

Chapter 6. Money, Liquidity, Credit, and Debt

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I. INTRODUCTION

6.1. This chapter covers key definitions and statistical concepts that countries should use in constructing money, liquidity, credit, and debt aggregates and 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*. This chapter covers broad money in two sections, and dedicates one section to each of monetary base (also called base money or reserve money), liquidity, and credit and debt aggregates.

6.2. In general, this *Manual* follows the concepts and principles of the *2008 SNA* with respect to the sectoring of institutional units (as discussed in Chapter 3) and the classification of financial assets (as discussed in Chapter 4) which underlie and support the definitions and compilation of the aggregates covered in this chapter. The *2008 SNA* does not provide a specific concept or measure of broad money, although it contains several references to broad money and monetary (money) aggregates. This *Manual* provides a definition of broad money that was absent in the *MFSM 2000*.

6.3. In describing the money aggregates covered in this chapter, the *Manual* classifies financial instruments on the liabilities side of the sectoral balance sheets into included in or excluded from broad money, and groups 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 instruments¹ 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.

6.4. 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, and credit is determined in accordance with the structure and other features of the financial system in the economy and against the benchmarks 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 sectored as depository corporations (DCs)² and constitute the money issuing sector (subsector).

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

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 other financial instruments that are contingent and are not financial claims, as described in Chapter 4.

² See Chapter 3, paragraph 3.116.

A. Basic Functions of Money

6.6. Money is recognized as having four basic functions, serving as a:

- medium of exchange—the means for settling a liability, acquiring goods, services and financial or non financial assets without resorting to barter;
- store of value or purchasing power—a means of holding wealth;
- unit of account—a standard for denominating the prices of goods and services and the values of financial and nonfinancial assets, thereby providing a means for comparisons of values and for preparation of financial accounts; and
- standard of deferred payment—a means of relating current and future values in financial contracts.

B. Rationale for Compiling a Money Aggregate

6.7. Money plays an important role in an economy and is a key 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 and level of inflation, given an assumption on the velocity of money. Monetary growth can also impact on asset prices in an economy. Money aggregates measure the money available to money-holding sectors in the economy for making purchases of goods, services, nonfinancial assets and financial assets, and are closely monitored by the central bank when determining decisions that affect the short-term policy interest rate and/or the level of the monetary base.

6.8. 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 every year for the desirable level of change in a money aggregate based on the expected changes in GDP and the desired price level. For economies applying other types of monetary policy frameworks (such as inflation targeting and 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

6.9. Money, which takes the form of various types of financial instruments, is held for its usability as a medium of exchange and a store of value. In defining broad money, therefore, the focus is on these two characteristics of money.

6.10. *Broad money is the sum of all financial instruments held by money-holding sectors (see paragraph 6.74) that are (1) medium of exchange widely used in an economy, or (2) close substitutes for the medium of exchange that are reliable store of value.* The latter includes

financial instruments that can be converted into the medium of exchange at short notice without incurring a significant loss on the amount initially invested by the current holder. Financial instruments included in broad money must be both liquid and a reliable store of value, and, with a few possible exceptions, be issued by the money-issuing sector (DCs). Financial instruments issued by other sectors, that are medium of exchange widely used in an economy or are close substitutes for the medium of exchange, can be included in broad money.

6.11. Financial instruments that are widely used as a medium of exchange include currency (coins and banknotes) as well as transferable deposits with DCs. Close substitutes for the medium of exchange include financial instruments which are liquid and are a reliable store of value such as savings and term deposits, short-term debt securities, and non-transferable shares/units in money market funds (MMFs).

6.12. In an economy, media of exchange are normally 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 widely, or even officially, accepted as legal tender. 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.

6.13. An important consideration is the maturity of the financial instrument to be included in broad money. Typically one to two years at issuance is the maturity limit, although this *Manual* does not provide a strict limit. In some instances, maturity at issuance of possibly up to five years can arise for time deposits and debt securities. Maturity at issuance rather than remaining maturity is usually considered because the former better reflects the intention of money holders (in the case of deposits) and the reliability as a store of value (in the case of debt securities).³

6.14. 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

6.15. Broad money encompasses financial instruments that are media of exchange or close substitutes to media of exchange, all being liquid and a reliable store of value. The combination of these characteristics is described as the degree of *moneyiness*. In judging moneyiness, account is taken of the extent to which each type of financial asset provides *liquidity* and is a *store of value*.

6.16. Liquidity is an important characteristic of financial assets included in broad money. *A financial asset is liquid if, at short notice and minimum cost, it can be bought, sold, or*

³ Long term debt securities are much less reliable as a store of value, even if traded in secondary markets, because of their fluctuations in value when interest rates change.

redeemed at, or close to, full value. This means that to be liquid, a financial asset must be exchangeable against a medium of exchange with minimum cost and time, and without unduly affecting the value of the asset. The liquidity of a financial asset subsumes other more specific characteristics such as negotiability, transferability, marketability, or convertibility, as well as divisibility.

6.17. The most liquid financial assets 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 goods, services, and financial (other than currency and transferable deposits) or nonfinancial assets. Financial assets other than currency and transferable deposits should possess significant moneyness to be included in broad money.

6.18. 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 reliable store of value depends on its capacity to increase in nominal value or to maintain its real value over time. Financial assets that earn interest and dividends are held because of this capacity.

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 and some types of debt securities can be converted into currency or transferable deposits without incurring explicit costs in the form of fees or other charges or the implicit costs arising from delays in the conversion 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 6.13. 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 aggregates.
- (d) Yield. In general, the components added to form the progressively higher-ordered aggregates have higher yields than the interest-earning components of the lower-ordered aggregates.

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

Box 6.1. Broad Money and Its Holders and Issuers: Sectors and Liabilities¹

Broad money holders

Other financial corporations
 State and local government
 Nonfinancial corporations
 Households and nonprofit institutions serving households

Broad money neutral

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)
 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
 Commercial paper
 Other⁷

¹ Domestic currency, transferable deposits, and other deposits shown under "issued by resident depository corporations" are included in broad money in most economies. Money market funds shares and debt securities (or specific subcategories therein) issued by resident depository corporations are included in broad money in a smaller number of economies. The currency, deposit, and debt securities categories shown under "issued by sectors other than resident depository corporations" are applicable to the broad money definitions in an even smaller number of economies.

² May include deposits denominated in foreign currency.

³ May include some or all transferable deposits denominated in foreign currency. 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.

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.

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 and mobile money issued by units other than depository corporations.

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

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 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, even though real values change with movements in the price level.
- (c) Transferability. Currency and transferable deposits can be used to make direct third-party payments.
- (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 as defined in Chapter 4 (paragraph 4.21) issued by resident units that are used as a medium of exchange in an economy. The following concepts describe the creation and use of currency:

- (a) Issuance of currency. The incurrence of a liability for currency that is placed in circulation in the economy. The *currency issuer* is the institutional unit that records the currency as a liability in its balance sheet.
- (b) Placement of currency in circulation. Distribution (sale) of currency to holders outside the central bank (and any other issuing unit), including FCs, other sectors, and nonresidents.

