

Spoilt and lazy: the impact of state support on bank behaviour in the international loan market

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Comments very much appreciated.

Abstract

This paper investigates the behaviour in the international syndicated loan market of banks that enjoy generous financial support (typically from the public sector) . Supported banks tend to be associated with risk under-pricing and lack of innovation. After controlling for risk, syndicated loans arranged by such banks have on average lower spreads compared to other loans and supported banks also retain loan portfolios that are on average priced below market. When the investment strategy of supported banks differs substantially from that of the average bank it is not typically in the direction of exhibiting more innovation. Supported banks tend to hold less specialised portfolios than the average bank, they tend to align themselves more closely with market trends and to exhibit lower persistence in their investment choices.

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Introduction

Banking is an area of economic activity of intense interest for public policy. Banking is heavily regulated globally and public sector involvement often includes control and outright ownership of banking institutions. While regulations aim at minimising the incidence and costs of financial distress to individual banks and the banking system as a whole, control is often sought to accomplish other objectives such as the channelling of financing to particularly sensitive economic sectors or borrowers with limited access to credit because of a market failure. Public sector interest is often associated with the existence of explicit forms of financial support or the expectation that banks under stress are likely to be helped out of their troubles by the public purse. Banking is also a business of taking and managing risk. The theory of moral hazard suggests that ill-conceived insurance against downside risks may lead to distorted incentives and excessive risk taking.

This paper focuses on the investment decisions of banks that are perceived by the market as likely to receive financial support if they find themselves in distress. More specifically, it concentrates on the behaviour of the banks in the international syndicated loan market. It investigates whether the existence of support (in the form of explicit or implicit guarantees) influences the pricing of loans in which these banks participate. It examines both the pricing of facilities in which the supported banks act as senior arrangers and the loan portfolios that they retain on their books. In terms of supported banks' investment decisions, the paper examines whether they use the benefits derived from the protection of their balance sheet to support borrowers in "niche" markets, an attribute consistent with their special character and prescribed role, which would set them apart from the typical market participant.

An important feature of this paper is that in analysing these questions, it takes an international perspective. This is true not only in terms of the banks that are examined, which come from a number of different countries, but also in terms of the market that we focus on, which is open to international competition. The benefits of this are two-fold. Firstly, the international syndicated loan market permits the comparison of the behaviour of banks that come from different countries within a fairly standardised environment. It is a market where the lack of a "levelled playing field" can give a competitive advantage to players that owe their lower funding costs to the existence of guarantees. Historically, concerns with this type of advantage were among the motivations behind the development of the first set of international standards for capital adequacy: the Basel Capital Accord of 1988. Secondly, the examination of the behaviour of banks in an international market also helps to reduce the influence of national circumstances, which typically complicate cross-border studies. A further element of cross-border comparability is the fact that the level of state support is identified on the basis of the "support ratings" by an international rating agency.

The results associate a high level of support with bank loan portfolios with a higher proportion of under-priced facilities. Similarly, the presence of a supported bank as a senior arranger in a loan syndicate is associated with lower loan spreads for the facility compared to a market benchmark, and hence an under-pricing of the underlying risk.

At the same time, there is no evidence that the investment choices of state supported banks differ in any fundamental ways from those of their competitors, an indication of a special role associated with supported status. In fact, there is stronger evidence of trend-following behaviour among supported banks. Namely, they tend to broadly follow market trends in their lending and their decisions are less sensitive to the strength of their balance sheet than the typical bank, which is not subject to the same protection. This result is particularly pronounced for banks that are state owned.

The implicit conclusion from this analysis is that state support does not translate in banks that are fundamentally different from the average bank in the market in the sense of persistently seeking to specialise in financing particular areas of economic activity. Investment decisions by supported banks track more closely the market average than those made by their non-supported peers (hence the characterisation "lazy"). State support does seem to be associated, however, with some carelessness about the pricing of risk and (implicitly) a business strategy of winning mandates by competing on the price of loans rather than on the strength of the services provided (hence the characterisation "spoilt").

The paper presents three interesting methodological aspects. First, it constructs a portfolio of loan participations for each bank on the basis of information on individual loan-level data. This permits the

calculation of the average characteristics of the loans in a bank's portfolio and, in particular, the average pricing of these investments. Second, the behaviour of banks with different characteristics (supported banks, large banks, public banks) is benchmarked against the overall market (defined as all banks participating in the international loan syndication) to detect different patterns in investment behaviour. Third, information on individual loan participations is matched with information on the balance sheet of individual banks to investigate, at a micro-level, whether banks' characteristics are associated with specific patterns in their syndicated lending activities.

One important limitation of the paper is that it does examine only one aspect of the overall behaviour of supported banks, the one related to the international syndicated loan market. It does not in particular look at the behaviour of these institutions in the domestic loan market, or their securities market activities. While this limitation is a drawback in terms of characterising the overall impact of support, the results indicate that there are areas of activity (such as the international loan participations) where supported banks tend to compete for size on the basis of consistently lower pricing. This suggests that state support may have implications that go beyond the national markets.

The rest of the paper is organised in six sections. The next section reviews related literature and lays down the main questions for the analysis. The second section gives an overview of the data and the empirical methodology describing, in particular, the two perspectives we adopt in our analysis. The third section discusses the result of the baseline pricing equation we employ throughout most of the paper. Section 4 discusses the results of our analysis from the perspective of the individual loan. By contrast, section 5 takes the perspective of individual banks and looks at the nature of their syndicated loan portfolio. The final section concludes and offers some suggestions for further work.

1. The main questions

While financial safety nets are recognized as important in alleviating the costs of banking crises, they are also known to create moral hazard in the banking industry (Baumann and Nier (2003)). However, safety nets are sometimes needed to incite banks to make higher-risk higher-return investment choices. This can in some instances make funding available to socially important borrowers that would normally be denied credit by lenders whose risk-return choices are constrained by the scrutiny of market discipline.

Safety nets are intended to alleviate the financial costs of economically inappropriate bank behaviour, but they entail moral hazard. They are typically provided by governments – in the form of guaranteed liabilities, or in a wider sense, of state ownership – in order to protect depositors and financial systems from the consequences of economically unsuitable (but perhaps sometimes socially desirable) risk-return decisions of bank managers. However, it is recognized that safety nets create moral hazard (Baumann and Nier (2003)). State ownership may have this effect because the managers of state-owned enterprises may exert lower effort or divert more resources than their private sector counterparts, for their own political, personal or economic objectives (Sapienza (2004))¹. As an example of government guarantees creating moral hazard and eventually culminating in a financial crisis, Kane (1989) cites the US savings and loans crisis of the 1980s entailed by deposit insurance and late action² to close problem banks. According to Kane et al (2003), implicit or explicit deposit insurance can exacerbate or subsidise bank risk taking – through an increase in leverage or in the volatility of asset returns – especially when the value of the insurance exceeds the premium paid. This idea has been formalised among others by Merton (1977, 1978) who shows that a deposit insurance

¹ Sapienza (2004) finds that state-owned banks charge lower interest rates than do privately owned banks, after controlling for borrower riskiness. Using a sample of banks in major emerging markets during the 1990s, Dinç (2005) shows that government-owned banks increase their lending in election years relative to private banks and that this result is robust to controlling for macro-economic and bank-specific factors.

