



6

Money, Liquidity, Credit, and Debt

I. Introduction

6.1 This chapter covers concepts and definitions that should be used in constructing money, liquidity, credit, and debt aggregates. It first covers broad money in two sections, then dedicates one section to monetary base (also called base money or reserve money) and another section to liquidity aggregates. The final section discusses credit and debt aggregates. Six annexes focus on currency-union currency, dollarized economies and co-circulation, reserves requirements, seasonal adjustment of economic time series, debt securities issued by economic sector, and on Divisia money. This chapter also sets the stage for Chapter 7, which presents the statistical framework for the compilation of monetary statistics in accordance with the methodology of this *Manual*.

6.2 Concepts and definitions applied in this chapter are in line with those discussed in Chapter 3 as regards the sectoring of institutional units and in Chapter 4 as regards classification of financial instruments¹ as they underlie and support the specific concepts and definitions relevant for the aggregates covered in this chapter.

6.3 The *System of National Accounts 2008 (2008 SNA)* does not define broad money, although it contains several references to broad money and money aggregates. This *Manual* provides a definition of broad money that was also absent in the *Monetary and Financial Statistics Manual (MFSM)*.

6.4 In describing the money aggregates, this chapter classifies financial instruments on the liability side of FC's sectoral balance sheets into included-in or

excluded-from broad money, and splits institutional sectors/subsectors into money-issuing, money-holding, and money-neutral sectors. These classifications are carried out to support the three basic dimensions of broad money, which are: (1) the financial instruments that are components of broad money; (2) the institutional sectors that are money issuers; and (3) the institutional sectors that are either money holders or money neutral.

6.5 The definition of broad money in this *Manual* is intended to help monetary statistics compilers determine the scope of broad money taking account of their own national circumstances. A precise coverage of broad money, as well as monetary base, liquidity aggregates, and credit aggregates is determined by national compilers in accordance with the structure and other features of the financial system in their economy and against the concepts and definitions set in this chapter. The coverage of financial instruments included in broad money determines, in particular, which units in the financial corporations (FCs) sector are classified as depository corporations (DCs) and constitute the money issuing sector.

6.6 DCs are the only money issuers in most countries; in some countries, broad money may include liabilities issued by institutional units outside the FCs sector—in particular, by the central government or public nonfinancial corporations (PNFCs). When some liabilities issued by sector(s) other than the FCs sector meet the definition of broad money, these liabilities are combined with those included in the Depository Corporation Survey (DCS) which, as described in Chapter 7, covers the broad money liabilities issued only by FCs.

A. Basic Functions of Money

6.7 Money has four basic functions:

- a. Medium of exchange—a means for acquiring nonfinancial assets (goods, merchandises,

¹ Within this chapter, the term “financial instrument” is used to relate to both assets and liabilities from the perspective of their holders and issuers, respectively. The use of this term is for convenience only and does not imply an extension of the coverage of assets and liabilities to include contingent financial instruments, as described in paragraph 4.2.

equipment, etc.), services, and financial assets without resorting to barter.

- b. Store of value—a means of holding wealth.
- c. Unit of account—a standard for denominating the prices of goods and services, and the values of financial instruments and nonfinancial assets, thereby providing a means for comparisons of values and for preparation of financial accounts.
- d. Standard of deferred payment—a means for settling liabilities and, in this way, of relating current and future values in financial contracts.

B. Rationale for Compiling a Money Aggregate

6.8 Money plays an important role in an economy and is a component of the transmission mechanism from monetary policy to economic activity and inflation. Conceptually, the notion of money has been linked to the formulation of monetary policy and the need for money growth to be in line with the desired real growth rate of the economy and level of inflation, given an assumption on the velocity of money. Changes in the volume of money can also impact asset prices in an economy. Money aggregates measure the money available to money-holding sectors in the economy for making purchases of goods and services that contribute to the gross domestic product (GDP), or for investing in other assets. Thus, money aggregates are closely monitored by the central bank when making decisions that affect the short-term policy interest rate and/or the level of the monetary base.

6.9 In a number of countries, the change in the money aggregates is one of the intermediate objectives that facilitate the achievement of price stability (monetary targeting). In this type of framework, a target is set for the desirable level of change in a money aggregate during a certain period, based on the expected growth in GDP and the desired price level. For economies applying other types of monetary policy frameworks (such as inflation targeting, interest rate targeting, or exchange rate targeting), monitoring the changes in money aggregates contributes, together with a series of macroeconomic variables, to the determination of the policy actions to be taken by the central bank.

II. Broad Money

A. Definition

6.10 Money, which takes the form of various types of financial instruments, is mainly held for its usability as medium of exchange, store of value, or both. In defining broad money, therefore, the focus is on these two functions.

6.11 *Broad money is the sum of all liquid financial instruments held by money-holding sectors that are widely accepted in an economy as a medium of exchange, plus those that can be converted into a medium of exchange at short notice at, or close to, their full nominal value.*

6.12 Broad money encompasses financial instruments that are media of exchange or close substitutes to media of exchange. For inclusion in broad money, it is necessary to evaluate the degree of *moneyiness* of financial instruments, focusing on the extent to which each type of financial instrument provides *liquidity* and a *store of nominal value*.

6.13 Liquidity is an important characteristic of the financial instruments that should be included in broad money. The liquidity of a financial instrument subsumes other more specific characteristics such as negotiability, transferability, marketability, or convertibility, as well as divisibility. In terms of markets, liquidity generally refers to the ability to sell assets quickly and in large volume without substantially affecting their price. In terms of financial instruments, liquidity generally refers to those assets that can be converted into a medium of exchange quickly without a significant loss in value. Only highly liquid financial instruments can be considered as close substitutes for the medium of exchange and therefore be included in broad money.

6.14 By definition, all financial assets have value and, therefore, to varying degrees, are stores of value. Financial instruments differ widely in how their nominal or real values are maintained or fluctuate, in response to changes in prices and interest rates in the economy. The extent to which a financial instrument serves as a store of value depends on more than simply preserving its face value, but also on its capacity to maintain its purchasing power (through indexation, interest income, or dividends).

6.15 An important consideration when deciding on the financial instruments to be included in broad

money is their maturity, which influences their degree of liquidity and store of nominal value. Long-term debt securities are less reliable as a store of nominal value, even if tradable in efficient secondary markets, because of their fluctuations in value when interest rates change. Maturity of one to two years at issuance would usually be acceptable as the upper maturity limit for inclusion in broad money (see also paragraphs 6.34 and 6.48). Maturity at issuance rather than remaining maturity is usually used for deposits because the former better reflects the intention of money holders. Conceptually, remaining maturity can be used for debt securities; however because of data source constraints, original maturity is used in practice.

6.16 The definition of broad money should be applied based on domestic circumstances. The instrument coverage of broad money can be informed by an empirical approach that considers the relationship between broad money, and real and other financial variables. Running empirical tests on different measures of broad money may be helpful in deciding where to draw the line, for example with reference to maturities of financial instruments to be included in broad money. Compilers should update these empirical tests as relationships can change over time.

B. Financial Instruments Included in Broad Money

6.17 The most liquid financial instruments are currency and transferable deposits, which can be used as a medium of exchange—that is, they are immediately exchangeable on demand at par, to acquire services, financial or nonfinancial assets. Financial assets other than currency and transferable deposits should possess significant moneyness to be included in broad money.

6.18 In an economy, media of exchange are usually denominated in the domestic currency. Financial instruments denominated in foreign currency can also serve as a medium of exchange in an economy if they are legal tender or are widely accepted for making payments. In such cases, financial instruments denominated in foreign currency that meet the definition of broad money (currency, transferable deposits, and their close substitutes) are included in broad money.

6.19 In determining the components of broad money other than currency and transferable deposits, the

following basic characteristics need to be taken into account:

- a. Transactions costs. Deposits other than transferable deposits and some types of debt securities can be redeemed without incurring explicit costs in the form of fees or other charges or implicit costs arising from delays in the redemption process. In contrast, conversion of some types of financial assets involves substantial transaction costs or time delays.
- b. Divisibility. Differentiation by large and small denomination of a financial instrument is considered both from the perspective of its inclusion or exclusion from broad money and its position within the money hierarchy. Financial instruments with large denominations may be excluded from broad money. Thresholds may vary in practice, depending on national circumstances.
- c. Maturity. Maturity is a major determinant of the components of broad money as discussed in paragraph 6.15. In some cases, the hierarchy of a set of money aggregates proceeds from only short-term components to the inclusion of longer-term deposits or debt securities in higher-ordered money aggregates.
- d. Yield. In general, the components added to form the progressively higher-ordered money aggregates have higher yields than the interest-earning components of the lower-ordered money aggregates.

6.20 Box 6.1 presents the broad money structure within the money hierarchy with respect to the moneyness of different financial instruments and institutional sectors.

Financial instruments issued by resident depository corporations

Currency and transferable deposits

6.21 Currency and transferable deposits, comprising the most liquid financial assets, meet the definition of broad money. The liquidity of currency and transferable deposits and their use as a medium of exchange arises from the following underlying characteristics:

- a. Legal tender or general acceptability. Currency must be accepted for domestic transactions

Box 6.1 Broad Money: Holder and Issuer Sectors, and Financial Instruments

Broad money holders

- Other financial corporations
- State and local government
- Nonfinancial corporations
- Households and nonprofit institutions serving households (NPISHs)

Broad money neutral¹

- Central government (domestic currency holdings are usually included in broad money)
- Nonresidents (domestic currency holdings are usually included in broad money)

Broad money issuers and broad money liabilities

Issued by resident depository corporations

- Domestic currency (currency outside the depository corporations)¹
 - Transferable deposits²
 - Demand deposits (transferable by check, giro order, or similar means)
 - Cashier's checks
 - Traveler's checks (if used for transactions with residents)
 - Deposits otherwise commonly used to make payments³
 - Other deposits
 - Nontransferable savings deposits
 - Term deposits (i.e., time or fixed deposits)
 - Deposits denominated in foreign currency (except those included in transferable deposits)
 - Other⁴
- Money market funds' shares
- Debt securities
 - Certificates of deposit
 - Commercial paper
 - Other⁵

Issued by sectors other than resident depository corporations

- Domestic currency issued by central government
- Foreign currency (applies to economies in which foreign currency is widely accepted as a medium of exchange)
- Transferable deposits
 - Transferable deposits at the central government or the postal system
 - Traveler's checks issued by units other than depository corporations
 - Other⁶
- Other deposits at the central government or the postal system
- Debt securities
 - Treasury bills
 - Other⁷

¹ Due to lack of data, domestic currency holdings of central government and nonresidents are usually included in broad money.

² May include deposits denominated in foreign currency.

³ Includes shares or similar evidence of transferable deposit issued by savings and loan associations, building societies, credit unions, etc.; savings accounts that provide automatic transfer service through which savings account balances are transferred to transferable deposits that would otherwise be overdrawn; electronic money issued by card or otherwise transferable; and other types not classified elsewhere. May include deposits denominated in foreign currency.

⁴ Includes shares or similar evidence of nontransferable deposit issued by savings and loan associations, building societies, credit unions, etc.; repurchase agreements included in broad money; sight deposits that are immediately redeemable, but not transferable; and other types. May include deposits denominated in foreign currency.

⁵ Any other debt securities issued by resident depository corporations that meet the definition of broad money (e.g., savings certificates or cash certificates, bankers' acceptances traded in efficient secondary markets).

⁶ Includes electronic money (including mobile money) issued by units other than depository corporations.

⁷ Includes debt securities issued by the central government, such as savings certificates.

because of its status as legal tender; transferable deposits are generally accepted for transactions because of the recipients' confidence in their acceptability as a medium of exchange.

- b. Fixed nominal (face) value. The nominal values of currency and non-interest-bearing transferable deposits are fixed, with real values changing inversely with movements in the price level.
- c. Transferability. Currency and transferable deposits can be used to make direct payments to a third party.
- d. Transaction costs. Payment by currency has no fees or other transaction costs and the use of transferable deposits has no fees or relatively small fees attached.
- e. Divisibility. Currency and transferable deposits are the most divisible financial assets available in denominations for making small transactions.
- f. Maturity. Currency and transferable deposits do not have maturity and are immediately accessible by their holders.
- g. Yield. Currency and transferable deposits earn no or low interest because their usefulness as a medium of exchange compensates the holder for the forgone interest that could have been received by holding other types of financial assets.

6.22 Domestic currency consists of banknotes and coins issued by resident units that are used as a medium of exchange in an economy, as defined in paragraph 4.25. *Currency in circulation² is the amount of currency outside the central bank (and any other issuing unit) held by all other resident sectors and nonresidents.*

6.23 Currency outside DCs is the domestic currency included in broad money and is compiled as currency in circulation less currency holdings in the vaults of other depository corporations (ODCs).³ In the majority of economies, currency issuance is an exclusive right of the central bank, and placement of currency in circulation is mainly or entirely channeled from

the central bank through the ODCs to the money-holding sectors of the economy.

6.24 The amount of currency placed into circulation is determined by ODCs' demand for cash in vault and their customers' demand for currency. Currency is placed into circulation when it is transported from the central bank to an ODC,⁴ accompanied by the appropriate accounting entries.⁵ Currency is only included in broad money when ODCs' customers in the money-holding sectors exchange deposits for currency.⁶ This currency is labeled *Currency outside DCs* within broad money liabilities.⁷

6.25 Commemorative coins and gold or precious metal coins, which are held for their numismatic and intrinsic value, are excluded from broad money as they are classified as nonfinancial assets rather than as financial assets. An exception to this treatment is the case of commemorative coins that differ only slightly from the standard coins in circulation, are issued at or near their face value, are fungible with the standard coins in circulation, and for which the issuing authority has a liability to redeem them; such coins are included in broad money within *Currency outside DCs*. (See paragraph 4.27.)

6.26 In a currency union, difficulties arise in estimating the common currency in circulation in its individual member countries because the common currency banknotes and coins circulate as legal tender throughout the union (see Annex 6.1).

6.27 Transferable deposits held by money-holding sectors are included in broad money. Demand deposits transferable by check, giro order, or similar means constitute in every economy the bulk of transferable deposits. Foreign-currency-denominated transferable deposits held at domestic DCs that can be directly

² *Currency in circulation* is reported in the liability section of the sectoral balance sheet for central banks (see Table A2.1 in Appendix II).

³ *Currency outside DCs* is reported as a liability in the DCS.

⁴ Central bank sometimes issues currency in relatively small amounts in direct transactions with institutional units in the money-holding sectors.

⁵ The ODC records an increase in *Currency—domestic* and a decrease in its transferable deposit holdings at the central bank. The central bank records the reduction in the ODC's transferable deposits and an increase in *Currency in circulation*.

⁶ Upon demand from its customers, an ODC reduces its vault cash in exchange for a reduction in customers' transferable (or savings) deposit holdings at the ODC.

⁷ Due to lack of data, domestic currency holdings of central government and nonresidents are typically included in *Currency outside DCs* in broad money.

used to make payments to third parties within the domestic economy are also included in broad money.

6.28 Cashier's checks, banker's drafts, and similar liabilities issued by deposit-taking corporations at the request of a unit in a money-holding sector are included (until their redemption) in broad money within transferable deposits.

6.29 Traveler's checks are expected to be used predominantly abroad, and therefore they should in principle be excluded from broad money. However, there may be circumstances where traveler's checks are used for domestic transactions, in which case, they should be included in broad money.

6.30 All types of electronic money as defined in Chapter 4 (paragraphs 4.38–4.42), issued by resident DCs and that can be used for direct payments to third parties, are included in broad money within transferable deposits.⁸

Other deposits

6.31 Other (nontransferable) deposits issued by DCs, as defined in paragraph 4.43, account for the predominant portion of broad money in many economies.

