



# 15

## External Debt Analysis: Further Considerations

### Introduction

**15.1** The type of debt burden indicators discussed in the previous chapter focus primarily on overall external debt and external debt service and the potential to meet debt obligations falling due on an economy-wide basis. However, in assessing the vulnerability of the economy to solvency and liquidity risk arising from the external debt position, a more detailed examination of the composition of the external debt position and related activity may be required.

**15.2** As financial markets in many economies have become increasingly integrated with global markets, foreign borrowing has helped finance higher levels of investment than would have been possible with savings by residents alone. But the opening of financial markets has revealed that private financial flows are sensitive to market conditions, perceived policy weaknesses, and negative shocks. Flows of private finance have been volatile, with some economies experiencing financial crises. The financial structure of economies—the composition and size of the liabilities and assets on the economy’s financial balance sheet—has been an important source of vulnerability to crises. Financial weaknesses, such as a high level of short-term debt, can be a trigger for domestic and external investors to reassess their willingness to provide finance to an economy.

**15.3** To support the analysis of the financial structure of economies, the balance sheet approach (BSA) provides a systematic analytical framework for exploring how balance sheet weaknesses contribute to macro financial vulnerabilities, including the origin and propagation of modern-day financial crises.<sup>1</sup> This

approach is built on the use of harmonized classifications and definitions in different types of economic statistics so that data can be aggregated and compared.

**15.4** In this chapter, the relevance of additional data on the composition of external debt, external income, external assets, financial derivatives, contingent liabilities, and on the economy’s creditors is explored, drawing particularly on data series described in Part I of the *Guide*. The discussion in this chapter, however, is not intended to be exhaustive. Data series described and presented in Part I of the *Guide*—notably sector, currency, and maturity breakdown of external debt data—facilitate the examination of potential vulnerabilities of balance sheets of key sectors of an economy.

### Balance Sheet Mismatches

**15.5** To support the analysis of potential risks and vulnerabilities, the framework for assessing balance sheet risks focuses on different types of balance sheet mismatches, all of which help to determine an economy’s ability to service debt in the face of shocks:

- *Maturity mismatches*—Where a gap between liabilities due in the short term and liquid assets leaves an institutional sector unable to honor its contractual commitments if creditors decline to roll over debt. They also expose the sector to the risk that interest rates will rise
- *Currency mismatches*—Where, if unhedged, a change in the exchange rate leads to a holding loss
- *Financial structure problems*—Where a heavy reliance on debt rather than equity financing leaves a firm or bank less able to weather revenue shocks
- *Solvency problems*—Where assets, including the present value of future revenue streams, are

<sup>1</sup>See M. Allen, C. Rosenberg, C. Keller, B. Setser, and N. Roubini, *A Balance Sheet Approach to Financial Crisis*, IMF Working Paper (WP/02/210); J. Mathisen and A. Pellechio, *Using the Balance Sheet Approach in Surveillance: Framework, Data Sources, and Data Availability*, IMF Working Paper (WP/06/100); and *BPM6*, Chapter 14.

insufficient to cover liabilities, including contingent liabilities

- *Dependency problems*—Where financial assets and liabilities by partner economy can help identify overreliance on another economy, and hence potential vulnerability and contagion concerns.

## Composition of External Debt

**15.6** The relevance for debt analysis of the different data series presented in the *Guide* is set out below. The level and the servicing profile of the debt are relevant when assessing vulnerabilities; a fuller discussion of the risks linked to debt structure characteristics—including borrowing sector, maturity, currency composition, and the creditor base—is warranted. In particular, this section focuses on the following issues:

- Who is borrowing?
- What is the composition of debt by functional category?
- What type of instrument is being used to borrow?
- What is the maturity of debt?
- What is the currency composition of the debt?
- Is there industrial concentration of debt?
- What is the profile of debt servicing?
- What is the value of residents' guarantees of external debt?

**15.7** Traditionally in debt analysis, the focus has been on official sector borrowing, not least in the form of loans from banks or official sources. However, the 1990s saw a tremendous expansion in capital market borrowing by the private sector. Since then, global shocks have underscored the increased interconnectiveness in a more globally integrated financial system as well as the interlinkages between the public and private sectors. This has had significant implications for debt analysis, including the need to gather and analyze external debt data by the borrowing sector.

