees. Deposit insurance, however, is not always in the form of a standardized guarantee.

Standardized guarantees provided by government

- 25.31 Governments often offer guarantees for specific policy purposes, and their activity in certain areas can be significant. Student loan guarantees are one example. The guarantees may be issued by a government unit that can be treated as a separate institutional unit. When this is so, the normal rules for the allocation of

government units to either publicly controlled corporations or as part of general government apply.

- 25.32 If a guarantee unit charges fees that are economically significant (in this case this may be equivalent to saying that most of the calls plus the administrative costs are covered by the fees charged), then this is a market activity. It should be treated as a private or public financial corporation, depending on ownership, and transactions should be recorded as described above. If the fees cover most but not all the costs, the recording is still as above. The loss made by the agency offering the guarantees (particularly, a public corporation) may be covered by the government, on a regular or intermittent basis, but this is not passed on to those seeking the guarantees as a subsidy. Regular payments are recorded as a subsidy to the agency and intermittent payments, covering cumulated losses, are recorded as capital transfers only when such payments are made.
- 25.33 In general, when a government unit provides standardized guarantees without fees or at such low rates that the fees are significantly less than the calls and administrative costs, the unit should be treated as a non-market producer within general government. If government recognizes the probability of having to finance some of the calls under the guarantee scheme to the extent of including a provision in its accounts, a transfer of this size from government to the units concerned and a liability of this amount (under provisions for calls under standardized guarantees) should be recorded.
- 25.34 In the case of a government unit providing standardized guarantees, this may be the specialized unit's main source of business. As a result, the accounting statements of this unit can provide a useful source of information to link to the financial statements of the guarantee holder counterparty.

C. Financial derivatives

1. Basic concepts and terminology

- 25.35 Financial derivatives are, in part, a response to both risks and uncertainties in the economic and financial environment and are used for hedging as well as investment/speculation purposes. They constitute a category of financial instrument with the distinguishing feature that they involve contracts that are determined in relation to the future values of specified other financial or physical variables, under definitions that are precisely stated and agreed between the parties to the contract. They enable the economic risks of future outcomes in the reference markets or phenomena to be transferred from one party to another in precise, standardized ways that can be highly flexibly implemented, reversed or otherwise varied. Financial derivatives enable parties to transfer large amounts of economic risk at little or no up-front cost. This has consequences that may be regarded sometimes as benign, such as when a party can use a financial derivative product to hedge against a risk that it does not want; or sometimes as potentially more precarious, such as when a party can readily establish a considerable speculative position in a dimension of risk.
- 25.36 More specifically (following the definition in Chapter 12), financial derivatives are financial instruments that are linked to another specific financial instrument or indicator or commodity, through which specific financial risks (foreign exchange or interest rate risk, equity or commodity price risk, credit risk, etc.) can be managed -- that is, traded in in their own right on financial markets. More specifically, the risk embodied in a financial derivative contract can be managed by trading the contract itself in the case of exchange trade contracts; or the risk can be offset in the case of over the counter contracts.
- 25.37 Financial derivatives constitute contractual arrangements whose values change in response to price movements in a primary asset or indicator -- referred to as the reference price. In other words, the value of a derivative contract is derived from the primary item. This underlying item can include currencies or exchange rates, agricultural commodities, stocks or stock market indices, precious metals, debt securities, interest rates, and a basket of prices or a spread between prices, and another financial derivative. As such, an observable current value (market price or index) for the underlying item is generally required to construct a derivative contract and to calculate the value of the derivative over the term of the contract. However, financial derivatives are separate assets from the primary item.
- 25.38 Two key characteristics of derivative contracts are that usually no up-front payment or a small up-front payment (e.g., premiums on options) is advanced, and no investment income accrues. Further, no principal amount is advanced, except for foreign exchange swaps where notional amounts may be exchanged at the beginning and end of the agreement. While some contracts are settled by delivery of the underlying items

(e.g., foreign currencies, commodities), in many or most cases contracts are settled by payments of net amounts in cash. A distinct advantage of derivative contracts is that they allow for the replication of positions in various items at a much lower cost, due to their leveraged nature. This is because any cash outlay for initiating these contracts is considerably less than taking a similar position in the underlying item. While some contracts (e.g., options) charge a premium at contract inception, most derivative contracts have no initial cost.

- 25.39 Financial derivatives are used for several purposes, and the parties to a derivative transaction may have different motives, including hedging, speculation, arbitrage, and general risk management. One party may be hedging, while the other may be dealing in derivative instruments or acquiring the derivative as an investment. Even if both parties are hedging, they may be hedging transactions or risks that involve different financial assets or even transactions in different accounts. Therefore, if derivative transactions were treated as integral parts of other transactions, such treatment would lead to asymmetries of measurement in different parts of the accounts or to asymmetries/imbbalances of measurement between institutional sectors.
- 25.40 Whatever the motive, there are some common considerations for the investors. For example, hedging involves taking positions in items negatively correlated with a given risk. For this, the investor determines the size of the derivative position to be taken to reduce the risk exposure by a desired amount, considers that the reference price can fluctuate over the course of the contract, and accounts for any associated opportunity costs. On the other hand, speculation involves taking a position to make gains from anticipated, but uncertain, price movements. And, in this case, similar expectations and factors are accounted for on the part of both investors, though they may have different expectations about the future value of the underlying item.
- 25.41 There are two main classes of derivative instruments: Forwards and options. That said, there are many types of sub-instruments as well as different ways by which to classify derivative instruments. Certain types of financial derivatives are exchange traded (i.e., bought and sold on exchanges), while others are not. For example, futures contracts are exchange traded forwards, while other forward contracts are traded over the counter. Notably, the over the counter market can offer more customized contracts to investors.
- 25.42 An essential characteristic of these contracts is that the risk embodied in a derivative can be “traded”. This occurs either by trading the contract itself on an exchange (futures or options); or, by creating a new contract that embodies risk characteristics that match, in a countervailing manner, those of the existing contract. The latter is termed “offsetability” and is used in over the counter markets. Offsetability means that it is often possible to eliminate the risk associated with a derivative contract by creating a new “reverse” contract having characteristics that countervail the risk underlying the first derivative. This is the functional equivalent of selling the first contract, in terms of eliminating the underlying financial risk. This practice is particularly common in forward markets, in cases where there are no formal exchanges through which to trade derivatives.
- 25.43 Forward type contracts can be contrasted with options in that:
- a. at inception, there is usually no up-front payment for a forward-type contract and, when initiated, the derivative contract begins with zero value, whereas there is usually a premium paid for an option representing a non-zero market value for the contract;
 - b. during the life of the contract, for a forward-type contract, either party can be creditor or debtor, and it may change, whereas for an option (except for credit default swaps), the buyer is always the creditor, and the writer is always the debtor;
 - c. at maturity, redemption is unconditional for a forward-type contract, whereas for an option it is determined by the buyer of the option.
- 25.44 Nevertheless, there exist hybrid-type derivatives that have characteristics of both forwards and options, as discussed below.

Exclusions from financial derivatives

- 25.45 For clarity, it is worth noting items or financial arrangements that are not financial derivatives, but that are sometimes confused with derivatives. Insurance contracts and standardized guarantees (Section B) are not

derivatives, as they manage risk by pooling. Contingent assets and liabilities, such as such as one-off guarantees and letters of credit, are neither assets according to the definition of the SNA, nor derivatives. Although repurchase agreements or reverse repurchase agreements (see paragraphs 12.xx-12.xx) involve a future commitment, they are not derivatives. The same can be said of business timing delays, that may entail exposure to price movements. A fixed-price contract for goods and services does not constitute a derivative, unless that contract is standardized, so that the market risk can be traded in financial markets in its own right. Gold swaps and central bank swap arrangements (see paragraphs 12.xx-12.xx) are also not financial derivatives.

- 25.46 Instruments with “embedded derivatives” are also excluded. An embedded derivative arises when a derivative feature is inserted in a standard financial instrument and is inseparable from the instrument. Examples include bonds that are convertible into shares and securities with options for repayments in different currencies from the currency of issuance.

2. Overview of types of financial derivatives

Forwards

- 25.47 Chapter 12 defines a forward contract as an unconditional financial contract that represents an obligation for settlement on a specified date. Futures and many other forward contracts are typically, but not always, settled by the payment of cash or the provision of some other financial instrument rather than the delivery of the underlying item. They are valued and traded separately from the underlying item. At the inception of a forward-type contract, risk exposures of equal market value are exchanged, so a contract typically has zero market value. As the price of the underlying item changes, the market value of the contract will also change (although it may be restored to zero by periodic settlement of over the life of the forward).
- 25.48 **Futures** are exchange traded forwards where two parties agree to exchange a specified quantity of an underlying item, whether financial or non-financial (e.g., energy, grain, livestock, currencies, stock indices, securities) at a particular price and for a period of time or subsequent date. These are standardized contracts, and the details are specified in contracts common to all participants and on an organized futures exchange. The exchange facilitates trading by determining the standardized terms and conditions of the contracts, acting as the counterparty to all trades, and requiring margin to be deposited to mitigate risk. It is quite common that investors do not wish to obtain the item upon which the future is based, so they do not hold the contracts to maturity. This has led to robust secondary markets for futures. The clearinghouse function of the exchange makes it easy to unwind futures’ positions prior to the settlement date. Unwinding is engaging in a second contract that takes a directly opposite position to the first.
- 25.49 There are also various over the counter **forwards** (e.g., foreign exchange contracts, forward rate agreements, swaps), but all involve exchanging assets, income flows, or commodities at a specified price (the “strike” price) on a specified future date. A swap contract involves counterparties exchanging, in accordance with prearranged terms, financial instruments or cash flows based on the reference rates of the underlying items. Over the counter forward contracts can be customized to meet investors’ needs. They may not always be marked to market each day, and some do not require margins. These types of contracts normally cannot be traded but they can be offset. Some examples of forward contracts are listed below.
- a. A **forward foreign exchange** contract (also referred to as a currency forward) involves two counterparties who agree to transact in foreign currencies at an agreed exchange rate in a specified amount at some agreed future date. Take, for example, an importer of intermediate goods, who has signed a contract to purchase those goods in one year from now. If the agreement specifies payment for the goods upon delivery, the importer will pay for the goods in relevant foreign exchange on the future settlement date. This involves a risk from fluctuations in exchange rates. If the domestic currency depreciates in the meantime, the import costs will be higher. The importer can hedge this risk by entering into a forward foreign exchange contract to buy the required foreign currency at a specified price (perhaps at the known current exchange rate which may be acceptable from a cost perspective) when his payment is due. The counterparty to this derivative contract might be an investor who is speculating on an opposite movement in the exchange rate. Another example of a foreign exchange contract would be a debtor with foreign currency debt and periodic payments of

interest and principal seeking to minimize exchange rate risks. In these types of contracts, either party can record unrealized gains and/or losses related to exchange rate fluctuations over the duration of the contract.

