Michael Chui Dietrich Domanski Peter Kugler Jimmy Shek
michael.chui@bis.org dietrich.domanski@bis.org peter.kugler@unibas.ch jimmy.shek@bis.org

The collapse of international bank finance during the crisis: evidence from syndicated loan markets[1]

This article examines developments in the syndicated loan markets during the financial crisis. The investigation of deal structures and purposes suggests that supply constraints aggravated the sharp decline of syndicated lending. An econometric analysis confirms that balance sheet constraints of international banks played a significant part in the collapse of syndicated lending.

JEL classification: F34, G15, G21.

The sharp decline in international banking claims is one of the defining features of the financial crisis. During the six months to March 2009, BIS reporting banks' foreign claims – the sum of the banks' cross-border claims plus their foreign offices' local claims in all currencies – fell by a total of $3.7 trillion, or almost 13%. This was the sharpest half-yearly decline since the BIS began collecting these international banking statistics in 1985. The contraction, which affected borrowers in both developed economies and emerging markets, marked the end of almost a decade of rapid expansion of banks' foreign claims (Graph 1).

To what extent have supply constraints in cross-border lending impeded global economic recovery? The answer to this question is not straightforward. Both supply and demand factors seem to have contributed to the contraction in international bank finance. Following the failure of Lehman Brothers in September 2008, funding markets froze temporarily (CGFS (2010)). This, together with rapidly growing credit losses, put bank balance sheets under severe stress towards the end of 2008. As a consequence, banks may have curtailed the supply of credit. At the same time, global economic activity fell sharply. In the fourth quarter of 2008, the value of exports of goods and services declined by 18% over the previous quarter. This reduced the demand for credit.

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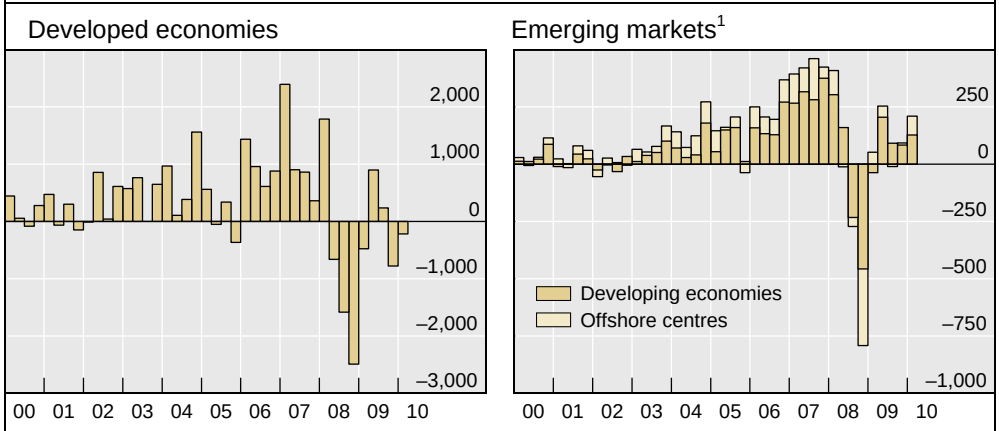
Changes in BIS reporting banks' foreign claims

In billions of US dollars



[1] Includes all developing economies and offshore centres.

Source: BIS consolidated banking statistics (immediate borrower basis). Graph 1

This article examines developments in the syndicated loan markets during the crisis to shed light on the decline in foreign bank lending.[2] Two particular features of the syndicated loan market help to identify the role of supply constraints in the contraction in international bank lending.

First, the syndicated loan market is more transparent than those for other types of lending. Competition among banks has encouraged the publication of detailed information on completed individual deals. These "tombstones" yield insights into the characteristics of borrowers and lenders, as well as the motivation and purpose behind such loans.[3] It is therefore possible to construct time series of syndicated lending for individual banks.