² Several papers provide evidence of political pressures delaying corrective action to deal with problem banks. In a study of large private banks in 21 major emerging markets in the 1990s, Brown and Dinç (2005) provide evidence that political concerns can significantly delay government action (closure, nationalisation and the like) to sort out problem banks. They show that such action is less likely to happen before elections than after, controlling for macroeconomic and bank-specific factors. Kroszner and Strahan (1996) provide similar evidence for the US Savings and Loans crisis.

contract can be thought of as a put option on the bank's assets, whose value increases with the bank's leverage and the volatility of its returns. It has been empirically demonstrated that by allowing, for a given level of risk-taking, capital buffers to be smaller or interest rates on banks' liabilities to be lower, safety nets weaken the ability of market discipline to foster financial stability (Demirgüç-Kunt and Huizinga (2004), Baumann and Nier (2003), Gropp, Vesala and Vulpes (2001)). If no safety nets exist, depositors and creditors can discipline banks³ that engage in excessive risk-taking by demanding higher interest rates or by withdrawing their deposits. But government safety nets⁴ appear to reduce the cost of funding for banks and make deposit rates and bank debt yields less sensitive to bank risk⁵.

Another risk associated with banks having a special status with regards to market discipline is that they might use that status to expand into areas where their expertise might be poorer than that of non-special banks. Jiménez and Saurina (2004) report that Spanish savings banks' lending is relatively riskier than that of other types of Spanish banks. They point out that deregulation of the Spanish financial sector resulted in savings banks⁶ extending loans to new geographical areas or sectors where they did not have the required expertise. An adverse selection problem (in the sense formulated by Shaffer (1998)) arose when these institutions offered loan contracts with collateral requirements that were more suitable for high-quality borrowers than for poor quality ones. Acharya, Hasan and Saunders (2004) also argue that diversification into new sectors by financial institutions lacking sufficient expertise may lower monitoring effectiveness and increase bank risk.

Despite the moral hazard issues involved, one possible rationale behind safety nets is to entice banks to adopt higher risk, higher return investment choices and thus to enhance funding opportunities for those socially important borrowers which would normally be denied credit by profit-maximising financial institutions. This can remedy market failures in credit and financial markets (Stiglitz and Weiss (1981), Greenwald and Stiglitz (1986)). Sapienza (2004) has empirically investigated this issue by examining the lending behaviour of Italian private and state-owned banks to Italian firms. She reports that state-owned banks are more likely to extend credit to firms located in economically depressed areas that would normally tend to be denied credit by privately owned banks. In a separate paper, Carey et al (1998) find that finance companies⁷ are more willing than banks to lend to riskier borrowers. On the other hand, Galindo and Micco (2004) present cross-country evidence that state-owned banks do not appear to play a significant role in providing credit to industries at risk of being excluded from financing by other institutions, ie sectors that have less collateral to put up for securing loans and that are subject to stronger informational asymmetries. Beck and Levine (2002) and La Porta et al (2002) fail to find that government ownership of banks is beneficial for growth.

In this paper we focus on two specific questions related to the influence that public sector support might have on the behaviour of banks in the international syndicated loan market. The first question is whether supported banks have an impact on the pricing of loans. The participation of banks with high support in a loan syndicate might distort pricing. In particular, to the extent that these lenders are

³ Investors' ability to assess default and to incorporate the resulting information into bond and stock prices makes market discipline a suitable tool to assist regulatory goals in the banking industry (Herring (2004)). Factors that determine the effectiveness of market discipline include the disclosure of financial information and the reliance of banks on uninsured liabilities for their funding. In addition, investors must have the ability and financial incentives to discipline banks, whose risk-return choices must be sensitive to the prices of their debt and equity.

⁴ One measure of the extent of government safety nets used by Gropp, Vesala and Vulpes (2001) is the Support rating assigned by the Fitch rating agency. The authors define banks with a support rating equal to 1 or 2 as having a strong implicit or explicit government guarantee.

⁵ For all these reasons, because of the moral hazard entailed, it is acknowledged that the government policy associated with the provision of safety nets has to contain an element of "constructive ambiguity" with regards to the conditions in which bailout will occur (Freixas (1999)).

⁶ The risk-return decisions of savings banks are not necessarily subject to the same level of shareholder scrutiny as are those of privately owned commercial banks.

⁷ Finance companies in the US are specialised financial firms primarily involved in extending credit to business and consumers. Unlike commercial banks, they are not constrained by bank regulations, since they do not collect deposits – relying instead on their parent companies or capital markets for their funding. It has been argued that finance companies use risk-controlling techniques that are different from those of commercial banks and are better-suited for high-risk borrowers. Finally, finance companies differ from commercial banks in their less tightly controlled ownership – and, as a result, a possibly less stringent oversight of risk-return choices by shareholders.

shielded from (less subject to) the disciplinary influence of market forces either because of lower funding costs (compared to the underlying asset risk) or because of state ownership, they may be less concerned with the proper compensation for risk and accept lower spreads. Competition for syndicate business may also force other lenders to accept these low spreads in order to maintain a presence in the market (defend their market share).⁸

The second question we ask is whether those banks differ in their behaviour from other lenders that do not benefit from the same level of support. In particular, we attempt to look for evidence that supported banks hold portfolios that have different characteristics from average bank portfolio. Do they tend to specialise more than other banks? Do they tend to build more stable relationships with particular types of borrower, or are they trend followers? Do they tend to promote newcomers to the international syndicated loan market? Are their portfolios balanced in terms of risk and reward?

2. Empirical methodology and data

This section provides a broad overview of the international syndicated loan market and describes the main variables used in the analysis. It also outlines the two complementary empirical perspectives adopted in this study: the one that focuses on the individual loan facility, and the one that looks at individual banks and their behaviour in this market.

The international syndicated loan market provides an interesting context for the analysis of the influence of state support on bank behaviour. It is a market with cross-border participation where the fact that some banks may enjoy a comparative advantage in terms of funding costs can have implications for other market participants. Syndicated loan market borrowers are typically large corporates of sovereign entities. Banks' participation in a lending syndicate can take different forms.⁹ The typical structure of the loan facility involves a small group of senior banks and a broader group of junior participant banks. *Senior* banks form the core of the lending syndicate that provides the seed funds and set the key facility parameters such as loan terms and pricing. A group of *junior* banks completes by the participation of a group of members: banks which take up smaller shares of the loan and play a secondary role in the design and structure of the loan. Senior syndicate members retain a substantial share of the loan and, importantly, share among them any residual unallocated amount that is not placed with junior participants.

Syndicate members are compensated for their participation in the syndicate through the interest rate on the loan and fees.¹⁰ Since the loans represent funding commitments the interest rate is typically calculated as a spread over LIBOR and it applies only on the amount that is actually drawn. A number of fees, which are calculated as a proportion of the amount raised and are either paid upfront and are recurrent (paid periodically through the life of the facility), compensate the members of the syndicate for their specific role in forming the syndicate, taking on any residual risk and the provision of funding.

