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## Do syndicated credits anticipate BIS consolidated banking data?<sup>1</sup>

Commercial data on international syndicated credit facilities are available three months earlier than the BIS consolidated banking statistics and provide information on many characteristics of the individual facilities. On the other hand, BIS data reflect actual loan drawdowns and repayments while syndicated loan data are based on announcements of facilities that may or may not be drawn. Nonetheless, syndicated loans account for a significant part of actual international bank claims and should thus contain information to complement the BIS data.<sup>2</sup> In this article we compare the two data sets, adjusting for conceptual and practical differences. The comparison allows us to better understand both the nature of the consolidated claims reported to the BIS and the way syndicated facilities are used. Moreover, we find that, under certain conditions and for certain classes of borrowers, the more timely syndicated credit data can provide some useful advance information about the consolidated data.

### Filtering syndicated credits

Making the two data sets comparable requires filtering ...

A direct comparison of the two data sets is less than straightforward. As shown in Table 1, while syndicated credit data are a mixture of domestic and international lending facilities, the BIS banking statistics focus exclusively on international lending. The syndicated credits are gross announcements of loan facilities (ie loan commitments which need not be drawn down fully or immediately), while the changes in amounts outstanding in the BIS data are driven mainly by net new lending (actual disbursements). Since the BIS data are obtained from balance sheets, they give a more accurate picture of banks'

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

<sup>2</sup> Estimated outstanding stocks of syndicated loans amount to about 50% of outstanding BIS bank loans to Latin America and developing Europe, but to around 100% of those to Asia and the Africa-Middle East region.

Differences between syndicated credits and the BIS consolidated banking statistics	
Syndicated credits	BIS consolidated banking statistics
Very few syndicated credits are extended to banks	All credits extended to banks as well as to non-banks are included
Credit announcements available on a weekly basis with a few day's lag	Balance sheet positions reported quarterly (semiannually up to end-1999) with a three-month lag
Limited to syndicated bank credit	Cover all (syndicated and bilateral) credits, include all on-balance sheet items
Include domestic bank lending to the extent that domestic banks join the syndicate	BIS reporting limited to banks' total cross-border claims in all currencies plus their foreign affiliates' local claims in foreign and local currencies
Gross announcements of loan facilities (always positive or zero)	Changes in stocks measure net new lending, including early repayments, payments of arrears and writedowns (can be negative)
Credit commitments	Actual balance sheet positions
Exclude repos	Include repos as collateralised lending

Sources: Dealogic Loanware; BIS.

Table 1

actual intermediation activity, taking into account early repayments, payments of arrears and writedowns.<sup>3</sup>

We reduce the differences in the two data sets by filtering the syndicated credit data to bring them conceptually as close as possible to the BIS consolidated banking statistics. The main adjustment we make is to include only those facilities in which the nationality of at least one of the syndicate banks differs from that of the borrower.<sup>4</sup>

Syndicated credit data from commercial providers (eg Dealogic Loanware) are not available as stocks but rather as announcements of loan facilities granted by bank syndicates. To approximate outstanding bank credit, we build up a stock of loans, which assumes new facilities are drawn at their announcement date and repaid at maturity. These are pseudo-stocks in the sense that we assume that the facilities are fully drawn and that no early repayments are made. To generate scheduled repayments for earlier loans, we extended backwards the filtered Loanware data (which start in 1992) with historical data from the Bank of England going back to the 1970s, which were

... and building synthetic stocks of syndicated credits

<sup>3</sup> The renegotiation of syndicated loans becomes more difficult as the number of banks participating increases. Early repayments may therefore be concentrated in non-syndicated traditional bank loans included in the BIS data. See Berlin (1996).

<sup>4</sup> For the coverage of international syndicated credit facilities, see the note to Table 10 on page A70 of the Statistical Annex.

collected using a similar, but not identical methodology. This ensures that the stock is complete and that amortisation of older loans (granted before 1992) is fully accounted for.