Second, the supply of syndicated loans tends to be more sensitive to bank balance sheet constraints than long-standing lending relationships. Syndicated loan markets are highly competitive and characterised by arm's length relationships. One, or a few, arranging banks typically negotiate the loan contract and a larger number of participating banks join the syndicate as providers of funding. While the lead banks (or arrangers) in a syndicate may seek fee income and to maintain the relationship with the borrower, the motivation for participating banks is primarily to generate interest income (Armstrong (2003)).[4]

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[2] Not all syndicated loans are cross-border in nature, and participating banks can be a mix of international and local banks. But in most deals, the lead arranger(s) are international banks. Accordingly, syndicated loan issuance contains important information about the borrower-lender and arranger-participating bank relationships (see Esty (2001)). In addition, Gadanecz and von Kleist (2002) find that the timelier syndicated loan data could provide important advance information on what later emerges from the BIS consolidated banking statistics.

[3] Syndicated loan data used in this feature are from Dealogic's *Loan Analytics* and Loan Pricing Corporation's *DealScan*, which contain information on global syndicated loan issues by borrower and issuer and by country of origination, and on the deal type and the use of proceeds.

[4] The managing agent negotiates the loan terms and coordinates the documentation process, the loan closing, the funding of loan advances and the administration of repayments (Dennis

This feature is organised as follows. The second section describes the main trends in syndicated loan markets during the past decade. The third explores what syndicated lending for specific financing purposes and changes in syndicated loan arrangements reveal about the importance of supply and demand factors. The fourth section employs a more formal test of the hypothesis that balance sheet pressures have reduced syndicated loan supply. The last section concludes.

Broad trends in syndicated loan markets

Syndicated loan volumes had grown rapidly prior to the crisis ...

Syndicated loans have become an important source of corporate funds in recent years. In 2009, international syndicated lending amounted to $1.8 trillion, compared with $1.5 trillion of borrowing by non-financial companies in international bond markets.

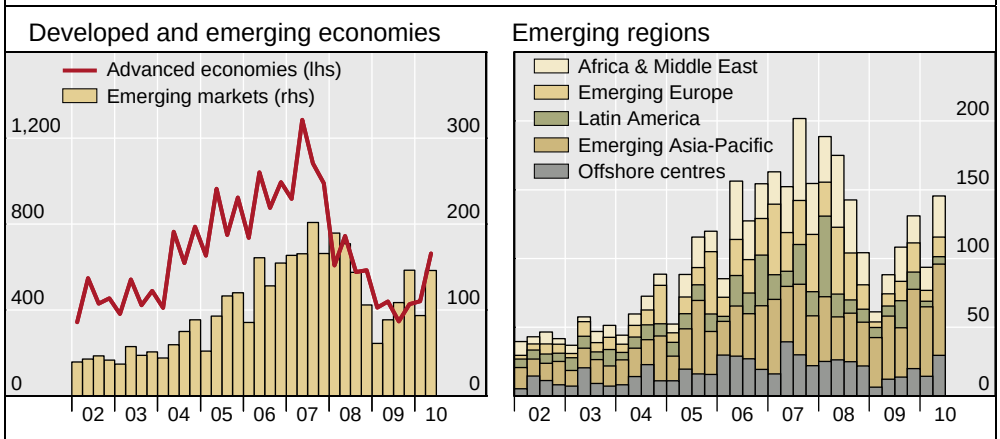
Like many other credit markets, syndicated loan markets grew rapidly in the run-up to the financial crisis. The gross amount of syndicated lending to developed economies rose from around $400 billion per quarter in 2002 to almost $1.3 trillion in the second quarter of 2007. Syndicated lending to emerging market borrowers followed a similar pattern, reaching a peak of almost $150 billion in the third quarter of 2007. Syndicated lending held up relatively well until mid-2008.

... and collapsed in the second half of 2008

Following the Lehman bankruptcy, syndicated loan markets collapsed. During the second half of 2008, gross syndicated lending declined by 67% in developed economies (Graph 2, left-hand panel). A decline of a similar magnitude was also observed in emerging markets (Graph 2, right-hand panel), with Africa and the Middle East being particularly affected. Notwithstanding the recovery in global financial markets since the second quarter of 2009, syndicated lending only recently picked up somewhat.