- b. A foreign **exchange swap**, sometimes referred to as a currency swap, involves a spot sale/purchase of currencies and a simultaneous forward purchase/sale of the same currencies. In effect there are two separate transactions, the first at the spot rate and the second at the forward price. There can also be periodic interest payments on the principal currency amounts. In this instance, the strike price could be set to the current exchange rate with similar results to the foreign exchange contract above.
- c. A **cross-currency interest rate swap**, sometimes also known as a cross-currency swap, involves an exchange of cash flows related to interest payments and an exchange of principal amounts at an agreed exchange rate at the end of the contract. More simply, interest (at either fixed or flexible rates) and principal in one currency are exchanged for interest and principal payments in another currency. The locked in exchange rate means that the contract can experience holding gains/losses over its duration.
- d. An **interest rate swap** contract involves an exchange of cash flows related to interest payments or receipts in one currency, over a period of time, on a notional amount of principal (which is never exchanged). Settlements are often made through net cash payments from one counterparty to the other. One use of such a contract is the virtual conversion of fixed rate debt into floating rate debt. The only event is the re-channeling of interest flows on the debt that the parties have previously negotiated. The creditors would be unaffected by this contract, and each party remains responsible for servicing its own debt. The main purpose is the opportunity to alter the cash flows associated with existing assets or liabilities. Other uses of interest rate swaps are to reduce the cost of financing by exploiting a comparative advantage in borrowing and or credit conditions, or for speculative purposes.
- e. A **forward rate agreement** is an arrangement in which two parties, to protect themselves against interest rate changes, agree on an interest rate to be paid at a specified settlement date based on a notional amount of principal that is never exchanged. Forward rate agreements are settled by net cash payments. The only payment that takes place is related to the difference between the agreed forward rate and the prevailing market rate at the time of settlement. The buyer of the forward rate agreement receives payment from the seller if the prevailing rate exceeds the agreed rate; the seller receives payment if the prevailing rate is lower than the agreed rate.
- f. An **equity swap** is an exchange of future cash flows between two parties, where for one side the payments are based on a stock price or index and for the other side payments can be based on a fixed or floating rate or another stock price or index.

Options

- 25.50 Chapter 12 defines **options** as contracts that give the purchaser of the option the right, but not the obligation, to buy (a “call” option) or to sell (a “put” option) a particular financial instrument of commodity at a pre-determined price (the strike price) within a given time span for American option or on a given date for a European option. Many options contracts, if exercised, are settled by a cash payment rather than by delivery of the underlying assets or commodities to which the contract relates.
- 25.51 Options are sold or “written” on many types of underlying bases such as equities, interest rates, foreign currencies, debt securities, commodities, futures contracts, and specified indices. The buyer of the option pays a premium (the option price) to the seller for the latter’s commitment to sell or purchase the specified amount of the underlying instrument or commodity on demand of the buyer. However, option contracts frequently expire without having any value; options are exercised only if settling a contract is advantageous for the option holder.
- 25.52 Options are largely exchange-traded in nature. This means that they are listed on an organized exchange, that they can be traded, and that they are subject to the typical conventions of exchange traded derivatives.

This means that they are standardized contracts, and that the central clearinghouse necessitates the use of margin as required. That said, there are over the counter options as well. These exist in cases where an exchange traded option does not meet the specific needs of the counterparties (buyer and seller). Over the counter options can be defined as customized options (e.g., strike prices and expirations dates are not standardized), with no secondary market, that arise from a private transaction between a buyer and a seller.

- 25.53 In the case of a call option transaction on equity, the purchaser acquires from the seller the possibility (option) to purchase corporate shares, at a fixed value, at some future point in time. If the stock price rises above the strike or exercise price, then the shares will likely be purchased at the strike price. The purchaser can claim an additional capital gain on the shares if he sells them, or he can hold them if expecting further stock market appreciation. However, if the option is not exercised then the seller benefits by retaining the premium. Buyers and sellers of such options may have different short and long-term expectations about the future value of the corporate shares.
- 25.54 **Warrants** are a form of options. They are tradable instruments giving the holder the right to buy, under specified terms for a specified period, from the issuer of the warrant (usually a corporation) a certain number of units of an underlying asset such as shares or bonds or exchange traded funds. Warrants are frequently attached to preferred shares (or bonds), allowing the issuer to pay lower dividends (interest rates). Warrants on equity-linked instruments give investors the right to buy the underlying shares at a discount to the issue price. There are also currency warrants based on the amount of one currency required to buy another and cross-currency warrants tied to third currencies. Warrants also include covered warrants. A covered warrant gives the holder the right but not the obligation to buy or sell an underlying asset (either financial, or non-financial such as commodities) at an agreed upon price for a specified period of time or on a specified date.
- 25.55 Warrants can be traded apart from the underlying securities to which they are linked and therefore have a market value. The issuer of the warrant incurs a liability, which is the counterpart of the asset held by the purchaser. Although similar to other traded options, a distinguishing feature is that the exercise of the warrants can create new securities. This dilutes the capital of existing bondholders or shareholders, whereas traded options typically grant rights over assets that are already available.

Credit derivatives

- 25.56 The financial derivatives described in the previous paragraphs are related to market risk, which pertains to changes in the market prices of securities and commodities, interest, exchange rates, or other underlying items. Credit derivatives are financial derivatives whose primary purpose is to trade credit risk. They are designed for trading in loan and debt security default risk. Credit derivatives take the form of both forward-type and option-type contracts, and like other financial derivatives they are frequently drawn up under standard master legal agreements and involve collateral and margining procedures. There are three main types of credit derivatives: credit default swaps which are more of an option type instrument because of the fixed payments/premiums, despite the ability to switch from an asset to a liability position; credit default options; and, total return swaps, which is a forward type of contract.
- 25.57 A **credit default swap** is a type of option. It is the case where the purchaser pays a periodic fee to the seller in return for a cash payment by the seller in the event of a default by the debtor of the underlying instrument. These payments made by the protection purchaser to the protection seller is referred to as credit default swap spread, which can be established as the yield differential between bonds and/or loans of different quality and similar maturity. A credit default swap is considered a type of safeguard against non-payment resulting from a credit event, such as a change in a borrower's capacity to meet payment obligations. The purchaser may be speculating that the debtor will default, while the seller takes an opposite position. In this way, this instrument transfers the credit exposure of fixed income products from one investor to another (counterparty) investor. The protection buyer benefits when there is a deterioration in the credit quality of the reference entity and the CDS spread increases; and the protection seller benefits when the credit quality of the reference entity improves and the CDS spread declines. In both cases, the value of the CDS adjusts accordingly. The CDS underlying asset may be loans, debt securities or securitized debt (asset-backed securities). And they are more useful in the context of longer-term debt securities, where the debtor's ability to repay is relatively more difficult to predict.

- 25.58 A *credit default option* is an option to buy protection or sell protection via a credit default swap.
- 25.59 A *total return swap* is a forward contract which is a modified equity swap. It is generally thought of as a credit derivative, even though it encompasses both credit and market risk. It constitutes a derivative contract where one party pays sums based on a floating or fixed interest rate and receives payments from another party based on the return of a reference item (bond, share, index). The returns include any gains or losses in the reference item's price as well as any coupon or dividends over the period. The swap allows one party (the buyer) to gain exposure to an asset without owning it, in exchange for taking on the risk associated with the reference item (market risk and or credit risk depending on the underlying item). The other party (the seller) eliminates risk with the underlying item but takes on the credit risk to which the first party may be subject (that is, the risk of the counterparty of the swap).

Other derivatives, not elsewhere included

- 25.60 Other derivative contracts include those that do not involve exposure to the risks noted above. These can include inflation-indexed, volatility, dividend, property, freight, weather, or any other derivative contracts with non-standard underlying items, which are developed for a particular client.

3. Overview of accounting for derivatives

Valuation of stocks and flows

- 25.61 This section can be supplemented by material in other manuals. Users are referred to the UN ECB Handbook Financial Production, Flows and Stocks in the System of National Accounts, for detailed examples, and the Monetary and Financial Statistics Manual and Compilation Guide.