**15.8** Financial difficulties of the government itself carry high risk of generating a broader crisis. If there is a risk that the public sector will cease to discharge its external obligations, this is likely in itself to lead to a sharp curtailment of financial inflows to the economy as a whole, in part because it also casts severe doubt on the government's commitment to an

economic environment that allows private sector debt repayment. Thus, information on public sector total, and short-term, external debt is important. Especially in the absence of capital controls or captive markets, information on short-term domestic debt of the government is important, since capital flight and pressure on international reserves can result from a perceived weak financial position of the public sector. In addition, the government's debt is often a key financial asset held by the domestic banking system; this interlinkage increases the risk that a government financing crisis will snowball into a banking crisis. On the other hand, there are cases in which the resolution of a private sector crisis may warrant intervention by the government in order to avoid spillovers to the broader economy. This is particularly true if the crisis either originates in the financial sector or has a clear risk of spilling over into the financial sector.

**15.9** Also, beyond its own borrowing policies, the government has a special role to play in ensuring that it creates or maintains conditions for sound risk management in other sectors; for instance, avoiding policies that create a bias toward short-term foreign currency borrowing.

**15.10** Most of the financial sector, notably deposit-taking corporations (banks), is by nature highly leveraged, i.e., most assets are financed by debt liabilities. Banks may take on liabilities to nonresidents by taking deposits and short-term interbank loans. These positions can build up quickly and, depending also on the nature of the deposits and depositors, be run down quickly. How well banks intermediate these funds has implications for the ability to withstand large-scale withdrawals. More generally, information on the composition of assets and liabilities is important for banks—notably information on the maturity structure and maturity mismatch (including in foreign currency)—because it provides insight about their vulnerability to such withdrawals and their sensitivity to changing exchange and interest rates.<sup>2</sup>

<sup>2</sup>Banks are subject to moral hazard risk through explicit or implicit deposit insurance and limited liability. The potential moral hazard risk arising from deposit insurance schemes is that by “protecting” from loss an element of their deposit base, banks might be provided with an incentive to hold portfolios incorporating more risk, but potentially higher returns, than they otherwise would. Monitoring the risks taken by banks is a central element of banking supervision, a subject beyond the scope of the *Guide*.

**15.11** This type of information is also important for other financial corporations, i.e., financial corporations other than deposit-taking corporations, also referred as to nonbank financial corporations. New banking standards may encourage certain activities to move to financial units that are part of the other financial corporations subsector, and that may be posing systemic risks within the so-called shadow banking sector, where those standards do not apply or are weakly enforced. Collectively, credit intermediation involving entities or activities undertaken by nonbanks that are outside the regulated sector (whether by maturity or liquidity transformation or leverage) has become known as the shadow banking system.<sup>3</sup> With a wider universe of tradable claims, banks become more connected with other banks and with other financial corporations; increased interconnectedness may also lead to higher systemic risk. The breakdown in credit markets in 2008 revealed how financial intermediation by nonbanks can contribute to systemic risks: the interconnection of banks and nonbanks led to contagion across both sets of entities. Enhanced monitoring of systemic risks posed by other financial corporations has been a work in progress, including improving data collection on the cross-border activities of these institutions, particularly for economies with a relatively large role for other financial corporations in the intermediation process.

**15.12** Balance sheet information of nonfinancial corporations is needed to identify potential financial weaknesses in private firms and how they might be transmitted to the rest of the economy in a crisis.<sup>4</sup> Large-scale defaults by nonfinancial corporations that borrow from abroad, depending on their importance to the economy, could result in financially expensive government intervention, an impact on the credit risk of the financial sector, and an undermining of asset prices in the economy. In any case, the debt-service needs of corporations will affect the economy's liquidity situation. As with deposit-taking corporations, the regulatory regime and incentive structure within which the corporate sector operates is important. For

instance, overborrowing in foreign currency, particularly short-term, in relation to foreign currency assets or hedges (be they natural hedges in the form of foreign currency cash flow or through derivatives products such as forwards), exposes the corporate sector to cash-flow (liquidity) problems in case of large exchange rate movements. Overborrowing in foreign currency in relation to foreign currency assets could potentially expose corporations to solvency problems in the event of a depreciation of the domestic exchange rate. Ensuing corporate failures, in the event of sharp exchange rate depreciation, can reduce external financing flows and depress domestic activity, especially if contract enforcement is poor or the procedures are overwhelmed.