6.32 Nontransferable savings deposits and sight deposits are redeemable at full value upon request without penalty and fee, although restrictions may apply for requests for withdrawal on very short notice if the holder intends to withdraw more than a certain amount. Savings deposits are both liquid and a reliable store of value and, thus, are included in broad money within other deposits. If equipped with automatic transfer service features, savings deposits are classified as transferable deposits and included in broad money.

6.33 Deposits redeemable at short notice are included in broad money within other deposits if the period of prior notice is short. This *Manual* does not recommend a specific limit for a "short" period of prior notice; country practices set this limit between three to six months.

6.34 Early withdrawal of fixed-term deposits, especially of long-term maturity, usually involves pen-

alties, resulting in such deposits being less liquid. Fixed-term deposits of short-term original maturity are included in broad money within other deposits; longer-term deposits are excluded. This *Manual* does not recommend a particular limit to the maturity for fixed-term deposits to be included in broad money, but considers a range of one to two years acceptable (see paragraph 6.15).

6.35 Other deposits denominated in foreign currency are viewed as having somewhat lower degree of moneyness than similar deposits denominated in domestic currency, because their domestic currency values are subject to change in response to exchange rate movements. However, other deposits denominated in foreign currency that could be drawn upon at short notice to make direct payments to third parties in the domestic economy are included in broad money.

6.36 Repurchase agreements resembling a standard deposit that are liabilities of the money-issuing sector to a money-holding sector are classified as other deposits and included in broad money applying the same maturity limit as for fixed-term deposits (paragraph 6.34). All other repurchase agreements are classified as loans (see paragraphs 4.43j and 4.71–4.73).

Deposits excluded from broad money

6.37 Restricted deposits are defined in paragraph 4.46. Withdrawals from some deposit accounts may be restricted only for short periods (up to one year), and such deposits may still possess sufficient moneyness to be included in broad money. In general, deposits for which withdrawals are restricted for periods of over one year are excluded from broad money.

6.38 Import deposits, defined in paragraph 4.46a, are generally not available to their resident holders and are eventually transferred to nonresident exporters. Thus, import deposits are excluded from broad money.

6.39 Checks or other types of transferable items are posted directly to depositors' accounts, but these are unavailable for use until after the transferable items have been cleared through the central bank or other clearing institution. Such unavailable deposits should be recorded within *other deposits*, but excluded from

⁸The ODCs' transactions with the recipients of the electronic funds are similar to electronic settlements for other types of transferable items.

broad money. Exclusion of such deposits from transferable deposits avoids double counting in broad money, given that these deposits continue to be included in the transferable deposits of DCs on which the items were drawn until the items are collected from these corporations.

6.40 Restricted deposits in the form of compulsory savings deposits are excluded from broad money, unless withdrawal privileges are such as to make the deposits liquid. Foreign exchange deposits, such as under foreign exchange repatriation schemes, for which withdrawals are not allowed for protracted periods are excluded from broad money.

6.41 Other forms of restricted deposits, such as escrow accounts, judicial deposits, good-faith deposits for participation in a privatization auction or for a placed bid, are excluded from broad money for it is not possible to determine at inception how long they will be restricted. In the event that the period of restriction is known at inception, such deposits can be treated like fixed-term deposits.

6.42 Deposits with ODCs in liquidation (see paragraphs 3.141–3.143). A special form of deposit restriction arises when an ODC is unable to meet depositors' withdrawal demands for substantial periods, because its operations have been suspended or are under receivership and deposit liabilities are frozen. In such cases, it is unclear how long depositors will need to wait to access their deposits, or even whether they will eventually be able to redeem all or part of their deposit balances. In the meantime, the deposits are illiquid. Nevertheless, as long as the ODC continues to exist, its liabilities to all depositors and other creditors also exist, and the ODC in liquidation continues to be part of the ODCs subsector. This *Manual* recommends the exclusion from broad money of all deposit liabilities of ODCs in the process of liquidation. This applies to all deposits irrespective of whether they are insured by a deposit insurance scheme or uninsured. Reorganization, sale, or merger of the affected deposit-taking corporations, or reimbursement by the deposit insurance scheme may result in all or part of the deposits eventually becoming available to depositors.

6.43 In the process of liquidation or reorganization, assets and liabilities of these ODCs are frequently

repackaged and auctioned or otherwise transferred to other ODCs and emerge as balance sheet items of the operating ODCs. Efforts should be made to ensure uninterrupted coverage of these assets and liabilities in the monetary statistics throughout the entire restructuring or liquidation process.

6.44 ODCs in the process of liquidation or under receivership are intertwined in creditor/debtor relationships with other ODCs, OFCs, and the central bank. In the absence of direct reporting by ODCs in the process of liquidation, data on their asset/liability positions with the central bank and operating FCs can be obtained from their counterpart data. Each operating FC would be required to report its positions with ODCs in the process of liquidation as memorandum items,⁹ in order to enable the monetary statistics compilers to aggregate the data in the sectoral balance sheets of the central bank, ODCs, and OFCs.

6.45 Reserve deposits that nonoperating FCs hold at the central bank may be restricted or frozen for a period. Excess reserves of these corporations can no longer be used to support credit expansion. Deposits held by the nonoperating FCs at the central bank should be excluded from reserve deposits and thus from the monetary base.

6.46 Long-term saving schemes held by households with the view to constituting capital for real estate purchase, for an additional pension income after retirement, or for financing college education for children can usually be redeemed, fully or partly, before maturity. Even if early withdrawals do not entail any loss on the amount initially invested, generally some form of penalty occurs in the form of a less-favorable tax regime, forgone or lower interest, or diminution of financial advantages embedded in the scheme under the provision that it reaches its contractual maturity. Thus, holders will consider early withdrawal only as a last resort because the initial intention has been to use these amounts only over a long time period. Consequently, long-term saving schemes are not included in broad money.

⁹ See memorandum items in the illustrative sectoral balance sheets/SRFs in Appendix II.

Money market fund shares and debt securities

6.47 In some economies, money market fund (MMF) shares are close substitutes for transferable deposits because they can be used for direct payments to third parties. In other economies, there may be restrictions on the transferability features of MMF shares with respect to minimum amount or maximum number of checks that can be written per period, or there may be no transferability features. In all cases, MMF shares are highly liquid and typically a reliable store of value. Thus, all MMF shares held by the money-holding sectors are included in broad money.¹⁰

6.48 Some types of short-term (original maturity) debt securities issued by DCs that can be converted into currency or transferable deposits at short notice at, or close to, their full nominal value, meet the definition of broad money. Such short-term debt securities include negotiable certificates of deposit and commercial papers issued by ODCs, and are included in broad money when traded in efficient secondary markets.¹¹ Bankers' acceptances could meet the definition of broad money if traded in efficient secondary markets. Short-term debt securities denominated in foreign currency traded in efficient secondary markets may be included in broad money. Savings certificates or cash certificates that can be converted into currency or transferable deposits at short notice at, or close to, their full nominal value also meet the definition of broad money. For the original maturity limit, this *Manual* recommends applying the same guidance as for fixed-term deposits—that is, a range of one to two years (see paragraph 6.34). This *Manual* recommends also that long-term debt securities be excluded from broad money, even if traded in efficient secondary markets, because of their price uncertainty (fluctuations in value when the market interest rate changes). Annex 6.5 presents ways of estimating the holdings by economic sectors of debt securities issued by FCs, including securities issued and held exclusively within the DC sector, which are to be excluded from broad money.

¹⁰ Deposits of MMFs held at ODCs are excluded from broad money (see paragraph 6.63) because MMFs are money issuers.

¹¹ Efficient secondary markets are competitive markets characterized by easy access for participants at relatively low cost with frequent price quotations of traded instruments, such as provided by market makers.

Financial instruments issued by sectors other than resident depository corporations

Domestic currency issued by central government

6.49 In a limited number of countries, the central government issues currency coins, and may even also issue banknotes. Currency in circulation issued by the central government should be included in broad money.

6.50 Though the central government incurs a liability for issuance of currency, the central bank often has sole responsibility for the placement of currency in circulation. A central government purchases the currency from a domestic or foreign mint (or bureau of engraving) and delivers the currency to the central bank. In the central bank's accounts, the nominal (face) value of the currency is recorded as vault cash (*Currency—Domestic*), along with a corresponding increase in the central bank's liability (*Transferable deposits—In domestic currency*) to the central government.¹²

6.51 Issuance of this currency, although not a liability in the CBS or DCS, enters the monetary statistics as a separate component of broad money (see Box 6.1). In many cases, data are directly available in the central bank's records and these data should be used for monetary statistics purposes.

6.52 When the central government places some of the currency into circulation through direct transactions with institutional units in the money-holding sectors,¹³ the central government should provide monthly data on its total currency placed into circulation to compilers of monetary statistics.¹⁴

¹² Through this transaction, the central government obtains the *seigniorage* from issuance of the currency—the net revenue equal to the difference between the nominal value of the currency and the cost of acquisition, distribution, and maintenance of the currency.

¹³ For example, the central government could distribute the currency banknotes in making cash payments to suppliers of government goods and services. The central government might distribute coins to the household sector, for example, in the course of conducting cash transactions with individuals acquiring licenses or paying other government fees.

¹⁴ The central government's holdings of currency that has already been placed in circulation—whether issued by the central government or the central bank—should be excluded from broad money, if data are available to compilers.

Foreign currency

6.53 Foreign currencies can serve as both medium of exchange and store of value, not only in the country of issuance, but in other economies. When a foreign currency is widely accepted as a medium of exchange within an economy, holdings of this foreign currency by resident units other than DCs and central government should be included in the currency component of broad money. This is particularly important for countries in which a foreign currency is the main (or only) currency in use (see Annex 6.2).

Deposits issued by nonfinancial corporations and central government

6.54 PNFCs (for example, post office or telecommunication units) in some countries accept transferable or other deposits, mainly from households. The deposit-taking service is often provided for the convenience of small savers, particularly those in rural areas that are not served by ODC branches. As explained in paragraph 3.136, if the financial activity of the public nonfinancial corporation,¹⁵ such as the post office, is recorded in a separate set of accounts (assets and liabilities), this financial activity is treated as a separate institutional unit included in the ODCs subsector and its liabilities that meet the definition of broad money are included in broad money. In those cases where financial and nonfinancial activities are intertwined and a separate set of accounts does not exist for financial activities, data compilation depends on the specific characteristics and financial activities of such PNFCs:

- a. Deposit pass-through to a DC. In some countries, deposit taking constitutes the only financial service provided by this kind of a public nonfinancial corporation, which maintains a deposit account at a DC (central bank or ODC) where all funds from the collected deposits are re-deposited. Either the deposit liabilities of such a public nonfinancial corporation to its depositors or the deposit of the public nonfinancial corporation at the DC are included in broad money, because the inclusion of both would result in double-counting. Where suf-

ficiently detailed information is made available by the public nonfinancial corporation on its own depositors, it should be used to ensure accurate sector allocation of these broad money deposits.

- b. Deposit funding for central government. Funds deposited with the nonfinancial corporation may be channeled directly to the central government for its use, constituting a liability of the central government in the form of deposits. This *Manual* recommends that these deposits be included in broad money within other deposits, applying the same maturity guidance as for fixed-term deposits (paragraph 6.34). Data may be collected directly from the nonfinancial corporation that operates the system.

6.55 The treasury or some other unit of the central government may accept deposits or issue debt securities, such as treasury bills and saving certificates that meet the definition of broad money. The proceeds from issuance of the deposits or debt securities may be used to finance central government expenses, or they may be used for government lending directly to other sectors of the economy. Only deposits and debt securities held by money-holding sectors are included in broad money; the same maturity guidance as for fixed-term deposits for inclusion in broad money is applied (paragraph 6.34). Data on deposits and debt securities may be obtained directly from the treasury or other relevant unit of the central government. For debt securities, data could also be sourced from the centralized securities' depository, if available.

6.56 In some countries, national regulations allow nonfinancial corporations (NFCs) to issue traveler's checks and electronic money (see paragraphs 4.38–4.42), including mobile money, as an ancillary activity, although most issuers are FCs. Traveler's checks and electronic money issued by NFCs that meet the definition of broad money are included in broad money within transferable deposits (issued by sectors other than DCs).¹⁶ If traveler's checks are expected to be used predominantly abroad, they should be excluded from broad money (see paragraph 6.29).

¹⁵ In such cases, through their financial operations, the public nonfinancial corporations often engage in financial intermediation, by taking deposits from small savers and lending to farmers and other small-loan customers.

¹⁶ Conceptually, if the payment services become the major activity of a nonfinancial corporation, it should be considered for reclassification as an FC, and more precisely as an ODC if engaged in issuance of broad money liabilities.

Financial instruments excluded from broad money

6.57 The other categories of financial instruments—loans; equity and investment fund shares (except money market fund shares); financial derivatives and employee stock options (ESOs); insurance, pension, and standardized guarantee schemes; and other accounts payable/receivable—are excluded from broad money.

6.58 The direct and specific nature of the financial contract between lenders and borrowers makes many types of loans illiquid. As observed in the preceding subsection, some securities repurchase agreements are included in broad money, in which case they are classified as *other deposits*. Other repurchase agreements are classified as loans.

6.59 *Equity and investment fund shares* serve as a store of value and may be converted to cash or transferable deposits through their sale in organized securities exchanges or over-the-counter markets. However, these instruments experience price variability, and the sale of such shares involves transaction costs and time delays, resulting in their exclusion from broad money. The nature of MMF shares makes them an exception, as explained in paragraph 6.47.

6.60 *Insurance, pension, and standardized guarantee schemes* are illiquid and are excluded from broad money. *Financial derivatives* may be tradable, but their price variability and lack of use as a store of value precludes their inclusion in broad money. *Other accounts receivable/payable* lack sufficient liquidity to be included in broad money.

C. Money-Issuing, Money-Neutral, and Money-Holding Sectors

6.61 Once all financial instruments that should be included in broad money have been identified, the compilation of money aggregates and counterparts further requires the classification of all institutional sectors/subsectors—as defined in Chapter 3—into three groups as money issuers, money neutral, or money holders in the broad money framework within the DCS.

Money-issuing sector

6.62 Monetary statistics classifies all FCs that issue broad money liabilities as DCs. Thus, *the DCs sector*

constitutes the money-issuing sector by definition.

This *Manual* recommends the compilation of a DCS showing, in a balance sheet format, broad money liabilities of the DCs on one side and the asset counterparts (or sources) of those liabilities on the other side.

6.63 Because DCs are money issuers, their financial claims on other resident DCs are not included in broad money. Such holdings of financial assets are not indicative of their short-term intention of spending, but are rather determined by: (1) regulations enacted by monetary and supervisory authorities; and (2) the need for maintaining working balances in liquid financial assets to be able to satisfy withdrawals from their clients. Intra-DC positions are consolidated in the DCS, as explained in Chapter 7.

6.64 When some broad money liabilities are issued by institutional units other than FCs, it is necessary to combine these liabilities with those included in the DCS in order to compile the total broad money of the economy. Box 6.1 provides such a presentation.

6.65 Many countries compile two or more money aggregates that have progressively broader coverage (see Box 6.2). In such cases, the money-issuing sectors may differ across these money aggregates. As regards broad money issued by DCs, a single aggregate as defined in paragraph 6.11 must be specified in order to construct the DCS described in Chapter 7.

Money-neutral sectors

6.66 Institutional sectors that are neither “money issuers” (except special cases) nor “money holders” are called “money-neutral” sectors. Money-neutral sectors comprise the central government and nonresidents.

6.67 Nonresidents’ deposit holdings are excluded from broad money because their deposits are used primarily for international rather than domestic transactions. The potential impact on domestic economic conditions is uncertain, as the predominant center of economic interest of the nonresident lies outside of the domestic economy.

6.68 However, deposits held by migrant workers (see paragraphs 3.89–3.91 for their sectoring) with ODCs in their home countries, which are freely usable by authorized family members or other designated parties in settling transactions in the home country,

should be included in broad money of the home country and not in liabilities to nonresidents.