- (c) **Currency in circulation.**⁴ *The amount of currency outside the central bank (and any other issuing unit) held by 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 ODCs.⁵ In the majority of economies, *issuance of currency* 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 vault currency (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,⁶ accompanied by the appropriate accounting entries.⁷ The currency becomes *currency outside DCs* when ODCs' customers in the money-holding sectors exchange deposits for currency.⁸

6.25. **Commemorative coins** are most often sold at prices well above the nominal (face) value. However, such coins can be produced in less expensive form as well and sold at or near the face value. These coins do not qualify as legal tender unless the central bank has a liability to redeem the commemorative coins. If the latter, the nominal (face) value should be included in the currency in circulation.⁹ Otherwise, the central bank should classify the sale of the coins as a transaction in nonfinancial assets.¹⁰

6.26. Difficulties arise in estimating the currency in circulation of the common currency in the individual member countries of a currency union. Currency issued in a currency union circulates as legal tender throughout the union, making it difficult to estimate the amount of the currency that is in use in each member country. (See Annex 6.1.)

6.27. **Transferable deposits** held by sectors that are designated as money holders are included in broad money. Foreign-currency-denominated transferable deposits held at domestic DCs that

⁴ *Currency in circulation* is the currency issued by the central bank and is reported in the liability section of the *Central Bank Survey (CBS)* (see Table 1S in Appendix II).

⁵ *Currency outside DCs* is reported as a liability account in the *Depository Corporations Survey (DCS)*.

⁶ Central bank sometimes issues relatively small amounts in direct transactions with institutional units in the money-holding sectors.

⁷ 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*.

⁸ 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.

⁹ The amount of currency being used as a medium of exchange is overstated by the nominal value of any coins and banknotes that have been withdrawn by collectors who value specific banknotes or coins for their age or rarity. The overstatement is considered insignificant and is ignored when compiling broad money.

¹⁰ Having acquired the coins from the mint, the central bank records them at cost in nonfinancial assets in its accounting balance sheet. Suppose the coins are acquired at a cost of 10, and are sold for 100 in exchange for currency banknotes. The central bank would record a reduction in its currency liability of 100 (currency banknotes received), a reduction in nonfinancial assets of 10 (commemorative coins out from inventory at cost), and a revenue of 90 (profit from sale of coins). The coins thereby disappear from the balance sheet of the central bank.

can be directly used to make third-party payments within the domestic economy are also included in broad money. Demand deposits transferable by check, giro order, or similar means constitute in every economy the bulk of transferable deposits.

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 in broad money (until their redemption) within transferable deposits.

6.29. Traveler's checks issued by resident DCs and used predominantly for domestic transactions are deemed to meet the definition of broad money and are included within transferable deposits. If traveler's checks are expected to be used predominantly abroad, they should be excluded from broad money. The currency of issuance, may allow for a more refined classification as regards inclusion in broad money. Traveler's checks issued in domestic currency, depending on national circumstances, can be included in broad money and those issued in foreign currency almost always are excluded from broad money.

6.30. All types of electronic money as defined in Chapter 4 (paragraphs 4.30–4.33), issued by resident DCs, that can be used for direct third-party payments are included in broad money within transferable deposits.¹¹

Other Deposits

6.31. Other deposits, as defined in Chapter 4 (paragraph 4.39), issued by DCs account for the predominant portion of broad money in many economies.

6.32. Non transferable savings deposits and sight deposits are redeemable at full value upon request without penalty and fee, although restrictions may apply for requests for withdrawal at a 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 range between three to six months.

6.34. Early withdrawal of fixed-term deposits, especially of long-term maturity, usually involves penalties, 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 limit in the range of one to two years acceptable (see also paragraph 6.13).

¹¹ The ODCs' transactions with the recipients of the electronic funds are similar to electronic settlements for other types of transferable items.

6.35. Other deposits denominated in foreign currency are viewed as having somewhat lower degree of moneyness, since 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 third-party payments in the domestic economy are included in broad money.

6.36. Overnight and short-term repurchase agreements that are liabilities of the money-issuing sector are included in broad money within other deposits when held by a money-holding sector. All other repurchase agreements are classified as loans (see Chapter 4, paragraphs 4.39j and 4.83–4.87). Repurchase agreements of over two years maturity are excluded; and national practice may be to have a shorter maturity limit.

Deposits excluded from broad money

6.37. Restricted deposits are defined in Chapter 4 (paragraphs 4.43–4.44). 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 protracted periods of over one year are excluded from broad money.

6.38. Import deposits are deposits that importers are required to place in special accounts as a prerequisite to opening import letters of credit. Balances on import deposits 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 organization. Such unavailable deposits should be recorded within *other deposits*, but excluded from broad money. Exclusion of such deposits from transferable deposits avoids their being double counted 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 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 are custodial deposits, escrow accounts, amounts in consignment for judiciary fine and penalty payments, good-faith deposits for participation in a privatization auction or for a placed bid. Such deposits are excluded from broad money for it is impossible 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 Chapter 3, paragraphs 3.133–3.135). A special form of deposit restriction arises when an ODC is unable to meet depositors' withdrawal demands for substantial periods, because the deposit-taking corporation has insufficient funds or because its operations have been suspended. 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 deposit-taking corporation continues to exist, its liabilities to all depositors and other creditors also exist. This *Manual* recommends exclusion of all deposit liabilities of ODCs in liquidation from broad money. 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 restructuring or liquidation, assets and liabilities of nonoperating 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. Nonoperating ODCs are intertwined in creditor/debtor relationships with other ODCs, OFCs, and the central bank. Their reciprocal asset/liability positions are netted out in the consolidation for compiling the ODCS and the DCS. In the absence of direct reporting by nonoperating ODCs, data on their reciprocal asset/liability positions (and transactions, if any) with the central bank and operating FCs can be obtained from the accounts of the central bank and operating FCs.

6.45. Each operating FC would be required to report its positions with nonoperating FCs in a format that would enable the monetary statistics compilers to aggregate the data into memorandum items in the sectoral balance sheets of the central bank, ODCs, and OFCs.¹²

6.46. Reserve deposits that nonoperating FCs hold at the central bank may be restricted or frozen for a period. Excess reserves of these corporations no longer are 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.

6.47. 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 normally 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 not to use these amounts for some long time period. Consequently, long-term saving schemes are not included in broad money.