**15.13** Contingent liabilities have gained prominence in the analysis of public finance and the assessment of the financial position of the public sector because they may result in substantial fiscal costs. The provision of guarantees can influence economic behavior. Invariably, the government provides implicit and explicit guarantees, such as deposit insurance, and sometimes also guarantees on private sector external borrowing (classified as publicly guaranteed private sector debt in the *Guide*). Also, domestic corporations may use offshore enterprises to borrow, and provide guarantees to them, or have debt payments guaranteed by domestic banks. Similarly foreign corporations may guarantee part of domestic debt. Countries could potentially have debt liabilities to nonresidents in excess of those recorded as external debt on a residence basis if their residents provide guarantees to nonresidents that might be called. Also, branches of domestic institutions located abroad could create a drain on the domestic economy if they ran into difficulties and their own head offices needed to provide funds. Indeed, the latter circumstances arose for some economies during the global crisis of 2008–2009. Where possible, direct and explicit guarantees should be monitored because they affect risk assessment; the magnitude of these “off-balance-sheet” obligations in financial crises reinforced the need to monitor them. Enhancing the analysis of tail risks—i.e., low-probability events with potentially severe consequences—could complement the focus on more likely risks. The *Guide* encourages the measurement and monitoring of contingent liabilities, especially of guarantees—the value of guarantees of residents' external debt

<sup>3</sup>Shadow banking is a broad term covering a variety of markets, instruments (including repos), and institutions that replicate core features of commercial banks.

<sup>4</sup>Information on bankruptcy resolution regimes is likely to be relevant on how corporate distress might transmit across the economy.

liabilities, by sector of the guarantor, and cross-border guarantees—and outlines some measurement techniques (see Chapter 9 and Table 4.7).

**15.14** The functional classification of financial instruments is a balance of payments concept, grouping instruments into four categories: direct investment, portfolio investment, financial derivatives and ESOs, and other investment.<sup>5</sup> The implications for vulnerability differ among different functional categories and instruments. In the case of direct investment and portfolio investment equity, the return to the creditor depends on the performance of the issuer. In contrast, in the case of debt liabilities, the payment stream due to the creditor is not dependent on the economic circumstances of the debtor, so the economy of the debtor has a greater risk exposure, in that payments are required to be made even if the debtor faces difficult circumstances. Direct investment takes place between an investor in one country and its affiliate in another country and is generally based on a long-term relationship. Recent crises have tended to support the view that this category of investment is less likely to be affected in a crisis than other functional types.<sup>6</sup> Portfolio investment, by definition, includes tradable debt instruments; other investment, by definition, includes all debt instruments other than those recorded in one of the other functional categories. The relevance of financial derivatives instruments for external debt analysis is discussed in paragraphs 15.35–15.41.

**15.15** The type of instrument that a debtor will issue depends on what creditors are willing to purchase as well as the debtor's preferences. Borrowing in the form of loans concentrates debt issuance in the hands of banks, whereas securities are more likely to be owned by a wider range of investors. Trade credit and advances are typically of a short-term maturity. Although equity issues are not regarded as debt instruments, dividends,

once the shares go ex-dividend, are recorded as debt liabilities and included in debt servicing until they are settled,<sup>7</sup> and so it remains necessary to monitor activity in these instruments. At the least, sudden sales of equity by nonresidents or residents can have important ramifications for an economy and its ability to raise and service debt.<sup>8</sup>

**15.16** The currency and maturity structure of the outstanding debt stock is almost as important as the total size of the debt stock. The maturity composition of debt is important because it can have a profound impact on liquidity. Concentration of high levels of short-term external debt is seen to make an economy particularly vulnerable to unexpected downturns in financial fortune.<sup>9</sup> For instance, an economy with high levels of short-term external debt may be vulnerable to a sudden change in investor sentiment. Interbank lines are particularly sensitive to changes in risk perception, and early warning signals of changes in investor sentiment toward the economy might be detected through the monitoring of the refinancing (“rollover”) rate.<sup>10</sup>