Gross syndicated loan issuance

In billions of US dollars



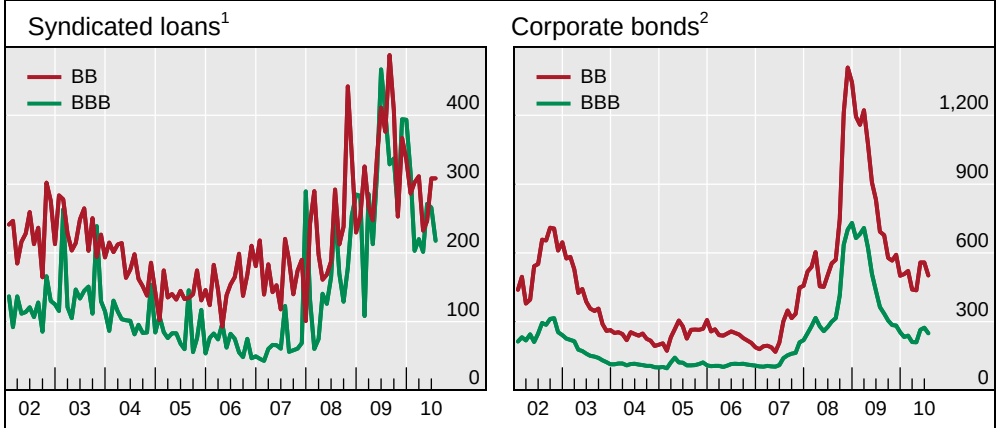
Source: Loan Pricing Corporation *DealScan*.

Graph 2

and Mullineaux (2000)). Furthermore, as some loans are issued as a backup revolving facility, a facility (or "non-use") fee may be charged regardless of the level of drawings.

Syndicated loan and corporate bond spreads

In basis points



[1] Spreads over Libor at issuance. [2] Merrill Lynch Global Bond Indices; option-adjusted spreads.

Sources: Bloomberg; Dealogic Loan Analytics. Graph 3

Sharp widening of syndicated loan spreads

The crisis was also associated with a substantial widening of syndicated loan spreads (Graph 3, left-hand panel). Following a period of low spreads in the mid-2000s, average primary market spreads of both investment grade and sub-investment grade (commonly known as "leveraged") syndicated loans rose sharply in late 2008, although by less than those on similarly rated corporate bonds. Towards the end of 2008, BBB-rated syndicated loan spreads reached 400 basis points, compared with about 750 basis points on corporate bonds with the same rating (Graph 3, right-hand panel). However, while corporate bond spreads have fallen significantly since early 2009, syndicated loan spreads seem to have remained wide until recently.

The combination of lower lending volumes and higher spreads is consistent with reductions in both syndicated loan supply and demand. The two are difficult to disentangle, especially since spread changes are difficult to interpret owing to the severe disruptions to Libor, which serves as benchmark for most syndicated loans.

Factors affecting syndicated loan demand and supply

The pattern of syndicated lending by financing purpose and changes in syndication arrangements confirm the view that a combination of demand and supply factors contributed to the collapse in syndicated loan markets.

Reduced demand for credit to finance acquisitions …

A first example is the drop in syndicated lending for acquisition finance. In 2007, syndicated loans used to finance mergers and acquisitions (M&As) accounted for 44% of total syndicated lending in developed countries;[5] this share fell to 25% by end-2008, coinciding with a decline in corporate profits (Graph 4, left-hand panel). One could argue that reduced expectations for corporate profits also lowered the expected returns from M&As, and hence the

[5] The buyout market in emerging economies has been relatively less developed, and syndicated lending for M&As represents only a small share of total issuance.

demand for acquisition finance. Indeed, expectations of rapid corporate profit growth had supported the boom in leveraged buyouts in advanced economies in the run-up to the crisis (CGFS (2008)).