Money Market Funds' Shares and Debt Securities

6.48. In some economies, MMF shares are close substitutes for transferable deposits because they can be used for direct third-party payments. In other economies, there may be restrictions on

¹² See memorandum items in the illustrative sectoral balance sheets/SRFs in Appendix II.

the transferability features of MMF shares—for example, on the maximum number of checks written per period or on the minimum amount per check—or there may be no transferability features. In all cases, MMF shares are redeemable at a very short notice and are therefore highly liquid and typically a reliable store of value. Thus, all MMF shares held by the money-holding sectors are included in broad money.¹³

6.49. Some types of short-term debt securities (original maturity) issued by DCs that can be converted into currency or transferable deposits at short notice without incurring a significant loss on the amount initially invested, meet the definition of broad money. Such short-term debt securities include negotiable certificates of deposit and commercial paper issued by ODCs, and are included in broad money when traded in efficient secondary markets.¹⁴ Bankers' acceptances are often transacted in inefficient specialized markets or have other limitations imposed on their liquidity, warranting their exclusion from broad money. Such instruments 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. For the original maturity limit, this *Manual* recommends applying the same limit as for fixed-term deposits—that is a limit in the range of one to two years, depending on national circumstances (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 general level of interest rate changes).

Financial Instruments Issued by Sectors Other Than Resident Depository Corporations

Domestic Currency Issued by Central Government

6.50. A central government may issue coins (and/or domestic banknotes) that account for all or only part of the total domestic currency in an economy. If this is the case, the central government most commonly issues the coins and the central bank issues the banknotes.

6.51. 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.¹⁵

6.52. 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, transactions data

¹³ Deposits of MMFs held at ODCs are excluded from broad money (see paragraph 6.64) because MMFs are money issuers.

¹⁴ Efficient secondary markets are competitive markets characterized by easy access for participants at relatively low cost and typically produce frequent price quotations of traded instruments, such as provided by bid-offer spreads.

¹⁵ 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.

are directly available in the central bank's records and these data should be used for monetary statistics purposes, if comprehensive.

6.53. When the central government places some of the currency into circulation through direct transactions with institutional units in the money-holding sectors,¹⁶ the central government should provide monthly data on its total currency placed into circulation to compilers of monetary statistics.¹⁷

Foreign Currency

6.54. Foreign currencies can serve as store of value, not only in the country of issuance, but in other countries. When a foreign currency is widely accepted as a medium of exchange within a country, 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

6.55. ***Public nonfinancial corporations*** (for example, post office, and telecommunication units) in some countries accept transferable or other deposits, mainly from households and, possibly, from other sectors. 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 Chapter 3 (paragraph 3.128), if the financial activity of the public nonfinancial corporation,¹⁸ such as the post office, has a separate set of accounts (assets and liabilities), it is treated as a separate institutional unit included in the ODCs subsector and its liabilities 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 public nonfinancial corporations:

- (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. It maintains a deposit account at a DC (central bank or ODC) into which all funds from the collected deposits are re-deposited. Either 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 sufficiently detailed information is available on such public nonfinancial corporation and its depositors, the inclusion of the deposit liabilities of the nonfinancial

¹⁶ 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.

¹⁷ 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.

¹⁸ 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.

corporation in broad money would help ensure accurate sector attribution of the depositors.

- (b) Funding for central government. The funds deposited with the nonfinancial corporation may be channeled directly to the central government for its use. This *Manual* recommends that these deposits be included in broad money within other deposits. Data may be collected directly from the nonfinancial corporation that operates the system.

6.56. 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 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. A limit in the range of original maturity of one to two years is applied, depending on national circumstances. 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.

6.57. In some countries, national regulations allow nonfinancial corporations to issue traveler's checks and electronic money, including mobile money, (see paragraphs 4.34–38) as an ancillary activity, although most issuers are FCs. Traveler's checks and electronic money issued by nonfinancial corporations that meet the definition of broad money are included in broad money within transferable deposits (issued by sectors other than DCs).¹⁹ If traveler's checks are used predominantly abroad, they should be excluded from broad money (see also paragraph 6.29).

6.58. Some types of (short-term) commercial paper issued by nonfinancial corporations and traded in efficient secondary markets may be converted into the medium of exchange at short notice without incurring a significant loss on the amount initially invested by the current holder, and thus may be considered close substitutes for the medium of exchange. Consequently, such commercial papers of original maturity in the range of one to two years, depending on national circumstances, and held by money-holding sectors can be included in broad money. Data on such commercial papers outstanding may be obtained from exchanges where they are traded or directly from the issuer, if available.

Financial Instruments Excluded from Broad Money

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

6.60. The direct and specific nature of the financial contract between lenders and borrowers makes many types of loans illiquid. As observed above, some securities repurchase agreements

¹⁹ Conceptually, if the payment services become the major activity of a nonfinancial corporation, it should be considered for reclassification as an FC.

are included in broad money, in which case they are classified as *other deposits*. Other repurchase agreements are classified as loans.

6.61. *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. These instruments experience price variability and the sale of such shares involves transaction costs and time delays, resulting in their exclusion from broad money. Shares in MMFs are an exception, as explained in paragraph 6.48.

6.62. *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

6.63. The compilation of money aggregates and counterparts 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

6.64. The framework for monetary statistics classifies all FCs that issue broad money liabilities as DCs and 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. ***Thus, the DCs sector constitutes the money-issuing sector by definition.***

6.65. 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 a framework for such a presentation.

6.66. 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 6.10 must be specified in order to construct the DCS described in Chapter 7.

Money Neutral Sectors

6.67. Nonresidents' deposit holdings are, in principle, 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. Deposits held by migrant workers (see paragraphs 3.83–85 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 (see paragraphs 3.56–3.57) should not be included in broad money of the economy where they work, 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, as discussed in paragraph 3.57.

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 deposit holdings 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 deposits of the 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 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, inflows exceeding current needs for cash may be used to reduce indebtedness, rather than meet expenses. Vice-versa, 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. *These two sectors—central government and nonresidents—that neither are “money issuers” (except special cases) nor “money holders” are called “money neutral” sectors.*

6.73. Domestic currency holdings of the central government and nonresidents, in principle, 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 in one or more other countries.²⁰

²⁰ 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).

Money-Holding Sectors

6.74. *Money holders are all sectors not discussed, that is: (i) nonfinancial corporations; (ii) OFCs; (iii) state and local governments; (iv) households; and (v) non-profit institutions serving households.* Broad money includes all money holdings of these sectors. Thus, broad money represents a particular measurement of the capacity of spending or potential purchasing power of money-holding sectors.

Special Cases

6.75. 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 above:

- (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 nonresident 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 nonfinancial corporations issuing travelers checks or electronic money as an ancillary activity; and
- (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.

6.76. The balances maintained by DCs in currency, in transferable and other deposits, and in other financial assets with other resident DCs that would otherwise meet the definition of money are not included in broad money as intra-DC positions are consolidated out in the DCS, as explained in Chapter 7. The holdings of these assets by DCs do not represent their short term intention of spending but rather are determined by (i) regulations enacted by monetary and regulatory authorities, and (ii) the need for maintaining working balances in liquid financial assets to be able to satisfy possible requests of such assets from their clients. Hence, DCs are money issuers (see above), but not money holders.

6.77. A few types of OFCs are mainly engaged in providing intermediation services to banks, effectively creating transactions similar to inter-bank business. Central clearing counterparties (CCPs) are one example. CCPs are classified as OFCs and, consequently, are likely to hold money at deposit-taking corporations. The deposit balances of CCPs 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 at resident deposit-taking corporations 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

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

- (a) broad money issued by DCs only; and
- (b) broad money issued by DCs and other sectors.