6.69 Deposits held by cross-border workers at ODCs in an economy where they work should not be included in broad money of that economy, but should be recorded as liabilities to nonresidents. This principle applies as long as cross-border workers do not have a center of predominant economic interest in the economy where they work. (See paragraphs 3.62–3.63.)

6.70 Deposit holdings of central government are always excluded from broad money. The rationale, often empirically based, for such exclusion is that central government deposits do not respond to macroeconomic influences (i.e., changes in economic activity, interest rates, exchange rates, etc.) in the same way, or to the same degree, as the deposits of money-holding sectors. This is because of the unique nature of the central government's financing constraints, spending decisions, and cash management techniques. The balances maintained by the central government on its deposit accounts with DCs do not reflect the short-term intention of spending because central government's spending is not predetermined and constrained by such balances. Further, insufficient tax and other revenue inflows may be supplemented by borrowing at short notice.

6.71 Exclusion of central government deposits from broad money can also be explained on the basis of the analytical approach to monetary and fiscal policy formulation. A major element of such formulation focuses on the amount of central government financing that DCs provide, represented by the net claims on the central government—that is, total claims on the central government *less* the central government's deposits and other liabilities to the central government. The DCS, described in Chapter 7, shows net claims on the central government as a counterpart to broad money, instead of including central government deposits as a component of broad money or as a separate liability category. The link between broad money and the other accounts of the DCs, including net claims on central government, is described in Chapter 7.

6.72 Domestic currency holdings of the central government and nonresidents should be excluded from

broad money; efforts to estimate such holdings may not be justified if the amounts are relatively small. Estimation of nonresidents' holdings of the domestic currency, and adjustment of broad money to exclude such holdings, may be warranted if a substantial amount of domestic currency circulates outside the domestic economy and is used as legal tender or is widely accepted as a medium of exchange in other countries.¹⁷

Money-holding sectors

6.73 *Money holders are all sectors not previously discussed, that is: (1) OFCs; (2) state and local governments; (3) NFCs; and (4) households and NPISHs.* Broad money includes all money holdings of these sectors. Thus, broad money represents a particular measurement of the spending capacity or potential purchasing power of money-holding sectors.

Special cases

6.74 The grouping of all institutional sectors into money-issuing, money-holding, and money-neutral sectors is one of the dimensions for defining broad money liabilities in the DCS. The coverage of the DC sector should be kept under continued review as the financial system evolves. In this respect, there are several exceptions as noted previously:

- a. Money can be issued by money-neutral sectors, such as central government/treasury issuing coins, treasury accepting deposits from money holders, and foreign currency issued by a non-resident central bank circulating widely in an economy.
- b. Money can be issued by money-holding sectors, such as post office accepting deposits from money holders, and NFCs issuing traveler's checks or electronic money as an ancillary activity.

¹⁷ For most countries, the major cross-border currency flows arise from the currency holdings of tourists, business travelers, cross-border workers, emigrant workers returning to their home countries, and those engaged in smuggling or other illegal activities. For those countries that use foreign currency as a legal tender, official shipments of foreign currency may be used to augment the currency stock. The records for such shipments can be used to estimate the currency stocks in both countries (i.e., the "importing" and "exporting" countries).

- c. Holdings of domestic currency by nonresidents and by central government may not be excluded from broad money measurement because of a lack of reliable source data.

6.75 Some OFCs are mainly engaged in providing intermediation services to ODCs, effectively creating transactions similar to interbank business. Central clearing counterparties (CCPs) are one example. CCPs are classified as OFCs and, consequently, are money holders. However, the deposits of CCPs at DCs reflect their principal line of business of settling transactions among financial market participants rather than the intention of making purchases within the economy. Thus, deposits of CCPs related to their principal line of business should not be included in broad money. To this end, direct collection of data from CCPs on their deposit balances may be necessary if DCs do not identify CCP deposit balances in the report forms used for the compilation of monetary statistics. If feasible, data directly collected from CCPs on their deposit balances should be split between the amount related to their principal line of business and the amount maintained for operating expenses; if available, the latter should be included in broad money.

III. Broad Money and Money Aggregates

A. Money Aggregates and Sub-Aggregates

6.76 This *Manual* distinguishes two levels of broad money as shown in Box 6.1:

- a. Broad money issued by DCs only
- b. Broad money issued by DCs and other sectors.

6.77 Further, although this *Manual* recommends that compilers focus on broad money,¹⁸ it recognizes that economies may define a range of money aggregates

¹⁸ Compilers sometimes still use the term “quasi-money” because of the focus on “narrow money” in the past. Under this approach, “narrow money” corresponded only to the media of exchange that were then considered “money.” Consequently, “quasi-money” included all financial instruments that were not media of exchange, but were substitutes for financial instruments included in “money.” This *Manual* does not recommend using the term “quasi-money,” but rather focusing on broad money because it covers all financial instruments that constitute money, including those that might have been included in “quasi-money.”

that are usually named in a sequence as follows: M1, M2, M3, etc., with each broader aggregate subsuming the previous one.

6.78 Whereas for almost all countries M1 is the narrowest money aggregate and includes all media of exchange, such as currency and transferable deposits in domestic currency, the content of the other aggregates M2, M3, etc., may differ significantly in concept and coverage across economies. The more encompassing M aggregate usually corresponds to broad money for an economy. Box 6.2 presents examples of national aggregates of broad money and draws out some common characteristics using the three dimensions of broad money: financial instruments (including maturity and domestic/foreign currency), money issuers, and money holders.

B. Broad Money Counterparts or Sources

6.79 Understanding changes in broad money and their causes is important for the conduct of monetary policy. The money aggregates, therefore, need to remain relevant to monetary policy analysis, particularly as financial institutions and markets evolve. As explained before in this chapter, broad money is compiled using data from the sectoral balance sheets of the central bank and ODCs.

6.80 First, monetary statistics compilers identify on the liability side of DCs’ sectoral balance sheets all financial instruments meeting the definition of broad money and assemble them together on one side of the DCS.

6.81 Second, all assets held by DCs and all liabilities that are not part of broad money are assembled on the other side of the DCS, which are considered as broad money “counterparts” or “sources.” For the broad money counterparts, claims on and liabilities to money-issuing and money-neutral sectors (namely, nonresidents, central government, and DCs) are presented on a net basis (i.e., assets *less* liabilities). As regards money-holding sectors, the broad money counterparts include gross claims of DCs on money holders. DCs’ liabilities to money holders not included in broad money are shown separately. Broad money counterparts provide information on the underlying sources of broad money growth, such as credit growth to resident units other than DCs.

6.82 Chapter 7 presents in detail the structure of the DCS and the counterparts to broad money. The term broad money “counterparts” refers to the accounting identity

between the two sides of the DCS (stocks) while the term broad money “sources” refers to the factors affecting the expansion and contraction of money (flows).

Box 6.2 Standard Components and National Aggregates of Broad Money (at end-September 2015)

Economy–Aggregate	Money issuers	Money holders	Financial instruments
<i>Broad money in this Manual</i>	<i>Central bank and ODCs (DTCs and MMFs)</i>	<i>OFCs; state and local government; public nonfinancial corporations; other nonfinancial corporations; households and NPISHs.</i>	<i>Domestic currency in circulation outside DCs; transferable and other deposits in domestic and foreign currency of the money-holding sectors at DCs; MMF shares/units held by money-holding sectors; short-term debt securities issued by ODCs and held by money-holding sectors.</i>
United States–M2	All depository institutions: Federal Reserve System, commercial banks, savings institutions, credit unions, and MMFs.	All U.S. residents except money issuers and federal government. Nonresidents’ holdings are excluded, including currency holdings.	In national currency only. Currency outside the U.S. Treasury, Federal Reserve Banks and DTCs; traveler’s checks of non-bank issuers; demand deposits, savings deposits, and time deposits (under \$100,000) less individual retirement accounts (IRA) and Keogh Retirement Plans balances at DTCs; and retail MMF shares, less IRA and Keogh Retirement Plans balances at MMFs. Repos and debt securities are excluded. There is no maturity cut-off.
United Kingdom–M4; M4 ^{ex}	Banking institutions.	U.K. private sector residents other than money issuers. From July 2009, Broad Money excludes “intermediate” OFCs (M4 ^{ex}), which specialize in intermediation between banks, for example, CCPs, securitization special purpose vehicles, and covered bond entities.	In national currency only—banknotes and coins in circulation outside the Bank of England and banking institutions in the United Kingdom; non-bank private sector sterling deposits (including repos) held with U.K. banking institutions; holdings of certificates of deposit and holdings of other debt securities of up to and including five years’ original maturity issued by banking institutions. Nonresidents’ holdings are excluded.

(Continued)

Box 6.2 Standard Components and National Aggregates of Broad Money (at end-September 2015)
(Continued)

Economy–Aggregate	Money issuers	Money holders	Financial instruments
Japan–M3	The Bank of Japan and the following depository institutions: domestically licensed banks; the Japan Post Bank; foreign banks in Japan; Shinkin banks; Shinkin Central Bank; the Norinchukin Bank; the Shoko Chukin Bank; Shinkumi banks; the Shinkumi Federation Bank; labor banks; the Rokinren Bank; agricultural cooperatives; Prefectural Credit Federations of Agricultural Cooperatives; fishery cooperatives; and Prefectural Credit Federations of Fishery Cooperatives.	Nonfinancial corporations, individuals, and local governments, including municipal enterprises. The entities such as the central government, central bank, depository institutions, insurance companies, bank and insurance company holding companies, government-affiliated financial institutions, securities companies, and tanshi companies (call loan dealers) are excluded from money holders. Nonresidents are also excluded from money holders.	Banknotes and coins held by money holders; demand deposits held by money holders at depository institutions; time and savings deposits and foreign currency deposits held by money holders at depository institutions; CDs issued by depository institutions and held by money holders.
Euro area –M3 ¹	MFIs (the Eurosystem and ODCs located in the euro area) and central government (postal system savings accounts and Treasury Department deposit facilities in some euro area countries).	All non-MFIs resident in the euro area except central government. State and local government, and social security funds are included.	In national and foreign currency. Currency in circulation and overnight deposits; deposits with agreed maturity of up to two years; deposits redeemable at notice of up to three months; repurchase agreements, excluding repurchase agreements with CCPs; MMF shares and money market paper; and debt securities of up to two years.
China–M2	The People's Bank of China (PBC) and banking institutions (including banks, rural credit cooperatives, and finance companies).	Non-bank, non-government sectors.	Currency in circulation (banknotes and coins issued by the PBC less the amount held by banking institutions); demand, time, and savings deposits in national currency of resident non-bank, non-government sectors with banking institutions.

Box 6.2 Standard Components and National Aggregates of Broad Money (at end-September 2015)
(Continued)

Economy–Aggregate	Money issuers	Money holders	Financial instruments
Korea–M2	The Bank of Korea, commercial banks (including branches of foreign banks in Korea), specialized banks, Korea EXIM banks, mutual saving banks, trust companies, credit cooperatives, credit unions, and postal savings unit.	Households and NPISHs, nonfinancial corporations, other financial corporations, and others.	In national and foreign currency. Currency in circulation (excluding commemorative issues), demand deposits, transferable savings deposits, time deposits with maturity of less than two years; installment savings deposits with maturity of less than two years, MMF shares, beneficiary certificates, certificates of deposits, money in trust with maturity of less than two years, financial debentures with maturity of less than two years, and other deposits with maturity of less than two years.
Brazil–M4	Depository corporations and central government. ² The depository corporations include: central bank and ODCs. ODCs include: commercial banks; multiple banks; Federal Savings Bank; credit cooperatives; investment and development banks; credit, finance and investment companies; savings and loan institutions; mortgage companies; real estate credit companies; and money market financial investment funds. Exclude exchange banks and financial institutions in liquidation.	Financial institutions that do not issue instruments included in broad money, state and local governments, public nonfinancial corporations, and nonfinancial private sector (companies and households).	Currency held by the public and demand deposits (M1); <i>plus</i> time deposits, savings deposits and securities issued by ODCs (M2); <i>plus</i> MMF shares and the net position of securities used in repurchase agreement transactions with money-holding sectors (M3); <i>plus</i> debt securities issued by central government held by money holders (M4).

(Continued)

**Box 6.2 Standard Components and National Aggregates of Broad Money (at end-September 2015)
(Continued)**

Economy–Aggregate	Money issuers	Money holders	Financial instruments
India–M3	Reserve Bank of India (RBI) and commercial and cooperative banks.	Private sector; quasi-government; selected financial institutions, primary dealers; foreign central banks and governments; and international agencies.	Currency outside the banking system (currency banknotes and coin in circulation <i>less</i> currency banknotes and coin holdings of the commercial and cooperative banks); demand deposits with the banking system, which include primarily current deposits and the transferable liabilities' portion of savings deposits; "other" deposits with the RBI, which comprise deposits of quasi-government, selected domestic financial institutions, primary dealers, foreign central banks and governments, and international agencies; and time deposits with the banking system, which include fixed deposits and time liabilities' portion of savings deposits.
Mexico–M4, M4A, M4–National Currency, M4–Foreign Currency	Bank of Mexico and ODCs: commercial banks, development banks, credit unions, savings and loans associations, investment funds, financial leasing companies, and specialized lending institutions.	Private sector, pension funds, and nonresidents. Also public sector for M4A.	In national and foreign currency. <i>M4</i> : Banknotes and coins outside the depository corporations; deposits in checking and current accounts that can be withdrawn through debit cards; demand and time deposits in national and foreign currency of the private sector; debt securities of the public sector held by residents; other instruments held by pension funds; demand and time deposits of nonresidents; debt securities of the public sector held by nonresidents; and deposits of residents and nonresidents in branches abroad of domestic ODCs. <i>M4A</i> : <i>M4</i> , plus deposits and instruments of the public sector. <i>M4 National Currency</i> : all instruments denominated in national currency. <i>M4 Foreign Currency</i> : all instruments denominated in foreign currency.
Russian Federation–M2	Central Bank of Russia (CBR) and ODCs: commercial banks and Vneshekonombank.	OFCs, public nonfinancial corporations, private nonfinancial corporations, and households.	In national and foreign currency. Currency in circulation and demand, time, and savings deposits in national and foreign currency, including accrued interest on deposits with the CBR and ODCs.

**Box 6.2 Standard Components and National Aggregates of Broad Money (at end-September 2015)
(Continued)**

Economy– Aggregate	Money issuers	Money holders	Financial instruments
Saudi Arabia–M3	Saudi Arabian Monetary Authority (SAMA) and commercial banks.	Businesses, individuals, and government entities.	In national and foreign currency. Currency outside banks (banknotes and coins issued by SAMA less the amount held by commercial banks); demand deposits in national currency with commercial banks; time and savings deposits; foreign currency deposits; margin deposits for letters of credit; outstanding remittances; and banks' repurchase agreements with the private sector.
South Africa–M3	South African Reserve Bank and ODCs.	Households, local governments, public and private nonfinancial corporations, and other financial corporations.	Banknotes and coins in circulation outside the DCs; check, transferable, other demand, other short-, medium-, and long-term deposits; negotiable certificates of deposits and promissory notes; and savings certificates issued by the Postbank.

¹ Some members of the European Union that are not members of the euro area comply with the concepts and definitions of the European Central Bank.

² The central government is a money issuer only in the M4 concept.

Note: ODC = other depository corporation; DTC = deposit taking corporation; MMF = money market fund; OFC = other financial corporation; DC = depository corporation; CCP = central clearing counterparty; CD = certificate of deposit; MFI = monetary financial institution; NPISHs = nonprofit institution serving households.

6.83 Table 6.1 presents a summary DCS, highlighting broad money and its counterparts or sources. In the table, subcomponents of counterparts carrying a minus sign originate from the liability side of the sectoral balance sheets.