… coincided with the drying-up of securities markets

At the same time, however, supply constraints seem to have been at work. Non-bank investors, such as hedge funds and other asset managers, retreated from the secondary market for syndicated loans. The funding of structures used to securitise syndicated loans, such as collateralised loan obligations, evaporated. As a consequence, banks were unable to securitise and distribute leveraged loans at previously expected prices. At the beginning of 2008, banks held an estimated $400 billion of leveraged loans that could not be securitised (CGFS (2008)). This intensified banks' funding constraints and may well have led them to reduce the supply of acquisition finance. In addition, corporate debt clearly became riskier during the crisis, which would have made investment in syndicated loans less attractive even for lenders without any balance sheet constraints.

The global recession lowered trade financing needs …

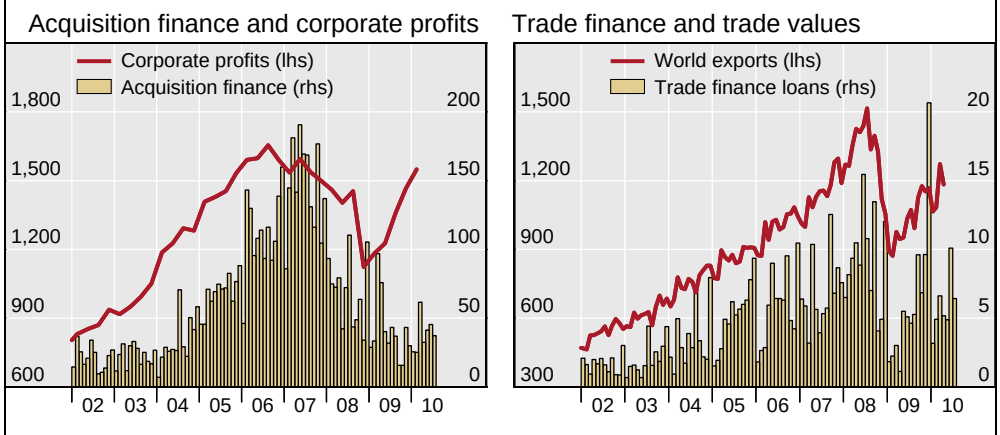
A second example for a simultaneous reduction of supply and demand is syndicated trade finance, which is much smaller than syndicated lending for M&As. The issuance of syndicated loans to finance trade virtually came to a halt around the end of 2008 (Graph 4, right-hand panel). The global economic recession reduced trade finance needs. For instance, exporters operating in global supply chains or in sectors particularly hard-hit by the global recession are reported to have been affected by the cancellation of orders and delays in buyers' payments (Malouche (2009)). Moreover, the sharp fall in commodity prices significantly reduced finance needs for a given trade volume. This had an impact on the demand for syndicated loans, which are mostly used for short-term commodity financing.

… while trade credit became much more expensive

That said, like other forms of credit, trade finance became much more expensive. Trade finance deals were offered at 300–400 basis points over interbank finance rates at the end of 2008 (Malouche (2009)). There is evidence that banks did not accept other banks' letters of credit in trade financing, suggesting that the decline in syndicated trade finance was in part due to supply constraints.

Syndicated loans and trade and acquisition activity

In billions of US dollars

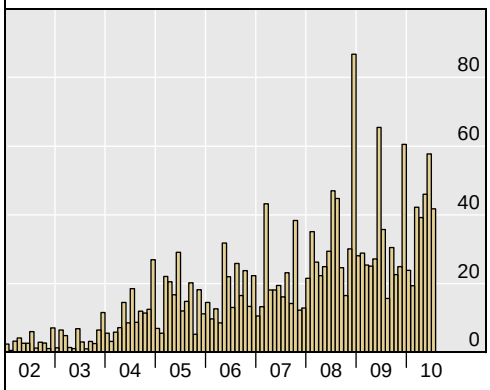


Sources: Federal Reserve Board; IMF, *International Financial Statistics*; Dealogic Loan Analytics. Graph 4