6.79. Further, although this *Manual* recommends compilers to focus on the broad money aggregate,²¹ it recognizes that economies may define a range of money aggregates that are usually named in a sequence as follows: M1, M2, M3, etc., with each broader aggregate subsuming the previous one.

6.80. Whereas for almost all countries, M1 is the narrowest money aggregate and includes usually all media of exchange (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 higher-ranked M aggregate usually corresponds to broad money for each 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 assets (including maturity and domestic/foreign currency), money issuers, and money holders.

²¹ Compilers sometimes still use the term “quasi-money” because of the focus on “narrow money” in the past. Under this approach, “narrow money” corresponded to the media of exchange only which was then considered “money.” Consequently, “quasi-money” included all financial instruments that were not media of exchange, but were substitutes to them. This *Manual* recommends not using the term “quasi-money”, but rather focusing on broad money because it covers all financial instruments that constitute money, including those formerly included in “quasi-money.”

Box 6.2. Standard Components and National Aggregates of Broad Money (as at, June 2014)

Economy/ Aggregate	Money issuers	Money Holders	Financial Assets
Standard broad money in the <i>IFS</i> (<i>DCS</i>)	Central bank, ODCs and MMFs	OFCs; state and local government; public nonfinancial corporations; other nonfinancial corporations; and other resident sectors (households and NPISHs).	Currency in circulation outside depository corporations; transferable and other deposits of the money-holding sectors at depository corporations; MMF shares/units held by money holders; debt securities issued by ODCs and held by money holders.
U.S.- M2	All depository institutions: Federal Reserve System, commercial banks, savings institutions, credit unions, and MMFs.	All US residents except money issuers and federal government. Non-residents' holdings are excluded, [including currency holdings.]	In national currency only. Currency outside the U.S. Treasury, Federal Reserve Banks and ODCs; travelers' checks of non-bank issuers; demand deposits, savings deposits, and time deposits (under \$100,000) <i>less</i> individual retirement accounts (IRA) and Keogh Retirement Plans balances at ODCs; and retail MMF shares, <i>less</i> IRA and Keogh Retirement Plans balances at MMFs. Repos and debt securities are excluded. There is no maturity cut-off.
UK - M4; M4 ^{ex}	Banking institutions	UK private sector residents and 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 UK; 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. Non-residents' holdings are excluded.
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 Coops, and	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	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.

	Prefectural Credit Federations of Fishery Cooperatives.	from money holders. Non-residents are also excluded from money holders.	
Euro area - M3 ²²	Monetary financial institutions (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, 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 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.
Korea - M2	Depository corporations: 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 NPISH, 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, certificate 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. ²³ The depository corporations include: central bank and other depository corporations (ODC). ODC include: commercial banks; multiple banks; Federal Savings Bank; credit cooperatives; investment and development banks; credit, finance and	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); until October, 2006, central bank securities were also included in M4.

²² Some members of the European Union which are not members of the euro area comply with the concepts and definitions of the ECB.

²³ The central government is a money issuer only in the M4 concept.

	investment companies; savings and loan institutions; mortgage companies; real estate credit companies; state savings banks (which existed until November, 1998) and money market financial investment funds. Exclude exchange banks and financial institutions in liquidation.		
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 less 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 an 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 non-residents. Also public sector for M4A.	In national and foreign currency. M4: Banknotes and coins outside the depository corporations; deposits in checking and current accounts which can be withdrawn through debit cards; demand and time deposits in national and foreign currency of the private sector; securities of the public sector held by residents; other instruments held by pension funds; demand and time deposits of nonresidents; securities of the public sector held by nonresidents; and deposits of residents and nonresidents in branches abroad of domestic ODCs. <i>M4A</i> : M4, 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.
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	South African Reserve Bank and other depository corporations	Households, local governments, public and private nonfinancial corporations and other financial corporations.	Banknotes and coins in circulation outside the depository corporations; 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.

B. Broad Money Counterparts or Sources

6.81. 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 above in this chapter, broad money is compiled using data from the sectoral balance sheets of the central bank and ODCs.

6.82. 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.

6.83. 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 non-money holder 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 as well as their liabilities to money holders that are not included in broad money. Broad money counterparts provide information on the underlying sources of broad money growth such as credit growth to resident units other than DCs.

6.84. 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 (stock positions) while the term broad money "sources" refers to the factors affecting the expansion and contraction of money (flows).

6.85. Table 6.1 presents a summary DCS, highlighting broad money and its counterparts or sources. In the table, sub-components of counterparts carrying minus sign originate from the liabilities side of the sectoral balance sheets.

Table 6.1. Depository Corporations Survey: Broad Money and Counterparts	
Counterparts	Broad Money
Net foreign assets/Net claims on non residents	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 ²⁴	Debt securities included in broad money
Other items net	MMF shares included in broad money
– Deposits of money-holding sectors excluded from broad money	
– Debt securities issued by DCs excluded from broad money	
– Equity of DCs	
+/- Other (nonfinancial assets, interbank positions net, etc.)	
Total Counterparts	Total Broad Money Liabilities

6.86. 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. For example, the large proportion of nonfinancial assets and indebtedness to residents other than broad money liabilities (exceeding by far their claims on residents) in their balance sheets will result in the significant reduction of financial counterparts to broad money.

6.87. Consequently, this *Manual* recommends compiling counterparts of broad money within the perimeter 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

²⁴ “Other resident sectors” include all resident sectors that are money holders, namely OFCs, nonfinancial corporations, government units other than central government, households and NPISH.

deposits with the postal system and any other nonfinancial corporation is recorded under *Claims on nonfinancial corporations*; or

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

6.88. 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.

6.89. 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).

Table 6.2. Extended Broad Money (with components issued by non FCs) and Counterparts	
Counterparts	Broad Money
Net foreign assets 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 Net claims on central government including a contra-entry for coins issued by the treasury Claims on other resident sectors including a contra-entry for demand and savings deposits of money-holding sectors with the postal system ¹	Transferable deposits included in broad money including demand deposits of money-holding sectors with the postal system. Other deposits included in broad money including savings deposits of money-holding sectors with the postal system.
Other items net – Deposits excluded from broad money – Debt securities excluded from broad money – Equity of DCs +/- Other (nonfinancial assets, interbank positions net, etc.)	Debt securities included in broad money MMF shares included in broad money
Total Counterparts	Total Broad Money Liabilities

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.”

6.90. 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 nonfinancial corporations (with a contra-entry in *Claims on other resident sectors*).

IV. MONETARY BASE

6.91. The monetary base²⁵ 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 money through the money multiplier. The money multiplier indicates the maximum amount of additional broad money that deposit-taking corporations can create by a unit of central bank money.²⁶ The issuance (or creation) of additional broad money by deposit-taking corporations is mainly achieved through the direct extension of loans to money-holding sectors, but can also be achieved through the purchase of assets not included in broad money.

6.92. 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.