6.84 When broad money includes liabilities issued by institutional units other than FCs, the compilation of counterparts of broad money becomes less straightforward, unless sufficiently detailed balance sheets of these money issuers are available to the monetary statistics compilers. In addition, as issuance of broad money accounts for a marginal part of the balance sheet of these units, and the structure of the balance sheet is quite different from that of DCs, the inclusion of their broad money counterparts may distort the analysis of the factors affecting the expansion and contraction of broad money.

6.85 Consequently, this *Manual* recommends compiling counterparts of broad money within the perim-

eter of the DCS and not for other measures of broad money that include instruments issued by institutional units other than FCs. Countries may, however, elect to compile counterparts for the added components of broad money issued by units other than FCs. Two approaches may be used:

- a. A single contra-entry is recorded for the full amount of the added components. For instance, the contra-entry for currency/deposits/debt securities issued by central government is recorded under *Net claims on central government* and the contra-entry for deposits with the postal system and any other NFC is recorded under *Claims on nonfinancial corporations*.
- b. Main counterpart assets, particularly financial assets, acquired by the issuer against the instruments issued, are identified (if possible), with supplemental information obtained from the issuer, and are recorded under the relevant

Table 6.1 Depository Corporations Survey: Broad Money and Counterparts

Counterparts	Broad money
Net foreign assets/Net claims on nonresidents	Currency outside depository corporations
Domestic claims	Transferable deposits included in broad money
Net claims on central government	Other deposits included in broad money
Claims on other resident sectors ¹	Debt securities included in broad money
Other items net	Money market fund shares included in broad money
– Equity of depository corporations	
+/- Other (nonfinancial assets, interbank positions net, etc.)	
	Liabilities excluded from broad money
	Deposits of money-holding sectors excluded from broad money
	Debt securities issued by depository corporations and held by money-holding sectors, excluded from broad money
Total counterparts	Total liabilities to money-holding sectors

¹ "Other resident sectors" include all resident sectors that are money holders, namely other financial corporations, nonfinancial corporations, government units other than central government, households and nonprofit institutions serving households.

Table 6.2 Extended Broad Money (with Components Issued by Nonfinancial Corporations) and Counterparts

Counterparts	Broad money
Net foreign assets/Net claims on nonresidents including, if the economy is partially or completely "dollarized," a contra-entry for the estimated amount of foreign currency	Currency outside depository corporations including coins issued by the treasury and, if the economy is partially or completely "dollarized," estimated amount of foreign currency
Domestic claims	Transferable deposits included in broad money including demand deposits of money-holding sectors with the postal system.
Net claims on central government including a contra-entry for coins issued by the treasury	Other deposits included in broad money, including savings deposits of money-holding sectors with the postal system.
Claims on other resident sectors including a contra-entry for demand and savings deposits of money-holding sectors with the postal system ¹	Debt securities included in broad money
Other items net	Money market fund shares included in broad money
– Equity of depository corporations	
+/- Other (nonfinancial assets, interbank positions net, etc.)	
	Liabilities excluded from broad money
	Deposits of money-holding sectors excluded from broad money
	Debt securities held by money-holding sectors, excluded from broad money
Total counterparts	Total liabilities to money-holding sectors

¹ If the funds collected through deposits of money-holding sectors with the postal system are immediately and entirely channeled to the treasury, this counterpart item must be accounted for in *Net claims on central government* rather than in *Claims on other resident sectors*.

counterpart claims with the residual amount recorded under *Other items net*.

6.86 This *Manual* considers either approach acceptable. For both approaches, components added to broad money and their contra-entries in counterparts should be separately identified for users of monetary statistics.

6.87 Table 6.2 illustrates the first approach for which the following three additional broad money components are added to broad money liabilities presented in Table 6.1: (1) coins in circulation issued by the treasury (a central government unit and, thus, money-neutral); (2) demand and saving deposits of money-holding sectors with the postal system (a nonfinancial public corporation and, thus, money holder); and (3) an estimated amount of foreign currency circulating in the economy issued by a nonresident central bank (money neutral).

6.88 Examples of other additional components of broad money include holdings by money-holding sectors of electronic money and traveler's checks issued by institutional units other than FCs (with a contra-entry in *Claims on other resident sectors*), transferable and saving deposits of money-holding sectors with the treasury (with a contra-entry in *Net claims on central government*), and debt securities issued by the treasury (with a contra-entry in *Net claims on central government*) or by NFCs (with a contra-entry in *Claims on other resident sectors*).

IV. Monetary Base

6.89 The monetary base¹⁹ comprises central bank liabilities that support the expansion of credit and broad money. The monetary base is also called *high-powered money*, because changes in the monetary base support larger increases in credit and broad money.

6.90 The monetary base is a measure of the funding base that underlies the money aggregates, rather than a money aggregate. The monetary base includes at least two components that are excluded from broad money: (1) ODCs' holdings of deposits with the central bank, and (2) ODCs' holdings of domestic currency.

6.91 The monetary base is calculated exclusively from the liability side of the central bank balance sheet. Thus, the central bank is the sole issuer of

the monetary base. Other resident sectors, particularly ODCs, are monetary base-holders. As in the case for broad money, central government and non-residents are not monetary base-holders (i.e., central bank liabilities to these sectors are excluded from the monetary base, except for their holdings of domestic currency due to lack of reliable data on these holdings [see also paragraphs 6.73 and 6.75c]).

6.92 *The monetary base is defined as currency in circulation, ODCs' deposit holdings at the central bank, and those deposits of money-holding sectors at the central bank that are also included in broad money.* It is common practice in many economies that state and local governments, and also PNFCs, hold deposits with the central bank. Not so common are accounts of other NFCs and households with the central bank; in the latter case, they are usually accounts of the central bank's current and former staff. Compilers may include additional components in the monetary base, depending on the types of liabilities issued by the central bank and the analytical use of the monetary base (see Box 6.3 for representative components of the monetary base).

6.93 Central bank deposits that ODCs use to satisfy reserve requirements and for clearing purposes are always included in the monetary base. ODCs' restricted deposits with the central bank that do not qualify for satisfying reserve requirements are excluded from the monetary base. Deposits of ODCs under liquidation should be excluded from the monetary base because they are frozen from use for an indeterminate period of time.

6.94 Deposits in foreign currencies, if any, to satisfy reserve requirements, and for clearing and external payments purposes are also included in the monetary base. In some countries, ODCs collect deposits in foreign currencies from their clients and are required to redeposit all or part of these funds at the central bank. In this case, re-deposited funds are restricted and should, therefore, not be included in the monetary base. Similarly, import deposits in domestic currency held by ODCs at the central bank on behalf of their clients are not to be included in the monetary base, because their use is restricted.

6.95 When a central bank sells securities to ODCs under repurchase agreements the transaction is recorded as a liability to ODCs, accompanied by a reduction in ODC deposits within the monetary base. Inclusion or exclusion from the monetary base of such

¹⁹ Different terms are used for "monetary base," such as reserve money, base money, and central bank money. This *Manual* recommends using the term "monetary base."

Box 6.3 Monetary Base Components

*Currency in circulation*¹

Central bank liabilities to ODCs

Transferable deposits²

Other deposits³

Debt securities issued by the central bank⁴

Central bank liabilities to non-ODCs included in broad money

Transferable deposits

Other deposits

Debt securities issued by the central bank⁵

¹ Comprises currency holdings of all sectors other than the central bank. In particular, the holdings of the central government and nonresidents are usually included along with the holdings of the other sectors for lack of data. The currency component of the monetary base in the CBS, described in Chapter 7, includes only the domestic currency issued by the central bank.

² Includes reserve requirements (including any excess reserves) that are based on averaging of reserve holdings (see paragraph 4.37).

³ Includes reserve requirements (including any excess reserves) that are pre-specified fixed amounts of required reserves (without averaging of reserve holdings). (See paragraph 4.37.) May include repurchase agreements with ODCs.

⁴ If holdings of these debt securities can be used in satisfying reserve requirements, they are included in the monetary base. Otherwise, such holdings are included or excluded, depending on the specific formulation and analytical use of the monetary base.

⁵ Includes only short-term debt securities issued by the central bank and held by the money-holding sectors that are included in broad money.

Note: ODC = other depository corporation; CBS = central bank survey.

liabilities to ODCs will depend on the central bank's objective in engaging in the securities repurchase agreements. If the objective is to affect liquidity of the ODCs, such central bank's liabilities to ODCs would not count towards reserve requirements and so would be excluded from the monetary base.²⁰ If the objective is to provide an interest-earning alternative to ODCs' non-interest-bearing reserves in the central bank,

²⁰ If they were included within the monetary base, the only effect would be a change in composition of the monetary base, but not in its total amount. The monetary base would then lose its role as an indicator for policy monitoring purposes.

whether or not they qualify as a reserve asset of the ODCs, they would be included in the monetary base. Consequently, in the first instance, the monetary base decreases while, in the second instance, the monetary base does not change.

6.96 Long-term securities issued by the central bank that do not qualify for satisfying reserve requirements should not be included in the monetary base. Short-term securities issued by the central bank should not be included in the monetary base if they are used to affect liquidity (open market operations). However, short-term securities held by ODCs that can be used to satisfy reserve requirements are included in the monetary base. Short-term securities issued by the central bank held by money-holding sectors that are included in broad money should also be included in the monetary base.

6.97 Countries can have different definitions of the monetary base, depending on their policy and analytical needs. However, it is expected that the components of the monetary base comply with the principles specified in this *Manual*. These can be compared with the components presented in Box 6.3 that are consistent with the principles specified in this *Manual*. Some compilers include all central bank liabilities to FCs and other domestic sectors (excluding central government holdings of central bank liabilities other than currency), whereas others use narrower definitions of the monetary base that include only currency in circulation and ODCs' deposits used to satisfy reserve requirements (see Box 6.4).

6.98 The category *Liabilities to ODCs* within the *Monetary base* section of the CBS (see Table A3.1 in Appendix III) includes separate lines for *Reserve deposits* and *Other liabilities*. Both lines are applicable in countries that have separate accounts for required reserves and for ODC balances used for clearing purposes. In these countries, an ODC must maintain fixed amounts of reserves throughout the required reserve maintenance period. Other countries' reserve requirements allow the averaging of an ODC's reserve holdings over the reserve maintenance period, and reserves held to satisfy reserve requirements are indistinguishable from reserves that ODCs hold for clearing and/or other liquidity management purposes. For countries that use reserve averaging in the specification of the reserve requirements, only the line for *Reserve deposits* within the *Monetary base* section is applicable. Additional information about required reserves is presented in Annex 6.3 of this chapter.

Box 6.4 Standard and National Components of the Monetary Base (at end-September 2015)

Economy	Components of the monetary base		
<i>Monetary base in this Manual</i>	<i>1) Currency in circulation</i>	<i>2) Deposits with the central bank: - ODCs' deposits - Money-holding sectors' deposits</i>	<i>3) Debt securities issued by the central bank included in monetary base Note: Excludes central bank liabilities to central government and nonresidents</i>
United States— Monetary base	1) Total reserves	2) Required clearing balances and adjustments to compensate for float at Federal Reserve Banks	3) Currency component of the money stock 4) For all quarterly reporters on the "Report of Transaction Accounts, Other Deposits and Vault Cash" and for all those weekly reporters whose vault cash exceeds their required reserves, the difference between current vault cash and the amount applied to satisfy current reserve requirements. Currency and vault cash figures are measured over computation periods ending on Mondays
United Kingdom—M0	1) Banknotes and coin in circulation outside the Bank of England	2) Bankers' operational balances with the Bank of England	
Euro area— Monetary base	1) Currency in circulation	2) Reserves (required and excess) held by counterparties with the Eurosystem	3) Recourse by credit institutions to the Eurosystem's deposit facility. In the Eurosystem's minimum reserve system, counterparties are obliged to hold reserves with the NCBs. Beyond that, credit institutions hold a small amount of excess reserves with the Eurosystem
China—Base money	1) Currency issued by the People's Bank of China (PBC)	2) Deposits of banking institutions with the PBC	
Korea— Monetary base	1) Currency in circulation (excluding commemorative issues)	2) Deposits with the central bank: reserve deposits, and liquidity adjustment deposits (LAD)	3) Debt securities issued by the central bank included in monetary base (if any—none at present)

(Continued)

Box 6.4 Standard and National Components of the Monetary Base (at end-September 2015)
(Continued)

Economy	Components of the monetary base		
Brazil—Reserve money	1) Currency issued	2) Deposits with the central bank: deposits of ODCs including banking reserves, other reserve requirements, and deposits from insufficiency in credit applications, such as the requirements referring to real estate credit, rural, or micro-credits	3) Debt securities issued by the central bank included in monetary base (if any)
India—M0	1) Currency in circulation	2) Bankers' deposits with the RBI comprise: required reserves and excess reserves maintained by banks with RBI	3) Other deposits with the RBI: deposits of quasi-government, selected domestic financial institutions, primary dealers, foreign central banks and governments, and international agencies
Mexico—Base Money	1) Bills and coins outside the Bank of Mexico	2) Demand deposits of commercial and development banks with the Bank of Mexico	
Russian Federation—Broad Monetary Base	1) Currency issued by the Central Bank of Russia (CBR) (excluding cash in its vaults)	2) ODCs' required reserves and correspondent accounts in national currency with the CBR	3) CBR bonds held by ODCs valued at market price 4) Other funds on operations of ODCs with the CBR
Saudi Arabia—Monetary Base	1) Currency in circulation (banknotes and coins issued by Saudi Arabian Monetary Authority [SAMA])	2) Bankers' deposits with SAMA	
South Africa—M0	1) Banknotes and coins in circulation outside the central bank	2) ODC's deposits with the central bank in national currency	

Note: ODC = other depository corporation.

V. Liquidity

6.99 The concept of liquidity is defined and used in several different ways in various contexts. *This Manual defines the concept of liquidity and liquidity aggregates from the perspective of issuers of financial liabilities included in measures of liquidity. Liquidity aggregates are defined as the sum of broad money liabilities and other liabilities that are somewhat liquid*

but not included in broad money. Liquidity aggregates have the same three underlying dimensions as broad money: (1) financial instruments—components of liquidity aggregates, (2) liquidity-issuing sectors, and (3) liquidity-holding sectors. This section presents a nonprescriptive framework on how liquidity aggregates are compiled and what financial instruments are included in liquidity aggregates (see Box 6.5).

Box 6.5 Liquidity Aggregates: Sectors and Liabilities

Liquidity holders

- Central government (inclusion possibly pertains only to domestic currency holdings)
- Other financial corporations
- State and local government
- Nonfinancial corporations
- Households and NPISHs
- Nonresidents (inclusion possibly pertains only to domestic currency holdings)

Broad money liabilities (see Box 6.1)

Plus

Liabilities issued by:¹

Depository corporations

- Long-term deposits and saving schemes
- Debt securities
- Commercial paper²
- Bankers acceptances²
- Long-term debt securities
- Traded shares

Other financial corporations

- Long-term deposits and saving schemes
- Commercial paper
- Other debt securities
- Traded shares (including non-MMF investment fund shares)

Central government

- Long-term deposits accepted by the national treasury, etc.³
- Short-term securities (for example, treasury bills)
- Savings bonds
- Other debt securities

State and local government

- Municipal debt securities
- Other debt securities

Public nonfinancial corporations

- Long-term deposits accepted by the postal system³
- Commercial paper
- Other debt securities
- Traded shares

Other nonfinancial corporations

- Commercial paper
- Other debt securities

Nonresidents⁴

- Transferable deposits
- Other deposits
- Debt securities
- Traded shares (including MMF and non-MMF investment funds shares)

Other⁵

¹ Definitions of liquidity aggregates may differ considerably across countries.

² If not already included in broad money.

³ Short-term deposits accepted by these units typically are included in the broad money component of the liquidity aggregate (see paragraph 6.54).

