

## Uses of the BIS statistics: an introduction<sup>1</sup>

The mandate of the BIS is to foster monetary and financial cooperation among central banks and within the international financial community. The compilation, publication and analysis of statistics on international banking and financial market activity make an important contribution to the fulfilment of this mandate.<sup>2</sup> Each quarter, the BIS publishes statistics on banks' international positions, issuance of international and domestic debt securities, turnover and open interest in exchange-traded derivatives, and international equity offerings. Twice a year, data are released on notional stocks and market values of over-the-counter (OTC) derivatives. And every three years, statistics are made available on turnover in foreign exchange and OTC derivatives markets.

The BIS statistics are referenced by a wide range of users for a wide range of purposes. This special feature focuses on a few of the key analytical uses of the statistics and in particular on how the statistics can be used in a complementary fashion, including for analysis of monetary and credit aggregates, external debt stocks and flows, banks' international risk exposures and changes in financial intermediation.

Each statistical series serves a specific purpose, and consequently the way in which each is compiled differs in important respects. An understanding of these differences is essential to any analysis of the statistics. While the following discussion touches on caveats to keep in mind when using the statistics, this article is meant to complement not substitute for more detailed descriptions of the BIS statistics. Numerous reports and publications cover the compilation of the statistics and the motivation for collecting them, the most recent being BIS (2000), BIS (2002a), BIS (2002b) and CGFS (2000).<sup>3</sup>

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<sup>1</sup> The views expressed in this article are those of the author and do not necessarily reflect those of the BIS.

<sup>2</sup> G10 central banks are charged with overseeing the BIS statistics. The BIS, in cooperation with central banks and monetary authorities worldwide, compiles and disseminates the statistics in accordance with the recommendations of the G10 central banks.

<sup>3</sup> The BIS statistics and various publications about them are available on the BIS website ([www.bis.org](http://www.bis.org)).

Statistics published by the BIS				
	Frequency/ first year available	Type of data	Breakdowns published	Source of data/ form of dissemination <sup>1</sup>
International banking markets				
Locational statistics	Quarterly/ 1983	Flows <sup>2</sup> Stocks (assets and liabilities)	Nationality and residency of reporter; residency and sector of counterparty; currency; instrument	Central bank survey/ QR Tables 1–8
Consolidated statistics	Quarterly/ 1985 <sup>3</sup>	Stocks (assets only)	Nationality of reporter; residency and sector of counterparty; maturity; risk transfers	Central bank survey/ QR Table 9; press release
Syndicated credits	Quarterly/ 1992	Signings	Nationality of borrower	Commercial sources/ QR Table 10
Securities markets				
International debt securities	Quarterly/ 1962 <sup>4</sup>	Announced <sup>5</sup> Completions Repayments Net issues Stocks	Nationality, residency and sector of issuer; currency; instrument; maturity	Commercial sources/ QR Tables 11–15, 17
Domestic debt securities	Quarterly/ 1989 <sup>6</sup>	Flows <sup>2</sup> Stocks	Residency and sector of issuer; maturity	National data/ QR Tables 16–17
International equity securities	Quarterly/ 1983	Announced <sup>5</sup>	Nationality of issuer	Commercial sources/ QR Table 18
Derivatives markets				
OTC derivatives	Semiannual/ 1998	Stocks <sup>7</sup>	Sector of counterparty; category of risk; currency; instrument; maturity	Central bank survey/ QR Tables 19–22; press release
OTC derivatives	Triennial/ 1995	Stocks <sup>7</sup> Turnover	Residency of reporter; sector of counterparty; category of risk; currency; instrument	Central bank survey/ press release; report
Exchange-traded derivatives	Quarterly/ 1975	Stocks <sup>8</sup> Turnover <sup>8</sup>	Residency of exchange; category of risk; instrument	Commercial sources/ QR Table 23
Foreign exchange markets	Triennial/ 1989	Turnover	Residency of reporter; sector of counterparty; currency; instrument; maturity	Central bank survey/ press release; report
<sup>1</sup> "QR" refers to the statistical annex of the <i>BIS Quarterly Review</i> ; data are also available on the BIS website (www.bis.org). <sup>2</sup> Exchange rate adjusted changes in stocks outstanding. <sup>3</sup> Prior to 2000, semiannual frequency. <sup>4</sup> Prior to 1993, data exclude money market instruments. <sup>5</sup> Announced issues. <sup>6</sup> Prior to 1993, annual frequency. <sup>7</sup> Notional principal and gross market values. <sup>8</sup> Notional principal and number of contracts.				

## Extension of monetary and credit aggregates

Banking statistics were first used to monitor eurocurrency markets

The BIS statistics facilitate the extension of domestic monetary and credit aggregates to capture cross-border and foreign currency positions. Indeed, this was the motivation for introducing the first set of statistics – the locational banking statistics – in the 1960s. The growth of the so-called eurocurrency markets (international deposit and loan markets) raised concerns among policymakers at the time about the possible macroeconomic consequences of the expansion of the money supply through these markets (Mayer (1979)). The BIS locational banking statistics greatly improved the monitoring of money and credit growth. Policymakers' concerns abated over time, as central banks reduced their focus on monetary targets and countries moved from closely regulated and administered financial systems to more open and competitive ones. Nevertheless, reference to broad measures of money and credit that include international positions remains as important today as in the 1960s for understanding domestic monetary and financial conditions.