6.93. 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 nonresidents are not monetary base-holders (i.e., central bank liabilities to these sectors are excluded from the monetary base, with the exception of their holdings of domestic currency, because of a lack of reliable source data (see also paragraphs 6.73 and 6.75c)).

6.94. ***The monetary base is defined as currency in circulation outside the central bank, ODCs' deposit holdings at the central bank, and those deposits of money holding-sectors²⁷ at the central bank that are also included in broad money.*** Compilers may include additional components in the monetary base, depending on the types of liabilities issued by the central bank and the analytical use for which the monetary base is formulated (see Box 6.3 for representative components of monetary base).

²⁵ 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."

²⁶ Arithmetically, the maximum level of the money multiplier is simply the reciprocal of the compulsory reserve requirement ratio set by the central bank on deposits collected by the deposit-taking corporations. If the reserve ratio is r (with $0 < r \leq 1$) uniformly, the money multiplier is $1/r$. For example, if $r = 0.05$ (5 percent), $1/r = 20$ and the maximum amount of additional broad money that deposit-taking corporations can issue is "excess reserves" $\times 20$. The general formula of the multiplier incorporates additional parameters, including the public's preference for currency (currency in circulation).

²⁷ As defined earlier in this chapter, money-holding sectors are OFCs, state and local governments, nonfinancial corporations, and households and nonprofit institutions serving households. In the few cases where households have deposits with the central bank, these are usually deposits of the central bank current and former staff.

<p>Box 6.3. The Monetary Base: Representative Components¹</p> <p>Currency in circulation²</p> <p>Central bank liabilities to ODCs</p> <ul style="list-style-type: none"> Transferable deposits³ Other deposits⁴ Debt securities issued by the central bank⁵ <p>Other central bank liabilities included in broad money</p> <ul style="list-style-type: none"> Transferable deposits Other deposits Debt securities issued by the central bank⁶
<p>¹ Broader or narrower definitions of the monetary base may be used in the national context.</p> <p>² Comprises currency holdings of all subsectors other than the central bank. In particular, the holdings of the central government, all FCs other than the central bank, and nonresidents are usually included along with the holdings of the other sectors. The currency component of the monetary base in the <i>CBS</i>, described in Chapter 7, includes only the domestic currency issued by the central bank.</p> <p>³ Includes reserve requirements (including any excess reserves) that are based on averaging of reserve holdings (see Chapter 4, paragraph 4.50).</p> <p>⁴ Includes reserve requirements (including any excess reserves) that are pre-specified fixed amounts of required reserves (without averaging of reserve holdings). May include repurchase agreements with ODCs.</p> <p>⁵ If holdings of these 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.</p> <p>⁶ Includes only short-term debt securities issued by the central bank and held by the money-holding sectors that are included in broad money.</p>

6.95. Central bank deposits that other deposit-taking corporations 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. Because they are restricted for use for significant periods of time, deposits of nonoperating ODCs should not be included in the monetary base.

6.96. 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 from use 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.

6.97. A special case arises when central banks sell securities to ODCs under repurchase agreements. For the central bank, 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 liabilities to ODCs will depend on the central banks' objective in engaging in the securities repurchase. If the objective is to regulate 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. If the objective is to provide an interest-earning alternative to ODCs' non-interest-bearing reserves in the central bank, whether or not they qualify as a reserve asset of the ODCs, they would be included in the monetary base.

6.98. 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 in open market operations with ODCs to regulate liquidity. However, short-term securities held by ODCs are included in the monetary base if they can be used to satisfy reserve requirements. Also included in the monetary base are short-term securities issued by the central bank and held by money-holding sectors that are included in broad money.

6.99. 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 representative 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. (See Box 6.4).

Box 6.4. Standard and National Components of the Monetary Base			
Economy	Components of the monetary base		
Standard monetary base in the <i>IFS</i> (Central Bank Liabilities in the CBS)	1) Currency in circulation	2) Deposits with the central bank: - ODCs' deposits - Money-holding sectors' deposits	3) Debt securities issued by the central bank included in monetary base Note: Excludes central bank liabilities to central government and nonresidents
U.S - 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; and 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.
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.

UK - M0	1) Banknotes and coin in circulation outside the Bank of England	2) Bankers' operational balances with the Bank of England	
China – Base money	1) Currency issued by the 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)
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; international agencies.]
Mexico - Base Money	1) Bills and coins outside the Bank of Mexico	2) Demand deposits of commercial and development banks in the Bank of Mexico	
Russian Federation - Broad Monetary Base	1) Currency issued by the CBR (excluding cash in its vaults)	2) Other depository corporations' required reserves and correspondent accounts in national currency with the CBR	3) CBR bonds held by other depository corporations valued at market price 4) Other funds on operations of other depository corporations with the CBR.
Saudi Arabia - Monetary Base	1) Currency in circulation (banknotes and coins issued by 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	

6.100. The category *Liabilities to ODCs* within the *Monetary base* section of the *CBS* (see Table 7.8) 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.

V. LIQUIDITY

6.101. 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 non-prescriptive framework on how liquidity aggregates are compiled and what financial instruments are included in liquidity aggregates (Box 6.5).

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

6.103. 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 NPISH, are liquidity issuers; all resident sectors are liquidity holders except DCs and central government.

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 non-profit institutions serving households
 Nonresidents (inclusion possibly pertains only to domestic currency holdings)

Broad money liabilities— see Box 6.1*Plus***Liabilities issued by the following: 1/****Depository corporations**

Long-term deposits and saving schemes
 Debt securities
 Commercial paper
 Bankers acceptances
 Long-term debt securities
 Traded shares

Other financial corporations

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

Central government

Long-term deposits accepted by the national treasury, etc. 2/
 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 system 2/
 Commercial paper
 Other debt securities
 Shares

Other nonfinancial corporations

Commercial paper
 Other debt securities

Nonresidents (all sectors, except households and NPISH) 3/

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

Other 4/

¹ National definitions of liquidity aggregates may differ considerably across countries.

² Short-term deposits accepted by these units typically are included in the broad money component of the liquidity aggregate (see paragraph 6.55).

³ Pertains to holdings by resident liquidity holders of the listed instruments issued by nonresidents.

⁴ Liabilities not classified elsewhere, such as repurchase agreements.

6.104. One significant difference between financial instruments included in broad money and the additional instruments included in liquidity aggregates is maturity. Liquidity aggregates include financial instruments with longer original maturities than those in broad money. A longer duration 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.

6.105. 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 nonfinancial corporations; and L4 could further cover shares of nonfinancial corporations, 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.

6.106. 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).²⁸

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> long-term debt securities issued by ODCs 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.

²⁸ See IMF Working Paper, *Exploring the Dynamics of Global Liquidity*, October 2012, and IMF Policy Paper, *Global Liquidity—Credit and Funding Indicators*, July 2013.

VI. CREDIT AND DEBT

A. Introduction

6.107. *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 financial claim, and the debtor incurs a liability to repay.* Credit is viewed from the asset side, and debt from the liability side.

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

6.109. 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

Introduction

6.110. 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 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.