⁴ Pertains to holdings by resident liquidity holders of the listed instruments issued by nonresidents.

⁵ Liabilities not classified elsewhere, such as repurchase agreements resembling deposits not included in broad money.

Note: NPISHs = nonprofit institutions serving households; MMF = money market fund.

6.100 Recent developments, including the 2007–2009 global financial crisis, demonstrated that broad money may not capture the full range of liquidity-creating mechanisms and instruments, given the increasing importance of OFCs and the substitution between different financial instruments issued by ODCs and other liquidity issuers. Liquidity aggregates—encompassing liabilities issued by ODCs, OFCs, and other issuers of financial instruments—provide a broader measure of the available liquidity in the economy than broad money.

6.101 In recognition of the scope for substitution of financial instruments, liquidity aggregates are broader than broad money with respect to both the types of financial instruments and the issuing sectors covered. Liquidity aggregates include, in addition to broad money liabilities, other liabilities that are also somewhat liquid, but that do not meet the definition of broad money. Box 6.5 illustrates the types of liabilities and holding and issuing sectors that would be considered in constructing liquidity aggregates. All resident sectors, except households and NPISHs, are liquidity issuers; all resident sectors are liquidity holders except DCs and central government.

6.102 One significant difference between financial instruments included in broad money and the additional instruments included in liquidity aggregates is maturity. Liquidity aggregates comprise also financial instruments with longer original maturities than those included in broad money. A longer maturity for tradable debt instruments entails a higher exposure

to changes in the yield curves and, consequently, an increased sensitivity of their market value to changes in market interest rates. Their market value may, therefore, fall significantly below the amount initially invested by the current holder.

6.103 Box 6.6 presents an example of measures of liquidity aggregates. Liquidity aggregates compiled by a number of countries are diverse. In many cases, countries compile two or three liquidity aggregates. For instance, a liquidity aggregate L1 could include broad money plus long-term deposits and long-term saving schemes; L2 could further cover long-term debt securities issued by ODCs, debt securities issued by government units and OFCs, and non-MMF investment fund shares; L3 could further cover debt securities issued by NFCs; and L4 could further cover shares of NFCs, and financial instruments issued by nonresidents. Investment fund shares not included in broad money would be included in the appropriate liquidity measure based on the types of financial assets that the fund invests in.

6.104 The main focus of monetary statistics compilers are liquidity aggregates issued by the entire FCs sector that can be derived from the FCs survey (FCS) discussed in Chapter 7. Liquidity aggregates issued by FCs may be grouped in different ways, including into *core liabilities* (i.e., those liabilities of DCs included in broad money) and *noncore liabilities* (all other liabilities of FCs included in liquidity aggregates).²¹

²¹ See Chen and others (2012); and Tiffin, Chen, and Raissi (2013).

Box 6.6 Measures of Liquidity Aggregates (an example)

Liquidity	Issuers of liquidity	Coverage
L1	DCs, other issuers of broad money, and OFCs	Broad money plus long-term deposits and long-term saving schemes
L2	All FCs and government units	L1 <i>plus</i> short-term and long-term debt securities issued by ODCs (not included in broad money) and debt securities issued by OFCs and government units, as well as non-MMF investment fund shares
L3	All FCs, government units, and nonfinancial corporations	L2 <i>plus</i> debt securities issued by nonfinancial corporations
L4	All FCs, government units, nonfinancial corporations, and nonresidents	L3 <i>plus</i> shares of nonfinancial corporations, and deposits, debt securities, and shares issued by nonresidents.

Note: DC = depository corporation; OFC = other financial corporation; FC = financial corporation; ODC = other depository corporation.

VI. Credit and Debt

A. Introduction

6.105 Credit and debt can be viewed as two sides of the same concept considered from either the creditor's or debtor's perspective, respectively. However, credit and debt scopes may be different, particularly as regards the financial instruments that should be included in each concept.

6.106 Debt instruments are defined in the *BPM6*, as well as the *Public Sector Debt Statistics: Guide for Compilers and Users* (2013) and the *External Debt Statistics: Guide for Compilers and Users* (2013). The 2008 SNA provides general definitions for credit and debt.

6.107 This *Manual* uses the term *claims on* to refer to the financial assets held by one unit that are liabilities of another unit, and recommends the measurement of such claims within the framework of the surveys, as presented in Chapter 7, and the stock and flow data for the entire economy, as presented in Chapter 8. The following sections provide guidance for the compilation of credit and debt aggregates.

B. Credit

6.108 *Credit creation involves the provision of resources by one institutional unit (the creditor or lender) to another unit (the debtor or borrower). The creditor acquires a claim, and the debtor incurs a liability to repay.*

6.109 Measures of credit have the same three dimensions as broad money. Compiling credit measures involves specifying: (1) the financial assets included, (2) the issuing sectors (lenders), and (3) the holding sectors (borrowers). Measures of credit may encompass the total domestic economy or may be limited to specific issuing sectors (e.g., credit issued by DCs). Credit measures may also focus on specific lender/borrower relationships (e.g., central bank credit to central government). The composition and coverage of credit measures should be reviewed periodically to ensure that they reflect the changing use and type of credit instruments and new credit channels such as a greater reliance on securities markets (see Box 6.7), as well as the impact of securitization on the measurement of ODCs' credit to the money-holding sectors.

6.110 Credit is a major link in the monetary policy transmission process. Credit to nonfinancial sectors

Box 6.7 Credit Aggregates: Borrowers, Lenders, and Financial Assets¹

Borrowers

- Central government
- State and local government
- Public nonfinancial corporations
- Other nonfinancial corporations
- Households and NPISHs
- Nonresidents

Lenders

- Financial corporations
- Central government
- State and local government
- Public nonfinancial corporations
- Other nonfinancial corporations
- Households and NPISHs
- Nonresidents

Financial assets

- Deposits
- Debt securities
- Loans
- Equity
- Trade credits

¹ Definitions of credit aggregates may differ considerably across countries.

Note: NPISHs = nonprofit institutions serving households.

finances production, consumption, and capital formation. Broad credit aggregates are related to overall economic activity; data on specific types of credit (e.g., mortgage lending, consumer credit, or construction lending) are related to the economic activity of specific sectors or industries.

6.111 Credit measures cover financial assets only and therefore exclude contingent positions such as lines of credit, loan commitments, and guarantees. However, the compilation of supplementary information on such contingent positions may be of value in projecting credit expansion and assessing credit conditions.

Financial assets

6.112 Credit measures may cover all or only a subset of financial assets that constitute forms of credit. Narrow domestic credit measures cover claims in the form of loans, debt securities, and trade credit and advances. Such measures exclude deposits, equity, and other accounts receivable (other than trade credit). Even though the placing of deposits is not

considered a typical method of providing credit, there are circumstances in which such deposits are viewed as a credit extension—for example, when government units maintain deposits in FCs for the express purpose of funding specific activities of these corporations. In such cases, the financial assets have the legal form of a deposit but have the economic nature of a loan. Financial derivatives, and claims on insurance corporations and pension funds are always excluded from credit measures.

6.113 Broader credit measures encompass most types of financial claims of one unit on another and may include holdings of deposits and equity. Acquisition of equity provides financial resources and a claim on the issuer, but its nature differs substantially from other credit flows from debt instruments, because it only represents a claim on the residual value of the corporation after the claims of all creditors have been met. Institutional, fiscal, and market conditions may affect preferences to use either debt securities or equity instruments as primary means of investing in corporations, and these patterns are reflected in the financial assets to be included in credit measures.

6.114 Credit aggregates can separately identify financial assets denominated in foreign currencies and breakdowns by original maturity. They may also be disaggregated by type of credit instrument, by sector of the lender and borrower, and by purpose of lending.

Lenders

6.115 The lending sectors may be defined narrowly or broadly. Narrow credit aggregates may be defined to include only DCs' claims on other sectors. The DCS presented in Chapter 7 provides the statistical framework for developing credit measures for DCs' financial claims. Broader measures may cover all FCs' claims, as included in the FCS described in Chapter 7, as well as claims of all domestic sectors and nonresidents. (See Box 6.7.)

6.116 Suppliers of credit within the FCs sector are a broader group than the issuers of broad money liabilities. OFCs may provide credit using the same or similar credit instruments as DCs, thereby differing from them only because their funding sources are not financial instruments included in broad money. These other credit suppliers (OFCs) obtain funds by incurring liabilities that are not included in broad

money, such as through accepting long-term deposits, the issuance of debt securities, borrowing from DCs, external borrowing, or issuance of equity.

6.117 Government units may provide credit to financial and nonfinancial corporations, and credit measures broadly defined should cover government lending. Government units (and central banks) may obtain financing from abroad for specific domestic uses. The government may incur a direct liability to the nonresident source of funds or may act as an agent or guarantor between the nonresident creditor and the final domestic recipient of the credit. When the government incurs a direct liability and on-lends the funds, these transactions should be recorded as foreign liabilities of the government and as credit provided by the government to the final domestic recipient. When the government acts only as an agent or guarantor between the nonresident and the final recipient, the nonresident should be shown as providing the credit directly to the final domestic recipient.

6.118 A similar situation may arise when government units (or central banks) provide funds to FCs to finance specific types of credit (e.g., credit to agriculture or to other specific industries). If the FC incurs a direct liability to the government and acquires a claim on the final domestic recipient, the credit should be recorded as credit provided by the government to the FC and as credit extended by the FC to the final domestic recipient. When the FC acts only as an agent for the government, credit should be shown as being provided by the government directly to the final domestic recipient.

6.119 Some important types of credit are provided primarily by nonfinancial sectors. Trade credit supplied by NFCs is an example. Nonfinancial units often acquire financial assets for liquidity purposes and, as a result, are significant suppliers of credit to other units. Many NFCs provide credit to affiliated companies. Households and NPISHs can also be credit providers when buying government bonds or NFCs debentures. In particular, trust funds of some NPISHs (universities) have a large portfolio of debt securities.

6.120 Resident units can also acquire credit from nonresidents, particularly from foreign FCs and international financial institutions. As financial liberalization proceeds, residents, including DCs, can borrow from nonresident FCs. Interbank borrowing from

foreign DCs can be an important source of finance, particularly during a period of fast credit expansion in the domestic economy and can be usefully recorded separately within foreign liabilities in the DCS if such a breakdown is available.

Borrowers

6.121 Under broad definitions of credit for an economy, the borrowing sectors are usually defined to include all nonfinancial sectors. Specific credit measures may focus on credit provided to individual sectors or subsectors, or groupings of sectors. Common examples include credit to central government, credit to the total or nonfinancial public sector, credit to NFCs, credit to the nonfinancial private sector, and credit to the household sector. Data on credit to non-residents are needed to account for total credit provided, and to assess foreign exposure of the FCs sector. The analysis of claims on (i.e., credit to) residents measures the direct impact of residents' borrowing on domestic economic activity. Credit flows between FCs are often excluded from broad credit measures, but credit received by FCs from abroad is needed to assess credit conditions in the domestic economy.

Specific credit measures

6.122 The surveys of the FCs sector presented in Chapter 7 provide data on credit extended by FCs to other domestic sectors. The surveys provide aggregate measures of credit, covering claims on the central government, state and local government, PNFCs, other NFCs, and households and NPISHs. The sectoral balance sheets used to compile these surveys contain data that are used to compile the broad domestic credit aggregate, broken down by sector of borrower, type of financial asset, and currency of denomination (into domestic and foreign).

6.123 In addition to the preceding measure, credit measures that can be important for the formulation of monetary and other macroeconomic policies include the following:

- a. Central bank credit. Extension of credit by the central bank to ODCs (and sometimes to OFCs) is important for implementing monetary policy. Such credit may be extended to (1) provide liquidity to fund ongoing operations of ODCs; (2) enable ODCs to respond to seasonal credit

demand; (3) influence domestic financial conditions and the amount of broad money; or (4) provide emergency assistance, including equity participation. The central bank can either place deposits in, or extend loans to, FCs. Either method provides ODCs with funds to support expansion of credit, leading to growth of broad money. Central banks regulate the cost at which FCs acquire such funds and attach other terms and conditions to the access to such credit, thereby influencing credit and monetary conditions in the economy.

- b. Central government credit. Central governments supply credit to FCs by extending loans or by providing deposits that are intended to be used for credit extension by FCs. Governments also provide credit to nonfinancial sectors to foster public policy goals such as development of specific industries or regions, or to provide emergency aid. Credit from government units is often extended at subsidized (i.e., below-market) interest rates. Comprehensive measures of government credit include lending by the central government and other levels of government.

6.124 The CBS and ODCS, presented in Chapter 7, provide a comprehensive framework for developing credit measures. The FCS, also presented in Chapter 7, provides the appropriate framework for expanding the coverage of measures of credit to encompass the credit provided by OFCs, as well as by DCs.

6.125 Financial statistics, as described in Chapter 8, provide the appropriate framework for compiling measures of inter-sectoral credit, including borrowing from nonresidents, identifying both the lending and borrowing sectors.

C. Debt

6.126 *Debt instruments are those instruments that require the payment of principal and/or interest at some point(s) in the future.*²² All debt instruments are liabilities, but some liabilities are not debt. The definition of debt is such that it includes all liabilities recognized in this *Manual* and in other major statistical manuals—except²³ for equity and investment fund

²² See 2008 SNA, paragraph 26.103, and BPM6, paragraph 5.31.

²³ In this *Manual*, provisions for losses on financial assets are treated as liabilities and included in *Other accounts payable [MS]*, but they are not debt instruments.

shares, and financial derivatives and ESOs. These liabilities, known as *debt liabilities*, comprise the following debt instruments: Special Drawing Rights (SDR) allocations; currency and deposits (including unallocated gold accounts); debt securities; loans; insurance, pension, and standardized guarantee schemes; and other accounts payable, including trade credit and advances. It is useful in all cases to clearly identify the instruments included, as sometimes debt aggregates are presented excluding some types of debt instruments.

6.127 The surveys presented in Chapter 7 provide a comprehensive framework for compiling measures of debt owed to the FCs sector, as well as the debt of FCs to other sectors. Debt of the total economy may be presented as an aggregation of the debt of all domestic sectors, or on a consolidated basis that eliminates all debts that are assets of residents, thereby leaving only liabilities to nonresidents. The latter is referred to as external debt.

6.128 Debt is a natural consequence of economic activity and has a significant impact, both positive and negative, on all resident sectors. On the positive side, borrowing allows funds to be channeled from sectors that are savers to those that need short- or long-term financing, directly or through the FCs sector. From the borrowers' perspective, depending on their economic function, debt provides opportunities such as financing capital investments, smoothing out expenses, and using future income for current needs. For example, for FCs, debt provides the necessary funding for expansion of financial intermediation (leveraging); NFCs often use borrowing to finance their production and capital formation; government units borrow to finance expenses as well as capital investments; and households use debt to finance their current consumption, asset purchases, and production.

6.129 On the negative side, borrowing entails cost—in the form of interest payments—and an obligation to repay. Therefore, debt gives rise to future payment liabilities. As a consequence, high levels of debt liabilities have the potential to create circumstances that render an institutional unit, a sector, and even the whole economy vulnerable to liquidity (including debt roll-overs) and solvency risks. For these reasons, there is strong analytical interest in debt measures.

6.130 A key element in debt analysis is maturity structure. For maturity analysis, debt data should be disag-

gregated, at a minimum, into short- and long-term categories, and more detailed maturity breakdowns are often useful. Data can be compiled on either an original maturity basis (ensuring consistency with other macroeconomic data sets) or a remaining maturity basis (more relevant for analyzing liquidity), or both. Features such as the ability to “call” the debt early may need to be identified in analyzing the maturity of some debt instruments.

6.131 Countries compile a wide range of debt measures, covering specific sectors and subsectors and the entire economy. In many cases, there are credit measures that correspond to specific types of debt (e.g., consumer credit and consumer debt). Some of the more common debt measures are described below.