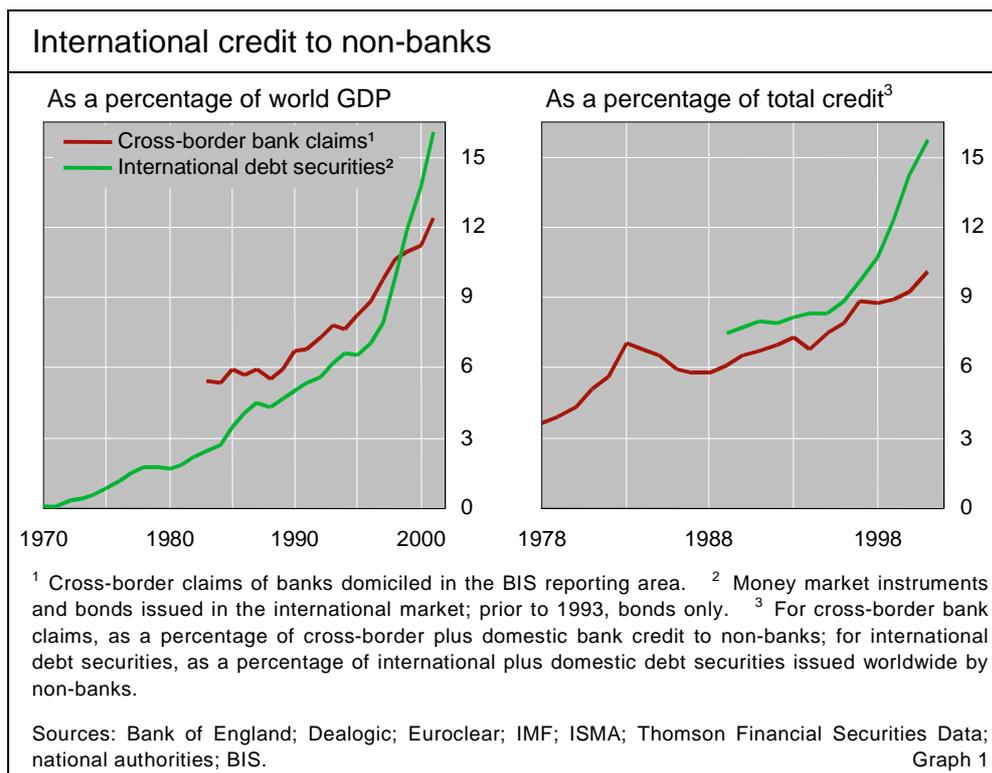
Data are available on banks' cross-border and foreign currency assets and liabilities

What makes the BIS statistics useful for extending monetary aggregates is the availability of data on banks' international liabilities. In the locational banking statistics, commercial banks in nearly 30 jurisdictions report their foreign currency liabilities to residents as well as their cross-border liabilities to non-residents.<sup>4</sup> Moreover, they report the currency in which these stocks are denominated, and whether the counterparty is a bank or a non-bank. This facilitates analysis of different measures of the money stock. Monticelli (1993) uses the locational statistics to derive six different monetary aggregates for the European Union, such as monetary assets held by EU residents regardless of the residency of the issuer and the currency of denomination, and monetary assets issued by EU-domiciled intermediaries regardless of the residency of the holder and the currency of denomination.

For the purpose of extending domestic credit aggregates, it is the availability of data on the international fund-raising activities of corporations and other non-bank borrowers that makes the BIS statistics useful. Domestic credit aggregates typically do not include cross-border borrowing by non-bank residents. The locational banking statistics capture cross-border credit – loans, deposits, debt securities and other assets – provided directly by banks. The international banking market was for several decades the largest source of cross-border funding to non-bank borrowers, and as of end-September 2001 the outstanding stock of cross-border bank claims on non-banks accounted for approximately 10% of total – domestic plus cross-border – bank claims (Graph 1). In many countries, this percentage is considerably higher: for

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<sup>4</sup> As of end-December 2001, banks in 32 jurisdictions contributed to the locational banking statistics: Australia, Austria, the Bahamas, Bahrain, Belgium, Canada, the Cayman Islands, Denmark, Finland, France, Germany, Guernsey, Hong Kong SAR, India, Ireland, the Isle of Man, Italy, Japan, Jersey, Luxembourg, the Netherlands, the Netherlands Antilles, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Taiwan (China), Turkey, the United Kingdom and the United States.



example, 31% in Mexico and 43% in Venezuela. Even in those countries where cross-border credit is not large as a proportion of total bank credit, it can be an important source of financing for specific sectors. Based on the locational statistics, McCauley and Seth (1992) estimate that in the early 1990s over 20% of total loans to commercial and industrial enterprises in the United States were booked offshore. From this, they conclude that more corporate funding was supplied by banks than was generally considered to be the case at the time.

The BIS statistics were expanded in the 1980s to include international issuance of money market instruments and bonds and later to include outstanding stocks of domestically issued debt securities. The international and domestic debt securities data sets compiled by the BIS are adjusted for known overlaps in issuance and so are broadly comparable. Nevertheless, they are not fully consistent because they are compiled using different methodologies. The international securities statistics are based on individual issues, whereas the domestic securities statistics are based on aggregated data from national sources. In addition, the domestic debt securities do not cover all countries, although those covered are by far the largest markets.

Borrowers have increasingly turned to domestic and especially international capital markets to raise funds. Indeed, in 1999 the international debt securities market surpassed the international banking market as the most important source of cross-border credit to non-banks (Graph 1, left-hand panel). The outstanding stock of international debt instruments issued by non-banks reached \$5.0 trillion by end-2001, equivalent to 16% of debt securities issued worldwide by non-banks. Banks purchased a substantial proportion of these securities, and so care must be taken to avoid double-counting when

International bond markets are an increasingly important source of finance

combining the various BIS statistical series to extend domestic credit aggregates (see below).

The BIS also publishes data on international issues of equity securities. These refer to announcements and so signal borrowers' efforts to raise equity financing. However, because announcements frequently differ from actual issuance and no information is available about share repurchases, the BIS statistics are of limited use for precise estimates of net new financing raised in international equity markets.