6.111. Credit is a major link in the money transmission process. Credit to nonfinancial sectors finances production, consumption, and capital formation. Credit expansion historically has been accompanied by an expansion of broad money. This relationship can be seen in Tables 6.1 and 6.2 on broad money and its counterparts. 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.

6.112. Credit measures cover financial assets 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. Credit intermediation may occur through different channels.

Financial assets

6.113. Credit measures may cover all or only a subset of financial assets that constitute forms of credit. Narrow 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.

6.114. Broader credit measures encompass most types of financial claims of one unit on another and may include holdings of equity. Acquisition of equity provides financial resources and a claim on the issuer in a manner similar to other credit extensions, but its nature differs substantially from other credit flows from debt instruments. 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.

6.115. 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

6.116. 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.)

6.117. 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 with respect to the manner in which their funding is acquired and the types of noncredit services provided. These other credit suppliers (OFCs) obtain funds by incurring liabilities that are not included in broad money, such as through the issuance of long-term debt securities, borrowing from DCs or issuance of equity.

6.118. 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 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 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 recipient.

6.119. 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 financial corporation incurs a direct liability to the government and acquires a claim on the

final recipient, the credit should be recorded as credit provided by the government to the financial corporation and as credit extended by the financial corporation to the final recipient. When the financial corporation acts only as an agent for the government, credit should be shown as being provided by the government directly to the final recipient.

6.120. Some important types of credit are provided primarily by nonfinancial sectors. Trade credit supplied by nonfinancial corporations 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 nonfinancial corporations provide credit to affiliated companies, and governments may also be suppliers of credit to public financial or nonfinancial corporations and to private corporations operating in specific sectors of the economy targeted by the government.

6.121. 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. Inter-bank 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.

Borrowers

6.122. 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 nonfinancial corporations, credit to the nonfinancial private sector, and credit to the household sector. Data on credit to nonresidents are needed to account for total credit provided, but analysis often focuses on claims on (i.e., credit to) residents, because of 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, not least credit extended between FCs in a direct investment relationship.

Specific Credit Measures

6.123. 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, public nonfinancial corporations, other nonfinancial corporations, and households and NPISH. 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).

6.124. In addition to those set out above, credit measures that can be important for the formulation and implementation 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.

6.125. 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.

Box 6.7. Credit Aggregates: Issuing and Holding Sectors and Financial Assets¹
<p>Borrowers</p> <ul style="list-style-type: none"> Central government State and local government Public nonfinancial corporations Other nonfinancial corporations Households and non-profit institutions serving households Nonresidents
<p>Credit issuers</p> <ul style="list-style-type: none"> Financial corporations Central government State and local government Public nonfinancial corporations Other nonfinancial corporations Nonresidents <p>Financial assets²</p> <ul style="list-style-type: none"> Deposits Debt securities Loans Equity Trade credits
<p>¹ National definitions of credit aggregates may differ considerably across countries.</p> <p>² May also include (1) insurance, pension and standardized guarantee schemes, (2) financial derivatives, and (3) other components of other accounts receivable.</p>

6.126. 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

Introduction

6.127. *In BPM6 (paragraph 5.31), debt instruments are defined as those instruments that require the payment of principal and/or interest at some point(s) in the future.* 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—except for equity and investment fund shares, and financial derivatives and employee stock options (ESOs). These liabilities, known as *debt liabilities*, comprise the following debt instruments: special drawing right (SDR) allocations; currency and deposits (including unallocated gold accounts); debt securities; loans; insurance, pension, and standardized guarantee schemes; 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.²⁹

6.128. 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.

6.129. Debt is an important element of any economy and can have significant impact, both positive and negative, on all resident sectors and on economic growth. On the positive side, borrowing allows funds to be channeled from sectors that are savers to those that need short or longer-term financing, through the FCs sector or directly. 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), nonfinancial corporations 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.

6.130. 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 rollovers) and solvency risks. For these reasons, there is strong analytical interest in debt measures.

6.131. A key element in debt analysis is maturity structure. For maturity analysis, debt data should be disaggregated, 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 or, more

²⁹ If currency issued is covered in a debt aggregate, it is recommended to show it as a separate item, so that users may include or exclude it from the aggregate as they desire.

usefully, remaining maturity basis 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.

6.132. Countries compile a wide range of debt measures, covering specific sectors and subsectors or an 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

6.133. 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 automobiles which are pledged as collateral for loans. Households also incur debt to finance current consumption, education or medical expenses, for obtaining working capital or longer-term funds for proprietorships, and for funding the 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 which affect households’ decisions to borrow.

6.134. Debt of the household sector is often disaggregated into mortgage debt and consumer debt, the latter term referring to many other types of household debt including the following:

- (a) Loans that ODCs and OFCs (e.g., finance companies) provide directly to their clients for general funding (personal loans) or for specific expenses (consumers loans).
- (b) Trade credit with repayment by installments provided by the sellers of goods and services.
- (c) Credit card debt.
- (d) Loans that are provided by insurance corporations and are collateralized by the borrowers’ equity in such entities.
- (e) Financial leases that permit consumers to use and, possibly, eventually acquire durables through such arrangements in lieu of conventional loan contracts.

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

Business Debt

6.136. 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, and by issuing debt securities.

Public Sector Debt

6.137. 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.

6.138. 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 (TTFS)—comprising representatives of certain international organizations, including the IMF—has published the first *Public Sector Debt Statistics: Guide for Compilers and Users (2011)*, which focuses on improving the quality and timeliness of these statistics and promoting a convergence of recording practices. The government's financial balance sheet is an integral part of fiscal risk and sustainability analysis. Financial balance sheet data should cover the general government and include memorandum information on contingent liabilities and arrears, if significant.

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. 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; (3) domestic and foreign currency composition of debt, needed to ascertain the possible balance-sheet effects arising from exchange rate changes; and (4) increasingly, extent to which financial derivatives are used to hedge, or even increase, exposure to risk.

6.142. The TTFS has published the *External Debt Statistics: Guide for Compilers and Users (2013)*, which provides international methodological standards 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.

Annex 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), East 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 central bank shows the amount of union-currency banknotes and coins issued by (or treated *as if* issued by) the central bank, as well as the amount of domestic currency issued earlier by the central bank and not yet removed from circulation.
- (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 that 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 European Monetary Union, 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, 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 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 which 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.

Annex 6.2. Dollarized Economies and Co-Circulation

6.149. Foreign currencies can serve two functions in all countries other than the country of issuance:

- (a) Store of value. Foreign currency banknotes, and to a lesser extent coins, which 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 nonresidents 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.

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. Foreign currency serves additional functions in several countries. In some countries, a foreign currency is the only or principal medium of exchange,³⁰ 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.³¹ 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 FCs.³²

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

³⁰ 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.

³¹ 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.

³² 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 medium of exchange and unit of account. By that definition, most countries would be classified as dollarized.

money aggregates in an economy, but does not affect the classification of financial assets and liabilities in the sectoral balance sheets of FCs.