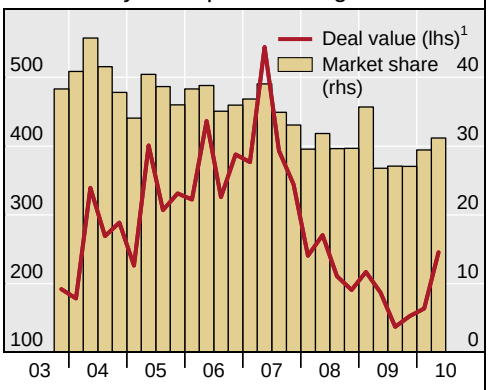
Club deals and loan issuance by the top five arrangers

In billions of US dollars

Issuance of club deals



Issuance by the top five arrangers[1]



[1] Ranked by the total value of arranged deals between 2003 and 2009.

Source: Dealogic Loan Analytics. Graph 5

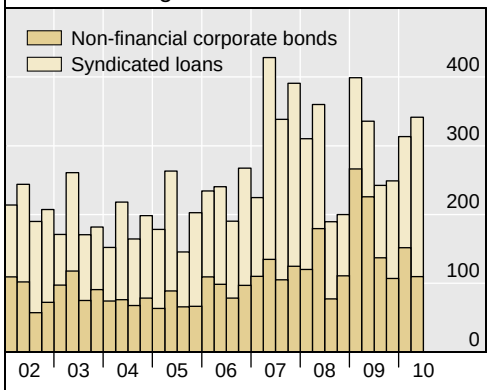
Growing importance of "club deals" …

Changes in syndication arrangements may be indicative of credit supply constraints. For instance, syndicated loan transactions in the form of "club deals" gained importance, increasing from 12% of total issuance in 2008 to 17% in 2009 (Graph 5, left-hand panel). A club deal is a loan syndicated by a small number of participating banks, which are not entitled to transfer their portion of the loan to a third party (White & Case (2003)). Such smaller syndicates result in lower restructuring and monitoring costs, and are thus preferred by lead arrangers when default is more likely. From this perspective, greater use of club deals might be an indication of both growing bank risk aversion and higher credit risk at a time of greatly increased economic uncertainty. This is consistent with Esty and Megginson (2003), who find that syndicate size is positively related to the strength of creditor rights and the reliability of legal enforcement.

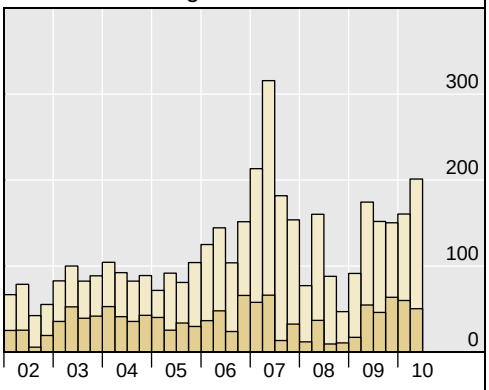
Syndicated loan and bond issuance by credit rating

In billions of US dollars

Investment grade



Non-investment grade[1]



[1] Non-rated issuance is not included.

Sources: Dealogic Loan Analytics; Dealogic DCM & ECM Analytics; BIS. Graph 6

… and substitution of syndicated loans with other forms of credit

The least ambiguous indication of supply constraints is perhaps the substitution of syndicated loans provided by international banks with other sources of finance. In developed countries, investment grade borrowers seem to have used capital markets as a funding alternative. Unusually strong investment grade corporate bond issuance in 2009 coincided with low syndicated lending (Graph 6). In some emerging economies (eg China), where domestic banks have the capacity and are willing to fill the funding gap created by the withdrawal of international banks, the issuance of syndicated loans continued to rise (see box). The top five banks' share in the syndicated loan market fell from over a third before the crisis to roughly one quarter in 2009 (Graph 5, right-hand panel).

A preliminary econometric analysis of bank-level data

This section presents a preliminary econometric investigation of the significance of credit supply effects at the level of individual banks. The panel analysis focuses on the relationship between the volume of syndicated loans issued by the world's largest 21 banks and bank-level measures of balance sheet stress for these banks during the 2005–09 period.