The syndicated loan information in this paper has been extracted from the Dealogic Loanware database. Each loan facility record identifies the members of the syndicate and their role as senior or junior members. It also contains information about the share of the loan retained by syndicate members. This information is complete for senior syndicate members. On occasion, however, only the total amount allocated to the junior syndicate members is identified and this total has been arbitrarily distributed equally across the group of participating junior banks. The database also provides information about several characteristics of the facility (such as currency of denomination, maturity, purpose etc) and describes the structure of syndication fees and the spread. For the analysis in this paper information on more than 24,000 loan facilities has been extracted over the period 1993-2001. Since there are no good reasons to believe that specific types of loan might present particularities in

⁸ Lending is increasingly linked to other ancillary business that can generate a constant stream of fees such as investment banking advice, securities underwriting etc. Universal banks that can provide a broad array of services to their clients are best positioned to benefit from a multi-faceted relationship with the borrower.

⁹ For an overall description of the structure and behaviour of the international syndicated loan market see Gadanez (2004).

¹⁰ For more detailed discussion on the structure of fees see Altunbaş et al (2006)

their pricing (beyond the characteristics that are explicitly controlled for in the regression) no particular filtering was applied in the selection of these loans other than the requirement that the database included information on all relevant variables.

The information on the individual loan facilities was combined with information on the syndicate banks extracted from Bankscope. This database contains details about the balance sheet composition and income statement of individual banks. Of particular interest for the questions at hand are the variables related to credit worthiness of the banks and, especially, the support rating assigned by Fitch Ratings.

In addition to the more traditional types of credit ratings (short-term and long-term creditworthiness) Fitch assigns to banks two special types of ratings related to the strength of outside support. The so-called *support rating* is an assessment of the level of outside financial support that the bank is likely to receive from outside entities (the government, its owners or third parties) in case of financial difficulty. The rating scale ranges from very high support (level 1) to no support (level 5). For the purposes of this paper banks with a rating of 1 or 2 are identified as “supported”.¹¹ This choice was based on the characterisation that Fitch gives to these rating classes in its manual. Level 1 support indicates “a clear legal guarantee or state support would be forthcoming”. Level 2 is assigned in cases where “state support would be forthcoming in the absence of a legal guarantee”. It should be noted that the ratings methodology does not strictly identify the government purse as the source of financial support. However, for the higher support rating categories the methodology identifies it as derived from either a legal commitment or the systemic importance of the particular institution in the national or international arena. For the purpose of this analysis this is treated as being practically tantamount to government support. No private entity would have the resources and the incentives to provide this financial support in the case of financial difficulty.

The reliance on ratings information has important advantages over alternative measures of financial support for banks. It guarantees a certain level of international comparability regarding these assessments which is very important in a study involving cross-country comparisons. There are very significant differences in banking system structure across countries and approaches relying on the national classification of bank types, or on statistical methods that can consistently select the banks that are likely to be bailed out in case of difficulty, are fraught with difficulties. There are no a priori reasons to believe that there are systematic biases in the ratings.

Table 1 about here

Table 1 gives an overview of the distribution of banks across the support ratings for two selected years in the sample. Slightly more than half of the banks are classified as supported banks (ie they have support rating equal to 1 or 2). However, in the later years while their numbers have grown only slightly, their share of total assets has boomed, suggesting that supported banks have grown faster than the average bank. In order to guard against the possibility that the results are driven by factors that might be associated with state support but are primarily due to the other characteristics of the banks, we examine two other (overlapping) categories of banks: large banks and publicly-owned banks. The definitions of those two characteristics are discussed below.

The fact that supported banks are larger on average is not by itself surprising. The systemic implications from the failure of a bank are typically directly related to its size. We have thus assigned the indicator variable **large** to institutions that fulfil one of the following criteria: they are among the 100 largest institutions by assets worldwide; or are among the 3 largest institutions in their own country or have more than 10% of domestic banking assets. These criteria are checked on a per year basis.

The effects of government support on bank behaviour might be stronger for those institutions that are outright owned by the state. To control for this possibility, we rely on information about bank ownership in Bankscope and assign the indicator variable **public** to those institutions in which the public sector ownership exceeds 15%.¹²

¹¹ Baumann and Nier (2003) use the same threshold to define the banks that have a high support rating. They focus on the potential distorting effects that outside support might have on market discipline and in their discussion they treat banks in these two support categories as de facto protected by the safety net.

¹² Central banks, multilateral government banks, specialised government credit institutions and entities indirectly held by the state sector were also flagged as public.

Finally, the distorting effect of government support on incentives could be most evident in the case of banks that are on a weak financial position. It is possible that the expectation of support, and the associated relief from funding cost pressures, may not provide sufficient discipline for these banks to focus on rebuilding their balance sheets and to refrain from excessive risk taking. Fitch publishes “individual strength” ratings for banks which focus on the inherent strength of the institution, namely their capacity to fulfil their liabilities in the absence of any outside support. In a way this ratings assessment is complementary to the support ratings discussed above. The scale for individual strength ratings ranges from A (indicating a *very strong bank*) to E (indicating a *bank with very serious problems*).¹³ For the purpose of this study, banks with ratings of C/D and below are classified as being fundamentally **weak** on a stand-alone basis.

Table 2 presents average spread statistics for loan portfolios of different types of banks. The average spread on loan portfolios of supported banks is about 17 basis points lower than the comparable spread on non-supported banks’ portfolios. These differences are more pronounced in the case of smaller banks (22 bps) and in particular in the case of public-sector banks where the difference is as high as 41 bps.

Table 2 about here

The baseline pricing model and two analytical perspectives

The remaining of this section discusses two key components of the empirical analysis: the basic baseline pricing equation for loan spreads, and the two analytical perspectives used in the study: the one focusing on individual loans, and the other focusing on individual banks as the unit of analysis.

The first component of the analysis is a benchmark pricing equation for loans. Following the literature we rely on a linear model which explains loan spreads as a function of a number of risk factors. These factors relate to the specific characteristics of the facility, the attributes of the borrower, and variables that control for the general conditions prevailing in the global loan market at the time when the loan was arranged. We refer to this as the *baseline model* and use it as a benchmark for the evaluation of loan pricing. In particular, the discrepancies between actual loan spreads and those implied by the model are interpreted as measuring the extent to which a particular loan might be priced more richly or more tightly than the market average. We also estimate a similar model for the “all-in” cost that includes fees as well as the spread. This is a more comprehensive measure of the final cost to the borrower than the spread alone, especially because many fee components are payable up front and are independent of whether the loan has been drawn or not.

The second component of the analysis refers to two complementary perspectives in terms of the units of analysis. The first perspective focuses on individual loan facilities, which become the unit of analysis. The role of supported banks on the pricing and structure of loans is examined on a loan-by-loan basis. We rely on the baseline pricing regression to gauge the degree to which the participation of supported banks in the syndicate is associated with lower spreads and/or fees. We also examine whether the relative importance of factors that drive the decision of how big a share of the loan to retain differs between supported banks and other banks in the senior arranger group. In this context we examine whether supported banks play a special role in the case of borrowers that make their first appearance in the syndicated loan market, for example supporting their debut by retaining a larger share. We also examine how sensitive the decision to retain part of the loan is on the state of the bank’s financial condition and how this sensitivity may be affected by the fact that the bank is supported or not.