Derivative positions

- 25.62 All financial derivative positions should be reported at current market value. This differs substantially from the notional value behind the derivative contract, which is the current value of the underlying item in a derivative contract at any point in time. As a result, the notional values are much larger than the corresponding market values of the derivative contracts. For exchange traded derivatives, the market values can be readily observed. For over the counter derivatives, the values should be valued using market-equivalent prices. This allows for a proper assessment of total market and/or credit risk on a timely basis. It is also necessary to calculate any new margin requirements, based on the gains or losses associated with the contracts.
- 25.63 A key characteristic of many derivative contracts is that the counterparties make commitments to transact, in the future and at agreed upon prices, in underlying items. Therefore, the market price (or present value) of a derivative contract corresponds to the difference between the agreed upon contract price of an underlying item and the prevailing market price (or market price expected to prevail), appropriately discounted, for that item. For a swap the value is derived as the difference, appropriately discounted, between expected gross receipts and payments. For options and warrants, the market value is the prevailing market price. In the absence of prevailing market prices, the cost of buying out the option is used. The accumulation of transactions should not be used to estimate positions. However, source data typically provide information on positions.
- 25.64 Financial derivatives are reported on the balance sheet account, ideally on a gross basis as assets or liabilities – that is, as an asset in the case of a holding gain (potential cash inflow) or as a liability in the case of a holding loss (potential cash outflow). The market value of a forward-type contract or a credit default swap can switch from an asset to a liability position (and vice-versa) between reporting dates resulting from movements in the price of the underlying item. For example, if the value of a credit default swap becomes negative, it becomes a liability for the protection buyer (rather than an asset) and an asset for the protection buyer (rather than a liability). More specific references to the balance sheet account and revaluation account follow in the discussion below.

Transactions and other flows

- 25.65 Financial derivatives transactions relate largely to those in options or to settlements for other types of derivatives. Transactions may take place between two parties directly, or through an intermediary. In the latter case, implicit or explicit service charges may be involved. In the former case, service charges may also be involved if one party is a financial institution. Arranging a financial derivative may also involve a set-up fee which should be shown as an explicit fee charged by the financial institution concerned and payable by the holder of the financial derivative. A financial institution may act as a market maker and sell the products with a spread between the bid and offer price. This margin is treated as a service charge as with other financial instruments. For example, the premium paid to the seller of an option can conceptually be considered to include a service charge. However, it is usually not possible to distinguish the implicit service element. Any observable commissions paid to brokers or other intermediaries for arranging options, futures, swaps, and other derivatives contracts are treated as payments for services in the sequence of accounts.
- 25.66 No investment income accrues on financial derivatives, and all payments are financial transactions (with holding gains/losses as required to reconcile opening and closing balance sheets). A premium may be charged at inception of contract (e.g., options), but forward-type contracts generally have a zero cost at initiation and therefore no value. This can change significantly over the course of a contract, giving rise to revaluations and some transactions. These are discussed briefly below, referencing major types of instruments.
- 25.67 Transactions in derivatives may arise in a series of instances:
- a. At inception, if there is a cost (e.g., in the case of options, where the premium is the acquisition of the derivative);
 - b. during the life of the contract if there is a series of premiums (in the case of credit default swaps) or exchanges of cash flows in interest swaps;
 - c. on secondary markets where existing contracts are bought and sold;
 - d. with ongoing servicing in the form of non-repayable margin payments (see paragraph 25.79);
 - e. and at settlement.
- 25.68 The value of most derivative positions emerges largely from revaluation. The initial value of a forward-type financial derivative is zero (no transactions recorded), but it acquires a value as soon as there is a change in the circumstances that the financial derivative is designed to address. At this point, a financial asset of one party and matching liability are recognized as a flow and recorded as a revaluation generating a balance sheet position. Most of the subsequent changes in value are recorded in the revaluation account and on the balance sheet, however some fluctuations in value are the result of transactions in margin (see paragraph 25.76), which act to reduce the exposure of the derivative contract between both parties. For exchange traded contracts with active secondary markets, such as futures, transactions are frequent and holding gains and losses can be significant.
- 25.69 In the case of options, including credit default swaps, the full price of the premium should be recorded as acquisition of a financial asset by the buyer and as incurrence of a liability by the seller in the financial account, with corresponding positions in the balance sheet account. The timing of premium payments on options varies. Depending on the type of contract, premiums are paid when the contracts begin, or at fixed intervals for credit default swaps, or when the options are exercised, or when the options expire. The value of an option at inception should be recorded at the full price of the upfront premium. If the premiums are paid after the purchase of an option, the value of the premium payable is recorded as an asset, under other accounts receivable/payable, at the time the derivative is purchased, financed by other accounts receivable/payable from the writer.
- 25.70 Purchases and sales of options and futures in the secondary market are also to be recorded in the financial account. If an option based on a financial asset is exercised or if a commodity-based option proceeds to delivery, the acquisition or sale of the underlying asset should be recorded at the prevailing market price in the appropriate accounts with the difference between this amount and the amount actually paid recorded as

transactions in financial derivatives.

- 25.71 Revaluations of both exchange traded and over the counter derivative positions are based on the holding gains/losses associated with the contract, and these changes can occur over the life of the contract prior to maturity. These fluctuations are reported as assets or liabilities in the revaluation account of the other changes in assets account, leading to new values on the balance sheet. For contracts with active secondary markets, holding gains and losses can be significant. For changes in value that arise from exchange rate fluctuations, it is useful to report these as supplementary details in the revaluation account.
- 25.72 Derivative instruments record net settlement transactions at maturity. This will involve the extinguishing of the derivative contract as a transaction along with corresponding transactions between the parties in other assets – typically cash, given that financial derivatives contracts are usually settled by net payments of cash. This can occur before maturity for exchange traded contracts such as commodity futures, giving rise to other accounts receivable/payable. Cash settlement is a logical consequence of the use of financial derivatives to trade risk independently or ownership of an underlying item. However, some financial derivative contracts, particularly involving foreign currency, are associated with transactions in the underlying item. The delivery of the underlying commodity or asset should be recorded in the relevant item (e.g., in goods or commodities) at the prevailing market price, and the difference between the prevailing price and the price actually paid (times the quantity of the commodity or asset) should be recorded as a transaction in financial derivatives.
- 25.73 Two further activities worth noting in relation to financial derivatives are novation and portfolio compression. Novation is the replacement of an existing bilateral obligation with two new ones. For financial derivatives, this is where a bilateral contract between two parties is replaced by two bilateral contracts between each of the original parties and a clearinghouse. One advantage of novation is that the clearinghouse middleman assumes the counterparty risk. Novation can also take place without a clearinghouse, where one participant transfers a contract to another party. The total value of derivative contracts increases with a novation activity because there is an additional contract involving a third party. Transactions are also recorded at the time of the activity but, for the original parties, extinguishing of the first contract is offset by a new contract with the same value. For the third party, whether a clearinghouse or not, new transactions are recorded.
- 25.74 On the other hand, portfolio compression is the process of replacing a number of derivative contracts among participants with fewer new contracts. This, in turn, reduces the value of the overall investment, while maintaining the same risk and on a net basis. Net positions are also unchanged, although gross positions can be different. Portfolio compression can take place among two or more parties. Compression also results in transactions at the time of the activity by terminating the existing contracts and creating new contracts, sometimes with different counterparties.

The treatment of margin

- 25.75 The requirement of margin is a feature of many derivative contracts, which reflects the leveraged nature of most contracts alongside the changes in value of the underlying item on which the derivative contract is based over the duration of the derivative instrument. Margins are payments of cash or collateral that cover actual or potential obligations under financial derivatives, especially futures or other exchange-traded derivatives.
- 25.76 A key role of the exchange is to organize trading so that default risk is minimized. To achieve this, the exchange operates a clearinghouse which acts as a counterparty for all contracts. The clearinghouse requires that both members of the exchange deposit a dollar amount per contract in an account upon entrance into the agreement. If the members of the exchange are acting on behalf of others, they will require a similar deposit from their clients. Some over the counter derivatives also require margin, in the case of cleared over the counter derivatives. In these cases, a clearinghouse, operating with the banks/brokers that facilitated the contract, requires that both parties to the transaction deposit an amount upon entrance to the agreement. This requirement will also be passed on to their customers if the facilitators act on their behalf.
- 25.77 The *initial margin* placement may be made up of cash or interest-bearing securities. These are *repayable margins*, and the funds remain under the ownership of the depositor who retains the risk and rewards of the amounts placed. Repayable margins payments in cash are not the counterpart of transactions in derivatives; rather, they are the counterpart of transactions in claims (deposits) on the exchange or at another institution corresponding to the resulting margin balances. Such claims are classified as deposits if the debtor's

liabilities are included in monetary aggregates' broad money. Otherwise, they are included in accounts receivable/payable or as a loan. When repayable margin payments are made in non-cash assets, such as securities, no entries are required because the entity on whom the depositor has a claim (the issuer of the security) is unchanged.

- 25.78 For centrally cleared derivative contracts, gains or losses associated with changes in the value of the derivative, over the life of the contract, are applied to the margin account. If the margin balance falls below the minimum or "maintenance" margin, the investor receives a margin call which is a call for providing additional funds. The cash transferred due to a margin call is referred to as the *variation margin* (sometimes also used to describe the margin call itself). This constitutes a *non-repayable margin*, and the entity that is responsible for the payment no longer retains ownership of the margin nor has the right to the risk and rewards of such ownership (such as the receipt of income or exposure to holding gains or losses). The funds transferred are typically transactions in deposits but can also be in loans or other accounts receivable/payable. Non-repayable margin reduces a financial liability created under a financial derivative contract. In organized exchanges, this type of margin is paid daily to meet the liabilities incurred from the daily marking of derivatives to market value. In terms of transactions, a payment of a non-repayable margin is normally recorded as a transaction-based decline in currency and deposits with a counter entry in the reduction in financial derivative liabilities; and the receipt of a non-repayable margin is recorded as a transaction-based increase of holdings of currency and deposits with the counter entry in the reduction in financial derivative assets. The counter entries constitute transactions in derivatives.