We chose an indirect approach to estimate supply effects, employing a rather general reduced-form equation. The dependent variable is the log of the amount of syndicated loans issued by a bank. The observable right-hand variables consist of predetermined variables that capture supply function shifts: five-year bank CDS spreads, as an indicator of market perceptions of a bank's riskiness and funding availability, a leverage ratio and cumulative capital injections. Economic growth in the bank's home country is used to control for domestic economic conditions that might affect a bank's international lending behaviour.[6] Besides the observable right-hand variables we include a bank-specific fixed effect in the regression. The bank fixed effect represents all unobserved time-invariant characteristics of the loan supply of a bank (eg the business model).

A time-specific fixed effect is regarded as a control for the time-variant worldwide demand for loans, which is common to all banks. It should, however, be noted that this catch-all variable may also capture supply shocks common to all banks not represented by the observable regressors. Hence, so interpreted, the results may even underestimate the importance of supply factors.

Econometric results …

The results of the panel regression are reported in Table 1. The coefficient estimates for the loan supply determinants are negative as expected. The CDS spread is economically and statistically highly significant. An increase in CDS spreads of 100 basis points leads to a loan supply reduction of approximately 13% in the following quarter. The leverage ratio coefficients estimate is statistically insignificant, but capital injections are significant at the 5% level.

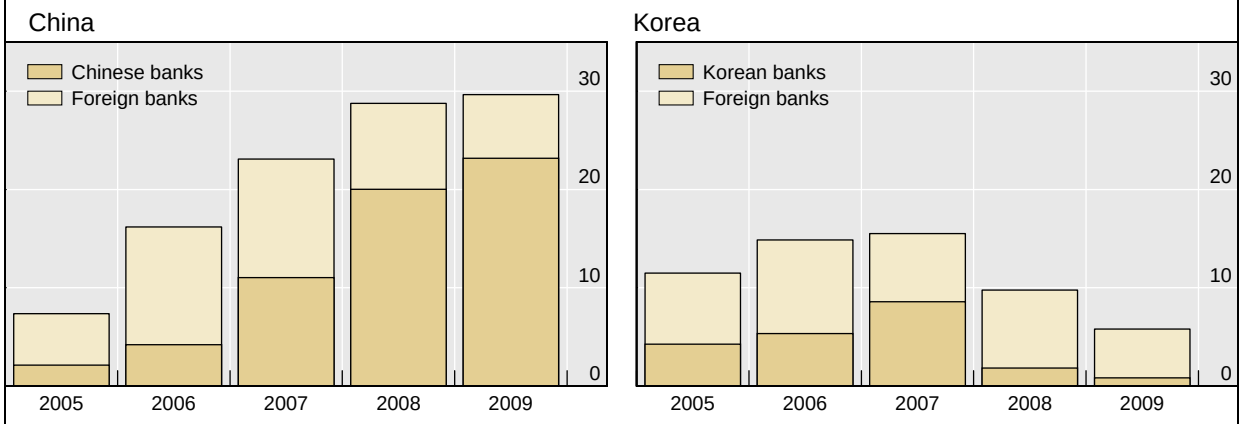
[6] All explanatory variables are lagged one quarter in order to avoid simultaneity problems. Moreover, the lagged dependent variable is included as an additional regressor in order to allow for dynamic adjustment.

Syndicated loans in China and Korea

The cases of China and Korea illustrate how conditions in domestic banking systems have affected syndicated loan markets. China was one of the few countries where syndicated loan issuance continued to grow through the global financial crisis. An important factor that has contributed to the expansion in China was the ample supply of bank credit by local banks. Traditionally, international banks dominated in the mandated manager "league table" of syndicated loan issuance to Chinese borrowers. However, starting from 2007, the annual volume of syndicated loans issued in China with domestic banks as mandated managers has increased markedly, more than offsetting the withdrawal by international banks (Graph A, left-hand panel). By contrast, the amounts of syndicated loans with local banks as mandated managers fell more than proportionately in Korea, contributing to the substantial decline in syndicated loan issuance over that period (Graph A, right-hand panel).