**15.17** Debt analysis needs to make a distinction between short-term debt on an original maturity basis, i.e., debt issued with a maturity of one year or less, and on a remaining-maturity basis, i.e., debt obligations that fall due in one year or less. Data on an original maturity basis provide information on the typical terms of debt and the debt structure, and monitoring changes in these terms provides useful information on the preferences of creditors and the sectoral distribution of debtors. Data on a remaining (residual) maturity basis provide the analyst and policymaker with information on the repayment obligations (i.e., the liquidity structure). Particularly important is information on payments coming due in the near term; information on external debt on a short-term remaining maturity basis helps in the

<sup>5</sup>Reserve assets is a further functional category in the balance of payments, but it is not relevant to the following discussion because it consists entirely of assets.

<sup>6</sup>However, direct investment enterprises may place additional pressure on the exchange rate in a crisis situation through the hedging of domestic currency assets. Affiliates of foreign-owned deposit-takers may need to remit funds to their parents or other foreign affiliates in certain circumstances, while foreign investors can repatriate rather than reinvest profits, thereby effectively increasing the domestically (debt) funded part of their investments.

<sup>7</sup>The ex-dividend date is the date the dividends are excluded from the market price of shares (see paragraph 2.27).

<sup>8</sup>In analyzing the securities transactions, both debt and equity, changes in prices (rather than in quantities) may equilibrate the market.

<sup>9</sup>The compilation of average maturity data might disguise important differences in the sectoral composition of debt and in the dispersion of maturities. However, data on average maturity by sector and by debt instrument might alert policymakers and market participants to maturity structures that are potentially problematic.

<sup>10</sup>This type of monitoring is discussed in more detail in Box 7.1.

assessment of liquidity risk by indicating that part of the gross external debt position that is expected to fall due in the coming year. For the policymaker, to ensure sufficient liquidity, such as indicated by an appropriate ratio of international reserves to short-term debt, requires avoiding a bunching of debt payments.

**15.18** The method of valuing financial assets and liabilities might depend on the focus of the analysis. The *Guide* recommends that debt instruments are valued at the reference date at nominal value, and for debt securities, at market value as well. The debtor will be interested in the nominal value of its debt because at any moment in time it is the amount that the debtor owes to the creditor at that moment, e.g., applying nominal values might help identify maximum exposure which can be used to assess liquidity risk. Also, the debtor is well advised to monitor the market value of its debt. The market value and the spreads over interest rates on “risk-free” instruments provide an indication to the borrower of the market view on its ability to meet debt obligations as well as current market sentiment toward it.<sup>11</sup> This is important information because it might influence future borrowing plans: whether it is advantageous to borrow again while terms seem good, or whether there are early warning signs of possible increased costs of borrowing, or even refinancing difficulties. However, for those countries with debt that has a very low valuation or is traded in markets with low liquidity (or both), a sudden swing in sentiment might cause a very sharp change in the market value of external debt, which might also be reversed suddenly. Because it would be unaffected by such swings, information on the nominal value of external debt would be of particular analytical value in such circumstances.

**15.19** The currency composition of external debt is also important. Experience suggests that information on the currency composition of the gross external debt position is necessary for monitoring an economy’s potential vulnerability to exchange rate risks. There is a significant difference between having external debt denominated in domestic currency

and having external debt denominated in foreign currency.<sup>12</sup> In the event of a sudden depreciation of the domestic currency, foreign currency external debt (including foreign-currency-linked debt) has potentially important wealth and cash-flow effects for the economy. For instance, when public debt is denominated in foreign currency, a devaluation of the domestic currency could aggravate the financial position of the public sector, so creating an incentive for the government to avoid a necessary exchange rate adjustment. Information on the currency composition of debt at the sectoral level, including resident and nonresident claims in foreign currency, is particularly important because the wealth effects also depend on foreign currency relations between residents. Private actors should hedge against currency risk; but there are risks when the government or deposit-takers are the primary source of the private sector’s hedge: if there is a significant underlying mismatch and it is passed to the government or deposit-takers, sudden changes in currency rates could expose vulnerabilities.