4. Classification and presentation of derivative contracts

Classification of derivatives

- 25.79 Derivative contracts can be classified in various ways. One common classification is by *instrument*, with two broad groupings: forwards and options, with any further details by sub-instrument. For example, forwards can include exchange traded futures and over the counter forwards and swaps. One complication with the instrument breakdown is that some sub-instruments are hybrid types and do not fit cleanly into the two main groupings. For example, some have a dual nature (e.g., credit default swaps) with both option and forward characteristics. A *maturity breakdown by type of instrument* is another example of supplementary sub-instrument detail. A lesser used related sub-classification is *by delivery type*. That is, whether at the end of a contract there is cash delivery (in most cases) or physical delivery of the underlying item (e.g., a commodity).
- 25.80 Another classification is by *trading venue*. This distinguishes between whether the instruments are exchange traded or over the counter derivatives. Exchange traded contracts are fixed in terms of denomination and maturity dates, and they have a market valuation. The exchange makes the contracts highly liquid. Over the counter markets exist when there is no central trading facility, such as a stock exchange, and contracts are arranged through an inter-dealer market (over the counter market). In many countries, banks and investment dealers negotiate contracts, acting on their own behalf as "market makers" or as representatives of clients. Over the counter contracts are "marked-to-market" regularly and, while they can be more customized to meet the needs of the investors than exchange traded contracts, they are less liquid than exchange traded contracts.
- 25.81 Related to the trading venue classification is one based on *clearing status*. This would combine exchange traded contracts with cleared over the counter contracts in one category and non-cleared over the counter contracts in another category. Cleared over the counter derivatives are those for which a clearinghouse party is involved and therefore margin is required. This classification would require a sub-category of cleared versus non-cleared for over the counter derivatives.
- 25.82 A more appropriate classification, than those discussed above, is by *market risk* category. This includes foreign exchange, interest rate, equity, commodity, credit, and other derivatives. It is widely considered that such a breakdown provides more analytical value than the instrument classification. It also allows for a separate classification of credit default swaps. In practice, however, individual financial derivatives may straddle more than one risk category. For contracts that are simple combinations of exposures, it should be possible to identify and report in terms of the individual components. Those that cannot be broken down into

separable risk components should be reported in only one risk category, determined by the underlying category that is the most significant. If there is doubt about the correct classification of multi-exposure derivative contracts, the allocation by risk component should be made according to the order of preference adopted by the Bank of International Settlements: Commodities, equities, foreign exchange, and single currency interest rate.

Presentation of derivatives in the SNA

Basis of recording

- 25.83 Asset and liability positions and flows in financial derivatives should preferably be recorded separately on the balance sheets. Contracts that have registered a holding gain (with a positive market value) are to be shown as an asset; and contracts that have registered a holding loss (with a negative market value) should be shown as a liability.
- 25.84 However, it may not always be feasible to record asset and liability positions and flows separately, because of data shortcomings. This is particularly true for transactions. As a result, a presentation which consolidates a unit's asset and liability positions is an acceptable alternative under these circumstances. The resulting balance, at any point in time, is shown as an asset (if the balance is positive) or a liability (if the balance is negative).

Classification details

- 25.85 The proposed recommended breakdown of financial derivatives emphasizes risk as the main classification as follows: By market risk category as the first supplementary item subclassification. The focus by derivative type (forwards, options, hybrid and other derivatives) is a second supplementary subclassification, with detailed types of contracts, if possible. This information could be inserted underneath each classification for derivatives by market risk category or shown separately. Derivatives by venue and/or by clearing status are also supplementary and can be reflected in the derivatives by type detail. Cross-classification of derivatives by instrument, trading venue and clearing status is also considered a supplementary presentation.
- 25.86 The first subclassification for financial derivatives, under AF7.1, financial derivatives includes contracts organized in the following groups: **Foreign exchange risk** (e.g., currency forward), **interest risk** (e.g., interest rate swap), **equity risk** (e.g., options on corporate shares), **commodity risk** (e.g., commodity futures), **credit risk** (e.g., credit default swap), and **other risk**. Each category of risk is briefly discussed below:
- a. Foreign exchange derivatives involve the exchange of currencies in the forward market. They include all contracts involving exposure to more than one currency, whether in interest rates or exchange rates. They cover outright forwards, foreign exchange swaps, currency swaps (including cross-currency interest rate swaps) and currency options.
 - b. Single currency interest rate derivatives are restricted to those deals where all of the legs are exposed to only one currency's interest rate. These are contracts related to an interest-bearing financial instrument whose cash flows are determined by referencing interest rates (or by another interest rate contract). They include forward rate contracts, single currency interest rate swaps, and interest rate options (including caps, floors, collars and corridors), but exclude contracts involving the exchange of currencies (e.g., cross currency swaps and currency options) and other contracts whose predominant risk characteristics is foreign exchange risk.
 - c. Equity derivatives where the return, or a portion of the return, is linked to the price of a particular equity or index of equity prices.
 - d. Commodity derivatives, where the return, or a portion of the return, is linked to the price or to a price index of a commodity (e.g., precious metal, petroleum, lumber or agricultural products).
 - e. Credit derivatives are contracts in which the payout is linked primarily to some measure of the creditworthiness of a particular reference asset. The specify and exchange of payments in which at least one of the two legs is determined by the performance of the reference asset. Payouts can be

triggered by different events, including a default, a credit downgrade, or a stipulated change in the credit spread of the reference asset. Typical credit derivative instruments are credit default swaps, credit-spread forwards and options, credit event/default swaps, and total return swaps.

- f. Other derivatives (as noted in paragraph 25.59) are any other derivative contracts which do not involve exposure to foreign exchange, interest rate, equity, commodity or credit risk. They include, for example, inflation-indexed derivatives, volatility derivatives, property derivatives, or freight derivatives.

D. Employee stock options

1. Some preliminaries and terminology

Definition and terminology

- 25.87 As noted in Chapter 12 an employee stock option is an agreement made on a given date (the “grant” date) under which an employee may purchase a given number of shares of the employer’s stock at a stated price (the “strike” price either at a stated time (the “vesting” date) or within a period of time (the “exercise” period) immediately following the vesting date. This part of the chapter will examine these issues in more detail.
- 25.88 While an employee stock option (ESO) has certain characteristics of a standard option or warrant on corporate shares (they are regular call options), it is in fact a different instrument that is used for specific purposes. An ESO is unlisted and not tradable (cannot be sold) or exchangeable, as it is specific to an employee’s compensation package. It is a particular form of income in kind, referred to as equity compensation, which reflects the practice of an employer giving an employee the option to buy stocks (shares) at some future date. The employee may choose to not exercise the option, for varied reasons; these might be the case either because the share price is now lower than the price at which they can exercise the option, or because they have left the employ of that employer and so forfeits his option in the process.
- 25.89 The terms of the ESO are spelled out to the employee in a formal agreement. Typically, an employer informs his employees of the decision to make a stock option available at a given price (the strike price or exercise price) after a certain time under certain conditions. These may include that the employee is still in the enterprise’s employ or may be conditional on the performance of the enterprise or employee.
- 25.90 The time of recording of the employee stock option in the national accounts must be carefully specified. This includes the “grant date” which is when the option is provided to the employee; the “vesting date” which is the earliest date that the option can be exercised; and the “exercise date” or “exercise period” which is when the option is either exercised or lapses. In some countries the permissible length of time between vesting and exercise date is quite long; in others it is short.

Valuation

- 25.91 The following is a brief description of how stock options are valued, taking accounting for the probability that not all the options are exercised. IASB accounting recommendations are that the enterprise derives a fair value for the options at grant date by taking the strike price of the shares at that time multiplied by the number of options expected to be exercisable at vesting date divided by the number of service years expected to be provided until the vesting date. This fair value is applied to the number of service years provided in each year to derive the cost to the firm in the year. The fair value per service year is adjusted if the assumptions about the number of options to be exercised alter.
- 25.92 In the SNA, if there is neither an observable market price nor an estimate made by the corporation in line with the recommendations just given, the valuation of the options may be estimated using a stock options pricing model. These models aim to capture two effects in the value of the option. The first effect is a projection of the amount by which the market price of the shares in question will exceed the strike price at the vesting date. The second effect allows for the expectation that the price will rise further between the vesting date and exercise date.

ESOs as financial assets

- 25.93 Following vesting but before the option is exercised, the arrangement between the employer and employee has the nature of a financial derivative stock option for a period; however, it is shown in the financial accounts of both parties as “employee stock options”. The employee has an asset, and the employer has a liability. Once exercised, the ESOs are exchanged for company stock, often at different and higher values which can entail a cash outlay by the employee. The advantage of an ESO is that if or when the stock rises above the call option exercise price, the employee can acquire the enterprise’s stock at a discount. Once acquired, the employee can hold the stock in anticipation of further gains or dispose of it for a realized gain.
- 25.94 The employer’s motive for an ESO is to provide staff with the incentive to help build the company’s success and share in the benefits of the success¹. ESOs may also provide a benefit with respect to the recruitment and retention of staff, as well as offer certain taxation advantages. There are two further qualifications worth making: first, it is sometimes possible that the employer may buy back the options for cash instead of issuing shares; and second, it is also possible that multinational corporations may offer employees in one economy options on shares of their parent company in another country.