Mandated arrangers of syndicated loans in China and Korea

Issuance volume, in billions of US dollars



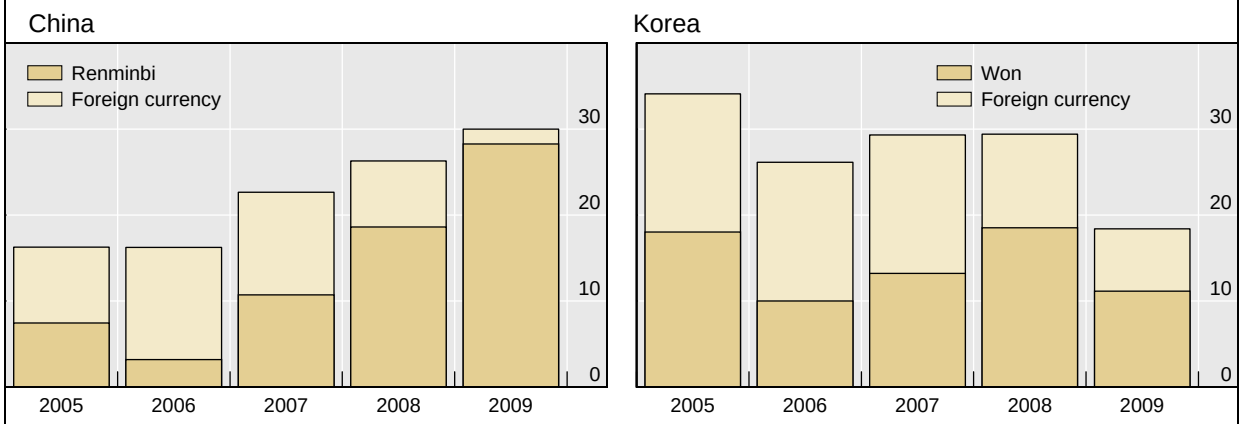
Source: Loan Pricing Corporation *DealScan*.

Graph A

The unwillingness of international banks to participate in loan syndicates during the crisis was also evidenced in the issuance data by currency. In 2006, almost 80% of syndicated loans issued in China were denominated in foreign currencies, mainly US dollars. Since then, the share of foreign currency denominated loans in total has contracted sharply, to less than 5% in 2009 (Graph B, left-hand panel). Given that the capacity of foreign banks to lend in renminbi is rather limited, this indicates that local banks have played an important role in supporting syndicated lending in China. In Korea, in contrast, both won-denominated and foreign currency denominated syndicated lending fell in 2009 (Graph B, right-hand-panel).

Syndicated loan issuance in China and Korea by currency

Issuance volume, in billions of US dollars



Source: Loan Pricing Corporation *DealScan*.

Graph B

Demand and supply factors in syndicated loan issuance[1]

Q1 2005–Q4 2009

Variables	Constant	Lagged dependent variable	CDS spreads[2]	Leverage[3]	Capital injection[4]	Output Growth[5]
Coefficient	4.0360***	0.2394***	–0.129***	–0.001	–0.3323**	–0.351*
	Demand					
Time fixed effect[6]	Q4 2005	Q4 2006	Q4 2007	Q3 2008	Q4 2008	Q1 2009
Coefficient	0.3587	0.4347	0.4106	–0.2752	–0.1432	–0.6326
R-squared	0.89					

*, ** and *** denote coefficients significantly different from zero at the 10%, 5% and 1% level, respectively.

[1] The dependent variable is the syndicated loan issuance by 21 banks (logarithmic). The model is estimated through panel regression using bank- and time-specific fixed effects. [2] Senior five-year CDS spreads, in percentage points; average for the period. [3] Total assets divided by common equity. [4] Capital injected divided by common equity. [5] Banks' home country output growth; annual change, in per cent. [6] Some are shown for illustration. The bank fixed effect is not reported here.