Another, complementary, perspective is that of the bank, where individual institutions become the unit of analysis. For each bank/year combination in the data we construct the portfolio of loans held on the bank’s books by aggregating across all loan participations the shares retained by the particular institution.¹⁴ The composition and patterns of change in these portfolios are compared between

¹³ There are also intermediate notches in these ratings such as A/B, B/C etc.

¹⁴ As noted earlier, this information is always available for the senior banks in the syndicate and we distribute the portion of the loan that is not retained by the senior group of banks equally among the junior members of the syndicate.

supported and non-supported banks. The focus is on the degree of portfolio diversification across geographic (country) and industrial sector exposures and the similarity between the bank portfolio and that of the “market” (defined as all syndicated loans captured in the dataset). Banks with a mission to address a market failure to supply funds to particular type of borrowers should be less prone to align themselves closely with broad market trends and should display a distinctive (idiosyncratic) pattern in their investment decisions. In contrast, banks with portfolios that are very similar to those of the broad market should be viewed as trend-followers and not particularly innovative in their investment behaviour.

3. Baseline pricing regression

The baseline pricing model regresses the two components of the loan price (spread and total fees) on a number of variables that capture the risk profile of the particular loan. These variables relate to characteristics of the facility, to characteristics of the borrower and to the overall market environment at the time when the loan has been contracted. A detailed description of the variables is included in the Annex. Here we briefly comment on those that are of greater interest for our investigation.

Among the characteristics of the loan facility the regression includes its size and three dummies to indicate whether it is of short- medium- or longer-term maturity. We have also included dummies that signal the presence of various risk mitigants in the form of collateral for secured loans, or different forms of guarantees (either explicit or implicit) offered by third parties.¹⁵

The second set of variables relate to the characteristics of the borrower. We include dummies that control for credit rating, including a dummy variable that signals borrowers in speculative grades (ie BBB- or below) that will capture the non-linear effect from “junk” rating on spreads frequently observed in the literature. We also control for the business sector of the borrower and the declared purpose of the loan. It is observed that capital markets demand a premium for financing facilities related to corporate actions and restructurings. We have also included an indicator variable that identifies the first time that a borrower appears to have accessed the international syndicated loan market according to the Loanware database. The lack of familiarity of potential lenders with the particular signature may have an impact on financing rates.

The third set of controls relates to market conditions, as spreads are likely to be affected by overall liquidity in financial markets or prevailing investor attitudes towards risk taking. To this effect we have included a full set of year dummies to capture the overall market environment but also a number of more specific controls which include a measure of the overall activity in the syndicated loan market measured by total value of facilities signed in the same year. We also include a proxy for overall liquidity in the international markets in the form of the weighted average of short-term interest rates in the G3 economies.¹⁶

Table 3 shows the results of this baseline model estimation. The coefficients are in line with the existing literature on the pricing of syndicated loans. Spreads increase with maturity and decrease with the size of the facility. Everything else equal, externally guaranteed loans carry lower spreads while the presence of collateral tends to be associated with higher interest rates. The latter result, which is commonly observed in the literature, is attributed to the fact that lenders demand (and obtain) collateral pledges only from those borrowers that pose higher risk (see for example Saurina (2005)). Similarly, borrowers that are unfamiliar to the market (proxied in the regression by those that tap it for the first time) borrow at slightly higher spreads than repeat borrowers. To our surprise, we find that the proxies for overall market conditions do not have an important effect in the pricing regression. It appears that the year dummies account for most of the systematic variation in the spreads. The only exception is the liquidity indicator which shows that for each percentage point decline in world interest rates there is a 5 basis points (bps) decline in loan spreads.

Table 3 about here

¹⁵ For a discussion of the role of guarantees on pricing see Sorge and Gadanez (2007).

¹⁶ The weights are based on the relative GDP of United States, Japan and Germany.

For our purposes it is important to note at this point that the overall fit of the model is quite good. The value of R^2 at 40% for the spread regression is near the top of the range of similar goodness of fit measures reported in the literature.

The results for the all inclusive measure of cost are very similar but less precise. The fit is less good and only a few of the explanatory variables seem to have a significant explanatory power for the level of fees associated with the loans. Fees decline with loan maturity and increase (moderately) with size. Among the other variables, none seems to have any economically significant effect or be statistically significant. In view of these results we will concentrate exclusively on loan spreads for the remainder of our analysis.

4. Looking at individual loans

In this section we focus on the individual loan as the unit of analysis. We focus on the presence of supported banks in the senior group of syndicate members. We discussed above that the senior group plays a key role in the structure and pricing of the loan whereas junior members that join the syndicate at a later stage act more as price takers. We ask two questions: (i) are there systematic effects on pricing that are associated with the presence of supported banks as senior arrangers? (ii) are there any differences in the share of the loan retained by the senior group of banks for those loans? In the rest of this section we will examine these issues in turn.

4.1 The influence of special banks on spreads

Since the purpose of our analysis is to investigate the behaviour of banks with high support ratings in the pricing of syndicated loan facilities, we have re-estimated the benchmark pricing equation for spreads model after adding variables that denote the presence of a state supported bank as a senior member of the syndicate. We estimate two variants. The first includes an indicator variable which is equal to one if the senior arranger group includes a supported bank, and the second includes the total amount of the loan retained by senior members of the syndicate that are also supported banks as a share of the overall loan facility. The results are reported in right-hand side panel of Table 4.

Table 4 about here

We find that this indicator variable has a significant and negative effect on loan spreads of about 13 bps, the same size as the existence of a guarantee on the facility and about half the impact on spreads from a one notch downgrade within the investment grade range of ratings.

The results of the estimated equation using the retained share of senior supported banks as the measure of their influence in loan pricing confirm and emphasise the message of the previous regression. For every one percentage point increase in the part of the loan that is retained by state supported banks that have acted as senior arrangers, there is a third of a basis point decline in the loan spread over LIBOR. For example, if supported banks were to retain half of a typical loan on their books, this loan would be priced on average 17 bps cheaper than a loan that was arranged without any state supported bank involvement.

To check whether this result is influenced by other characteristics of the senior bank group we have estimated the same regression by including the other types of indicator variables we have constructed on the basis of the information we have on the senior arranger banks. Indeed, the presence of big banks in the syndicate also seems to be associated with under-priced risk. However, the estimated impact is slightly weaker than that for supported banks in both variants of the regression. We interpret this as weak evidence that size alone cannot be a driver of this result. By contrast, when we focus on state ownership of the banks, the results are considerably stronger. The associated coefficients are three times as large in this case as in the case of all banks with high support ratings. The presence of public sector banks in the syndicate is associated with 30 bps lower spreads and the spread declines by one bps for every one percentage point increase in the retained share of those banks.