2. Accounting for ESOs

Current accounts

- 25.95 An estimate of the value of the ESO should be made on the grant date. This amount should be included as part of compensation of employees spread over the period between the grant date and vesting date, if possible. If this is not possible, the value of the option should be recorded at the vesting date.
- 25.96 The following adapts a simplified version of the example in the UN-ECB Handbook Financial Production Flows and Stocks in the System of National Account. It is assumed that the ESO has a strike price of 30 and a fair value of 20 and that there are 5 employees. for a total value of 100. It is further assumed that the ESO compensation is spread over 2 consecutive periods, at 50 per period. This amount (50) would be included on the uses side of the corporation’s generation of income account as compensation of employees in each period. It would also be recorded in the households’ allocation of primary income account as compensation of employees in each period, as well as being reflected in the net saving balances.
- 25.97 The costs of administering ESOs are borne by the employer and are treated as part of intermediate consumption just as any other administrative functions associated with compensation of employees. Although the value of the stock option is treated as income, there is no investment income associated with ESOs in the primary income account.

Accumulation accounts and balance sheet

- 25.98 The value of the ESO in both periods (i.e., the vesting period and the exercise period) would be reflected in the net lending/borrowing balances. In the financial account, the acquisition of an asset of 50 by households in each of the first and second periods is matched by the corresponding liability increases of the employer. The corresponding amounts recorded on the balance sheet are 50 at the end of the first period and 100 at the end of the second period, respectively. Prior to vesting, this is usually recorded as other accounts receivable/payable but can be recorded as an ESO asset and liability in the broader financial derivatives category under F7.2 Employee stock options.
- 25.99 At vesting, if the entry is not already accounted for as an ESO, then there would be offsetting financial transactions, for the full amount of 100, to convert the other accounts receivable and payable into ESO assets and liabilities. These would also be reflected in the balance sheet account.
- 25.100 When the ESO is exercised following the vesting date, the stock price is assumed to be 50, in line with the

¹ There are other types of arrangements where employers can achieve similar results with their staff, such as through stock appreciation rights or employee stock purchase plans.

grant value of 20 and the strike price of 30. Households record purchases of shares, for a total amount of 250 (50 times 5 employees), in the financial account, with the source of funding being drawing down their own liquid funds by 150 (such as deposits) and extinguishing the ESO of 100 (this value would be the difference between the market price of the equity and the price paid by the buyer for the equity). Corporations record a corresponding issue of shares of 250 and an extinguishing of their ESO liability entry, as well as a source of funds (such as deposits), in the financial account. In other words, exercising the ESO constitutes a set of financial transactions and not a set of entries in the other changes in the volume of assets account. This change is also reflected in the closing balance sheet account with households' stock holdings now at 250 from the exercise of the ESO, and corporations' equity liabilities up by the same amount. In the end, households have acquired 250 in new equity from the prior period labour compensation of 100 and a further 150 injection of their own funds.

- 25.101 In principle, any change in value between the grant date and vesting date should be treated as part of compensation of employees while any change in value between vesting date and exercise date is not treated as compensation of employees but as a holding gain or loss. In practice, it is most unlikely that estimates of the costs of ESOs to the employers are revised between grant date and exercise date. For pragmatic reasons, therefore, the whole of any increase between grant date and exercise date is typically treated as a holding gain or loss. An increase in value of the share price above the expected price is a holding gain for the employee and a holding loss for the employer and vice versa.

3. Variations on employee stock options

- 25.102 For clarity within the SNA, the term employee stock option (ESO) is used to include stock appreciation rights for that part that relates to employee compensation. However, there are a few types of activities that have some similarities in accounting with ESOs that amount to other means of rewarding employees that are related to shares in the company. None of these activities constitute ESOs, but they are briefly discussed so as not to confuse them with ESOs.
- 25.103 The first is a variation on the use of stock options to reward employees is an offer extended to employees to purchase shares at advantageous rates under an employee share (stock) purchase plan. Employees are not obliged to accept the offer; however, if they do, the discount in the share value should be treated as part of compensation of employment. Similarly, if employees receive a benefit relating to the change in a company's shares but not shares themselves, this payment should be treated as part of the compensation of employees. The second variation is the case of a firm contributing its own shares to the pension fund. This is usually termed an employee share plan or a stock ownership plan.

E. Recording of flows associated with financial assets and liabilities

1. Introduction

- 25.104 Financial instrument stocks in the balance sheet account arise from the sectoral imbalances (net lending or net borrowing balances) in the sequence of current and capital accounts. These, in turn, give rise to net acquisition of financial assets or net incurrence of liabilities transactions in the financial account to build and adjust those stocks as required. This deficit or surplus of funds is largely intermediated through the financial corporations' subsectors, which meets the needs of investors and borrowers through their own stocks of financial assets and liabilities and investment activities, underlining the importance of the financial system to an economy. Chapters 12 and 14 discuss the financial account and balance sheet, respectively, with an emphasis on financial assets and liabilities. Chapter 29 discusses financial corporations.
- 25.105 Holdings of financial instruments can give rise to various types of returns (e.g., interest and dividends), which are recorded as transactions in the primary income account. Transactions in financial instruments and holdings of financial instruments may also give rise to fees charged by financial corporations, some explicit and some implicit, and included in their output measures.
- 25.106 Financial assets and liabilities stocks also generate other flows = revaluations from holding gains and losses as well as volume changes, as discussed in Chapter 13. Revaluations of assets and liabilities tend to be a

significant part of other flows, especially for marketable securities and instruments as well as financial instruments denominated in foreign currencies.

- 25.107 All in all, non-financial and financial transactions, as well as other flows, determine the changes between opening and closing stocks on the balance sheets. The objective of this part of chapter 25 (as summarized in Figure 25.1) is to discuss, for each category of financial assets and liabilities, how and where changes in their values are recorded in the SNA and to discuss when some part of the transaction relating to a financial instrument is treated as a measure of the output of financial institutions. Before describing these flows in detail in the next section, it is helpful first to recall the characteristics of financial institutions, the type of flows that are associated with providing financial services as well as the sort of income and holding gains and losses associated with holding financial assets and liabilities.

Figure 25.1: Indications of the flows associated with different financial instruments

The characteristics of financial institutions

- 25.108 Within the SNA, the term “corporations” is used to describe institutional units providing both financial and non-financial services. These are divided into two institutional sectors: financial corporations and non-financial corporations. Financial corporations are distinguished from non-financial corporations because they play a particular role in the economy. Some may issue deposits and facilitate means of payments between other units thus avoiding the need for barter. Some also provide the means whereby units seeking additional funds to finance capital formation, acquire financial assets or even for consumption can utilize the funding set aside by other units as saving. More generally, financial corporations are important for matching domestic non-financial investment with national saving and the external sector balance.

Figure 25.1: Indications of the flows associated with different financial instruments

- 25.109 When considering the financial sector alone or in connection with other statistics such as monetary and financial statistics, it is usual to speak of financial institutions rather than financial corporations. No change in definition or coverage is implied by this change in terminology. When sub-sectoring the financial sector, as explained in chapter 5, a distinction is made between those financial corporations that are primarily involved in financial intermediation, which are called financial intermediaries, and other financial institutions.
- 25.110 Financial intermediation characterizes the activity of matching the needs of borrowers with the desires of lenders. It is carried out by financial institutions preparing alternative sets of conditions under which clients can borrow and lend. These conditions allow for variations in the rate of return that may be expected from an investment (lending) with, often, higher returns associated with increased risk and/or the longer-term investment of funds. There are now very many, very diverse ways in which money can be borrowed and lent. Financial intermediation thus draws on the different expectations of borrowers and lenders. The act of financial intermediation is thus one of devising financial instruments that encourage those with savings to commit to lend to the financial institutions on the conditions inherent in the instruments so that the financial institutions can then lend the same funds to others as another set of instruments with different conditions. This activity encompasses financial risk management as well as maturity and liquidity transformation.
- 25.111 All financial intermediation in the SNA is carried out by financial corporations. However, some institutional units in the financial sector are not themselves intermediaries but simply provide services auxiliary to financial intermediation. For example, they may provide advice on borrowing and lending products and counterparts suitable for their clients, such as a mortgage broker or provide certain sorts of financial resources such as a foreign exchange bureau that exchanges one currency for another. These are the units described as financial auxiliaries.
- 25.112 Financial institutions charge for the services they provide. The ways in which they charge for their services are not always obvious, or explicit. When a bank offers low-cost deposits, it only signifies that there are

minimal explicit fees, not that there are no implicit fees. Fees may also be charged indirectly by means of charging those purchasing a financial asset more than the seller of the same asset receives. For example, dealers in foreign exchange typically buy and sell at different rates; the differences between those rates and the mid-point represent service charges paid by the customers. Further, interest rates on loans are typically higher than the costs of funding by banks (i.e., deposits); or, conversely, interest rates on deposits are lower than the risk-free interest at which banks may invest these funds (i.e., loans).