Sources: Bloomberg; Loan Pricing Corporation *DealScan*; Markit; national data. Table 1

The coefficient estimates indicate that a 10% capital injection, including both capital-raising in the markets and capital support provided by governments, is followed by a reduction in the supply of syndicated loans of about 3.3%. A decline in GDP growth in the home country of 1% is followed by a 3.5% decline in loan supply. The coefficient of the lagged dependent variable is clearly statistically significant but is relatively small (0.24).[7] This indicates that the syndicated loan supply is adjusting quickly, consistent with the arms length's character of the loans.

Both bank and time fixed effects are highly statistically significant. Of the banks in the sample, the bank fixed effects show, for instance, that Citibank and Rabobank have the largest (smallest) amount of loans outstanding, ceteris paribus. The time effects are positive or only slightly negative up to the fourth quarter of 2008. For 2009 they are strongly negative. This pattern is in line with the course of the recent worldwide recession and, subject to the caveat noted above, supports a loan demand interpretation of the period fixed effect.[8]

… confirm the importance of credit supply constraints

Overall, these preliminary results support the view that especially concerns about the soundness of large international banks, and the resulting funding pressures, constrained the supply of syndicated loans. The average increase in CDS spreads of the banks in our sample of about 180 basis points between end-2007 and the second half of 2008 could explain a decline in syndicated loan issuance of about one quarter until early 2009. However,

[7] This clearly shows that our estimation does not suffer from a spurious regression problem which implies a lagged dependent variable coefficient of 1. However, given the small period sample we have available, it does not make sense to test for unit roots and cointegration.

[8] Finally, it should be mentioned that the results with respect to our loan supply determinants are essentially the same when we adopt a first-difference specification. However, we get a strongly negative coefficient estimate for the lagged dependent variable, which indicates that this alternative specification suffers from an over-differencing problem. In addition, using current values of the loan supply determinants only leads to a slight decrease in the R-squared with marginal changes in the coefficient estimates.

understanding the precise nature and transmission of balance sheet constraints requires further investigation. For instance, it is not clear how to interpret the reduction of syndicated loan supply following capital injections. One possibility is that those banks that received the largest capital injections had the weakest balance sheets and faced the most severe lending constraints. Another explanation is that capital injections created a bias in favour of domestic assets. Indeed, in several advanced economies government capital support programmes contained clauses aimed at ensuring that fresh capital was used to sustain domestic lending (Panetta et al (2009)).

Conclusion

Both demand and supply factors contributed to the decline in syndicated loan issuance during the financial crisis. The investigation of deal structures and purposes suggests that supply constraints aggravated the sharp decline of syndicated loan issuance. Regression analysis confirms that balance sheet constraints of international banks played a significant part. These preliminary results broadly confirm the findings of similar studies on the significance of supply effects.[9]

The results raise at least two issues. The first concerns the extent to which constraints in syndicated loan supply can be expected to ease in the near term. Dysfunctional securitisation markets might constrain the ability of banks to place syndicated loans in the secondary market for a while. Moreover, repairing bank balance sheets takes time. But the sensitivity of syndicated loan supply to changes in bank CDS spreads may suggest that measures that alleviate concerns about banks' soundness and ease bank funding pressures could have significant positive effects on credit supply even in the near term.

Second, recent developments in syndicated loan markets might be indicative of structural changes in credit markets. The gradual return to more normal functioning of the corporate bond markets could have eased funding constraints for banks and corporations. In particular, those with an investment grade rating might be more reliant on market finance in the future. Moreover, looking forward, emerging market banks may play a much bigger role in syndicated loan markets, and in international banking more generally, than in the past. The syndicated loan market with its role in financing trade and mergers and acquisitions might be one key area of expansion for these banks.

[9] Takáts (2010), using the BIS locational statistics, finds that the impact of supply factors was stronger than that of demand factors in causing the sharp decline in bank lending to emerging market economies during the financial crisis. McGuire and Tarashev (2008) also find that deterioration in bank health is associated with a decline in the growth of credit to emerging markets in the 1990s.

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