## Stocks and flows of external debt

The use of the BIS statistics to extend domestic credit aggregates suggests a further application: to monitor external debt. In its strictest sense, external debt refers to residents' contractual liabilities to non-residents.<sup>5</sup> Bank loans, deposits and debt securities typically make up the bulk of these liabilities. In addition, exposures to financial derivatives are becoming an increasingly important component. It is important to supplement this strict definition of external debt with other measures that more clearly identify the risks to which a country or sector may be exposed, such as the liquidity risk associated with short-term debt.

To improve the availability of data on external debt, in the wake of the Asian financial crisis the BIS, IMF, OECD and World Bank began jointly to publish statistics on the external debt of developing countries. To these the BIS contributes data on bank lending and international debt securities. There are gaps and overlaps in the coverage of the joint statistics; therefore, they are not a substitute for data from national sources. Rather, they serve as a complement to national data by providing information about components of external debt from a creditor perspective. In addition, the joint statistics are sometimes more timely than national data and occasionally more accurate, which makes them helpful for highlighting trends.

### *External debt owed to banks*

The BIS publishes three sets of statistics on international banking activity: locational banking statistics, consolidated banking statistics and syndicated loan statistics. The first of these is consistent with external debt measures compiled on a national accounts or balance of payments basis. Indeed, the locational statistics are used by many national statistical agencies to enhance their own balance of payments estimates (IMF (1992), Bach (2001)). The consolidated and syndicated loan statistics provide information about cross-border borrowing from banks. However, owing to differences in reporting

BIS contributes to joint statistics on external debt ...

... and to balance of payment estimates

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<sup>5</sup> The Inter-Agency Task Force on Finance Statistics uses the following definition: "Gross external debt, at any given time, is the outstanding amount of those actual current, and not contingent, liabilities that require payment(s) of principal and/or interest by the debtor at some point(s) in the future and that are owed to non-residents by residents of an economy" (BIS et al (2001), p 17).

conventions, the interpretation of these two sets of statistics is different from that of conventional measures of external debt.

What makes the locational banking statistics consistent with national accounts or balance of payments data is their compilation on the basis of the residency of the reporting bank. The locational statistics cover the cross-border positions of all banks domiciled in the reporting area, including positions vis-à-vis their foreign affiliates. By contrast, the consolidated statistics are based on the nationality of the reporting bank and net out intragroup positions.<sup>6</sup> Cross-border lending to banks' own affiliates in the locational statistics is instead captured as lending to end borrowers in the consolidated statistics.

Locational banking statistics are consistent with balance of payments data

In countries with little international banking business, the difference between external debt owed to banks based on the locational statistics and the same stock based on the international component of the consolidated statistics is often not large. For example, cross-border (locational) claims on emerging economies are in aggregate no more than 5% larger than international (consolidated) claims. The international component of the consolidated statistics captures, in addition to reporting banks' cross-border claims, their foreign affiliates' local claims in foreign currencies.<sup>7</sup> In many countries, such claims are funded from abroad by head office and so are a reasonable proxy for cross-border inter-office positions.

However, the difference between cross-border and international claims can be significant in individual countries. In dollarised economies, a large proportion of banks' local claims in foreign currencies are funded locally, and so international claims tend to be much larger than cross-border claims. In international banking centres, funds channelled to own affiliates are typically onlent to non-residents, and so international claims tend to be much smaller than cross-border claims. Cross-border claims on residents of offshore banking centres totalled \$1.3 trillion at end-September 2001, but international claims on offshore centres only \$666 billion; inter-office positions accounted for most of the difference.

Coverage of international banking activity in the BIS statistics is virtually complete. The largest centres of international financial activity all contribute to one or both sets of banking statistics and, moreover, the reporting area is continually expanding. Nevertheless, it should be noted that the locational statistics do not include positions booked in non-reporting countries, and the consolidated statistics only partially cover the positions of banks headquartered

Coverage is virtually complete

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<sup>6</sup> As of end-December 2001, banks in 24 jurisdictions contributed to the consolidated banking statistics: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong SAR, India, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Taiwan (China), Turkey, the United Kingdom and the United States.

<sup>7</sup> Banks contributing to the consolidated banking statistics report international claims and local claims and liabilities in local currencies. International claims comprise reporting banks' cross-border claims in all currencies plus their foreign affiliates local claims in foreign currencies.

in such countries.<sup>8</sup> The locational and consolidated banking statistics may, therefore, understate debt owed to banks by individual countries. Korean banks, for example, reportedly purchased substantial amounts of Russian government securities prior to Russia's default in August 1998. However, such omissions are unlikely to be significant in most countries.

The currency breakdown in the locational statistics allows flows to be calculated

Banks contributing to the BIS locational and consolidated banking statistics report only stocks, not flows. Flows to individual countries are estimated as changes in stocks. For the locational statistics, banks report the currency in which their claims and liabilities are denominated, and this allows quarterly flow data to be calculated by adjusting outstanding stocks for currency movements during the quarter. Flows may have taken place at different exchange rates, and so exchange rate adjusted changes in outstanding stocks are not a perfect substitute for data on actual flows. Nevertheless, they are a far better approximation than unadjusted changes in stocks. A currency breakdown is not available for the consolidated statistics, and consequently exchange rate movements can result in changes in consolidated positions reported in US dollars even when underlying positions remain unchanged. The currency breakdown from the locational statistics can be applied to the consolidated statistics to adjust for exchange rate movements. The resulting estimates, however, should be regarded as no more than rough approximations.