- 25.113 It is not only the service charge that may have to be measured indirectly, but also in some cases the investment income. Bills are an offer of a fixed sum at some time in the future and the promise of this payment is sold at a discount. The increase in value between the buying price and the redemption price is treated as interest in the SNA.
- 25.114 The existence of implicit fees explains the difference between the terms used in financial markets (e.g., banking) and those used in the SNA. For example, the money paid by a bank on a deposit is described as interest by the bank but is not the amount recorded as interest in the SNA, because the amount paid by the bank is assumed to be a compound payment representing interest as understood in the SNA less the service charges levied on the depositor for the costs of operating the account. In the SNA, the terms bank interest and SNA interest are used when it is necessary to distinguish the two concepts. Unless it is qualified as bank interest, the term interest in the SNA is to be taken as referring to SNA interest.

Charging for financial services

- 25.115 As noted above, the way in which financial institutions charge for the services they provide is not always as evident as the way in which charges are made for most goods and services. Several kinds of financial institutions do make explicit fees for the services they render. Other financial institutions may make implicit charges, either alone or in conjunction with explicit fees.
- 25.116 Explicit fees should always be recorded as payable by the unit to whom the services are rendered to the institution performing the service. If the services are rendered to a corporation or to government, the costs will form part of intermediate consumption. If they are rendered to households they will be treated as final consumption unless the financial service is performed in relation to an unincorporated enterprise, including the owning and occupying of a dwelling. Within the SNA, fees are not incorporated into the value of any financial asset even if their incurrence is necessary for the acquisition of the asset, nor do these fees affect the value at which transactions in financial assets take place in the market.
- 25.117 Implicit charges for financial services have to be measured indirectly. The charges may be simply the difference between the buying and mid-price and between the mid-price and selling price as in the example of foreign exchange quoted above. (Each service should be calculated at the time of the transaction concerned so that holding gains and losses occurring between the time of the purchase and sale are not treated as services.) Other implicit charges may be combined with other transactions (or other flows) on a particular financial instrument. The service charge associated with borrowing and lending is one such example where it is combined with interest. As noted in Chapter 8 when the output of financial services is discussed, ignoring the implicit charges for financial services may lead to understating the output of the industry and sector.

Investment income associated with financial instruments

- 25.118 Most financial instruments give rise to investment income. Debt instruments such as Special Drawing Rights (SDRs) on the IMF, loans, most debt securities, deposits, and some unallocated gold accounts where the amount is repaid according to a fixed formula give rise to interest. Equity and investment fund shares give rise to dividends, withdrawals from income of quasi-corporations, reinvested earnings on foreign direct investment, or investment income attributable to collective investment fund shareholders. Except for other accounts receivable or payable, only gold bullion, currency, non-interest-bearing deposits, financial derivatives and employee stock options never give rise to investment income.

Holding gains and losses on financial instruments

- 25.119 In the normal course of events, loans and deposits at nominal value and denominated in domestic currency do not give rise to holding gains though there will always be real holding losses for the asset holder (holding gains for the borrower) in the presence of inflation. Securities denominated in domestic currency may be subject to holding gains and losses, as changes in the market interest rate leads to changes in the present value of future coupon payments and redemption values, which are reflected in the market price.
- 25.120 For equity and investment fund shares other than money market fund shares, nominal holding gains are common and may be substantial. Indeed, reaping potential holding gains is one main reason for investing in such instruments.

Volume changes on financial instruments

Unlike non-financial assets, there are few items recorded in the other changes in the volume of assets accounts for financial instruments. Two common ones are worth noting here. First, the monetization and de-monetization of monetary gold reserves is entered as volume changes, as the gold assets typically change from/to valuables (gold bullion). Second, loans that are deemed uncollectible, and that are not forgiven, are written-off and the values disappear from the asset boundary as volume changes. Refer to Chapter 13 for a detailed discussion on volume changes.

2. Recording flows in financial instruments

- 25.121 As explained above, both service charges and investment income flows may be combined with the costs of acquiring and disposing of financial assets and liabilities. This section of the chapter, therefore, examines each class of instrument in turn to identify what flows should be recorded in each case. Explicit fees are not covered in this section since even if they apply, their value is additional to the value at which financial assets change hands.
- 25.122 There are three types of flows of relevance in this section; the implicit fees made by financial institutions, different income flows, and holding gains and losses. A summary of the types of flows that relate to each instrument is given in figure 25.1. Implicit fees are subdivided between those that appear as a margin between the purchase and selling price and those that represent a margin on interest paid and received (FISIM). All income flows are investment income, and these flows are divided between interest, dividends, withdrawals from quasi-corporations, reinvested earnings on foreign direct investment and investment income attributed to investment fund shareholders. Only the instruments relating to insurance, pension schemes are excluded as the treatment of these schemes is described in Chapter 24. Standardized guarantees are discussed in Section B of this chapter. Furthermore, more details on Islamic finance are provided in Chapter 26.

Monetary gold

- 25.123 Monetary gold is gold to which the monetary authorities (or others who are subject to the effective control of the monetary authorities) have title and is held as a reserve asset. Monetary gold consists of two subcategories: physical gold bullion (including allocated gold accounts) and unallocated gold accounts, both of which are held by the monetary authorities (or other units authorized by them) as part of reserves. Although it may not be possible to publish these two subcategories separately for reasons of confidentiality, it is important to understand the different considerations that apply to each of them.
- 25.124 Gold bullion takes the form of coins, ingots, or bars with a purity of at least 995 parts per thousand. Gold held as a valuable by commercial banks or as inventories by some specialized industries (for example, jewelers), may be indistinguishable from gold bullion or may be of a lower quality. Physical gold, excluding gold bullion included in monetary gold, whether gold bullion or not, can be referred to as commodity gold (since it is traded on commodity markets).
- 25.125 Gold bullion may be sold by one monetary authority to another in another country. In such a case the exchange is recorded as an exchange of financial assets only. In all other cases, the gold is reclassified as commodity gold and thus a valuable held by the monetary authority (and is no longer part of reserves) and is

then sold as commodity gold. The reclassification is recorded in the other changes in the volume of assets account as demonetization of gold. If the gold is sold abroad it will feature in exports and imports of the countries concerned. When commodity gold is sold, there may be a trade margin attached to it. When a monetary authority seeks to increase its holdings of monetary gold through purchases of commodity gold, a reverse path is followed. The gold is acquired initially as commodity gold either from a domestic unit or from abroad and is subsequently reclassified to monetary gold as monetization in the other changes in the volume of assets account.

- 25.126 There is no interest earned on gold bullion held as a valuable, but it is subject to nominal and real holding gains and losses as the gold price changes. However, a fee or interest can be earned when gold is lent out (i.e., gold swaps).
- 25.127 Unallocated gold accounts are treated as foreign currency deposits unless they are held by the monetary authorities as part of foreign reserves. Unlike gold bullion, unallocated gold accounts have counterpart liabilities. Because the unallocated gold accounts classified as monetary gold must be held as part of foreign reserves, the counterpart liability is necessarily held abroad. The counterpart liability will not be treated as part of monetary gold in the counterpart country. (Assets held abroad as part of foreign reserves are generally not identified as such within the liabilities of the partner country.) If a monetary authority acquires an unallocated gold account to be treated as reserves from a non-resident non-monetary authority entity, it is recorded first as an acquisition of a foreign currency deposit and then reclassified to monetary gold as a change of classification in the other changes in the volume of assets and liabilities account. Removing an unallocated gold account from reserves is recorded as, first, a change in classification from monetary gold to a foreign currency deposit and then as a disposal of the deposit.
- 25.128 Unallocated gold accounts attract interest and a service charge and are also subject to nominal and real holding gains and losses as the gold price alters.

Special Drawing Rights (SDRs)

- 25.129 SDRs are international reserve assets created by the IMF and allocated to its members to supplement existing official reserves. SDRs are held only by the monetary authorities of IMF members and a limited number of international financial institutions that are authorized holders. SDR holdings represent unconditional rights to obtain foreign exchange or other reserve assets from other IMF members. Participants may hold more or fewer SDRs than their allocation as a result of transactions in SDRs between participants, or between participants and prescribed holders. The IMF's SDR Department pays interest on SDR holdings to each member and levies charges on SDR allocations of each member at the same rate. Participants incur a small annual levy to cover the operational costs of the SDR, which should be treated as explicit fees. Data on the interest rates payable are available regularly from the IMF. Since the value of the SDR is based on a basket of five major currencies, the value of SDRs is always subject to nominal and real holding gains and losses. Sometimes, new allocations of SDRs may be made; when this occurs, the allocation is recorded as a transaction.

Currency

- 25.130 Currency consists of notes, coins and digital currencies that are of fixed nominal values and are issued or authorized by the central bank or government. Notes and coins are the simplest financial asset to record since for domestic currency, no service charges, investment income or nominal holding gains and losses are recorded. Under inflation, though, the holder of notes and coins suffers real holding losses. The cost of producing the physical notes and coins is recorded as government expenditure and not netted against the receipts from issuing the currency. Central bank digital currency might be subject to explicit fees.
- 25.131 Foreign currency should be recorded in the national balance sheets converted to a value in domestic currency using the exchange rate relevant for the date of the balance sheet. This value is subject to nominal and real holding gains and losses as the exchange rate of the foreign currency relative to the domestic currency fluctuates. As noted above, there is usually a service charge associated with acquiring or disposing of foreign currency.