Overall, these results suggest that the presence of supported banks as senior arrangers leads to underpriced loans (at least by the standards of the average relationship between the loan spreads and risk factors). This underpricing is particularly pronounced for those banks that are state owned whereas if one focuses on the larger banks, which might arguably be the beneficiaries of an implicit

support because of their systemic importance, the evidence of underpriced spreads is more muted. We attribute, therefore, loan underpricing to the impact of state support on incentives and highlight that it is stronger in the case of institutions that are supported for reasons that may differ across countries but they are not related to their size.¹⁷ In the following sections we will focus on analysing the nature of this impact and measuring its economic significance.

The left-hand side reports the same coefficient but corresponding to a dummy variable that is based on the general presence of a supported bank in the syndicate independently of whether it has a senior or junior role. We observe that the results are qualitatively identical and quantitatively very similar in most cases. The effect of banks with special status on spreads seems to be stronger when these institutions play a senior role in the syndicate.

4.2 Do supported banks retain a higher share of the loan?

We now turn our attention to the share of the loan retained by the senior members of the syndicate. As discussed earlier, the senior arrangers play a key role in shaping the loan facility and determining the pricing and terms. They then open the loan to participation by the junior syndicate members who act mainly as price takers. It is possible, therefore, that senior banks might retain smaller portions of underpriced loans, hence engaging in risk shifting.

In the same context we also look at a number of other hypotheses related to the behaviour of state supported banks in the market. In particular, we examine whether the retained share bears any systematic relationship with the financial condition of the senior syndicate banks. To this end, we construct indicators of the syndicate banks' health (capitalisation, loan provisions-to-asset ratio and liquid asset ratio) as weighted averages of the indicators for the member banks using as weights the shares of their participation. To avoid simultaneity problems we lag those indicators by one year. In addition, we examine whether supported banks tend to help borrowers that make their first foray into the international market by retaining a larger portion of their loan, thus taking a larger portion of the associated risk.

Table 5 about here

The regression of retained shares on these variables is estimated over a sample of more than 16,000 loans of which we have all the necessary information and in split samples according to whether a special bank is a member of the senior syndicate or not. The results are tabulated in Table 5. The explanatory power of the regression is not very high for the broad sample, but increases very substantially in the case of the sub-samples that focus on banks with particular characteristics. The pattern of significantly estimated coefficients across groups reveals some interesting points.

Senior banks tend to retain about one-quarter of the loan (25.7%) and syndicates that include state supported banks tend to retain less than other syndicates. However, the larger the share of supported banks within the arranger group, the larger the overall share of the loan that is retained by this group. In other words, supported banks tend to hold higher senior shares in loans that are very widely held by junior and non-supported banks. We interpret the combined message from these coefficients as an indication that supported banks tend to not hold large portions of the loans they originate.

Large senior banks tend to retain a slightly larger share (by 2.6 percentage points) of the loan in the case of first time borrowers. This is probably an indication that the senior banks provide some form of certification as to the credit worthiness of these newcomers to the syndicated loan market. The interaction dummy between the first timer dummy and the status of the senior syndicate members in the arranger league tables is statistically significant. Importantly for our analysis, however, this tendency is considerably more pronounced among syndicates that do not include state supported banks among the senior arrangers. By contrast, syndicates that include supported banks do not seem to retain a significantly greater portion of the loan in this case.

¹⁷ The behaviour of larger banks with a track record of good performance is arguably driven mainly by a corporate culture motivated by success. The impact of state support on investment choices would be stronger on banks that do not have this culture.

Finally, there is no evidence that syndicates that include supported banks tend to strategically retain shares in loans that are inappropriately priced. There is no systematic statistical link between the retained share by senior banks and the unexplained risk of the loan as estimated by the residual of our pricing equation. The corresponding coefficient is very close to zero and while statistically less than zero in the case of groups with supported banks in the senior group it is not meaningful from an economic standpoint. Having said that, we observe that those syndicates that include state supported banks tend to be less responsive to their financial health when they decide to on the portion of the loan retained. On average, the lower the quality of the syndicate's loan book (as measured by the average level of loan loss provisions) the lower is the retained share of the loan. Senior banks may be using their relationship with the borrower to bring a loan to the market (and collect the fees), but they might refrain from taking large participations if their balance sheet is weakened by low quality loans. The opposite is true for the syndicates with state supported banks as senior members. The estimated coefficient is positive and significant, indicating that these banks' investment decisions are less sensitive to their own condition.

5. Looking at individual banks

In the previous section we focused on the analysis of the pricing and structure of individual loans and established that the presence of state supported banks has a compressing impact on spreads without any evidence of a more prudent or innovative behaviour by these institutions. In this section we shift the focus towards the institutions themselves and analyse the impact of state support from the perspective of the individual bank. To this end, we construct for each bank in our data a portfolio of their retained shares from all the loans they participated in during a calendar year. We look at the composition and changes in these portfolios for supported and other banks as they compare to the overall market. In particular we look at three types of characteristics: the degree of diversification, the similarity to the market portfolio of loans and the degree of turnover from one year to the next. We will discuss these in turn below. Finally, we examine the pricing of their overall portfolio of new loan participations for each year with a view to establishing whether they do hold loan assets that are fairly priced.

5.1 Patterns of portfolio composition

How does the portfolio composition of supported banks differ from that of other banks? Do these banks show evidence of innovative behaviour, or do they seem to be following broader market trends? These are the questions on which we focus in this section. If state support is provided as a quid pro quo for lending behaviour that pays closer attention to borrower categories that are overlooked by the market, one should observe that supported institutions exhibit distinct investment patterns. If on the other hand, they tend to follow the same lending patterns of other banks, one is led to question the benefits of the generosity of the safety net for those institutions.

To look at these questions from the perspective of the international syndicated loan market, we have extracted information about the industrial sector and country of origin of the borrower. We have grouped the loans into broader categories following two schemes. For the geographic classification we have used the BIS classification that distinguishes among individual countries for the advanced economies but classifies emerging market into broader regional groups.¹⁸ For the sectoral classification we rely on the FTSE scheme that distinguishes between eight broad industrial sectors. The analysis below is conducted along both those dimensions.

Specialisation

Concentration in a particular type of borrower can signal of bank investment strategy specialisation. Strictly speaking, concentration is neither a necessary nor a sufficient condition for the bank to play a beneficial social role in lending to borrowers with limited access to funding, but it is nevertheless a sign

¹⁸ For details see the statistical tables and associated notes in any of the BIS Quarterly Review issue.

consistent with individuality in its investment approach. To look at the concentration patterns of the banks in our sample we have calculated for each bank/year portfolio the Herfindahl indices of country and sector concentration by adding the squared percentage shares across the categories and divided by 100. Thus calculated, the index value ranges between 0 and 100 with more concentrated (respectively, less diversified) portfolios having higher (respectively, lower) scores. We then compute the average index value (weighted by balance sheet sizes) for supported, large or publicly owned banks for each year and compare them to the overall sample.

Table 6 about here

The results of this comparison are shown in Table 6. We report the average values for each group of banks and significance tests for the difference in the averages across groups. We further analyse the differences between different sized banks and those that are state owned conditional on them having a high support rating. We observe that the concentration figures are overall quite high. This is a consequence of the existence of a relatively large number of banks that have a small number of loan participations each year.