Announcements of syndicated loan facilities tend to be reported by Loanware within one week. In contrast, the process of reporting banks' worldwide consolidated end-of-quarter balance sheet totals to monetary authorities and then to the BIS currently takes up to 12 weeks to complete.

Because there is very little syndicated lending between banks, we restrict both data sets to the non-bank sector. We use the consolidated rather than the locational BIS banking data because the sectoral classification of consolidated non-banks is closer to that of the syndicated credit data. In contrast, at least 20% of lending classified as lending to banks in the locational statistics ultimately provides funds to non-banks. This result is derived from comparing the locational statistics with the consolidated statistics for developing countries. In the consolidated statistics, inter-office bank lending is netted out, and subsequent lending to non-banks is reported instead. Since banks' loans and holdings of securities are reported as a single aggregate in the consolidated data, we use the locational banking statistics to estimate the *loan* component of total consolidated lending to non-bank borrowers. Separate data on the loan component of the BIS locational statistics started to become available in 1993, so we begin our comparative analysis in the second half of that year.<sup>5</sup>

To establish the strength of the relationship between the two data sets, we compare semiannual and quarterly changes in stocks, depending on the availability of BIS data. These changes include similar exchange rate effects in both cases, since we convert the non-dollar components of the synthetic stock of syndicated lending into dollars at each end of period at current exchange rates, thus replicating the way in which BIS banking data are reported.

### Comparison with the BIS consolidated banking statistics

Because the BIS consolidated banking statistics are available on a quarterly basis only as from end-1999, we compare semiannual changes in both data sets. We focus on lending to emerging markets, where the limited participation of domestic banks in syndicates makes our filtering more effective in identifying international lending.

A visual comparison of the two adjusted data sets shows some correlation. In Graph 1 we have plotted the changes for four groups of emerging economies. Downturns are more pronounced in the consolidated banking statistics than in the syndicated credits series (see, notably, Latin

The two data series appear correlated

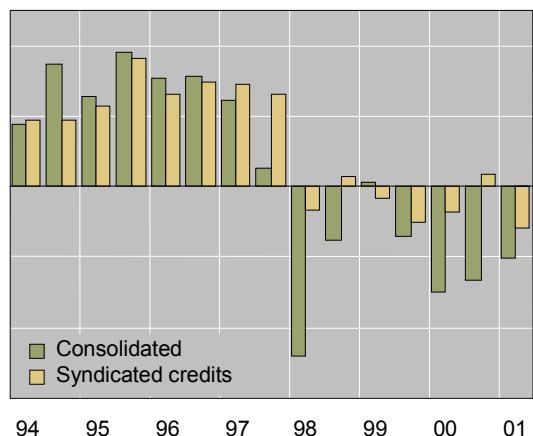
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<sup>5</sup> For further discussion of the consolidated and locational BIS banking statistics, see Wooldridge, in this *BIS Quarterly Review*. The concepts underlying the two sets of BIS banking statistics are also discussed in the Introduction to the Statistical Annex (page A4).

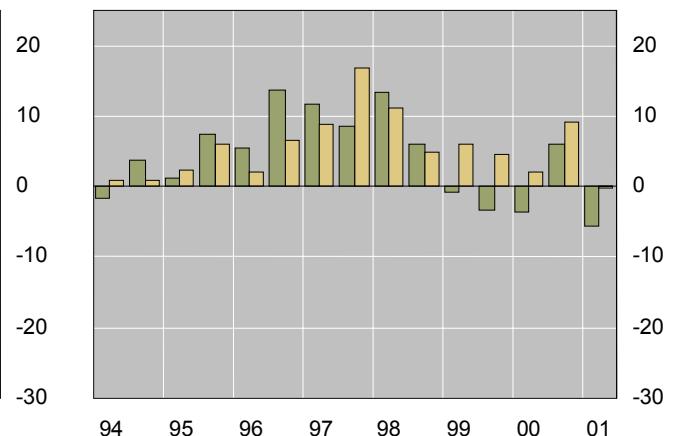
## BIS consolidated banking statistics and syndicated credits for selected borrowers