Deposits and loans

- 25.132 Financial Intermediation Services Indirectly Measured (FISIM) concern the implicit service charges related to financial intermediation associated with loans and deposits held with financial intermediaries (excluding central banks). Paragraphs 8.xxx to 8.xxx describe the basic principle of FISIM and explain the need to make the distinction, referred to above, between interest as understood by the banks holding deposits and issuing loans and the investment income flows recorded in the SNA. Preferably, a single reference rate should be applied to the level of loans and deposits denominated in domestic currency to determine the SNA interest flows to be recorded. The difference between these flows and bank interest are recorded as service charges payable to the banks by the units holding the deposits or loans. This applies to both resident and non-resident units and to deposits and loans held with resident and non-resident units. For clarity, the term bank interest is used to indicate the apparent interest as quoted by a financial intermediary to their customer; the term SNA interest is used for the amount recorded in the SNA as interest, that is the level of loans and deposits multiplied by the reference rate chosen. For deposits with banks, the service charge is equal to SNA interest less bank interest; for loans the service charge is equal to bank interest less SNA interest. At a minimum, it is probable that different reference rates should be used for every currency in which non-resident loans and deposits are denominated. For reasons of feasibility, it is recommended to use, for the calculation of imports and exports of FISIM, at least two groups of currencies (typically, the two most material in terms of non-resident loans and deposits).
- 25.133 No exclusion is made for lending of own funds. Although the act of lending own funds, and the charging of SNA interest is not a productive activity, the SNA considers that there is a service charge associated with lending. A person borrowing from a bank is unaware whether the amounts borrowed are of intermediated funds or come from the bank's own funds and no difference in the service charges applied should be made. Similarly, if a person borrows from a money lender, there is a service charge payable. A noteworthy feature of some microfinance schemes is that, because defaults are uncommon, the charges are modest.)
- 25.134 It is not always simple to determine whether positions between banks should be classified as deposits or loans because the parties are unclear, or one party considers it a loan and the other a deposit. To ensure symmetry all interbank positions, other than securities and accounts receivable/payable, are classified under deposits. It is assumed that the inter-bank rate at which banks borrow and lend to one another is usually such as to meet the criteria for a reference rate. (In some cases, it may be appropriate to use the inter-bank rate as the reference rate.) For this reason, it may often be appropriate to assume that there is no FISIM associated with inter-bank lending and borrowing within the national economy. In some instances, such as for major financial hubs, it may often be appropriate to assume that there is also no FISIM associated with inter-bank lending and borrowing with non-resident financial intermediaries.
- 25.135 The outstanding balance on a credit card or on an account with a retailer is often subject to interest. These outstanding balances should be classified as loans, not other accounts receivable or payable. FISIM is calculated on them if the unit providing the loan is classified as a financial intermediary.
- 25.136 Repurchase agreements are classified as giving rise to deposits or loans depending on whether they are or are not included in the national measure of broad money. They thus give rise to interest that may have a FISIM component. In addition, they have fees associated with their initiation.
- 25.137 There are no nominal holding gains and losses on deposits and loans expressed in domestic currency (whether these are held by residents or non-residents). With any inflation, there will be real holding losses on assets denominated in domestic currency. There may be nominal and real holding gains and losses on deposits and loans denominated in other currencies or held as unallocated gold accounts (or similar accounts in other precious metals).
- 25.138 Any charges made by a financial institution for operating a bank account, a fee for cashing a cheque or for withdrawing money from an automatic teller machine are all treated as explicit fees.
- 25.139 The special case of non-performing loans and how they should be treated in the SNA is discussed in Chapter 14.

Debt securities

- 25.140 In terms of recording the associated flows, there are three types of debt securities. The first is where the amount payable at the end of the period for which the security exists is the same as the initial amount paid for the security but there are associated “coupons” that entitle the holder to payments of interest, at fixed or variable rates, at intervals during the life of the instrument. The second type of security is one where no intermediate payments are made but the issue price differs from the redemption price, where the security is issued at a discount or a premium. Take the case where the issue price is lower than the redemption price, with the security issued at a discount. The issue price is equal to the redemption price discounted to the date of issue at the appropriate rate of interest that could be earned on a deposit of similar characteristics. The increase in value of the security during its life is treated as interest accruing to the holder of the security that is “reinvested” in the security to increase its value. The third type of security is a hybrid of the two other forms noted above; the initial value is less than the redemption value but there are also attached coupons. In certain circumstances, if the coupons represent a rate of interest higher than that prevailing in the market for similar securities at time of issue, the security may be offered at a price higher than the redemption price (but only the face value will be redeemed at maturity).
- 25.141 Irrespective of the cash-flow structure of the security, interest on debt securities can be defined as follows: the increase in the present value of the instrument’s future cash flows discounted with the interest rate prevailing at the time of issuance (debtor approach), after subtracting any financial transaction.

Service charges associated with securities

- 25.142 For securities, the interest calculated according to the coupon or as the increase in value of the security is recorded in the SNA as such without adjustment for a service charge. However, there is normally a service charge associated with the acquisition of a security on initiation and with the disposal and acquisition of a security at any point during its life. These service charges are identified as being the difference between the buying (bid) and selling (ask or offer) price quoted for each security and the mid-price. The bid and offer prices should be those applicable to the individual buyer and seller since these may vary according to the quantity being transacted or other factors.
- 25.143 Suppose an instrument is bought for 102 and subsequently sold for 118 (both values including accrued interest) even though there has been no change in the rate of interest (and hence of the value of the instrument due to holding gains and losses). At first sight, it seems that interest of 16 should be recorded. However, suppose the mid-price on purchase was 100 and on sale was 120. The correct recording would be to show interest of 20 payable by the issuer of the security to the holder with a purchase of services of 4 payable by the holder to the dealer in securities. Ignoring the bid-ask spread understates interest and ignores the services provided by the financial institutions that buy and sell securities.

Interest on discounted securities

- 25.144 There are two ways in which the value of a discounted security can be determined during its life when the prevailing interest rate is different from the rate prevailing when the security was issued. The debtor approach is the perspective of the unit issuing the security and the creditor approach is the perspective of the unit holding the security. The first option, called the debtor approach, is to continue to use the rate prevailing on initiation throughout the instrument’s life. The alternative, the creditor approach, is to use the current rate to estimate the value of interest between any two points in the instrument’s life.
- 25.145 Suppose a debt security is offered at 90 with a redemption value of 100 (i.e., zero-coupon instrument). If the discount (interest) rate does not change during its life, interest will accrue steadily throughout. Suppose, though, that the interest rate falls when the instrument has reached a value of 95. Because the redemption value is now discounted by a smaller factor, the value of the security increases, say to 97. Both the creditor and debtor approach would record interest of 5 in the period before the interest rate decline. Under the creditor approach, this increase in value of 2 from 95 to 97 is treated as a holding gain and only the subsequent rise to the redemption value of 100 is treated as interest. Thus, over the whole life of the instrument it has given rise to interest of 8 and a holding gain of 2 for the creditor (and a holding loss for the debtor).
- 25.146 In the SNA, the debtor approach is used. Under this approach, the interest accruing in the period before the

interest rise is still 5 but so is the interest in the period after the interest rate rise. Adding this level of interest to the value of 97, which includes the holding gain of 2, when the rise occurred would give a value of 102 at the redemption date. Since this value is too high, a holding loss of 2 must be recorded for the creditor (and a holding gain for the debtor). Thus, over the whole life of the instrument there is interest of 10 with an initial holding gain of 2 (when the interest rate changed) offset by the later holding loss of 2. The holding loss occurs steadily between when the holding gain was recorded and the redemption period. The rationale for using the debtor approach is that the debtor, the issuer of the security, is not liable to make the payment until the security matures and from his perspective it is appropriate to treat the total amount of interest as accruing steadily over the life of the security.

Interest on bills, commercial paper and similar instruments

- 25.147 Bills are short-term securities that give the holder (creditor) the unconditional right to receive a stated fixed sum on a specified date. They are issued and traded in organized markets at a discount that depends on current market short-term interest rates and the time to maturity. Most bills mature after a period ranging from one month to one year.
- 25.148 As the bill approaches maturity, its market value increases because there is less discounting applied to it. This increase in value, in common with the increase in the value of any asset due to the unwinding of a discount factor, is treated as income in the SNA. For financial assets, the income is recorded as interest.
- 25.149 Let the price paid for a bill at its time of issue and after excluding the service charge be L ; this represents the amount of funds that the purchaser (creditor) provides to the issuer (debtor) and measures the value of the initial liability incurred by the issuer. Let the face value of the bill be F : this represents the sum paid to the holder of the bill (the creditor) when it matures. The difference, $F-L$, or discount on the bill, measures the interest payable over the life of the bill.
- 25.150 Bills are traded on money markets at values that gradually rise to reflect the interest accruing on the bills as they approach maturity. The increase in the value of a bill due to the accumulation of accrued interest does not constitute a holding gain because it is due to an increase in the principal outstanding and not to a change in the price of the asset.

Interest on bonds and debentures

- 25.151 The nominal value of a debt security accrues interest in accordance with the debtor approach. Bonds and debentures are long-term securities that give the holder the unconditional right to:
- A fixed or contractually determined variable money income in the form of coupon payments; or
 - A stated fixed sum on a specified date or dates when the security is redeemed; or
 - Both (a) and (b). Most bonds fall into this category.
- 25.152 When a bond is issued at a discount, the difference between the face value, or redemption price, and the issue price constitutes interest that accrues over the life of the bond, in the same way as for a bill. However, as accounts are compiled for time periods that are typically much shorter than the life of the bond, the interest must be distributed over those periods. The way in which this may be done is explained below.