Market access can be monitored with syndicated loan statistics

The syndicated loan statistics can also be used to monitor cross-border bank flows. Again, they are not a substitute for data on actual flows: they refer to signings, which may not be the same as disbursements, and information about repayments or outstanding stocks is not available.<sup>9</sup> Nevertheless, they are more timely than the other two sets of BIS banking statistics and provide details about the purpose, maturity and pricing of syndicated facilities, details which are helpful for understanding the nature of international bank lending. A feature article on page 65 finds that, under certain conditions and for certain classes of borrowers, the syndicated credit data can also provide some useful advance information about the consolidated statistics. Furthermore, the syndicated statistics are more useful than the other BIS banking statistics for monitoring borrowers' access to loan markets. Net figures do not necessarily indicate which debtors are the most active borrowers, because large borrowings could be offset by equally large repayments. Differences in

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<sup>8</sup> The consolidated statistics cover the worldwide consolidated claims of banks headquartered in the BIS reporting area, and the unconsolidated claims of affiliates domiciled in the reporting area but owned by banks headquartered in countries outside the reporting area.

<sup>9</sup> The syndicated credit statistics will tend to overestimate gross cross-border loan flows. First, facilities arranged as support for commercial paper programmes or standby credits may never be drawn down. Other facilities may be only partially drawn down because of changes in the borrower's investment plans or a breach of loan covenants. Second, the syndicated statistics include a mix of instruments, such as multi-option facilities that are part loan and part security. Third, international lending within a given tranche is sometimes not readily identified because the exact amount provided by each institution, and in particular that provided by banks domiciled in the same country as the borrower, is unknown.

borrowing requirements and market access are revealed more clearly in gross figures (signings or disbursements).

### *External debt owed to non-banks*

Debt owed to international banks is of course only one of several components of external debt. Other types of investors, including pension funds, insurance companies, hedge funds and retail investors, have become more active in global financial markets over the past decade, and as a result hold an increasing proportion of external debt. Unfortunately, little information is available from creditor sources about debt owed by individual countries to these non-bank investors.

External debt owed to non-banks can be approximated by referring to data on debt securities issued to international investors. The BIS statistics on international debt securities are the most comprehensive source of such data. Announcements, completions, scheduled repayments and early repayments are all tracked. The repayments data collected by the BIS are especially valuable because they allow refinancing needs to be monitored and net new issues to be calculated.

External debt owed to non-banks can be proxied with securities statistics ...

Banks are large players in the international debt securities market, as investors, underwriters and issuers, and so there is some overlap between the BIS banking statistics and the international debt securities statistics. This overlap can be eliminated by taking only banks' cross-border loans and deposits. A breakdown of banks' international positions by instrument – loans, deposits and securities – is publicly available from the fourth quarter of 1995 for the locational banking statistics.

Issuance in the international debt securities market is no longer as reliable a proxy for cross-border portfolio flows as it once was. With more and more countries liberalising their capital accounts and financial markets, the distinction between international and domestic markets has become less meaningful over the years. As a result, the BIS statistics could over- or understate residents' external obligations. On the one hand, if investors domiciled in the country of the issuer purchase debt securities sold in the international market, the BIS statistics will tend to overstate cross-border portfolio flows.<sup>10</sup> Bond issues marketed to both residents and non-residents are in fact becoming more common. For example, whereas in 1995 less than 5% of net new issues by US government-sponsored enterprises such as Fannie Mae and Freddie Mac were classified as international in the BIS statistics, by 2001 nearly 50% were so classified. On the other hand, if non-residents invest in

... but less reliably than before

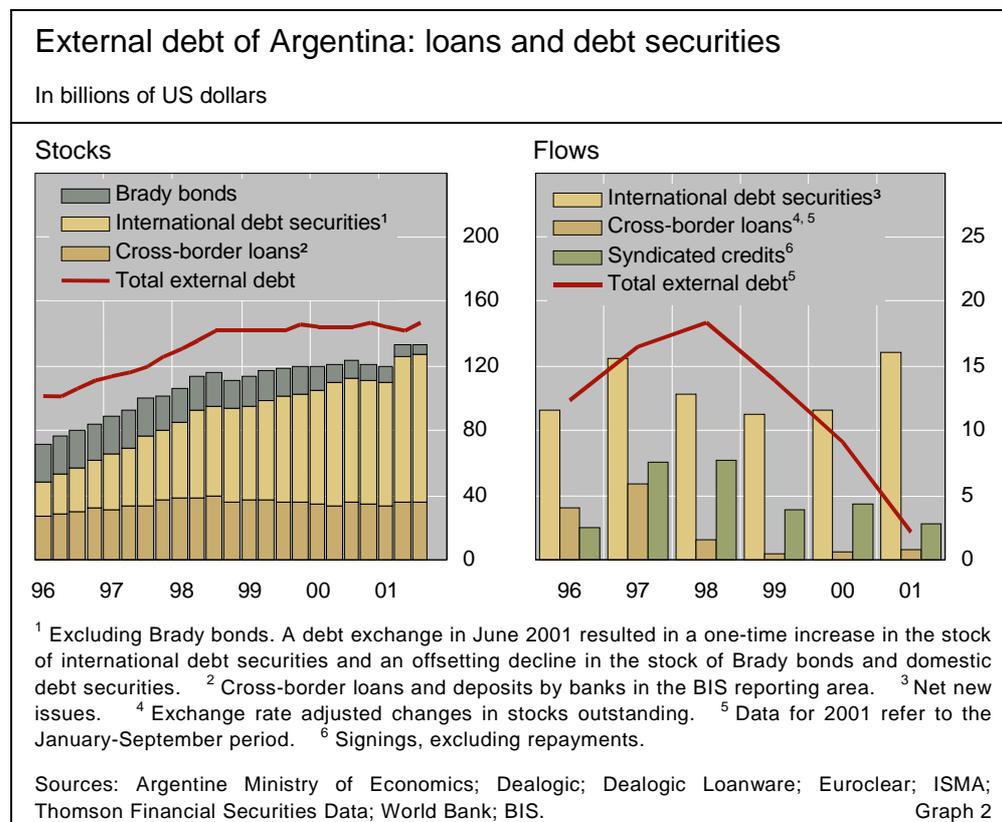
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<sup>10</sup> The international debt securities database covers three types of instruments: securities denominated in a currency different from that of the market in which they are issued ("eurobonds"); securities denominated in the currency of the market in which they are issued, but issued by non-residents (foreign bonds, such as "yankee" bonds in the US market); and securities denominated in the currency of the market in which they are issued, issued by residents, but targeted to non-residents. For this last type of instrument, tranches targeted to domestic investors are sometimes identified separately from those targeted to international investors, in which case the BIS statistics would not necessarily overstate portfolio flows.