Total lending to non-banks in emerging economies, semiannual changes in stocks, in billions of US dollars

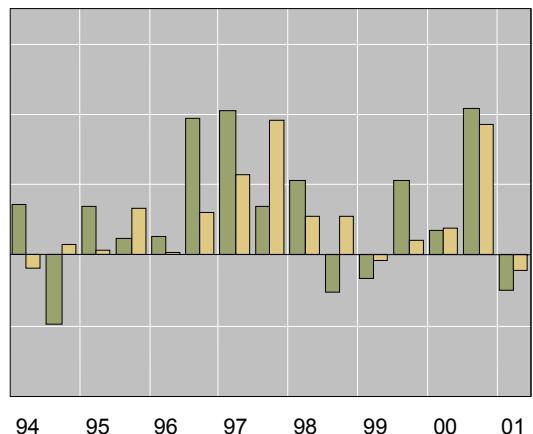
Asia



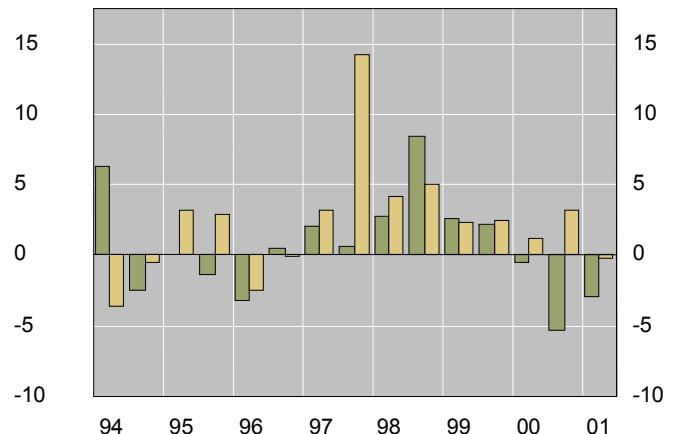
Latin America



Developing Europe



Africa-Middle East



Sources: Bank of England; Dealogic Loanware; BIS international consolidated banking statistics.

Graph 1

America in 1999 and 2000 or Asia in 1998) because decreases in the latter are limited to the assumed repayment of the full facility amounts at due date. Conversely, reductions in the former also cover called-in loans, write-offs and loans sold from banks' books. Changes may also appear in the BIS data later than in the syndicated credits, due to unusual delays between commitments and disbursements, such as during times of financial stress or turbulence (see, for instance, Latin America between 1997 and 1999).<sup>6</sup>

Detailed examination of individual credit facilities allows us to identify likely causes of some of the major discrepancies. For example, a liquidity

<sup>6</sup> We tested whether systematically excluding from the syndicated stocks all facilities granted for standby, commercial paper backup, refinancing, debt repayment and future acquisition purposes would improve the data correlation, since such facilities may not be drawn immediately or at all, and their undetermined drawdown pattern may be introducing noise. Although the amplitude of opposite moves is reduced when using the more restricted data set, the original data series are more closely correlated.

## Methodology

Regression analysis allows us to quantify the strength of the relationship between the changes in stocks in the BIS banking statistics and those in syndicated credits. Progressing from the general to the specific, we found that one- and two-period lags of the syndicated credit variable did not contribute significantly to explaining changes in the BIS data. We then reduced the model to two parameters:

$$\Delta \text{CONS}_i = \alpha_i + \beta_i \Delta \text{SC}_i + \varepsilon_i$$

where:

- $\Delta \text{CONS}_i$  denotes semiannual changes<sup>①</sup> in consolidated BIS loan stocks to geographical area  $i$ , corrected for any breaks in series, the exact size of which is available in the BIS database.
- $\Delta \text{SC}_i$  denotes semiannual changes in stocks of syndicated credits outstanding to region  $i$ .
- $\varepsilon_i$  is a randomly distributed error term.<sup>②</sup>

Parameters to be estimated:

- $\alpha_i$  corresponds to the average discrepancy in the two series for region  $i$  unrelated to any co-movements between the two.
- $\beta_i$  estimates the proportional covariation between the two data sets for region  $i$ .