**15.20** But any analysis of the foreign currency composition of external debt needs to take account of the size and composition of foreign currency assets, and income, together with foreign-currency-linked financial derivatives positions. The latter instruments can be used to change the exposure from foreign to domestic currency or to a different foreign currency.

**15.21** The interest rate composition of external debt, both short- and long-term, may also have significant implications. For instance, economies with high amounts of variable-rate debt are vulnerable to a sharp increase in interest rates. Sharp increases in short-term interest rates, such as those experienced in the early 1980s, can have profound implications for the real cost of debt, especially if a significant share of debt pays interest that is linked to a floating rate such as LIBOR. As with the foreign currency position, it is necessary to take account of financial derivatives positions, since these may significantly change the effective interest composition of debt. For instance, interest-rate-based financial derivatives can be used

<sup>11</sup>Increasingly, information from credit derivatives, such as default swaps and spread options, also provides market information on an entity’s credit standing.

<sup>12</sup>The currency of denomination is the currency in which cash flows are determined. For settlements purposes, a different currency may be used—which means that a currency conversion is involved when settlement occurs.

to swap variable-rate obligations into fixed-rate liabilities, and vice versa. For instance, if all external debt were variable-rate linked but debtors had entered into derivatives contracts with nonresidents to swap all their interest payments into fixed-rate-related payments, then the apparent exposure of the economy to variable-rate interest rates would be actually converted into a fixed-rate exposure. The relevance of financial derivatives in analyzing external debt is considered in more detail in paragraphs 15.35–15.41.

**15.22** The industrial concentration of debt should also be monitored. If debt is concentrated in a particular industry or industries, economic shocks such as a downturn in worldwide demand for certain products could increase the risk of a disruption in debt-service payments by that economy.<sup>13</sup>

**15.23** To monitor debt service, the amounts to be paid are important, rather than the market value of the debt. Debt servicing involves both the ongoing meeting of obligations—i.e., payments of interest and principal—and the final payment of principal at maturity. However, it is most unlikely that the debt-service schedule will be known with certainty at any given time. Estimates of the amounts to be paid can vary over time because of variable interest and foreign currency rates, and the repayment dates for debt containing embedded put (right to sell) or call (right to buy) options that can be triggered under certain conditions can add further uncertainty. So, in presenting data on the debt-service payment schedule, it is important that the assumptions used to estimate future payments on external debt liabilities be presented in a transparent manner along with the data.

**15.24** Detailed information on arrears is useful for various kinds of policy analyses and solvency assessments and should be made available where significant. One indication of an economy that is beginning to have difficulty servicing its external debt is when the level of arrears is on a rising trend both in relation to the external debt position and to the amount of debt service falling due. In such circumstances, detailed

<sup>13</sup>While the *Guide* does not explicitly include guidance for the measurement of the industrial composition of external debt, these data can be compiled using the concepts set out in the *Guide* together with the International Standard Industrial Classification of All Economic Activities (2008 SNA, paragraphs 2.39 and 14.32, and pp. 545 and 614).

data by institutional sector and by type of instrument might help to identify the sources of the difficulty.

## The Role of Income

**15.25** In analyzing debt, the future trend of income is clearly relevant because it affects the ability of the debtor to service debt. Debt burden indicators focus on the typical measures of repayment capacity. Traditionally, the focus has been on earnings from exports of goods and services.<sup>14</sup> To what extent is debt, or are debt-service payments, “covered” by earnings from the export of goods and services? Diversification of products and markets is positive because it limits exposure to shocks, in turn limiting the possibility that the private sector as a whole will get into difficulties, and that the public sector will lose revenues, thus affecting the willingness to pay. The currency composition of export earnings may also be of relevance.<sup>15</sup>

**15.26** While the willingness to pay is an important factor in determining whether debt-service payments are made, the use of external borrowing will affect the future income from which those payments are made.<sup>16</sup> If debt is used to fund unproductive activity, future income is more likely to fall short of that required to service the debt. The question to address is not so much the specific use of the borrowed capital but rather the efficiency of total investment in the economy, considered in the context of indicators for the economy as a whole, such as the growth rates of output and exports, and total factor productivity—all data series potentially derivable from national

<sup>14</sup>For some economies, remittances—which constitute a source of income and foreign exchange for a country along with its exports of goods and services—can also affect the probability of debt distress by enhancing a country’s capacity to repay its external debt. The inclusion of remittances in the denominator lowers the debt burden indicators, particularly for countries receiving large remittances.