Household debt

6.132 Household debt is incurred for a variety of purposes. Often, debt is incurred to finance the purchase of specific assets, such as real estate and vehicles, which are pledged as collateral for loans. Households also incur debt to finance current consumption, education or medical expenses, development of small businesses, and purchase of equity or other financial assets. Interest rates, the size of monthly payments for installment loans, expectations regarding future income, and wealth are all factors that affect households' decisions to borrow.

6.133 Household debt may be disaggregated into different types of loans, such as mortgage loans, consumer loans, loans for sole proprietorship, etc. The most common loans received by households include:

- a. Loans that ODCs and OFCs (e.g., finance companies) provide directly to their clients such as personal loans for general purposes, mortgage loans, equity loans backed by the net value of real estate, consumers loans for acquiring durables, etc.
- b. Trade credit with repayment by installments provided by the sellers of goods and services.
- c. Credit card loans.
- d. Loans that are provided by insurance corporations and are collateralized by the borrowers' reserves in such entities.
- e. Financial leases that permit consumers to use and, eventually, acquire durables through such

arrangements in lieu of conventional loan contracts.

6.134 Because of the difficulty of obtaining data directly from households, data on consumer debt are usually derived from creditor sources.

Business debt

6.135 Corporations and other business entities incur short-term debt to finance current production, acquire inventories, and meet recurring expenses such as tax and interest payments. They also acquire long-term debt to finance capital formation. Corporations may finance these activities by obtaining trade credit, by borrowing from FCs, or by issuing debt securities.

Public sector debt

6.136 Debt data should be compiled for the central government, general government, and the entire public sector. Data on government debt are often disaggregated by debt to residents and to nonresidents. Supplementary data on debt that is incurred by other sectors, but is guaranteed by the government, should be compiled if the amounts of such guarantees are significant.

6.137 The IMF's *Government Finance Statistics Manual 2014* provides international guidelines for the construction of measures of government debt. The inter-agency Task Force on Finance Statistics (TFFS)²⁴ has published the first *Public Sector Debt Statistics: Guide for Compilers and Users* (2013), which focuses on improving the quality and timeliness of these statistics and promoting a convergence of recording practices.

6.138 Beyond debt statistics, the government's financial balance sheet is an integral part of fiscal risk and

sustainability analysis, and should cover the general government and public sector, and include memorandum information on contingent liabilities and arrears, if significant. Information on foreign currency debt of the general government or public sector is important to measure vulnerabilities of the public sector that can be triggered by exchange rate fluctuations.

External debt

6.139 External debt refers to debt liabilities of a country, sector, or unit to nonresidents. External debt statistics, including debt service payments, are used in the analysis of vulnerability to solvency and/or liquidity problems. They are useful for general macroeconomic analysis and for negotiations of debt rescheduling.

6.140 The International Investment Position (IIP) statement described in the *BPM6* covers an economy's stock positions of external financial assets and liabilities, including external debt. The IIP components can be fully reconciled with the financial asset categories of the *2008 SNA*.

6.141 Analysis of the vulnerability of an economy's external debt position requires data beyond that provided by the IIP framework. These other data series include information on the (1) amount actually owed—the nominal value of debt, as opposed to the market value of external debt; (2) debt service schedule; and (3) increasingly, extent to which financial derivatives are used to hedge, or even increase, exposure to risk.

6.142 The TFFS has also published the *External Debt Statistics: Guide for Compilers and Users* (2013), which provides international methodological guidelines for the measurement of external debt, as well as guidance on the analytical use of the data and on the sources and methods for their compilation.

²⁴ The members of the TFFS are the BIS, the Commonwealth Secretariat, the ECB, Eurostat, the IMF (chair), the OECD, the Paris Club Secretariat, the UNCTAD, and the World Bank.

6.1

Currency-Union Currency

Framework

6.143 In a currency union, the union-wide currency is issued by a supranational central bank such as the European Central Bank (ECB), Eastern Caribbean Central Bank (ECCB), and the two central banks of the CFA franc areas—Banque Centrale des États de l’Afrique de l’Ouest (BCEAO) and Banque des États de l’Afrique Centrale (BEAC). The union-wide currency serves as the medium of exchange and domestic unit of account in each of the member countries of the union. Several actions apply to each country in the currency union at its inception:

- a. For the transition to the union currency, a fixed exchange rate between the domestic currency and the union currency is announced.
- b. Domestic currency banknotes and coins are withdrawn from circulation, either gradually or within a preannounced period.
- c. The financial records of institutional units in all sectors of the economy are translated into union currency units, which is the new standard unit of account.
- d. Banknotes and coins denominated in the union currency are placed in circulation by the central banks of the union’s member countries.

6.144 The introduction of the union currency in an economy is reflected in the sectoral balance sheets and surveys of the FCs of each union member country.

- a. Currency in circulation. This liability account of the national central bank shows the amount of union-currency banknotes and coins issued by (or treated as if issued by) the national central bank, as well as the amount of domestic currency

issued earlier by the national central bank and not yet removed from circulation.²⁵

- b. Union currency banknotes and coins. Union currency banknotes and coins are classified as in *domestic currency*.
- c. Financial asset/liability disaggregation by currency. In the sectoral balance sheets/SRFs in Appendix II, deposits are disaggregated into separate categories for *domestic currency* and *foreign currency*. For economies participating in a currency union, the common currency is the domestic currency of all participant countries.

Estimation of Currency-Union Currency

6.145 It is difficult to estimate the amount of union currency in circulation in individual countries belonging to a currency union. The basic problem is the lack of data on cross-border currency flows, which do not appear in FCs’ accounts and generally are not reported from other sources to the monetary statistics compilers.

6.146 Estimation and compilation practices for currency in circulation differ across currency unions. For the euro area, each national central bank records euro banknote liabilities in an amount equal to its share of the total euro banknotes issued for the entire currency union. Each country’s share is calculated in proportion to the amount of its share in the ECB’s capital,

²⁵ When the period set for exchanging domestic currency for the union-currency lapses, the liability of the national central bank for the issued domestic currency expires, and it records extraordinary revenues for the non-redeemed national currency as an OCVA. In the case of the euro area, domestic currency was reclassified outside of currency in circulation 12 months after the adoption of the union currency.

with 8 percent of the issue allocated to the ECB; plus coins issued by the national central bank intended for circulation.

6.147 The ECCB has the exclusive right to issue the common currency banknotes and coins of the Eastern Caribbean Currency Union (ECCU). The ECCU member countries do not have national central banks, and the currency is placed in circulation through the ODCs in these countries. The amount of currency issued in each member country is based on each country's equity

share in the ECCU. All currency banknotes and coins are marked with a specific letter to designate the country where they were placed in circulation. Banknotes and coins spent in another member country are eventually repatriated to the member country of issue.

6.148 For countries that are members of BCEAO or BEAC, the currency banknotes issued by a member country are imprinted with an identifying sign, which facilitates the repatriation of banknotes that circulate outside the country of issue.

6.2

Dollarized Economies
and Co-circulation

6.149 Foreign currencies can serve three functions in countries other than the country of issuance:

- a. Store of value. Foreign currency banknotes, and to a lesser extent coins, that are easily transported into and out of a country are held by all sectors of an economy. Holdings of currency banknotes and coins issued by foreign countries constitute a separate category of claims on non-residents in the sectoral balance sheets of the FCs and in the balance sheets of institutional units in the nonfinancial sectors.
- b. Foreign unit of account. Institutional units in the various institutional sectors hold foreign-currency-denominated assets—deposits, loans, debt securities, and financial derivatives. DCs in many countries accept foreign currency-denominated deposits and make foreign currency-denominated loans. Corporations and government units sometimes issue foreign-currency-denominated debt securities and may have foreign currency-denominated positions in financial derivatives and other accounts receivable/payable.
- c. Medium of exchange. In some countries, a foreign currency serves as the only or widely used medium of exchange, or it is permitted that both domestic and foreign currency serve as media of exchange.

6.150 Foreign-currency-denominated assets and liabilities may be claims on and liabilities to residents or nonresidents. Foreign-currency-denominated deposits that DCs accept from money-holding sectors that meet the definition of broad money are included in broad money. All foreign-currency-denominated claims on and liabilities to nonresidents should be

classified as foreign assets and foreign liabilities, respectively, regardless of the functions that foreign currencies serve in the economy.

6.151 In some countries, a foreign currency is the only or principal medium of exchange,²⁶ and the foreign currency unit is used as the domestic unit of account. These countries are referred to as “dollarized” economies, regardless of whether the U.S. dollar or some other foreign currency (such as the euro) is the foreign currency that serves as the medium of exchange and the domestic unit of account.²⁷ Dollarization has implications for the measurement of money aggregates in an economy and for the classification of financial assets and liabilities in the sectoral balance sheets of financial corporations (FCs).²⁸

6.152 Some countries use their own domestic unit of account, but permit both domestic and foreign currency to serve as media of exchange. These countries are described as having currency co-circulation. Currency co-circulation has implications for the measurement of the money aggregates in an economy but does not affect the classification of financial assets and liabilities in the sectoral balance sheets of FCs.

²⁶ The domestic currency in circulation in these countries is limited to coins issued by the central bank or government and, in some countries, old domestic currency banknotes not yet removed from circulation.

²⁷ The dollarization in Panama is a minor exception. The domestic currency unit is the balboa, which is on a par with the U.S. dollar. The foreign currency unit (that is, U.S. dollar) is tantamount to being the domestic currency unit of Panama. Coins denominated in balboa (but not balboa banknotes) are in circulation.

²⁸ This *Manual* uses a narrower definition of dollarization than literature in which dollarized refers to any country in which foreign-currency-denominated assets and liabilities are prevalent, even when domestic currency is the legal tender.

Dollarization

6.153 During the transition to a dollarized economy, the following actions are taken:

- a. The financial records of institutional units in all sectors of the economy are converted from the domestic unit of account to U.S. dollars (or other foreign unit of account) at an exchange rate announced by the central bank or government.
- b. Domestic currency banknotes are withdrawn from circulation, either gradually or within a pre-announced period in which currency holders are entitled to exchange the domestic currency for U.S. dollars (or another foreign currency) at the preannounced exchange rate.

6.154 Dollarization of an economy is reflected in the following accounts in the sectoral balance sheets and surveys of the FCs:

- a. Currency in circulation. After dollarization is completed, this liability account of the central bank shows only the amount of domestic-currency-denominated coins and old domestic currency banknotes, if any, that are still in circulation.
- b. Dollarization currency banknotes and coins. Holdings of the “dollarization currency” are included in the same category as holdings of other foreign currencies and along with other foreign currencies are classified as claims on nonresidents (foreign assets).
- c. Financial instrument disaggregation by currency of denomination. In the sectoral balance sheets in Appendix II, all domestic positions in dollarization currency are included under the domestic currency category. Positions in dollarization currency with nonresidents are included under foreign currency. This distinction for a dollarized economy is important for adherence to the definition of official international reserves which includes only *foreign-currency* assets.²⁹

Co-Circulation

6.155 In some countries, foreign currency is allowed to co-circulate with domestic currency. The foreign

currency serves as a medium of exchange and store of value, and the domestic currency continues to serve as a medium of exchange, store of value, and the domestic unit of account. The circulation of foreign currency (often the currency of a major trading partner) together with circulation of domestic currency is common in regional monetary integrations in which member countries retain their domestic currencies. The currencies are allowed to co-circulate freely within a single economy wherein each currency serves as the medium of exchange, and the domestic currency remains the domestic unit of account. Co-circulation may be legally sanctioned or may be permitted as an informal practice that is clearly acceptable to the authorities.³⁰ Co-circulation may involve the use of two or more foreign currencies, along with the domestic currency, as media of exchange.

6.156 Co-circulation of foreign currency does not affect the classification of the accounts in the sectoral balance sheets of the FCs or in the balance sheets of the other institutional units in the economy. The characteristics of currency in these countries are:

- a. Unit of account. The financial records in all sectors of the economy continue to be based on the domestic currency as the standard unit of account.
- b. Currency in circulation. The central bank’s account for currency in circulation shows its liability for the outstanding amount of domestic currency that it has issued. Liabilities for the co-circulating foreign currency appear only in the records of the foreign central bank or central government that issued the currency.
- c. Co-circulating banknotes and coins. Holdings of the co-circulating foreign currency continue to be included in the same category as holdings of other foreign currencies, wherein all foreign currency is classified as claims on nonresidents (foreign assets).
- d. Financial asset/liability disaggregation by currency of denomination. All financial assets and liabilities denominated in a foreign currency

²⁹ On reserve assets as *foreign currency assets*, see *BPM6*, paragraph 6.64.

³⁰ Co-circulation is distinguished from “parallel market” trading, which involves the buying and selling of foreign currency in violation of national laws or regulations that are enforced.

(whether or not a co-circulating foreign currency) are classified as in *foreign currency*.

6.157 Currency co-circulation may be combined with dollarization, as in the case of the monetary integration arrangement of the Common Market Area (CMA) in southern Africa. The rand is the domestic currency of South Africa, as well as a co-circulating currency in the other CMA countries—Lesotho, Namibia, and Swaziland. Each of these countries has a domestic currency that, along with rand notes and coins, serves as a medium of exchange and the domestic unit of account. Moreover, the domestic currencies (Lesotho loti, Namibian dollar, and Swazi lililani) have exchange rates that are pegged to the South African rand, which makes the rand akin to a domestic unit of account. Under the monetary arrangements, all CMA members share the seigniorage that South Africa obtains from the issuance of rand banknotes and coins.

Estimation of Dollarization and Co-Circulation Currency

6.158 Various techniques can be used to estimate the amount of foreign currency in circulation in dollarized economies and countries in which currency co-circulation is extensive. Estimation methods can be based on surveys of currency holdings, historical information about currency holdings, and econometric techniques. Similar techniques apply to the estimation of domestic currency outflows from countries that provide the dollarization or co-circulation currency to other countries.

6.159 Collection of survey data on currency flows across the domestic border is a first step in estimating the currency in circulation in a country with co-circulation of currency or a dollarized economy. Surveys typically cover currency transactions within the banking system, or are customs-type reports of currency carried by travelers. In some countries, statistical estimates of international flows of currency are constructed through netting of outflows and inflows associated with balance of payments transactions. Gross outflows associated with tourism, emigrant remittances, and other activities are netted against gross inflows from tourism, bank flows, etc. Some countries have formal customs reports that require reporting of currency taken across borders. In some

countries, data for small transactions need not be reported, or are sampled.

6.160 Data on currency shipments are important for estimating the cross-border currency flows. Wholesale shipments of U.S. currency are provided by a few large FCs that specialize in this service. Local financial institutions acquire or repatriate U.S. dollars through wholesale shippers. For large shipments of U.S. currency, the U.S. Customs Department requires that a currency and monetary instrument report be filed by the shipper. The reporting applies only to cross-border currency shipments of \$10,000 or more.

6.161 Survey methods can be used to estimate foreign currency holdings of the general population of a country. In addition to amounts of U.S. dollars, euros, and other foreign currencies held, the survey questions can delve into motives for foreign currency holding, identification of currency exchanges frequented by respondents, and their propensities for overseas travel. A general aversion to disclosure of personal or confidential information about currency transactions and holdings undermines the reliability of data from direct surveys of households or businesses.³¹

6.162 A technique for accurate responses is to survey households only about their foreign currency holdings *relative to* their domestic currency holdings. Using survey responses on the ratio of foreign currency holdings to domestic currency holdings with an estimate of households' total domestic currency holdings, the foreign currency holdings of households can be estimated.

6.163 Some insight into currency circulation may be gained by analyzing data on domestic currency holding³² before the introduction of dollarization or before widespread use of co-circulation. Care must be exercised in extrapolating from historical experience. Data on currency holdings in the period just prior to dollarization may reflect a flight to currency in response to financial and economic instability in the country, which may have provided impetus for the move to dollarization. For a country experiencing an

³¹ A significant share of the currency circulation is associated with "non-observed economy," which includes smuggling and the use of cash transactions to avoid the recording of taxable income. Exclusion of participants in these activities would distort the coverage of the survey; inclusion would likely not lead to satisfactory results.