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 preannounced 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 asset/liability disaggregation by currency of denomination. In the sectoral balance sheets in Appendix II, all domestic positions in dollarization currency are included under 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.³³

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

³³ On reserve assets as *foreign currency assets*, see *BPM6*, paragraph 6.64.

the authorities.³⁴ 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 (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 note and coins, serves as a medium of exchange and the domestic unit of account. Moreover, the domestic currencies (Lesotho loti, Namibia dollar, and Swaziland lilageni) 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.³⁵

³⁴ Co-circulation is distinguished from 'black market' trading, which involves the buying and selling of foreign currency in violation of national laws or regulations that are enforced.

³⁵ Although several countries have shown considerable interest in adjusting their money aggregates for circulation of foreign currency, the implementation of such adjustments has not followed.

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 (CMIR) 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.³⁶

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, the ratio of foreign currency holdings to domestic currency holdings and 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 holdings³⁷ 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 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.

³⁶ 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.

³⁷ The total amount or as a proportion of a broad or narrow money aggregate.

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.³⁸

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³⁸ These and other methods of estimating the amount of co-circulating currency are described in Krueger and Ha (1995).

Annex 6.3. Reserve Requirements

Reserve requirements with averaging of reserve holdings

6.165. 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 in the central bank³⁹ (reserves deposits) that are used to satisfy reserve requirements (see Chapter 4, paragraph 4.50). 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.⁴⁰ 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.⁴¹ 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).

³⁹ 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.

⁴⁰ 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.

⁴¹ 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.

- (g) Reserve requirements. The average amounts of average reservable liabilities during the reserve computation period are multiplied by the required reserve ratios, normally stated as percentages of reservable liabilities. Many countries have differential reserve requirements—required reserve 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.⁴² Reserve requirements normally apply to broad money components.⁴³

6.166. 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 illiquid.

Reserve requirements without averaging of reserve holdings

6.167. 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.

6.168. 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.

⁴² For example, an exemption may apply to ODCs that are being liquidated or reorganized.

⁴³ Exceptions are not precluded. For example, the ECB is authorized to impose reserve requirements against liabilities arising from off-balance-sheet items.

Annex 6.4. Seasonal Adjustment of Economic Time Series

General principles

6.169. 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,⁴⁴ harvest seasons or other production cycles, model-year changeovers, 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.

6.170. 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.⁴⁵

6.171. Seasonal adjustment of money aggregates and, to a lesser extent, 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

6.172. 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 obtained as a linear combination of other seasonally adjusted component series or related aggregates.

6.173. From a cost viewpoint, the level of data disaggregation for which seasonal adjustment is calculated in general increases 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.

6.174. This *Manual* recommends that, if a choice between approaches is necessary, the analyst responsible for the seasonal adjustment concentrate on a thorough application of the direct

⁴⁴ 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 season.

⁴⁵ Seasonal adjustment has also been applied to weekly and daily data, but with limited success.

approach on main aggregates, utilizing as many of the diagnostic tools and other advanced features of the seasonal adjustment software as possible.

6.175. Seasonal adjustment is a non-linear 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 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.

6.176. 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 $A = M1$ (that is, currency plus transferable deposits); $B = M2 \text{ less } M1$; and $C = \text{Broad Money less } M2$. Components A, B, and C each would be directly seasonally adjusted, and then would be summed to obtain the seasonally adjusted series for broad money. On the other hand, a simplified application of the second approach would be the seasonal adjustment of deposits in broad money by institutional sector of the holder. This would involve directly adjusting total deposits and all but one sectoral component, which would be instead calculates as a difference between the total and the directly adjusted components.

6.177. 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, after experimentation with both methods. For a specific time series, several practical criteria have been recommended. These include: (1) "smoothness" of the seasonally adjusted series,⁴⁶ (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 components 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.⁴⁷

6.178. A different approach to seasonal adjustment of aggregates and components is *the multivariate seasonal adjustment*. In this approach, the components of the aggregate and, in some cases, other related economic time series, are adjusted simultaneously. Application of this

⁴⁶ 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 seasonal variability.

⁴⁷ For more information, see European Central Bank (2000b), pp. 9–10. See also, Burnett (2006) and Thorp (2003), pp. 4–8.

approach to seasonal adjustment, though conceptually appealing, has major practical limitations. For the monetary statistics, a major application would involve the simultaneous seasonal adjustment of categories for all assets (loans, securities other than shares, etc.), all broad money components, and all other liabilities (deposits excluded from broad money, loans, etc.) in the *DCS*, while preserving the balance-sheet identity in the seasonal adjustment process.

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 section, 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-ARIMA⁴⁸ 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.⁴⁹

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

6.182. The X-12-ARIMA program—still the most widely applied worldwide—is used by the IMF to seasonally adjust the monthly data for *Money* and *Broad Money* in the *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.⁵⁰ *Money*, *Seasonally Adjusted* refers to the money supply as narrowly defined.

⁴⁸ Bureau of the Census (1999).

⁴⁹ For further details, see Gómez and Maravall (1996).

⁵⁰ The IMF employs the automatic options in the X12-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.

6.183. The modular structure of the X12-ARIMA program is shown in Box 6.8. The RegARIMA model is used to prepare the data input to the X-11 module in which the decomposition of the time series into trend/cycle, seasonal, and irregular components is performed. An important function of the regARIMA modeling is to extend the time series with pre-series estimates (backcasts) and post-series forecasts to improve the estimates of the seasonal adjustments to the earliest and most recent data in order to enable the use of symmetric moving-average processes in a decomposition of the time series at its extremes.

6.184. 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 seasonally 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.⁵¹