<sup>15</sup>For remittances, the geographical distribution of counterparts may also be of relevance, as GDP growth perspectives in both the sending and receiving economies may affect remittance flows.

<sup>16</sup>Dragoslav Avramovic and others (1964, p. 67) noted that while the debt-service ratio “does serve as a convenient yardstick for passing short-term creditworthiness judgments, i.e., judgments of the risk that default may be provoked by liquidity crises,” in fact, “the only important factor, from the long-run point of view, is the rate of growth of production.” Indeed, “it is only in the interest of the borrowers as well as of the lenders that output and savings be maximized, since they are the only real source from which debt service is paid.”

accounts data. From another perspective, if an economy is unwilling to service its debts, and defaults, production losses might ensue as the economy ceases to be integrated with international capital markets.

## The Role of Assets

**15.27** As indicated above, the external debt position needs to be considered in the context of the financial structure of economies—the composition and size of the liabilities and assets on the economy’s financial balance sheet. As an economy increasingly integrates with the rest of the world, so analysis of the external liability position, and gross external debt position in particular, needs to take into account positions in external assets. External assets may help meet debt-servicing requirements—assets generate income and can be sold to meet liquidity demands. On the other hand, there is difficulty in ascertaining the extent to which assets might be usable to meet outstanding debt liabilities. In the IIP, the difference between external assets and external liabilities is the net asset (or liability) position of an economy.

**15.28** For all economies, international reserve assets are, by definition, those external assets that are readily available to and controlled by monetary authorities for meeting balance of payments financing needs, for intervention in exchange markets to affect the currency exchange rate, and for other related purposes (such as maintaining confidence in the currency and the economy, and serving as a basis for foreign borrowing).<sup>17</sup> Because of this role, in March 1999, the IMF’s Executive Board, drawing on the work of the IMF and the Committee on Global Financial Systems of the G-10 central banks, strengthened the Special Data Dissemination Standard requirements for the dissemination of data on international reserves and foreign currency liquidity. A data template on international reserves and foreign currency liquidity was introduced that provides a considerably greater degree of transparency in international reserves data than was hitherto available.<sup>18</sup>

<sup>17</sup>See *BPM6*, paragraph 6.64.

<sup>18</sup>The Reserves Data Template aims to provide a comprehensive account of countries’ official foreign currency assets and drains on such resources arising from various foreign currency liabilities and commitments of the authorities. See *International Reserves and Foreign Currency Liquidity: Guidelines for a Data Template* (IMF, 2012).

**15.29** As private entities in an economy become increasingly active in international markets, they are likely to acquire external assets as well as liabilities. The diverse nature of private sector external assets suggests that they are of a different nature than reserve assets. For instance, private sector external assets may not be distributed among sectors and individual enterprises in such a way that they can be used to absorb private sector liquidity needs. But the presence of such assets needs to be taken into account in individual country analysis of the external debt position. One approach is to present the net external debt position for each institutional sector, thus comparing the institutional attribution and concentration of external assets in the form of debt instruments with external debt (see Chapter 7).

**15.30** But in comparing assets with debt, it is necessary to also consider the liquidity and quality of assets, their riskiness, and the functional and instrument composition of assets.

**15.31** Most important, assets should be capable of generating income or be liquid so that they could be sold if need be, or both. The functional composition of assets provides important information in this regard. For instance, direct investment assets may generate income but are often less liquid, especially if they take the form of fully owned nontraded investments in companies or subsidiaries. Typically, direct investment assets are either illiquid in the short term (such as plant and equipment) or, if they are potentially marketable, the direct investor needs to take into account the implications on direct investment enterprises of withdrawing assets. The latter will be a countervailing factor to any selling pressures. Nonetheless, some direct investment assets may be closer to portfolio investments and relatively tradable—such as nonmajority shares in companies in countries with deep equity markets.