domestic securities markets, the BIS statistics will tend to understate cross-border portfolio flows. For instance, while most government securities are issued locally and so are not included in the international securities database, in many countries a sizeable proportion of government debt is purchased by non-residents. Graph 2 compares BIS data on cross-border loans and international debt securities, coupled with data on Brady bonds from the joint statistics, to national data on the external debt of Argentina.

The market value of derivatives is a growing component of external debt

In addition to loans, deposits and debt securities, financial derivatives make up an increasing (albeit in most countries still small) component of external debt. Futures, swaps, options and other types of derivatives give rise to contractual obligations that may involve cross-border settlement. For the purposes of measuring external debt, it is the market value (or net present value) of these contracts that is of relevance, not the value of the underlying instrument. The BIS publishes data on the gross market values of various types of derivatives traded in OTC markets. These data are of little use for measuring external debt, however, because only a global aggregate is available; dealers contributing to these statistics are not required to report the residency of their counterparties. Nevertheless, the OTC statistics indicate the potential size of liabilities arising from derivatives positions. As of end-June 2001, gross market values for all types of OTC derivatives totalled \$3.0 trillion, equivalent to 8% of the outstanding stock of debt securities issued worldwide.



### *Risks of external borrowing*

Conventional measures of external debt can in some circumstances be an unreliable indicator of potential vulnerabilities. Through guarantees, collateral, derivatives and other off-balance sheet transactions, risk may be transferred from a debtor in one country – the immediate borrower – to a debtor residing elsewhere – the ultimate obligor. Moreover, data disaggregated by maturity, currency, sector or creditor can help to highlight risks that may not be apparent in the gross figures.

While balance of payments measures of external debt are based on the residency of the immediate borrower, measures based on the residency of the ultimate obligor may sometimes be more useful, such as to monitor rollovers or initiate a restructuring. For example, borrowing by a bank's foreign affiliate in London or some other international banking centre will not be captured by external debt statistics. Yet, it could potentially result in liquidity problems at head office if the affiliate has difficulty rolling over its obligations. Alternatively, borrowing by the foreign subsidiary of a multinational corporation might be guaranteed by the parent, resulting in a contractually binding transfer of risk from one country to another. The consolidated banking statistics capture some of these risk transfers (see below).

Another important indicator of vulnerability is the maturity structure of a country's external debt. Financial crises in various emerging markets in the late 1990s demonstrated that a rapid build-up of short-term debt can undermine financial stability even in countries with moderate levels of external debt (Hawkins and Klau (2000)). A maturity breakdown is available for the debt securities statistics and the international component of the consolidated banking statistics.<sup>11</sup> In fact, the consolidated statistics are one of the few sources of internationally comparable data on short-term external debt. The maturity breakdown for the consolidated statistics is reported on the basis of remaining maturity. The availability of a one- to two-year maturity bracket allows the proportion of short-term debt that was originally longer-term to be estimated.<sup>12</sup> The left-hand panel of Graph 3 illustrates the evolution of Argentina's short-term liabilities to banks.

The currency breakdown available in the BIS statistics also helps to highlight risks. External debts denominated in foreign currencies are more likely to expose borrowers to liquidity or even solvency risk than debts

Risks faced by debtors can be disaggregated by maturity ...

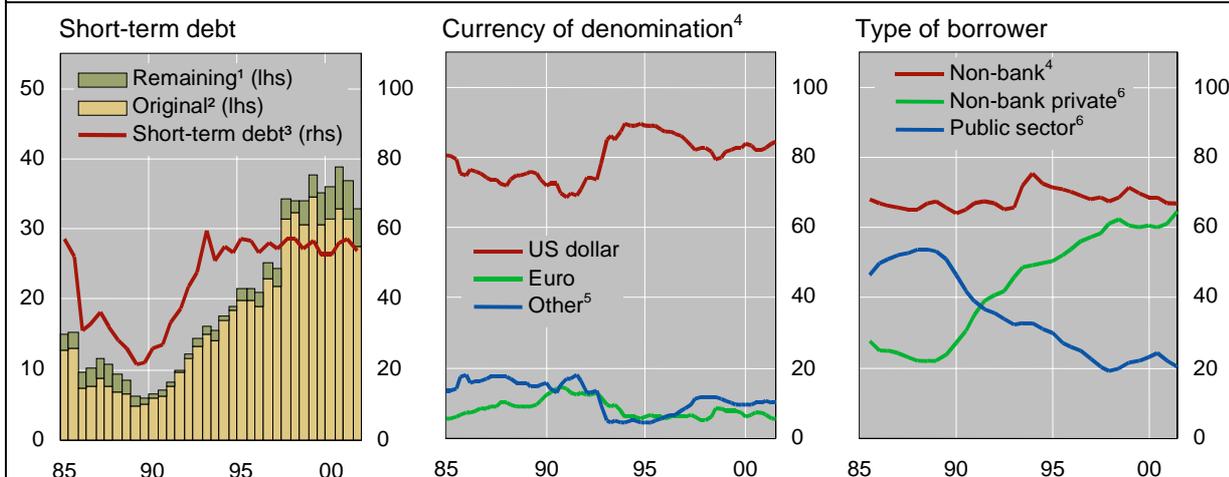
... currency ...