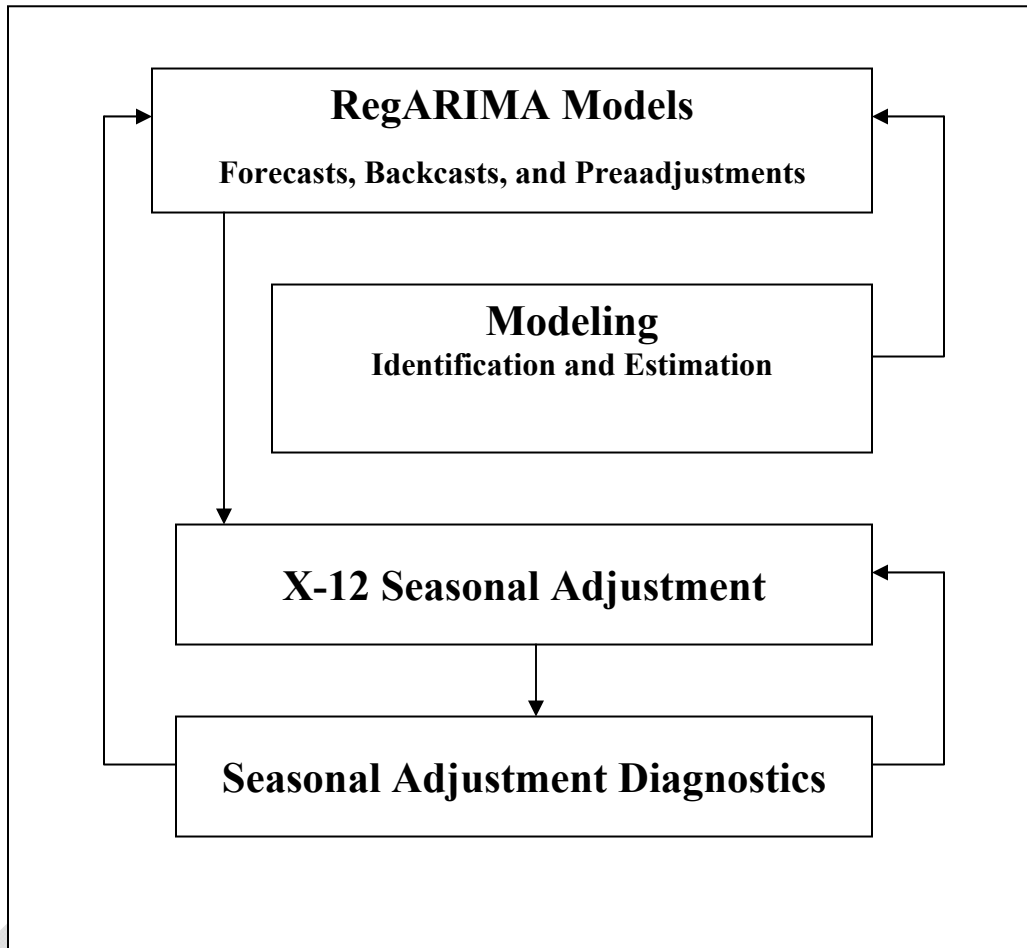
6.185. The post-estimation analysis subsumes the policies and procedures for revision of the seasonally adjusted data. Standard practice is to reestimate the seasonal factors when additional time-series observations become available. Re-estimation and revision of the seasonally adjusted data can be performed on an annual basis or more or less frequently. The data revision policy—an important component of the seasonal adjustment framework—may call for several revisions of the seasonally adjusted time series, leading up to the seasonally adjusted series in final form.

6.186. 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 US Bureau of the Census.⁵² 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.

⁵¹ Residual seasonality sometimes is found in the adjusted data, leading to further empirical work.

⁵² Due to its prevalent use among institutions (including the IMF), this annex discusses the most prominent features of X12-ARIMA.

Box 6.8. Structure of the X12-ARIMA Estimation



Custom application of X-12-ARIMA

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

6.188. 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.⁵³

⁵³*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.

6.189. 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.⁵⁴

6.190. 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.

6.191. 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

6.192. 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 *trading-day and end-of-month effects* (TD_t), *moving-events effects* (ME_t), and *other calendar effects* (OC_t). In the case of flow variables, *trading-day effects* arise from year-to-year variations in the number of work days (trading days) and the weekday composition for a particular month or quarter relative to the standard for a particular month or quarter. In the case of stock variables, *end-of-period calendar 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 expenditure). *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. The *other calendar effects* include leap-year and length-of-quarter effects. All seasonal subcomponents represent systematic, persistent, predictable, and identifiable effects.
- (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*

⁵⁴ On parsimony, see Box-Jenkins (1976), pp. 17–18, 302, 340.

irregular effects (OI_t).⁵⁵ The *irregular effects narrowly defined* are assumed to be a stochastic variable with a mean of 1 for a multiplicative model. From an analytical perspective, the irregular component contains economically significant information on short-term developments.

6.193. 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 a wide variety of economic 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.

Seasonal adjustment revision policy

6.194. 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 applied.⁵⁶

6.195. Determination of the periodicity of the revisions in seasonally adjusted series is left to the authorities. It is recommended that the data revision policy be formalized and the schedule for revised data release be publicized.

⁵⁵ *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.

⁵⁶ Various types of revision analysis have been suggested, including measures of total absolute revision, median absolute revision, mean absolute revision, root mean square revision, mean convergence, and smoothness of convergence. These statistics are described, and other information on revision policy is presented, in Maurin (2003).

Annex 6.5. Debt Securities Issued by Economic Sector

6.196. An FC that has issued debt securities is unlikely to be able to easily identify the holders, and may be unable to disaggregate debt securities liabilities by holding institutional sector, as prescribed by this *Manual*.

6.197. 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 ODCs are the only eligible purchasers, in which case the institutional sector of the holders is given. In an unlikely case FCs—the central bank, ODCs, or OFCs—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 OFCs. 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 provided to the compilers, the debt security liabilities of the ODC subsector (but not those of an individual ODC) can be disaggregated by holding FC subsector.⁵⁷

6.198. 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 nonresident holdings of securities (i.e., equity and debt instruments) are used to obtain data for the balance of payments statistics in many countries.⁵⁸

6.199. 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 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.

6.200. 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

⁵⁷ 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.

⁵⁸ 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 IMF's *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.

available from custodial repositories for securities.⁵⁹ 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 will need to receive regular information from them on holders of debt securities issued by FCs subsectors to be able to disaggregate debt securities liabilities by institutional sector. Otherwise, monetary statistics compilers, in consultation with national accounts compilers, will need to develop a securities ownership survey for obtaining data on the securities holdings of sectors other than the FC sector. For the monetary statistics, the survey would need to cover only other 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.⁶⁰ 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). 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.

⁵⁹ For instance the European Central Bank collects information from custodians resident in the euro area, for compiling its (forthcoming) statistics on securities holdings.

⁶⁰ 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.

Annex 6.6. Divisia Money

6.201. The description of broad money in the previous sections 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 discussed in previous paragraphs, different components of broad money have different degree of *moneyiness* and the broad money aggregate does not fully reflect that money components are not perfect, but only close, substitutes for each other.

6.202. **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 transactions purposes.⁶¹ 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.

6.203. 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 transactions 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).⁶² 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.

6.204. The general formula of the Divisia index is shown in Box 6.9.

⁶¹ The Divisia index was originated by the French economist Francois Divisia (1925). On the development of the Divisia index for money aggregates, see Barnett (1980); Barnett, Offenbacher, and Spindt (1984); Barnett, Fisher, Serletis (1992), Anderson, Jones, and Nesmith (1997), Barnett and Serletis (2000), Bolongia and Binner (2000), Stracca (2001), Barnett and Chauvet (2011), and Barnett (2012).

⁶² Boxes 6.9 and 6.10 show that the weights depend on the user costs of the components, but also on the relative amounts outstanding of the various money components.

Box 6.9. Divisia Money (The general Definition)

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

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

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 ,

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

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

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

6.205. Divisia money formulations originated in the United States, but have become most prominent at the Bank of England (BOE) which has published Divisia money series since 1993. The BOE publishes a Divisia money series for a measurement of broad money, as well as Divisia series for the money holdings of separate money-holding sectors—that is, for the household sector, private nonfinancial corporations sector, and OFCs sector.⁶³

6.206. The BOE equation for Divisia money is shown in Box 6.10.

⁶³ 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 (January 2013).

Box 6.10. 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.