**15.32** Portfolio investment is by definition tradable. Investments—such as loans and trade credit and advances—while generating income can be less liquid than portfolio investment, but the maturity of these investments may be important because the value of short-term assets can be realized early. Increasingly, loans can be packaged into a single debt instrument and traded. Trade credit and advances may be difficult to withdraw without harming export

earnings, a very important source of income during situations of external stress.

**15.33** In assessing assets in the context of debt analysis, the quality of assets is a key factor. In principle, the quality of the assets is reflected in the price of the assets. Some knowledge of the issuer and the country of residence may provide a further idea of the quality of the asset and its availability in times of a crisis; availability is often correlated with location or type of country. Knowledge of the geographic spread of assets can help one to understand the vulnerability of the domestic economy to financial difficulties in other economies.

**15.34** The currency composition of assets, together with that of debt instruments, provides an idea of the impact on the economy of changes in the various exchange rates; notably, it provides information on the wealth effect of cross exchange rate movements (such as changes in the dollar-yen exchange rate for euro-area countries). *BPM6* provides, as part of the standard presentation of the IIP, a table for presenting the currency composition of outstanding debt claims and liabilities using the currency of denomination.<sup>19</sup> The BIS International Banking Statistics, and the IMF's Coordinated Portfolio Investment Survey (see Chapter 13) and Coordinated Direct Investment Survey (see Chapter 12), at the least, encourage the collection of data on the country of residence of the nonresident debtor, and the first two also encourage the collection of data on the currency composition of assets.

### Relevance of Financial Derivatives and Repurchase Agreements (Repos)

**15.35** The growth in financial derivatives markets has implications for debt management and analysis. They are used for a number of purposes including risk management, hedging, arbitrage between markets, and speculation.

**15.36** From the viewpoint of managing the risks arising from debt instruments, derivatives can be both cheaper and more efficient than other tools. This is because they can be used to directly trade away the specific risk to be managed. For instance, a foreign

currency borrowing can be hedged through a foreign-currency-linked derivative and so eliminate part or all of the foreign currency risk. Through the use of financial derivatives, the economy could become more, or less, exposed to exchange rate risk than is evidenced in the gross foreign currency external debt data; in this context, the notional value data—by providing a broad indication of the potential transfer of price risk underlying the financial derivatives contract—are analytically useful. Thus, aggregate information on the notional position in foreign currency derivatives is important in determining the wealth and cash-flow effects of changing exchange rates. Similarly, the cash-flow uncertainties involved in borrowing in variable interest rates can be reduced by swapping into “fixed-rate” payments with an interest rate swap.<sup>20</sup> In both instances the derivatives contract will involve the borrower in additional counterparty credit risk, but it facilitates good risk-management practices.

**15.37** Derivatives are also used as speculative and arbitrage instruments.<sup>21</sup> They are a tool for undertaking leveraged transactions, in that for relatively little capital advanced up front, significant exposures to risk can be achieved, and differences in the implicit price of risk across instruments issued by the same issuer, or very similar issuers, can be arbitrated.<sup>22</sup> However, if used inappropriately, financial derivatives can cause significant losses and so enhance the vulnerability of an economy. Derivatives can also be used to circumvent regulations, and so place unexpected pressure on markets. For instance, a ban on holding securities can be circumvented by foreign institutions through a total-return swap.<sup>23</sup>

<sup>19</sup>See *BPM6*, Appendix 9, Table A9-I.

<sup>20</sup>The risk might not be completely eliminated if at the reset of the floating rate the credit risk premium of the borrower changes. The interest rate swap will eliminate the risk of changes in the market rate of interest.

<sup>21</sup>Speculation and arbitrage activity can help add liquidity to markets and facilitate hedging. Also, when used for arbitrage purposes, derivatives may reduce any inefficient pricing differentials between markets and/or instruments.

<sup>22</sup>Leverage, as a financial term, describes having the full benefits arising from holding a position in a financial asset without having had to fund the purchase with own funds. Financial derivatives are instruments that can be used by international investors to leverage investments, as are repos.

<sup>23</sup>A total-return swap is a credit derivative that swaps the total return on a financial instrument for a guaranteed interest rate, such as an interbank rate, plus a margin.