³² The total amount, or as a proportion of a broad or narrow money aggregate.

evolution from cash-based to deposit-based transactions in the retail market, the propensity for currency holding in periods before dollarization or significant co-circulation may contain information that is not relevant to the present period.

6.164 Estimation of the foreign currency circulation in the co-circulation context can be based on econometric modeling of the demand for money. In these models, the quantity of money—observed deposits and domestic currency *plus* the unobserved co-circulation

currency—is specified as dependent on a set of macroeconomic variables (a measure of domestic income, interest rates, expected inflation, etc.). Applying econometric methods, an estimate of the unobserved quantity of the co-circulation currency can be obtained.³³

6.165 When reliable and frequent estimates of the foreign currency circulation in an economy are available to monetary statistics compilers, the data should be added to broad money (see paragraph 6.87, as well as Table 6.2).

³³ These and other methods of estimating the amount of co-circulating currency are described in Krueger and Ha (1995).

Reserve Requirements

Reserve Requirements with Averaging of Reserve Holdings

6.166 The following terminology applies:

- a. Reservable liabilities. The categories of deposits and, if applicable, debt securities that are subject to reserve requirements.
- b. Reserve-computation period. The period over which reservable liabilities are averaged to determine the reservable liability amounts to which the reserve requirements (in percent) are applied. Alternatively, the computations may be based on reservable liabilities as of a single date—for example, end-of-month levels.
- c. Reserve-maintenance period. The period over which the specified average amount of required reserves is to be held. In some countries, large ODCs have reserve-maintenance and reserve-computation periods that are different from those for small ODCs.
- d. Required reserves. ODC deposit holdings at the central bank³⁴ (reserves deposits) that are used to satisfy reserve requirements (see paragraph 4.37). In many countries, ODC holdings of domestic currency in vault also qualify as required reserves. In a few countries, foreign currency deposit holdings in the central bank also qualify as required reserves. Required reserves are average holdings during a reserve maintenance period.³⁵ The reserve holdings may be interest-bearing or non-interest-bearing.
- e. Lagged reserve requirements. Required reserve holdings in the reserve-maintenance period are based on the average levels of reservable liabilities in a reserve-computation period that precedes the maintenance period.³⁶ The reserve-computation period may immediately precede the maintenance period or may precede the maintenance period by one or more weeks or months.
- f. Reserve settlement. The accounting for required reserves at the end of the reserve-maintenance period. Excess reserves arise when the reserve holdings exceed the average amount required for the maintenance period. A reserve deficiency arises when the maintenance-period average holding is less than the required average amount. A reserve deficiency results in: (1) a penalty being applied, (2) an ODC borrowing of reserves from the central bank, or (3) augmentation of the amount of reserves required for the next reserve-maintenance period (if the regulations include a reserve deficiency carry-over provision).
- g. Reserve requirements. The average amounts of average reservable liabilities during the reserve computation period are multiplied by the required reserve ratios, usually stated as percentages of reservable liabilities. Many countries have differential reserve requirements—required reserve

³⁴ An exception in some countries is for some ODCs to hold all required reserves through an ODC that acts as an intermediary in centralizing the reserve holdings.

³⁵ In some countries, the required amount may be reduced by a lump-sum adjustment. Each ODC is permitted to reduce its

required reserve by the lump-sum amount. For a small ODC, the lump-sum adjustment may exceed the total amount of required reserves that it would otherwise be required to maintain.

³⁶ In principle, the reserve-computation period and the reserve-maintenance period can be specified to overlap, resulting in contemporaneous or quasi-contemporaneous reserve requirements such as those applied in the United States during the 1984–98 and pre-1969 periods.

ratios that differ across categories of ODC liabilities. Deposits and debt securities in broad money may be subject to different reserve requirements. Different reserve ratios may also be applied to: (1) transferable deposits and other deposits, (2) short- and long-term other deposits, (3) household and corporate deposits, and (4) deposits in domestic and foreign currency. A deposit or debt security category may have a zero required reserve ratio (that is, may be excluded from reserve requirements). Some ODCs may be exempt from reserve requirements.³⁷ Reserve requirements usually apply to broad money components.³⁸

6.167 All ODC deposits to be used in satisfying reserve requirements with averaging of reserve holdings (as well as for settlement purposes) are classified as transferable deposits in the sectoral balance sheets of the central bank and ODCs unless they are restricted in their use.

Reserve Requirements without Averaging of Reserve Holdings

6.168 The following additional terminology applies:

- a. Reserve-computation date. Reservable liabilities are measured usually as of a particular date (for example, at end-month).

- b. Reserve-maintenance period. The period over which a specified level (rather than average amount) of required reserves must be maintained.
- c. Reserve settlement. The accounting for required reserves is on a daily basis. The fixed amount of required reserves applies for each day of the reserve maintenance period. Any excess reserves are synonymous with ODCs' other deposits in the central bank. Those used for check clearing and other settlement purposes are classified separately from required reserves.
- d. Reserve requirements. The levels of reservable liabilities, as of the reserve computation date, are multiplied by the required reserve ratios.

6.169 ODC deposits that are pre-specified fixed amounts of required reserves (without averaging of reserve holdings) and excess reserves are classified as other deposits (that is, nontransferable deposits) in the sectoral balance sheets of the central bank and ODCs. ODC deposits held in the central bank for settlement purposes are classified as transferable deposits in the sectoral balance sheets of the central bank and ODCs.

³⁷ For example, an exemption may apply to ODCs that are being liquidated or reorganized.

³⁸ Exceptions are not precluded. For example, the ECB is authorized to impose reserve requirements against liabilities arising from off-balance-sheet items.

Seasonal Adjustment of Economic Time Series

General Principles

6.170 Seasonal adjustment of economic time series involves the estimation and removal of fluctuations that recur each year with a broadly similar pattern. They may be linked to public holidays,³⁹ harvest seasons or other production cycles, model-year changes, administrative and legal measures, etc. Seasonal adjustment can be based on mathematical (deterministic) models, econometric (stochastic, or statistical) models, or both. Procedures that combine mathematical and econometric techniques are now widely used.

6.171 Many countries seasonally adjust price statistics, GDP and other national accounts statistics, exports/imports and other balance of payments statistics, monetary and financial statistics, and other macroeconomic time series. Seasonal adjustment is useful for analyzing short-term developments and is applied to both monthly and quarterly data.⁴⁰

6.172 Seasonal adjustments of money aggregates and credit aggregates are the most common applications of seasonal adjustment in monetary and financial statistics. This annex describes the general application of seasonal adjustment methods with emphasis on seasonal adjustment of monthly money aggregates. Quarterly monetary data may also be seasonally adjusted, but seasonally adjusted monthly data are viewed as the most relevant for analytical and policy purposes in most countries. General principles

discussed in this annex also apply to series for other economic variables.

Direct and Indirect Seasonal Adjustment

6.173 Economic time series—in particular money aggregates derived from multiple balance sheet items—consist of additive component series. In the case of univariate (single series) seasonal adjustment, aggregate time series and their components can be adjusted either directly or indirectly. The *direct seasonal adjustment* of a series is obtained by applying the chosen adjustment method to the original unadjusted time series. The *indirect seasonal adjustment* of a series is instead obtained as a linear combination of other seasonally adjusted component series or related aggregates.

6.174 From a cost viewpoint, the level of data disaggregation for which seasonal adjustment is calculated increases, in general, the amount of resources needed to maintain the seasonal adjustment of the monetary statistics. In other words, from a cost standpoint, direct seasonal adjustment of main aggregates may be preferable as the procedure is only performed on a few series.

6.175 This *Manual* recommends that, if a cost-effective choice is necessary, the analyst responsible for the seasonal adjustment concentrate on a thorough application of the direct approach on main aggregates, utilizing as many of the diagnostic tools and other advanced features of the seasonal adjustment software as possible.

6.176 Seasonal adjustment is a nonlinear operation on the data and, as such, it is not additive. Therefore, if the seasonally adjusted presentation of the data includes separate time series for an aggregate and

³⁹ Holidays such as Christmas or New Year occur on a fixed day and month of each year; the dates of holidays such as Chinese New Year, Easter, Ramadan, and Deepavali move from year to year. Seasonal adjustment methods can accommodate both fixed and moving holiday seasons.

⁴⁰ Seasonal adjustment has also been applied to weekly and daily data, but with limited success.

its components, a choice must be made as to which series in the balance sheet identity need to be adjusted directly or indirectly (i.e., as a linear combination of other series) in order to preserve the additivity.

6.177 Application of indirect seasonal adjustment can take various forms, depending on the way in which the components of the aggregate are defined and on their time series behavior over time. In particular, the main choice is whether to (1) directly adjust all the components and then indirectly derive the aggregate as sum, or (2) directly adjust the aggregate time series and some components, leaving one component as a residual. For instance, an application of the former to the components of broad money would specify $A = \text{currency plus transferable deposits}$; $B = \text{broad money less } A$. Components A and B would be directly seasonally adjusted, and then would be summed to obtain the seasonally adjusted series for broad money. Instead, the second approach would involve direct seasonal adjustment of broad money and *either* A or B . Depending on the choice, the remaining component would then be calculated as a difference between the total and the directly adjusted component.

6.178 An unambiguous decision rule for choosing between the direct and indirect methods of seasonal adjustment does not exist. An important consideration is that the indirectly adjusted series are calculated as a residual of the other identity components' direct adjustment. In turn, this implies that a meaningful indirect seasonal adjustment depends on the accuracy of the direct adjustment of the related series. The choice must be made on a case-by-case basis,⁴¹ after experimentation with both methods. For a specific time series, several practical criteria have been recommended. These include: (1) minimization of residual seasonality in the seasonally adjusted series, usually leading to smoother adjusted series;⁴² (2) minimization of revision errors; (3) stability of seasonal components; and (4) out-of-sample forecasting accuracy. Informal "rules of thumb" are: (1) the direct adjustment approach has advantages when the com-

ponents of the aggregate time series are highly correlated; (2) the indirect approach has advantages with respect to minimization of estimation and revision errors when the components have dissimilar stochastic (statistical) properties; and (3) the indirect approach has advantages when the contribution of each component, as a proportion of the aggregate, fluctuates significantly over the estimation period.⁴³

6.179 The multivariate approach is not advocated in this *Manual*, because of its computational complexity and software limitations. The most widely used software packages for seasonal adjustment, described later in this annex, are designed exclusively for univariate (single-series) seasonal adjustment. Major advantages of these seasonal adjustment programs include ease of use; diversity of modeling specifications; and breadth of advanced statistical tools for specification of the seasonal adjustment model, estimation of the seasonal components, and diagnostic testing of the time-series output.

Seasonal Adjustment Software Packages

6.180 The most popular seasonal adjustment packages, extensively applied worldwide, are the X-12-ARIMA⁴⁴ program of the U.S. Census Bureau and the combination of the TRAMO ("Time-series Regression with ARIMA Noise, Missing Observations and Outliers") and SEATS ("Signal Extraction in ARIMA Time Series") programs developed at the Bank of Spain.⁴⁵

6.181 The ARIMA module (called RegARIMA) in X-12-ARIMA and the TRAMO part of TRAMO/SEATS are similar in that both use time-series regression models to forecast (and "backcast") input data and to detect and correct for outliers, calendar effects, missing observations, etc. The decomposition modules (called X-11) in X-12-ARIMA and SEATS are used to separately identify and estimate the trend-cycle, seasonal, and irregular components of a time series, but using different methods. The X-12-ARIMA method uses an existing set of moving-average filters, whereas the SEATS method

⁴¹ X-12 allows formal testing procedures for the indirect-direct choice (revisions history, sliding spans, F-tests on residual seasonality, etc.).

⁴² The smoothness criterion is specified in terms of "roughness measures" computed for seasonally adjusted series obtained by each approach. The criterion does not imply that seasonal adjustment is aimed at smoothing a time series, but seasonal adjustment generally leads to a time series with less variability.

⁴³ For more information, see European Central Bank (2000), pp. 9–10. See also, Burnett (2006) and Thorp (2003).

⁴⁴ Bureau of the Census (2011).

⁴⁵ For further details, see Gómez and Maravall (1996).

uses ARIMA-based signal extraction with filters derived from the ARIMA-type modeling.

6.182 The X-12-ARIMA program is used by the IMF to seasonally adjust the monthly data for *Money* and *Broad Money* in the *International Financial Statistics (IFS)* country pages. Application of X-12-ARIMA requires a time series that has a sufficient number of observations. As of end-2013, the requirements have been satisfied for nearly all countries, and data for the *Money*, *Seasonally Adjusted* and *Broad Money*, *Seasonally Adjusted* in most IFS country pages have been based on X-12-ARIMA techniques.⁴⁶ *Money*, *Seasonally Adjusted* refers to the money supply as narrowly defined.

6.183 The X-12-ARIMA program uses a modular structure subdivided into three main stages, which are illustrated in Figure 6A.1.

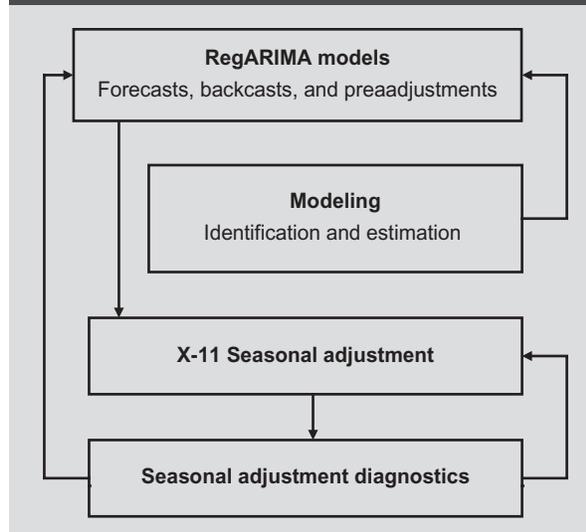
6.184 In the first stage, referred to as RegARIMA, an ARIMA model with regressors is used to prepare the data input for the actual seasonal adjustment decomposition. An important function of the regARIMA modeling that improves the estimates of the seasonal components, is the extension of the time series with pre-series estimates (backcasts) and post-series forecasts. This procedure enables the use of symmetric moving-average processes in the decomposition of the time series at its extremes.

6.185 In the second stage, referred to as X-11, the algorithm decomposes the time series into trend/cycle, seasonal, and irregular components. This decomposition is performed in two sequential steps. First, the trend in the series is identified and removed by means of a filter, and the series is thus rendered stationary. Secondly, the seasonal component is estimated using symmetrical seasonal moving averages.

6.186 A third stage of the seasonal adjustment process is statistical analysis of the data output of the X-11 module, including the seasonally adjusted time series. The analysis utilizes standard statistical tests and examination of out-of-sample forecasts of the sea-

⁴⁶ The IMF employs the automatic options in the X-12-ARIMA program, because of the magnitude of the task and the need to present data for which the seasonal adjustment is consistent across countries. Detailed examination of seasonality in the money series for each country is not feasible. Compilers are encouraged to undertake more detailed investigations in the national context, and more refined results can be reported to the IMF in Form 5SR, and disseminated directly.

Figure 6A.1 Structure of the X-12-ARIMA Algorithm



sonally adjusted data. The seasonal adjustment procedure may need to be an iterative process in which the RegARIMA and X-11 decomposition are repeated until the post-X-11 analysis indicates that the seasonal adjustment is satisfactory.⁴⁷

6.187 The X-12-ARIMA and TRAMO/SEATS programs have statistical properties that are worthy of combining. This has prompted the development of the X-13-ARIMA-SEATS program, which is now in use at the U.S. Census Bureau.⁴⁸ In particular, the new approach differs from X-12-ARIMA in that the second stage of the algorithm may now use either the X-11 module or the SEATS method. Additionally, X-13-ARIMA-SEATS provides the analyst with a comparison of the seasonal patterns identified using the two different methods. The possibility to choose between X-11 and SEATS in general allows for smoother results, as the two methods perform differently depending on the series being analyzed.