## Regression of changes in BIS consolidated banking data on changes in stocks of syndicated credits

Sample period 1994 H1 to 2001 H1, 15 semiannual observations, in billions of US dollars

Change in consolidated lending ( $\Delta \text{CONS}$ )	Constant	Change in syndicated credits (* $\Delta \text{SC}$ )	$R^2$	Standard error of regression	DW
All emerging markets	– 1.8 (– 1.94)	+ 1.02 (7.67)	0.50	5.7	1.33
Asia	– 6.6 (– 2.92)	+ 1.43 (6.34)	0.76	7.1	1.28
Latin America	– 0.8 (– 0.38)	+ 0.89 (3.14)	0.43	4.9	1.23
Developing Europe	0.9 (0.66)	+ 0.79 (2.39)	0.30	4.1	2.48
Africa-Middle East	0.4 (0.37)	+ 0.10 (0.42)	0.01	3.7	1.21

Note: t-statistics in parentheses.

Sources: Bank of England; Dealogic Loanware; BIS consolidated banking statistics.

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<sup>①</sup> Both syndicated credits and the BIS consolidated data are non-stationary in levels. Changes are stationary under a Phillips-Perron test at the 5% level of significance, with the exception of syndicated credits for Asia. <sup>②</sup> Using the White test, we could not find any evidence of heteroskedasticity in the residuals of the regressions.

The table shows the semiannual estimation results for this model for the 1994–2001 period taking all regions together as well as each region separately. The slope coefficients for all regions except Africa-Middle East are significant at the 5% level or better, while only the constant for Asia is significantly different from zero.

We re-estimated this model using the available quarterly data for the 2000–01 period (not shown). Again, the constant for Asia is highly significant, but only the slope coefficient for developing Europe is significant in the quarterly estimation.  $R^2$  values are generally lower, except for a 0.98  $R^2$  value for developing Europe consistent with the very close visual relationship between the two regional series in the most recent periods. For both regressions, the slope coefficients and their standard errors are plotted by region in Graph 2.

We tested whether timing differences in the recording of loans might have a larger impact on quarterly data relative to semiannual data, thus explaining some of the weaker performance of the quarterly regressions for most regions. However, shifting the quarterly intervals of the syndicated credits backwards or forwards by one month did not improve the fit.

The BIS banking data tend to be more volatile than the syndicated loans series because they include short-term repo transactions. Excluding short-term components (less than one year) from both quarterly data sets, we obtained an overall  $R^2$  of 0.45 and coefficients similar to those yielded by the quarterly model including all maturities.

standby facility worth \$2.5 billion granted to the government of Mexico may not have been drawn and probably contributed to the major divergence in the two Latin America data sets at the end of 1997. Likewise, loan refinancing worth \$3.5 billion, arranged for an energy utility in Chile and having no net effect on the BIS data<sup>7</sup> but entering the syndicated credits as a new facility, may account for the opposite changes in Latin America in the second half of 1999.

### Semiannual estimates

Next we try to quantify the strength of the relationship between the two sets of data. As discussed in the box on methodology, we relate semiannual changes in consolidated BIS loans to changes in the synthetic stocks of syndicated credits for all emerging economies together and then by region for the period from mid-1994 to mid-2001.<sup>8</sup> From this we expect answers to two questions:

- First, what is the average difference between the two series, unrelated to any co-movement between the two? This is measured by the regression constant. Its value should depend mainly on the amount of *non-syndicated* lending included in BIS data, but also on average early repayments and the average amount of announced syndicate loans not drawn down. This amount might be positive or negative, depending on which factor was dominant during the sample period.
- Second, to what extent do the two series move together over time? Given an increase of one dollar in the syndicated credits, will the BIS data on

<sup>7</sup> Assuming the refinanced debt was non-syndicated bank debt already included in the BIS consolidated banking statistics.