A simple comparison between the two vertical panels in the table suggests that bank loan portfolios tend to be more concentrated geographically than by industrial sector, with the concentration index values being two to three times higher in the country dimension than in the sectoral dimension. The comparison between supported and non-supported bank portfolios is, however, much less pronounced. The values of the index are broadly similar across the two groups of banks especially on the sectoral dimension. Supported banks have a lower concentration in their portfolios on the country dimension. It is difficult in the absence of a formal statistical test to make a firm judgement on the significance of this difference. For our purposes, it suffices to remark that special banks do not seem to stand out as having more specialised portfolios. If anything, in terms of their country exposure, they tend to be more diversified than non-supported banks.

Herding

Banks that play a particular role in financing should be less inclined to follow market trends. In this section we look at the year-to-year patterns of change in state supported banks' portfolios and we examine whether they differ from those that characterise the market as a whole. We perform this comparison by looking at the changes in the share allocation of the loan portfolios along the two dimensions we described above.

For each year we calculate the changes in the share of total portfolio exposure that is accounted for by loans to the particular class of borrowers for the individual bank and the market as a whole. We then calculate the rank correlation of those changes in shares. The resulting measure will be higher the higher the degree of similarity in the movement of exposures between the banks and the average bank in the sample. A negative correlation indicates that the bank increases (decreases) its exposure to the groups that the market has decreased (increased) its lending.

Table 7 about here

What we observe from the rank correlation values tabulated in Table 7, there is no apparent difference in behaviour between the two sets of banks in the earlier part of the sample period. Coefficients are broadly similar but there is no consistent pattern distinguishing these groups. In the post-1998, however, the picture is different. Supported banks' lending patterns correlate significantly with those of the market as a whole, especially in the case of country exposures. Supported banks tend to be less "idiosyncratic" than the average non-supported bank, an observation that casts some doubt of them playing a particular role in channelling funds to borrowers that due to market failures are shunned by other lenders.

Churning

The third dimension we examine relates to the degree of turnover in bank portfolios. We take the absolute values of the changes in the shares we computed in our investigation of herding, and compute averages for the two groups of banks for each year in the sample. This turnover measure can take values between 0 (an invariant portfolio) and 200 (a portfolio where there is no common exposures between the two years).

Table 8 about here

The results of this calculation are shown in Table 8. They indicate that special banks tend to exhibit somewhat higher turnover than other banks. The effect is more pronounced for turnover measured in the geographical dimension of their loan portfolios. This tendency of high turnover in terms of the geographic composition of the portfolio is also more pronounced among banks under public sector ownership.

5.2 Underpricing of portfolios

The last exercise we conduct is to relate the average spread of the portfolio of each bank to variables related to its financial condition and to whether it enjoys state support or not. To this effect, we calculate the average mispricing of the portfolio of loans held by the bank as a weighted average of the residuals from the baseline pricing equation we described above, using the participation amounts in the database. Clearly these residuals are both positive and negative and they will tend to cancel each other out to the extent that they are due simply to idiosyncratic pricing errors. However, a large negative value would indicate that the portfolio of the bank includes a large number of under-priced loans.

We then regress these measures of portfolio mispricing to a number of bank characteristics from the previous year, the “special” and “spoilt” dummies and measures of the degree of herding and turnover exhibited by the bank. The idea being to test whether banks that are more likely to be market followers and have a high tendency to churn their portfolios are also likely to hold under-priced loans on their books. Table 9 has the results.

Table 9 about here

The regression has very low explanatory power not surprisingly given that the dependent variable is supposedly only idiosyncratic risk. Nevertheless, one clear result emerges. Special banks tend to systematically hold loan portfolios that are underpriced by about 11bps compared to the market. The coefficient is not only significant but also economically important given that it refers to portfolios of loans and not single exposures.

Similar magnitude effects are also present in portfolios of banks that are large and those that are publicly owned as it can be seen from the second and third column of the table. To better gauge the effect of public support we have run the regression with interaction dummy terms flagging those supported banks that are also large or publicly owned (two right-hand-side columns). The results seem to strengthen our conclusions. Among the supported banks those that are smaller and/or public seem to have systematically the more underpriced portfolios. Loan pricing decisions in larger banks that may also enjoy an implicit public guarantee do not seem to be as distorted as those of smaller ones. It seems that it is the direct impact of explicit public support that leads to a more relaxed attitude towards credit risk.

All variables that relate to the investment behaviour of banks (concentration, turnover and trend-following) do not appear to have an impact on the pricing of the portfolios held by the banks. The coefficients are all small and statistically insignificant.

Concluding remarks

This paper examines the investment decisions of banks that receive (or are expected to receive) financial support, in case of trouble. More specifically it focuses on the patterns they exhibit in the international syndicated loan market either as senior arrangers or as general investors. While support can come from many sources, in this case it can be traced directly or indirectly to the public purse.

The overall picture that emerges suggests that supported banks are not fundamentally different from other banks in a number of dimensions. They are very much “typical banks”, in the sense that their portfolios track closely overall market trends (in many cases more closely than it is the case for other types of banks). They show little in terms of contrarian, persistent or innovative investment patterns. In fact, when these patterns differ from those exhibited by non-supported banks, it is because supported banks are more like the market average, not less.

This conformism of banks is not per se a negative attribute. It suggests, however, that there is very little that is special in terms of the investment decisions of supported banks. This is inconsistent with a description of a mission for those institutions that emphasises the public good nature of their activity. Supported banks are not very special and do not appear very active in seeking out borrowers that are shunned by the loan market.

Where supported banks seem to differ substantially from their peers is the attitude towards risk. Supported banks hold portfolios of loans that are on average lower priced than a market benchmark. Moreover, as senior arrangers they tend to be involved in initiating loans that carry thinner spreads than the average loan with similar characteristics. Finally, they also seem to be less responsive to indicators of balance sheet risk in deciding whether to invest on a particular loan as compared to other banks.

This relatively relaxed attitude towards risk is more problematic from a policy perspective. It is an indication that state support distorts the incentives of these banks and encourages risk taking that is not remunerated by market expected returns. Combined with a "lazy" attitude towards investment also suggests that these banks are likely to be using the funding benefits of their status to engage in price competition in the international loan market. This behaviour is not compatible with the typical motivation behind the existence of government support and is akin to an abuse of their privileged status.

These results have quite sceptical implications as regards the impact of state support. Clearly, the data used in this paper cannot examine the overall behaviour of the banks, but only a small component in their activities in the international arena. More research is needed to generate a more complete picture of the impact of support on the banks. Nevertheless, the results suggest that there are externalities from state support that go beyond the national markets. Hence, they warrant a more careful consideration of the conditions at which support is made available and the governance structures in these institutions.