**15.38** Derivatives positions can become very valuable or costly depending on the underlying price movements. The value of the positions is measured by the market value of the positions. For all the above reasons, there is interest in market values, gross assets and liabilities, and notional (or nominal) values of financial derivatives positions.<sup>24</sup>

**15.39** Risk-enhancing or -mitigating features that are similar to financial derivatives may also be embedded in other instruments such as bonds and notes. Structured bonds are an example of such enhanced instruments. These instruments could, e.g., be issued in dollars, with the repayment value dependent on a multiple of the Mexican peso–U.S. dollar exchange rate. Borrowers may also include a put—right to sell—option in the bond contract that might lower the coupon rate but increase the likelihood of an early redemption of the bond, not least when the borrower runs into problems. Also, e.g., credit-linked bonds may be issued that include a credit derivative, which links payments of interest and principal to the credit standing of another borrower. The inclusion of these derivatives can improve the terms that the borrower would otherwise have received, but at the cost of taking on additional risk. Uncertainty over the repayment terms or the repayment schedule is a consequence, so there is analytical interest in information on these structured bond issues.

**15.40** Repos also facilitate improved risk management and arbitrage. A repo allows an investor to purchase a financial instrument, and then largely finance this purchase by on-selling the security under a repo agreement. By selling the security under a repo, the investor retains exposure to the price movements of the security, while requiring only modest cash outlays. In this example, the investor is taking a “long” or positive position. On the other hand, through a security loan, a speculator or arbitrageur can take a “short” or negative position in an instrument by selling a security they do not own and then meeting their settlement needs by borrowing the security (security loan) from another investor.

<sup>24</sup>While the *Guide* explicitly presents data only on the notional (or nominal) value for foreign-currency- and interest-rate-linked financial derivatives, information on the notional value of financial derivatives, for all types of risk category, by type and in aggregate, can be of analytical value.

**15.41** While in normal times all these activities add liquidity to markets and allow the efficient taking of positions, when sentiment changes, volatility may increase as leveraged positions may need to be unwound, such as to meet margin requirements. Position data on securities issued by residents and involved in repurchase and security lending transactions between residents and nonresidents help in understanding and anticipating market pressures. These data can also help in understanding the debt-service schedule data, e.g., if a nonresident sold a security under a repo transaction to a resident who then sold it outright to another nonresident, the debt-service schedule would record two sets of payments to nonresidents by the issuer for the same security, although there would be only one payment to a nonresident for that security. In volatile times, when large positions develop in one direction, this might result in apparent very significant debt-service payments on securities; the position data on resident securities involved in cross-border reverse transactions could indicate that reverse transactions are a factor.

### Information on the Creditor

**15.42** In any debt analysis an understanding of the creditor is relevant because different creditors have different motivations and may respond to changing circumstances differently.

**15.43** The sector and country of lender are important factors in debt analysis because different types of creditors may respond to changing circumstances differently, and this can have implications for the economic situation of an economy. Debt analysis has traditionally focused on sectors—in particular, on the split between the official creditors, banking, and other, mostly private, sectors. The importance of this sectoral breakdown lies in the different degrees of difficulty for reaching an orderly workout in the event of payment difficulties. Traditionally, creditor sector information has been most readily available for nonnegotiable instruments and has been essential when undertaking debt-reorganization discussions. For instance, negotiations of debt relief will differ, depending on the status of the creditor. The official sector and the banks constitute a relatively small and self-contained group of creditors that can meet and negotiate with the debtor through such forums as the Paris Club (official sector) and London Club (banks).

By contrast, other private creditors are typically more numerous and diverse, although they might organize their negotiations through specialized groups, such as trade associations.

**15.44** Also, the public sector may be a guarantor of debts owed to the foreign private sector. Often this is the case with export credit, under which the credit agency pays the foreign private sector participant in the event of nonpayment by the debtor, and so takes on the role of creditor. These arrangements are intended to stimulate trade activity, and premiums are paid by the private sector. In case of

default, the ultimate creditor is the public sector, if the credit agency is indeed in the public sector. The country of creditor is important for debt analysis because overconcentration of the geographic spread of creditors has the potential for contagion in adverse financial conditions. For instance, if one or two countries are main creditors, then a problem in their own economies or with their own external debt position could cause them to withdraw finance from the debtor country. Indeed, concentration by country and sector, such as banks, could make an economy highly dependent on conditions in that sector and economy.