<sup>8</sup> For a discussion of the factors driving international bank lending during this period, see Jeanneau and Micu, in this *BIS Quarterly Review*.

average increase by more, by less or by exactly one dollar? For example (keeping other factors constant), if syndicated loans are only partially drawn down in each period, we expect this factor to be less than one. It will be negative if changes in the two series tend to move in opposite directions, eg if early repayments exceed net new syndicated announcements. If additional non-syndicated lending is generally proportional to syndicated lending, we expect a coefficient greater than one. These effects may partially cancel each other out and other factors may also influence the proportional relationships. Ideally, if changes in both data sets were identical, we would expect the regressions to estimate an exact dollar for dollar relationship.

The strength of the relationship differs by region ...

... and is influenced by early repayments and partial drawdowns

Regarding the first question, we found that, taking lending to the four emerging market regions (Asia, Latin America, developing Europe and Africa-Middle East) together, *on average* and for the period as a whole, the stock of BIS banks' lending declined by \$1.8 billion more each half-year than could be inferred from the changes in syndicated lending. As is clear from Graph 1, this average is influenced by substantial early repayments in Asia during the post-1997 period. With respect to the second question, the proportional changes in both data sets seem to be closely linked, with the change factor significantly different from zero and virtually identical to one. On average, 50% of the variation in BIS bank lending to emerging market economies can be related to changes in syndicated credit facilities during the whole period in this simple model.

We then allow the constant and the proportional factors to be different for each region. The various regional constants (reported in the box) confirm that the large repayment constant noted above is due mainly to Asia, where heavy early repayments of bank credit are not reflected in the syndicated data. Thus, credit to Asia appears to have declined by \$6.6 billion more each period than evident from the syndicated credits. The positive constant terms for developing Europe and Africa-Middle East indicate that in these regions the changes in the consolidated statistics exceeded those in syndicated credits by \$0.9 billion and \$0.4 billion per half-year respectively, although, statistically speaking, the latter positive amounts may be due to random fluctuations in the reported data.

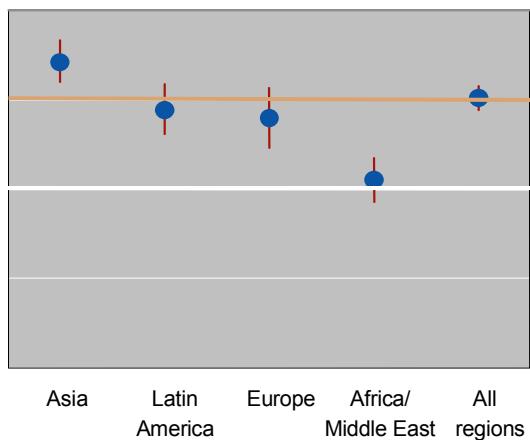
The resulting proportional factors by region are shown in Graph 2 (left-hand panel). The length of the vertical lines reflects the degree of confidence in the estimates. The longer lines signal that the true underlying coefficient could be quite far removed from our central estimate. The proportional factors are all positive and in three regions significantly different from zero and close to one.<sup>9</sup> They indicate that, over the period, a one-dollar change in syndicated lending to Latin America and developing Europe tended

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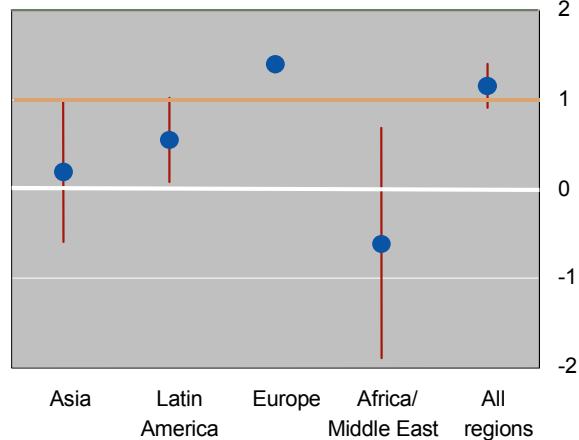
<sup>9</sup> There appears to be no statistically significant relationship between the two data sets in the Africa-Middle East region.