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Tables

Table1

Distribution of bank types (1995, 2000, numbers and total assets, \$bn)

		Big	Small	Public	Private	Total
1995	Supported	313	3	18	298	316
		7,812	7	162	7,657	7,819
	Not supported	162	139	46	256	301
		6,404	577	353	6,630	6,981
	Total	475	142	64	554	618
		14,216	584	516	14,286	14,802
2000	Supported	389	40	7,812	7	429
		19,546	704	2,155	18,096	20,250
	Not supported	191	202	6,404	577	393
		8,974	2,330	686	10,620	11,304
	Total	580	242	14,216	584	14,800
		28,520	3,035	2,841	28,716	31,557

Source: Dealogic, BankScope, authors' calculations

Table 2

Average loan spreads by bank type (in bps)

	Big	Small	Public	Private	Total
Supported	87	94	75	88	87
Not supported	101	118	116	105	104
Total	92	114	87	95	

Source: Dealogic, BankScope, authors' calculations

Table 3
Baseline regression: Selected variables

Dependent variable	Libor spread (BP)	Fees (BP)
Log (loan size)	-19.95**	-18.20**
Maturity		
1 to 3 years	-32.93**	-39.30**
3 to 6 years	-23.33**	-32.65**
>6 years	-2.54	-13.70
Guarantees	-15.44**	-16.02**
Collateral	47.64**	46.76**
First time borrower	9.33**	11.44**
Corporate control loan	124.01**	122.37**
Capital structure loan	100.02**	97.41**
Global liquidity	-5.21*	-8.65*
Global market activity	-7.43	1.26
Borrower rating at signing:		
AAA	11.44	-66.18
AA	19.62	-57.77
A	30.56**	-45.83
BBB	54.39**	-20.25
BB	-56.60**	-59.53**
B	-27.24*	-29.42*
CCC	3.80	-0.37
CC	-34.50*	-42.25*
C	13.94	1.10
Unrated	79.76**	8.57
Speculative grade rating	156.18**	87.22*
Adj. R ²	39.92	19.57
N	23,914	23,925

** and * denote significance at the 1 and 5% levels, respectively. Source: authors' calculations.

Table 4

Effect of bank type on spreads

	All participations		Senior participations only	
	Presence dummy	Retained share	Presence dummy	Retained share
Supported	-9.34**	-0.31*	-13.14**	-0.32**
Public	-30.29**	-1.02**	-30.51**	-1.01**
Big	-7.24**	-0.20**	-4.99**	-0.21**

** and * denote significance at the 1 and 5% levels, respectively. Source: authors' calculations.

Table 5
Determinants of retained share by senior arrangers¹

	All facilities	Facilities with at least one supported bank	Facilities with at least one public bank	Facilities with at least one large bank
<i>Loan characteristics</i>				
Unexplained risk ²	-0.02**	-0.01**	0.00	-0.01**
Number of banks in syndicate ³	0.18**	0.33**	-0.09	0.20**
First time borrower	-0.15	2.56	-0.09	2.55*
First time borrower x share in arranger leaguetable	0.89**	2.05	4.49*	0.80*
Share of special senior banks / share of senior banks		30.54**	45.34**	26.15**
<i>Senior banks' characteristics for previous year⁴</i>				
Equity/assets ratio	0.13*	0.20	-0.15	1.13**
Loan loss provisions to loans	-1.86**	3.66**	1.46	0.32
Liquidity ratio	-0.09**	-0.09*	0.00	-0.09**
Share in arranger leaguetable	-1.74**	-3.92**	-4.43**	-0.45
Constant	25.73**	11.54**	6.78**	14.72**
Adj. R ²	2.42	16.49	52.58	8.20
Observations	16,221	2,896	517	4,566

** and * denote significance at the 1 and 5% levels, respectively

¹ The dependent variable is the retained share of all senior banks which also satisfy the criterion listed in each column. ² Unexplained part of the LIBOR spread derived from the baseline regression. ³ Incl. junior banks. ⁴ Average for syndicate.

Source: authors' calculations.

Table 6. Specialisation in lending

CONCENTRATION COUNTRIES	UNCONDITIONAL	STATUS		STRENGTH	
		non supported	supported	strong	weak
UNCONDITIONAL		95.40***	91.74	93.90	93.21
SIZE small	96.97***		94.86**		97.94***
big	92.22		91.53		92.57
OWNERSHIP private	93.96***		92.06***		94.48
public	90.64		88.68		93.23
CONCENTRATION SECTORS	UNCONDITIONAL	STATUS		STRENGTH	
		non supported	supported	strong	weak
UNCONDITIONAL		74.61	73.46	74.43	77.90***
SIZE small	76.71***		79.99***		84.15*
big	73.01		73.06		78.42
OWNERSHIP private	73.48		73.13		79.87
public	78.95***		76.62*		80.15
Source: authors' calculations.					

Table 7. Trend following

HERDING COUNTRIES	UNCONDITIONAL	STATUS		STRENGTH	
		non supported	supported	strong	weak
UNCONDITIONAL		-0.21	4.62***	1.86	2.91
SIZE small	0.07		1.86		2.96
big	0.30		4.83		4.59
OWNERSHIP private	2.05		4.29		3.95
public	4.27		7.59		0.35
HERDING SECTORS	UNCONDITIONAL	STATUS		STRENGTH	
		non supported	supported	strong	weak
UNCONDITIONAL		2.75	4.59**	3.60	5.03
SIZE small	2.02		6.45		5.07
big	4.61*		4.50		5.22
OWNERSHIP private	3.82		4.74		4.66
public	3.45		3.17		5.05
Source: authors' calculations					

Table 8. Portfolio churning

TURNOVER COUNTRIES	UNCONDITIONAL	STATUS		STRENGTH	
		non supported	supported	strong	weak
UNCONDITIONAL		55.05	62.94***	59.67	67.28***
SIZE small	53.33		63.48		71.03
big	61.20***		62.92		67.66
OWNERSHIP private	57.07		61.60		67.47
public	74.60***		75.71***		70.53
TURNOVER SECTORS	UNCONDITIONAL	STATUS		STRENGTH	
		non supported	supported	strong	weak
UNCONDITIONAL		113.1	116.0**	113.8	112.6
SIZE small	112.5		123.3*		114.2
big	115.4*		115.5		110.0
OWNERSHIP private	115.3***		116.7**		113.0
public	108.5		109.2		108.0
Source: authors' calculations					

Table 9
Loan underpricing and bank characteristics

	Supported	Big	Public	Supported and Big	Supported and Public
Liquidity	-0.14	-0.09	-0.09	-0.14	-0.12
Capital	1.04	1.15*	1.71**	1.06	0.96
Provisions	2.12	2.39	2.16	2.16	2.02
Reputation	3.44**	4.11**	3.37**	3.37**	3.18**
Herding					
Country	-2.28	-2.25	-2.55	-2.38	-2.46
Sector	-4.61	-4.88	-5.67	-4.08	-4.59
Turnover					
Country	-0.03	-0.04	-0.04	-0.03	-0.03
Sector	0.02	0.03	0.02	0.02	0.02
Specialisation					
Country	0.00	0.00	0.00	0.00	0.00
Sector	-0.00	-0.00	-0.00	-0.00	-0.00
Supported	-11.31**				
Big		-11.64*			
Public			-17.38**		
Supported and Big				-10.30**	
Supported and Small				-18.28*	
Supported and Public					-22.36**
Supported and Private					-10.28**
Constant	-12.30	-15.84	-19.80	-13.29	-10.42
Adj. R ²	5.47	5.35	5.52	5.45	5.66
N	1,651	1,662	1,672	1,640	1,650