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<sup>11</sup> A maturity breakdown is not available for the locational banking statistics. The breakdown from the consolidated statistics could be applied to the locational statistics to arrive at a measure of short-term bank debt consistent with balance of payments reporting principles. Alternatively, the instrument breakdown from the locational statistics could be applied to the consolidated statistics to minimise overlaps with the international debt securities statistics. Neither option is likely to give reliable estimates, however.

<sup>12</sup> This method will tend to underestimate the proportion of short-term debt that was originally longer-term because the United States and Luxembourg do not report a one- to two-year breakdown and Hong Kong SAR does not report any maturity breakdown.

## External debt of Argentina: liabilities to BIS reporting banks



<sup>1</sup> Long-term liabilities with a remaining maturity of one year or less, in billions of US dollars. <sup>2</sup> Liabilities with an original maturity of one year or less, in billions of US dollars. <sup>3</sup> As a percentage of international (consolidated) bank claims. <sup>4</sup> As a percentage of cross-border (locational) bank claims; two-quarter moving average. <sup>5</sup> Including unallocated currencies. <sup>6</sup> As a percentage of international (consolidated) bank claims; two-quarter moving average.

Source: BIS.

Graph 3

denominated in their local currency. For the international debt securities statistics, a full currency breakdown is available, making it possible to determine the proportion of international debt securities issued in the currency of the borrower. This proportion ranges from 86% for international issuers resident in the United States to 0% for issuers resident in all but a handful of developing countries. Banks contributing to the locational statistics do not report every currency in which their claims and liabilities are denominated, only the major currencies.<sup>13</sup> Using the available information, it is possible to estimate an upper bound on the amount of bank debt that might be denominated in the currency of the borrower, as well as to identify currency mismatches arising from, for example, the receipt of export revenues in one currency and the servicing of debts in another.

An important caveat when interpreting the currency breakdown available in the locational and debt securities statistics is that it covers only on-balance sheet liabilities. Issuers may hedge their foreign currency exposure with export revenues or external assets, or through derivatives. The BIS derivatives statistics show that OTC and exchange-traded foreign exchange contracts totalled \$20.5 trillion in notional principal at end-June 2001, equivalent to a little more than half of the outstanding stock of debt securities issued worldwide. However, owing to the lack of information about the residency of counterparties, these data shed little light on hedging activity in individual countries.

<sup>13</sup> Banks report seven currency categories: the currency of their country of residence, US dollar, euro, yen, pound sterling, Swiss franc and other currencies.

The maturity and currency breakdowns can be further disaggregated by sector to identify those sectors most exposed to liquidity or foreign currency risk. The Asian financial crisis of 1997–98 highlighted the importance of monitoring the external positions of the financial and corporate sectors separately from that of the public sector (Financial Stability Forum (2000)). The locational statistics provide information about international banks' claims on the bank and non-bank sectors, and the consolidated statistics further split the non-bank sector into public and private sectors. The international debt securities statistics provide an even finer breakdown of the non-bank sector. While the maturity breakdown in the consolidated statistics cannot be combined with the sectoral breakdown, the breakdowns available for the other statistics can be disaggregated by sector.

... sector ...

A further source of potential vulnerability is through a common creditor. A borrower which relies on a heterogeneous group of creditors for external financing is less likely to be affected by contagion. The distribution of bank claims by nationality of bank is available from the consolidated banking statistics. The distribution of bank claims by residency of bank is available from the locational banking statistics, but residency is a less meaningful basis upon which to judge the heterogeneity of creditors than nationality. The heterogeneity of a country's creditors can also be assessed by comparing the amount of financing provided by banks to that provided through the international debt securities market.

... or creditor

Finally, liabilities alone give an incomplete picture of a country's potential vulnerabilities. Even if liabilities are small or stable, a country's external position can still be undermined by capital flight. In addition, residents frequently have foreign assets available to meet a sudden need for liquidity, although those holding the assets may differ from those borrowing abroad. Funds placed with banks abroad are covered by the locational banking statistics. Owing to such assets, countries with large external debts may in fact be net creditors. For example, at end-September 2001 emerging economies' liabilities to international banks totalled \$875 billion, yet outstanding cross-border deposits and other assets placed with international banks by residents of the same countries totalled \$1.1 trillion.

Liabilities might be offset by deposits and other foreign currency assets

## Risk exposures of creditor banks

What is a debt to a borrower is of course an asset to a creditor. Indeed, it was the desire to monitor banks' foreign assets – not countries' external debt – that led to the introduction of the consolidated banking statistics following the Mexican debt moratorium of 1982. Changes in banks' foreign assets are visible in the locational banking statistics. However, owing to the residency principle on which the locational statistics are based, it is not possible to assess the exposure of national banking systems to individual countries. In particular, the locational statistics do not capture positions booked in non-reporting countries, and do not allow the breakdown by residency of the counterparty to be combined with the breakdown by nationality of the reporting bank. In contrast,

The consolidated statistics measure banks' foreign exposure

The focus was initially on transfer risk ...

the consolidated statistics focus explicitly on banks' foreign credit risk exposures, in that they measure on a worldwide consolidated basis the foreign claims of banks headquartered in the reporting area.<sup>14</sup>

At the time that the consolidated statistics were introduced, authorities in the reporting area were especially concerned about transfer risk, ie the risk associated with policy measures that have a territorial jurisdiction, such as capital controls or payments moratoriums.<sup>15</sup> As a result, the consolidated statistics measured only claims on an immediate borrower basis (also referred to as contractual claims). Furthermore, the focus was on the international component of consolidated claims, ie reporting banks' cross-border claims in all currencies plus their foreign affiliates' local claims in foreign currencies. The other component of consolidated claims – local claims in local currencies – was typically funded locally and so did not incur transfer risk. The rationale for including local claims in foreign currencies together with cross-border claims was that they were likely to be funded from abroad, and so would be subject to transfer risk.