## Average relationship between changes in syndicated credits and in BIS consolidated banking stocks vis-à-vis emerging economies

Semiannual data, 1994-2001



Quarterly data, 2000-01



Note: The dots correspond to the central estimates of the proportional factors. The vertical lines show one standard error on each side; this measures the statistical reliability of the estimates, with two chances in three that the true underlying values lie within the bands.

Graph 2

to be mirrored by a respective 90 or 80 cent proportional change in BIS consolidated banking data. The coefficient for Asia indicates that changes in syndicated lending were accompanied by more than proportional moves in the BIS data. This result is presumably driven by large early repayments following the Asian crisis (Graph 1).

### Quarterly estimates

The BIS consolidated banking statistics became available on a quarterly basis at end-1999. A re-estimation of the model with quarterly data for 2000 and the first half of 2001 produced similar results for emerging markets as a whole, compared with our earlier results for the whole period from 1994 onwards. Pooling all data for the four emerging market regions, we found that there was a constant quarterly decline of \$2.7 billion in BIS lending, reflecting the heavy early repayments taking place during the estimation period that cannot be inferred from the changes in syndicated lending. The proportional changes in both data sets again seem to be closely linked, with the proportional coefficient close to one and highly significant with a low standard error. On average, 46% of the total variation in BIS bank lending to emerging market economies can be related to changes in syndicated credit facilities during this period.

Recent quarterly data produce similar estimates in aggregate ...

However, once we allow the constants and the proportional factors to be different for each region, there is a strongly significant and positive slope coefficient only for developing Europe,<sup>10</sup> indicating that total lending to that region exceeded syndicated lending during the estimation period. The other coefficients are rather low and not significant (Graph 2, right-hand panel). The

... but regional proportional factors are not as strong

<sup>10</sup> The standard deviation of the estimated coefficient is very low for that region.

values and the significance of the regional estimates for the proportional factors are consistent with early repayments being most concentrated in Asia, less so in Latin America and least in developing Europe. Although 46% of the variation in BIS data is accounted for by changes in syndicated credits, some of the estimated factors are so close to zero that we cannot have statistical confidence in them. We conclude that, in the current climate of early repayments of loans and subdued new lending to emerging markets, with the exception of developing Europe, it is difficult to find in most regions relationships as strong as those evident in the past between syndicated lending and the BIS data derived from banks' balance sheets. Moreover, the limited run of available quarterly consolidated BIS data reduces the statistical reliability of the estimates for the time being.

## Conclusion

It is clear that there are significant differences between the two data sets. Even after our adjustments the changes in the two data sets are not always of similar magnitude or even of the same sign. Over the estimation period, about 50% of the variance in international bank lending to emerging market economies can be explained statistically by changes in syndicated credits. This probably reflects in part the fact that the BIS consolidated banking statistics take account of actual drawdowns and early repayments, which cannot be identified in the constructed stocks of syndicated credits.

As a consequence of the weak relationship between the two data sets on a quarterly basis, there is little evidence that syndicated credits can be a reliable early proxy for consolidated bank lending in the near future. Once an additional timely source of early repayments data becomes available or once the level of early repayments shrinks again, this conclusion can be re-examined.

Still, at least in those periods where both data sets change by a similar amount, it may be helpful to look at the composition of the syndicated credit data to improve our understanding of BIS-reported bank lending to regions and individual economies. The purpose, maturity and pricing of most syndicated facilities are known, and we can distinguish between facilities entering and exiting the constructed stock of syndicated credits; therefore, we can analyse variations in the composition of net new lending. More generally, the data sets are complementary. Taken together, they improve our understanding of movements in international bank lending by more than if analysed in isolation.

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