** and * denote significance at the 1 and 5% levels, respectively. Source: authors' calculations.

Annex 1: Data description

Baseline regression: standard case and controlling for involvement by type of bank (Tables 3 and 4)

Libor spread	Spread over Libor. This variable, expressed in basis points, was used as the dependent variable in the loan pricing regressions.
All-in spread	For robustness purposes, most of these regressions were also run using the all-in pricing as the dependent variable, ie the sum of the Libor spread and drawn fees.
Log (loan size)	Natural logarithm of loan size, in millions of US dollars
Maturity	We have included dummy variables for the following maturity buckets: 1 to 3 years, 3 to 6 years, greater than 6 years (the lower than one year bucket was omitted from the regressions as the case by default)
Guarantees	We have included dummy variables for guaranteed loan facilities: either in the form of explicit guarantees, or implicit ones (e.g. borrower is a subsidiary of another corporation).
Collateral	Binary variable for collateralised loans
First time borrower	Binary variable equal to one if the borrower has not borrowed beforehand, ie appears in the sample for the first time (note: this is delimited by the beginning of the sample, ie, 1 January 1993).
Loan purpose	We have included control variables for the following loan purposes (not all of them reported): corporate control (e.g. loan arranged to finance a merger), capital structure (e.g. for recapitalisations), general corporate purpose loan, project finance loan, property finance loan
Borrower sector	The 150+ base sector codes in Loanware had been mapped into FTSE sector classifications (dummy variables not reported): basic industry, cyclical consumer goods, cyclical services, financials, general industries, government, information technology, non-cyclical consumer goods, non-cyclical services, resources, utilities (the latter sector excluded from the regressions as the case by default).
Facility type	The following loan facility types were controlled for (not reported in the regression output): A-loan, B-loan, guarantee / CP backup facility, lease finance facility, loan facility, multiple purpose facility, note issuance facility, revolving loan, swap facility, bridge facility, trade finance loan, tax-spared loan (the latter type excluded from the regressions as the case by default).
Borrower S&P rating at signing	The following borrower ratings were controlled for: selective default (excluded), AAA, AA, A, BBB, BB, B, CCC, CC, C, not rated. In addition, a separate binary variable was added to track borrowers with a speculative rating (ie BB or below). (Note: S&P rating was preferred to Moody's as Loanware gets it via a direct feed and claims it is more reliable. In any case, it is more widely available in Loanware than Moody's.)
Liquidity proxy	Weighted average of short-term interest rates in the G3 economies, weights based on GDP measures of Germany, Japan and the US.
Total loan number and amount	Total number and amount (in \$m) of syndicated loans granted during year in which the facility was signed; proxies for activity on the syndicated loan market
Involvement by bank type	We controlled for the involvement of the following bank types in the syndication: supported, weak, public, large. For each of these bank types, we ran separate regressions with separate controls for their involvement. On the one hand, we included into the baseline regression a binary variable to indicate whether one or more bank(s) of a specific type had been present in the syndicate. On the other hand, we included the share (in % of the US\$ loan amount) retained by these types of bank(s) on their books. A final control was to distinguish between the case where these bank types had been involved in all capacities (junior or senior) and the one where they had acted as senior arrangers.
Year dummies	

Determinants of share retention (Table 5)

Share of loan retained by supported, weak, large and public senior banks	Dependent variable (in % of the US\$ loan amount), respectively for facilities with at least one supported, weak, large and public senior bank present.
Unexplained risk	Deviation of the loan spread from the spread predicted by the baseline loan pricing model based on the micro characteristics of the loan, (see above), in bp.
Number of banks in syndicate	Number of banks in syndicate including junior banks
First time borrower	Binary variable for first-time borrowers
First time borrower x share in the arranger leaguable	The above variable interacted with the average leaguable position (ranking, based on total amount of loans arranged in year preceding the year of signature of the loan, proxy for reputation) of senior arranger banks of a given type (supported, weak, large and public)
Share of special senior banks / share of senior banks	Share of loan retained by supported, , public, large senior banks (respectively) divided by share of the loan retained by all senior banks (independent of their type)
Senior banks' characteristics for the previous year	Weighted average characteristics (equity to assets ratio, loan loss provisions to loans, liquidity ratio – defined as the ratio of liquid assets to short term liabilities –, leaguable position) of all, supported, public, large senior banks, respectively, treating the total loan amount retained by each senior bank category as 100. Characteristics taken for year preceding the signature of the loan.

Specialisation, herding and turnover (Tables 6, 7 and 8, respectively)

Specialisation	<p>Each loan is classified into a country and industrial sector group on the basis of the identity of the borrower. For each bank/year portfolio we have then calculated Herfindahl indices of country and sector concentration by adding the squared percentage shares across the categories. Thus calculated, the index value ranges between 0 and 10,000 with more concentrated (less diversified) portfolios having higher scores. We then compute the average (weighted by portfolio size) index value for “supported” and other banks for each year in our sample. The values presented in Table 6 range from 0 to 100 as we have divided the corresponding Herfindahl indices by 100 for easier readability.</p>
Herding	<p>For each year we calculate the changes in the share of total portfolio exposure that is accounted for by loans to the particular class of borrowers for the individual bank and the market as a whole. We then calculate the rank correlation of those changes in shares. The resulting measure will be higher the higher the degree of similarity in the movement of exposures between the banks and the average bank in the sample. A negative correlation indicates that the bank increases (decreases) its exposure to the groups that the market has decreased (increased) its lending. For each bank, the correlation can range from -1 (bank does the complete opposite of the market) to 1 (bank is perfectly correlated with the market). We then report, by bank type, the weighted average correlations with the market.</p>
Turnover	<p>We examine the degree of turnover in bank portfolios. We take the absolute values of the changes in the country or sector shares we computed in our investigation of herding, and compute weighted averages for the two groups of banks for each year in the sample. This turnover measure can take values between 0 (an invariant portfolio) and 200 (a portfolio where there is no common exposures between the two years).</p>

Underpricing vs. herding and turnover (Table 9)

Portfolio of pricing errors	Dependent variable. Weighted average pricing error (deviation of the loan spread from the spread predicted by the baseline loan pricing model based on the micro characteristics of the loan, see above), in bp, for each bank, for each year. Weighting was done by loan sizes.
liquidity, capital, provisions, reputation	Liquidity ratio, equity to assts, loan loss provisions to loans, leaguetable ranking of bank for year preceding the year of signature of the loan.
Country and sector herding, turnover and specialisation	Bank's country and sectoral herding, portfolio churning and concentration proxies for year concerned. For each bank, herding is calculated as the rank correlation of country and sector reallocation measures between the bank and market, comprised between -1 and 1. The portfolio churning proxy is computed as the speed of country and sector reallocation of portfolio, comprised between 0 and 200. Specialisation is proxied for by the Herfindahl index of the bank's portfolio (calculated for country and sector shares) divided by 100. That measure is comprised between 0 and 100.
Year dummy	
Bank type dummies (weak, supported, large, public)	