Financial crises in Asia and other emerging markets in the late 1990s and changes in the structure of international banking led to a re-evaluation of the information conveyed by the consolidated banking statistics. Owing in large part to the growing globalisation and sophistication of banking and financial markets, contractual claims have become a less accurate measure of banks' credit risk exposures. Off-balance sheet transactions can significantly modify on-balance sheet claims. Derivatives are one such transaction. The inclusion of derivatives claims boosted US banks' cross-border exposures by nearly 20% at end-September 2001. Owing to the way in which the value of derivatives claims is measured, the impact of derivatives may be even larger during periods of abnormal volatility in market prices. Between June 1997 and December 1997, following the flotation of the Thai baht, the amount owed to US banks by counterparties in Thailand via foreign exchange and derivatives products nearly quadrupled to \$2.5 billion, rising from 15% of on-balance sheet claims to 89% (Ruud (2002)).

Another important way in which on-balance sheet claims can be altered is through guarantees, collateral and other credit risk transfers. For example, lending to the subsidiary of a foreign bank in London may be booked as lending to a UK counterparty, but the ultimate obligor is likely to reside elsewhere. Reallocations of claims from the immediate borrower to the ultimate obligor can significantly increase banks' exposures to some countries and reduce them to others. For instance, claims on Germany on an ultimate risk basis are 20%

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<sup>14</sup> Foreign claims comprise BIS reporting banks' cross-border claims plus their foreign affiliates' local claims.

<sup>15</sup> The counterparty breakdown available in the consolidated statistics was at first limited to developing countries. This reflected monetary and financial authorities' concern about the large amount of bank lending to developing countries, a concern that heightened following Mexico's declaration in August 1982 of a moratorium on its external debt payments. In the second quarter of 1999, the statistics were expanded to cover all countries.

higher than contractual claims, whereas claims on the United Kingdom are nearly 25% lower.

In addition to the growing globalisation and sophistication of markets, cross-border mergers and acquisitions have altered the risks faced by banks. In particular, the growing share of locally funded business in banks' foreign claims shifts the balance of risks away from transfer risk and more towards country risk, ie the risk associated with the economic, business, political and social environment in which the debtor operates. Whereas transfer risk is associated with cross-border claims, all foreign claims – cross-border and local, foreign currency and local currency – are subject to country risk.<sup>16</sup> When the consolidated statistics were first introduced, local claims accounted for a small proportion of banks' foreign claims; this is no longer the case. In 1985 local claims in local currency accounted for only 6% of reporting banks' foreign claims on emerging economies. By 2001 this proportion had risen to 37%. A feature article on page 41 explores this shift from international to locally funded business.

... but has shifted to country risk

The consolidated statistics were expanded in June 1999 to capture risk transfers. As currently reported, consolidated claims measured on an ultimate risk basis reallocate guaranteed claims to the country of residence of the guarantor and transfer claims on legally dependent bank branches to the country of residence of the parent bank. In accordance with the recommendations of the Committee on the Global Financial System (CGFS (2000)), the consolidated statistics will be further expanded by end-2004 to capture all relevant aspects of banks' credit risk exposures, including all off-balance sheet financial contracting.

Consolidated statistics are being expanded to capture off-balance sheet exposures

## Changes in financial intermediation

A final use of the BIS statistics is to document changes in financial intermediation. Many of the statistics published by the BIS can be disaggregated by instrument, type of counterparty and residence of reporting institution. Therefore, in addition to monitoring the growth of various market segments, the BIS statistics allow changes within these segments, such as the relative importance of non-financial customers in derivatives markets or of the Caribbean as a financial centre, to be examined. The inter- and intramarket changes that could be examined are too numerous to discuss in detail, and so the following paragraphs focus on only a few possible ways in which the BIS statistics could be used to monitor changes in financial intermediation.

One obvious use of the BIS statistics is to measure the size, growth and structure of different market segments. This is done regularly in the sections on

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<sup>16</sup> The BIS recently changed the presentation of the consolidated banking statistics to give greater emphasis to country risk exposures and to enhance the comparability of the statistics across national banking systems. Whereas previously the focus was on BIS reporting banks' international claims, now the tables in which the consolidated banking statistics are presented focus on total foreign claims.

BIS statistics can be used to monitor the size, growth and structure of markets ...

market developments in the *BIS Quarterly Review*. Innumerable analytical studies use the BIS statistics to make a variety of other comparisons. Alworth and Andresen (1992) use the locational banking statistics to examine the linkages between the origin and destination of cross-border deposits. The Study group on fixed income markets (2001) combines the domestic and international debt securities statistics to compare and contrast the US dollar, euro, yen and sterling markets. Kambhu et al (1996) exploit the triennial survey to examine the role of derivatives markets in the transfer and trading of risk. The various statistical series published by the BIS are broadly comparable if account is taken of the different way in which each is compiled. Nevertheless, features or characteristics of different markets may complicate direct comparisons. For example, in exchange-traded derivatives markets, the reversal of an initial position leads to a decline in notional stocks because contracts are offset through a centralised counterparty. By contrast, in OTC markets positions are usually reversed by writing a new contract, resulting in an increase in notional stocks.

... the constellation of market players ...