Zero-coupon bonds

- 25.153 Zero-coupon bonds are long-term securities that are similar to bills. They do not entitle their holders to any fixed or variable money income but only to receive a stated fixed sum as repayment of principal and accrued interest on a specified date or dates. When they are issued, they are usually sold at a price that is substantially lower than the price at which they are redeemed on maturity. Let L equal the issue price and F the redemption price, so $F-L$ is the value of the interest receivable and payable over the life of the bond. This interest has to

be distributed over the years to its maturity. One possible method is to assume that interest at a rate of r is credited at the end of each year at an annual rate that is constant over the life of the bond, so that the final value $F = L(1 + r)^n$.

- 25.154 The interest rate, r , is given by the following expression $r = (F/L)^{1/n} - 1$ where n is the number of years from the time of issue to maturity. The interest accruing during the course of year t is then given by $rL(1+r)^{t-1}$ where $t = 1$ at the end of the first year.
- 25.155 The interest accruing each year is effectively reinvested in the bond by its holder. Thus, counterpart entries equal to the value of the accrued interest must be recorded in the financial account as the acquisition of more bond by the holder (creditor) and as a further issue of more bond by the issuer (debtor).

Other bonds, including deep-discounted bonds

- 25.156 Most bonds pay a fixed or variable money income and may also be issued at a discount or, possibly, a premium. In such cases, the interest receivable by the holders of the bonds has two components:
- a. The amount of the money income receivable from coupon payments each period; plus
 - b. The amount of interest accruing each period is attributable to the difference between the redemption price and the issue price.
- 25.157 The second component is calculated in the same way as for zero-coupon bonds, as described above. In the case of deep-discounted bonds, most of the interest accruing is attributable to the difference between the redemption price and the issue price. At the other extreme, some bonds offer an income stream in perpetuity and are never redeemed.

Index-linked securities

- 25.158 Index-linked securities are financial instruments for which the amounts of the coupon payments (interest) or the principal outstanding or both are linked to a general price index, a specific price index, the price of a commodity or an exchange rate index. Different treatments are recommended for the recording of transactions depending on the type of index used to uprate the level of principal to which the interest is linked and on the currency in which the interest and principal are denominated.
- 25.159 The indexation mechanism links the amount to be paid at maturity or coupon payments or both to indicators agreed by the parties. The values of the indicators are not known in advance. For debt securities with indexation of the amount to be paid at maturity, they may be known only at the time of redemption. As a result, interest flows before redemption cannot be determined with certainty. For estimating interest accruals before the values of the reference indicators are known, some proxy measures have to be used. In this regard, it is useful to distinguish the following three arrangements:
- a. indexation of coupon payments only with no indexation of amount to be paid at maturity,
 - b. indexation of the amount to be paid at maturity with no indexation of coupon payments, and
 - c. indexation of both the amount to be paid at maturity and coupon payments.
- 25.160 The principles described below for index-linked debt securities apply to all index-linked debt instruments.
- 25.161 When only coupon payments are index-linked, the full amount resulting from indexation is treated as interest accruing during the period covered by the coupon. It is most likely that by the time data are compiled for a reporting period, the date for the coupon payment would have been passed and hence the value of the index is known. When the date for the coupon payment has not been passed, the movement in the index during that part of the reporting period covered by the coupon can be used to calculate the interest accrual.
- 25.162 When the amount to be paid at maturity is index-linked, the calculation of interest accruals becomes uncertain because the redemption value is unknown; in some cases, the maturity time may be several years in the future. Two approaches can be followed to determine the interest accrual in each accounting period.
- a. Interest accruing in an accounting period due to the indexation of the amount to be paid at maturity

may be calculated as the change in the value of this amount outstanding between the end and beginning of the accounting period due to the movement in the relevant index.

- b. Interest accruals may be determined by fixing the rate of accrual at the time of issue. Accordingly, interest is the difference between the issue price and the market expectation, at inception, of all payments that the debtor will have to make; this amount is recorded as interest accruing over the life of the instrument. This approach records as income the yield-to-maturity at issuance, which incorporates the results of the indexation that are foreseen at the moment the instrument was created. Any deviation of the underlying index from the originally expected path leads to holding gains or losses which will not normally cancel out over the life of the instrument.
- 25.163 While the first approach (using the movement in the index) has the advantage of simplicity, interest includes all changes and fluctuations in the value of the amount to be paid at maturity in each accounting period due to the movement in the relevant index. If there is a large fluctuation in the index, this approach may yield negative interest in some periods even though market interest rates at the time of issue and current period may be positive. Also, fluctuations behave like holding gains and losses. The second approach (fixing the rate at the time of issue) avoids such problems, but the actual future cash flows may differ from the initially expected cash flows unless ex ante market expectations are exactly met. This means that interest for the life of the instrument may not be equal to the difference between the issue price and redemption value.
- 25.164 The first approach works well when a broad-based indexation of the amount to be paid at maturity is used (for example a consumer price index) as such indexation is expected to change relatively smoothly over time. However, the first approach may give counter-intuitive results when the indexation of the amount to be paid at maturity combines motives for both interest income and holding gains (for example, a commodity price, stock prices, or gold prices). Therefore, when indexation includes a holding gain motive, typically indexation based on a single, narrowly defined item, the second approach is preferred, otherwise the first approach should be used for the measurement of interest accrual.
- 25.165 When both the amount to be paid at maturity and coupon payments are indexed to a broad-based reference item, interest accruals during an accounting period can be calculated by summing two elements: the amount resulting from the indexation of the coupon payment (as described in paragraph 17.276), that is attributable to the accounting period, and the change in the value of the amount outstanding between the end and beginning of the accounting period due to the movement in the relevant index (as described in paragraph 17.277(a)). When both the amount to be paid at maturity and coupon payments are indexed to a narrow index that includes a holding gain motive, interest accruals for any accounting period can be determined by fixing the yield-to-maturity at issuance.
- 25.166 Debt instruments with both the amount to be paid at maturity and coupon payments indexed to foreign currency are treated as though they are denominated in that foreign currency; interest, other economic flows and stock levels for these instruments should be calculated using the same principles that apply to foreign currency denominated instruments. Interest should accrue throughout the period using the foreign currency as the currency of denomination and converted into the domestic currency using mid-point market exchange rates. Similarly, the amount outstanding should be valued using the foreign currency as the unit of account with the end of period exchange rate used to determine the domestic currency value of the entire debt instrument (including any accrued interest) in the international investment position. Changes in the market value of debt securities due to exchange rate movements or interest rate changes are treated as revaluations.
- 25.167 As with other securities, the interest accruing as a result of indexation is effectively reinvested in the security and these additions to the value of the security must be recorded in the financial accounts of the holder and issuer.

Equity and investment fund shares

- 25.168 The financial service charges levied on transactions in equity and investment fund shares are calculated in the same way as for debt securities as the difference between the financial intermediary's selling price and the mid-price and between the mid-price and the intermediary's buying price. They are treated as implicit fees.

- 25.169 The investment income from corporate equity takes the form of distributed income of corporations. For corporations, the distributed income is in the form of dividends. For quasi-corporations, the investment income is withdrawals from income of quasi-corporations. As noted in chapter 8, dividends or other withdrawals from corporate income are recorded as investment income at the time the shares start to be quoted ex dividend. A different recording is made for extraordinarily large dividends that are out of line with recent experience regarding the amount of income available for distribution to the owners of the corporation. Any excess distribution is to be recorded as a withdrawal of equity (recorded in the financial account) and not as part of investment income. However, for foreign direct investment companies, all distributions to non-resident shareholders of accumulated reserves from past earnings are recorded as dividends, except for redistributions arising from sales of assets. In addition, the retained profits are treated as being distributed in the form of reinvested earnings on foreign direct investment and reinvested in the relevant company. Chapter 30 discusses the case of exceptional dividends of public corporations.
- 25.170 For investment funds, the income element comes in the form of investment income attributable to collective investment fund shareholders. In the SNA, these include dividends distributed to shareholders and retained earnings attributed to shareholders. Therefore, the full value of the investment income earned is shown as being distributed to the shareholder in the allocation of primary income account with reinvestment of the retained earnings portion recorded in the financial account. However, if an investment fund is also a foreign direct investment enterprise, the reinvested earnings are recorded before the remaining investment income is distributed to investment fund shareholders.
- 25.171 As noted earlier, there may be considerable holding gains and losses, both nominal and real, on equity and investment fund shares.
- 25.172 The entries in the financial accounts relating to acquisitions of equity conceptually contain two distinct types of transactions. One is the exchange of equity and investment fund shares between institutional units. Because the transactions are valued at mid-price, total acquisitions must be equal to total disposals. The net effect, therefore, is to show the change in composition of the holders of shares by institutional sector and with the rest of the world. The second type of transaction included in the financial account is the receipt of any reinvestment of earnings and the counterpart of the outflow recorded under investment income payable by corporations. In calculating the revaluation element between opening and closing balance sheet, care must be taken to exclude the reinvestment of earnings term.

Financial derivatives

- 25.173 Issues relating to financial derivatives are discussed in Section C of this chapter.

Employee stock options

- 25.174 Issues relating to employee stock options are discussed in Section D of this chapter.

Other accounts receivable or payable

- 25.175 Other accounts receivable or payable are, essentially, accrual adjustments typified by trade credit and advances. Trade credit refers to the case where goods and services have been delivered but payment has not yet been received. Advances refer to payment for work-in-progress for which prepayment has been made but the products are not yet delivered. The means of financing payment, such as the use of credit cards, is not included here; the balance on the cards is treated as a loan and payments such as interest or overdue fees are recorded as for loans.
- 25.176 Other accounts receivable or payable denominated in domestic currency can have no nominal holding gains and losses but may have real ones. Any items denominated in foreign currency may have both nominal and real holding gains and losses.