Custom Application of X-12-ARIMA

6.188 For customized time-series models, X-12-ARIMA has capabilities for the three modeling stages: *identification*, *estimation*, and *diagnostic checking*. Use

⁴⁷ Residual seasonality sometimes is found in the adjusted data, leading to further empirical work.

⁴⁸ Due to its prevalent use among institutions (including the IMF), this annex discusses the most prominent features of X-12-ARIMA.

of the RegARIMA module requires specification of the regression variables in the model and of the ARIMA model for the regression errors. Specification of the regression variables is based on automatic outlier identification by the program, which can be complemented by user knowledge about events that influenced the time series (e.g., a large reclassification adjustment).

6.189 Identification of the ARIMA model for the regression errors is based on well-established procedures in the Box-Jenkins (1976) analysis, which require examination of sample autocorrelation and partial autocorrelation functions generated by the X12-ARIMA program.⁴⁹

6.190 Parsimony is a fundamental principle of the identification procedures. A model specification might include many parameters, when a simpler specification with fewer parameters would have been adequate. Such over-specification can lead to unnecessarily poor estimation of the time series. For example, specification of a moving-average process with a single parameter may substitute for an autoregressive process that has many parameters, or vice versa.⁵⁰

6.191 Estimation of the parameters of the RegARIMA model is performed by the X-12-ARIMA routine for maximum likelihood estimation using an iterative generalized least-squares algorithm.

6.192 Diagnostic checking involves analysis of the residuals from the fitted model to explore the possibility of model inadequacies. X-12-ARIMA produces several standard residual diagnostics for detecting additive outliers and level shifts in the data. The program also produces forecasts, forecast standard errors, and prediction intervals from the fitted regARIMA model.

Decomposition of an Economic Time Series

6.193 For seasonal adjustment purposes, a time series is decomposed into three major components:

- a. **Trend-cycle component** (T_t): constitutes the underlying path or general direction reflected

in the data, combining the long-term trend and business-cycle movements.

- b. **Seasonal component** (S_t^c): comprises *seasonal effects narrowly defined* (S_t) and calendar-related systemic effects that are not stable in timing from year to year, including *end-of-period effects* (TD_t) and *moving-events effects* (ME_t). *Seasonal effects narrowly defined* are calculated as seasonal moving averages of the detrended series. *End-of-period effects* arise from observing the level of the variable on a specific day of the week (e.g., measuring currency in circulation on a Friday may lead to a higher than average value, due to cash hoarding for weekend expenditures). *Moving-events effects* arise from occasions such as moving holidays, paydays for large groups of employees, and pension payments that occur at regular intervals but not at exactly the same time each year.
- c. **Irregular component** (I_t^c): comprises the effects that are unpredictable in the absence of additional information about the timing, impact, and duration of the occurrence. These effects are *irregular effects narrowly defined* (I_t), *outlier effects* (OUT_t), and *other irregular effects* (OI_t).⁵¹ From an analytical perspective, the irregular component contains economically significant information on short-term developments.

6.194 The seasonal adjustment decomposition can be specified in additive or multiplicative form. The default option in the X-12-ARIMA program is the multiplicative form, because that specification has proved to be superior for nonstationary time series. For monetary statistics, this result is linked to the fact that most balance sheet series have an exponential long-run trend. In the multiplicative specification, the absolute size of the components of the series are dependent on each other, resulting in seasonal variations that increase and decrease with the level of the series. The seasonal and irregular components of the multiplicative model are ratios centered on a value of 1.

⁴⁹ *Spectral analysis* is also a useful tool for model identification. Spectral plots may reveal spikes at seasonal frequencies. For many applications, however, plots of the autocorrelation and partial autocorrelation functions are sufficient for identifying the ARIMA models. On spectral density functions, see Box and Jenkins (1976), pp. 39–45.

⁵⁰ On parsimony, see Box and Jenkins (1976), pp. 17–18, 302, 340.

⁵¹ *Other irregular effects* can arise from unseasonable weather, natural disasters, labor strikes, etc. Such effects are mitigated, moreover, if they have been taken into account in the regular regression component of RegARIMA in producing the input data for the decomposition in the X-11 module.

Seasonal Adjustment Revision Policy

6.195 Seasonal adjustment analysis is not completed when the first set of data for the seasonally adjusted time series has been produced. Seasonally adjusted data for a time series can be improved by using the additional observations for the time series, as the data become available. Seasonally adjusted data for money aggregates and other economic series may be revised several times before the latest revised data are deemed to be final. A general rule is that the seasonal adjustment is repeated until the revisions in the seasonal factors from successive re-estimations are small. Ideally, the concept of small revisions can be quantified and, where possible, revision statistics can be analyzed.

6.196 National authorities will need to determine the periodicity of the revisions in seasonally adjusted series. This *Manual* recommends a yearly review of seasonal factors and models based on new data. Although in specific cases a shorter review period may be warranted (e.g., in case of large revisions), the general principle of updating the seasonal factors on a yearly basis ensures that new information is included in the assessment, while minimizing the frequency of data revisions. It is recommended that the data revision policy be formalized and the schedule for revised data release be publicized.

Determining Holding Sectors of Debt Securities Issued by Financial Corporations

6.197 A financial corporation (FC) that has issued debt securities may be unable to disaggregate debt securities liabilities by holding institutional sector, as prescribed by this *Manual*.

6.198 Debt securities that are issued, and held exclusively within the FCs sector do not create a sectoring problem for the monetary and financial statistics. For example, central banks may issue debt securities for which other depository corporations (ODCs) are the only eligible purchasers, in which case the institutional sector of the holders is given. In an unlikely case, FCs may issue debt securities that can be held and traded exclusively among FCs. Suppose debt securities issued by ODCs can be held and traded only among FCs. Because of secondary market trading in the securities, the ODC does not have the information required for the disaggregation by holding sector—that is, into separate categories for central bank, ODCs, and other financial corporations (OFCs) subsectors. The compilers of the monetary and financial statistics receive data, by institutional sector of holder, in the form of FCs' reporting on their debt securities holdings, which are disaggregated by issuing sector (including separate categories for the central bank, ODCs, and OFCs). Using these data, the debt security liabilities of the ODCs subsector (but not those of an individual ODC) can be disaggregated by the holding FCs subsector.⁵²

⁵² Data reporting by OFCs may be on a quarterly or annual basis. If so, monthly data for their debt securities holdings would need to be estimated for use in compiling the data for DCs. The compilers receive monthly data on the total securities issuance by ODCs, as well as on central bank and ODC holdings of the securities, disaggregated by sector of issuer. From these data, the share of the securities issuance that is held by OFCs can be derived residually.

6.199 Sectoral disaggregation is more complicated when the debt securities issued by FCs are held by several domestic sectors and, in some cases, nonresidents. In some countries, security ownership surveys are conducted for use in disaggregating the securities data for the monetary and financial statistics. Surveys that focus on holdings of securities (i.e., equity and debt instruments) issued by nonresidents are used to obtain data for the balance of payments statistics in many countries.⁵³

6.200 The broader recommendation in this *Manual* is that, if no other information on current holders is available, debt securities issued by all institutional sectors are initially classified by sector of the original purchasers of the securities. Provided with these data, compilers of monetary and financial statistics need to adjust the data to take account of cross-sector trading in the secondary market.

6.201 The compilers will have access to quarterly data on debt securities holdings of all FCs (assuming that OFCs report quarterly), disaggregated by institutional sector of issuer. In many countries, information on securities ownership by resident sectors (other than FCs) may be available from custodial repositories for securities. These entities include centralized securities depositories but also FCs that provide custodian accounts to their customers. If such entities exist in an economy, FCs or monetary statistics compilers might receive regular information from them on holders of debt securities issued by FCs subsectors in order to

⁵³ These surveys are used to obtain data on cross-country debt securities holdings disaggregated by the securities owner's country of residence. On security ownership surveys, see the *Coordinated Portfolio Investment Survey Guide* (2002), Chapter 2. For the monetary and financial statistics, the data on nonresident holdings is relevant, but the breakdown by country of residence is not needed.

Box 6A.1 Securities Holdings Statistics—the European Central Bank

The securities holdings statistics (SHS) compiled by the European Central Bank (ECB) provide quarterly harmonized sectoral data on (1) holdings of securities by euro area resident investors, and (2) holdings by non-euro area residents of securities issued by euro area residents. In a separate module of the SHS, the ECB also collects information on holdings of securities by selected individual banking groups. The SHS covers both debt securities and equity securities (including investment fund shares).

The SHS mainly rely on two sources of information, namely (1) security-by-security (s-b-s) reporting of

holdings by euro area financial institutions (see Box 5.3), and (2) for the other sectors (including nonresidents), reporting of information by custodian institutions resident in the euro area. Similarly to what previously discussed for s-b-s reporting, reporters transmit only a limited amount of information (e.g., the amount held for a particular security, including its ISIN code). After the data are received by the compilers, the information is enriched using the Centralized Securities Database (CSDB).

disaggregate debt securities liabilities by institutional sector. For example, the European Central Bank (ECB) collects information from custodians resident in the euro area for compiling its statistics on securities holdings as explained in Box 6A.1.

6.202 Otherwise, monetary statistics compilers, in consultation with compilers of other macroeconomic statistics, will need to develop a securities ownership survey for obtaining data on the securities holdings of sectors other than the FC sector. For monetary statistics, the survey would need to cover only non-FC sectors' ownership of debt securities issued by the

central bank, ODCs, and OFCs. To provide data for the financial statistics, the ownership survey should cover debt securities issued by all domestic sectors.⁵⁴ It is recommended that the securities ownership survey should be conducted on a quarterly or at least annual basis (assuming that a monthly survey is not feasible), in close coordination with national accounts and external sector statistics compilers. If the debt securities are also held by nonresidents, portfolio investment surveys for the external sector statistics would provide additional input for the sectoral disaggregation in the monetary and financial statistics.

⁵⁴ In particular, transactions data on debt securities issued by central government, state and local government, public nonfinancial corporations, and other nonfinancial corporations—disaggregated by institutional sector of the debt securities purchaser/seller—are needed for the financial statistics.

6.6

Divisia Money

6.203 The description of broad money in this chapter focuses on a measure of broad money (M) in which the money components (m_i , $i = 1, 2, \dots, n$) are weighted linearly and equally in the final total: $M = \sum_{i=1}^n m_i$, wherein the components (m_i s) are treated as perfect substitutes. As such, broad money represents a measure of the stock of nominal monetary wealth that is a measure of DCs monetary liabilities. As already discussed, different components of broad money have different degrees of *moneyiness* and the broad money aggregate does not fully reflect that money components are not perfect, but only close, substitutes for each other.

6.204 *Divisia money* is a quantity index measuring the change of quantity of money between two time periods by assigning different weights to the growth rates of money components—currency, transferable deposits, other deposits, etc.—according to the usefulness of each component for transaction purposes.⁵⁵ The relative relevance of each component for making transactions is proxied by the *user costs* (opportunity costs) of holding the various money components. A *user cost* is measured by the spread between a benchmark rate—the interest rate paid on a financial asset that cannot be used for making transactions in the short run—and the interest rate paid on a particular component of the money aggregate.

6.205 By weighting the growth rates of money components, the Divisia index takes account of the trade-off between their medium of exchange and store of value functions. It is assumed that relatively illiquid financial assets are less likely to be used for transaction purposes than highly liquid assets included in the measure of money supply, and that higher interest rates are paid on the less-liquid assets. The largest weights tend to be attached to components that are directly usable as media of exchange (domestic currency and non-interest-bearing transferable deposits).⁵⁶ The smallest weights tend to be assigned to those money components that are not directly usable as media of exchange and for which the interest rates are closest to the benchmark rate.

6.206 The general formula of the Divisia index is shown in Box 6A.2.

6.207 Divisia money formulations originated in the United States, but have become most prominent at the Bank of England (BOE), which has published the Divisia money series since 1993. The BOE publishes a Divisia money series for broad money, as well as a Divisia series for the money holdings of separate money-holding sectors—that is, for the household sector, private NFCs sector, and OFCs sector.⁵⁷

6.208 The BOE equation for Divisia money is shown in Box 6A.3.

⁵⁵ The Divisia index was originated by the French economist François Divisia (see Divisia (1925)). On the development of the Divisia index for money aggregates, see Barnett (1980), Anderson and Jones (2011), and Barnett and Serletis (2000).

⁵⁶ Boxes 6A.2 and 6A.3 show that the weights depend on the user costs of the components and also on the relative amounts outstanding of the various money components.

⁵⁷ On the BOE formulation of Divisia money, see Fisher, Hudson, and Pradhan (1993) and Janssen (1996). On recent revisions in the BOE formulation, see Hancock (2005a and 2005b) and Berar and Owladi (2013).

Box 6A.2 Divisia Money (the General Definition)

The continuous-time Divisia index M_t^D is defined by the following differential equation:

$$\frac{d \log M_t^D}{dt} = \sum_{i=1}^n W_{i,t} \frac{d \log m_{i,t}}{dt}$$

where

$$W_{i,t} = \frac{m_{i,t} \pi_{it}}{\sum_{j=1}^N m_{j,t} \pi_{jt}}$$

is the expenditure share of asset i during period t ;

$$\pi_{kt} = P_t \frac{(r_{B,t} - r_{k,t})}{(1 + r_{B,t})}, \quad (k = i, j)$$

is the nominal user cost defined as the equivalent rental price of the services provided by a unit of monetary asset, $r_{i,t}$, the interest rate paid on the monetary component $m_{i,t}$, $r_{B,t}$, a benchmark rate—the interest rate paid on a financial asset that has no usefulness for making transactions in the short run, and P_t a cost-of-living index. The benchmark return is usually viewed as the maximum-available holding-period yield at each point in time.

The discrete-time Divisia index is obtained by approximating the line integral solution to the preceding differential equation, using the Simpson's rule. The resulting discrete-time index is the following index, also known as the Tornqvist-Theil-Divisia monetary quantity index:

$$M_t^D = M_{t-1}^D \prod_{i=1}^n \left(\frac{m_{i,t}}{m_{i,t-1}} \right)^{1/2(w_{i,t} - w_{i,t-1})}$$

The percentage change of the Divisia index is obtained by writing the above equation in a logarithmic form:

$$\Delta \log M_t^D = \sum_{i=1}^n \frac{1}{2} (w_{i,t} + w_{i,t-1}) \Delta \log M_{i,t}$$

where $\Delta \log x_t = \log x_t - \log x_{t-1}$, ($x_t = M_t^D, M_{i,t}$)

Box 6A.3 Divisia Money (The Bank of England's Definition)

Divisia (D) growth rates are calculated as a weighted averages of the growth rates of the N components of a money aggregate, using the following equation:

$$\frac{D_t - D_{t-1}}{D_{t-1}} = \sum_{i=1}^n \frac{1}{2} (W_{i,t} + W_{i,t-1}) \frac{\Delta M_{i,t}}{M_{i,t-1}},$$

where $M_{i,t}$ denotes the outstanding amount of the i th component of the money aggregate, $\Delta M_{i,t}$ is the corresponding change, and $W_{i,t}$ is the weight for the i th component, defined as:

$$W_{i,t} = \frac{M_{i,t}(r_{B,t} - r_{i,t})}{\sum_{j=1}^n M_{j,t}(r_{B,t} - r_{j,t})},$$

where $r_{B,t}$ is the effective interest rate on the benchmark asset, and $r_{i,t}$ is the effective rate on the i th asset.