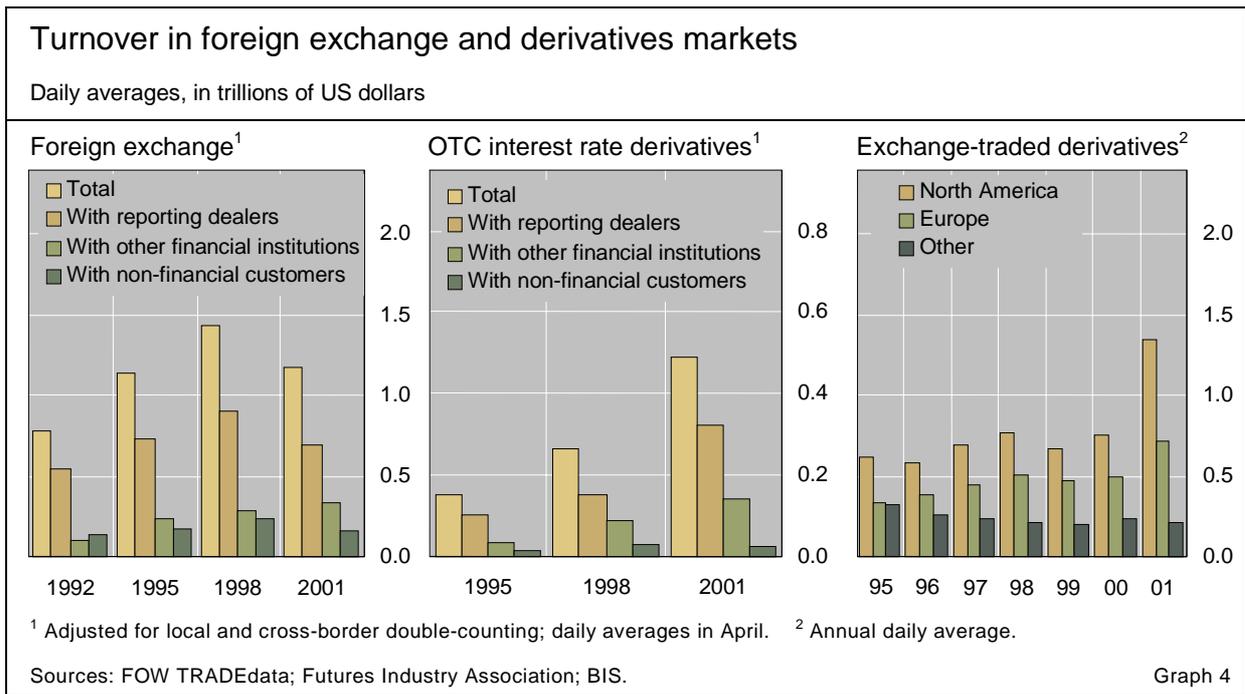
Information about the constellation of players and strategies active in markets can also be gleaned from the BIS statistics. The importance of banks relative to non-banks as both borrowers and lenders in international markets can be derived using the BIS banking and securities statistics. The foreign exchange and OTC derivatives statistics can be disaggregated into dealers, other financial institutions and non-financial customers. If coupled with information from other sources, this may even make it possible to identify more precisely the types of players behind changes in activity. For example, Dixon (2001) illustrates how the BIS banking statistics can be used to help monitor intermediation via offshore financial centres, including borrowing by hedge funds. McCauley and von Kleist (1998) refer to the locational banking statistics to assess the importance of carry trade strategies.

... off-balance sheet activity ...

The off-balance sheet activities of market participants can also be monitored using the BIS derivatives statistics. The exchange-traded derivatives statistics, which are based on commercial data, and the semiannual OTC derivatives statistics, which are taken from survey data collected by central banks, measure the notional principal of the underlying contracts. Various breakdowns are available, including by type of instrument, category of risk, currency, or some combination of type, risk and currency. Market values and credit exposures, ie market values after taking into account legally enforceable bilateral netting agreements, are also available for the OTC statistics. Data on credit exposures exclude cash positions – which could offset exposures associated with derivatives positions – and so potentially overstate participants' ultimate exposures.

... or liquidity

Another use of the BIS statistics is to measure changes in market liquidity. Turnover in exchange-traded derivatives markets is available from the exchange-traded derivatives statistics, and turnover in OTC derivatives and foreign exchange markets from the triennial survey. Graph 4 shows turnover in



different markets and between different counterparties. Turnover is just one of several dimensions of liquidity and, moreover, can at times be a misleading indicator because it is also influenced by volatility (CGFS (1999)). Therefore, trading activity should be considered alongside other measures of market liquidity. Galati (2001) concludes that even though turnover in foreign exchange markets declined in 2001, it is not clear that liquidity deteriorated.

### Future improvements to the BIS statistics

The BIS statistics have evolved with the changing policy concerns of monetary and financial authorities and the changing structure of banking and financial markets. The first set of statistics – the locational banking statistics – focused on monetary stability, but subsequent series have gradually shifted towards a focus on financial stability. Improvements continue to be made to the statistics to reflect financial innovations. Consolidated banking statistics on an ultimate risk basis with a detailed sectoral breakdown and including off-balance sheet positions will begin to be published in 2005, providing a better measure of the country risk exposures of internationally active banks. Efforts are also under way to expand the country and instrument coverage of the domestic and international debt securities databases.

Although the statistics were originally compiled with a specific purpose in mind, they nevertheless have a wide range of possible uses. These uses include extending monetary and credit aggregates, monitoring external debt, analysing banks' country risk exposures and documenting changes in financial intermediation. As markets change, so too will the possible uses of the statistics. However, it is neither feasible nor perhaps even desirable to accommodate changes in markets and uses by constantly refining the way in

As markets change, so too will the possible uses of the statistics

which the statistics are compiled and disseminated. The costs to institutions contributing to the statistics of constant refinements would be too high and could discourage their participation. Providing that their limitations are recognised, the currently available or planned statistics are sufficiently flexible to give insights into many aspects of banking and financial markets.

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