Does Bank Liquidity Creation Translate into a Wealth Effect for Borrowers?

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This paper revalidates the loan announcement effect with a large sample of loans from 2004-09, addressing recent criticism of past studies which suggest that it is driven by sample selection bias and asymmetric information. A small but significant positive effect is found, after adjusting for size and P/B, and, contrary to criticism, unannounced loans are not found to be a substantial problem. Announcements and not activations of loans are found to matter to the market, from an event perspective. The sample offers strong evidence that the banks which create the most liquidity are also the best monitors. Firms are rewarded by the market for borrowing from such banks, especially when the economy is doing well. Firms also tend to benefit from the presence of more aggressive liquidity creating banks on the lower rungs of the lending syndicate in a recession. Liquidity creating syndicates, in turn, earn higher spreads, as do syndicates that lend to weaker borrowers. However, the distribution of these spread gains is top-heavy within the syndicate. While the market rewards borrowers, it punishes lenders for loans made in a growing economy and/or to weak borrowers. The burden of this market 'tax' falls most heavily on the lower ranked lenders in the syndicate but they are spared this tax on loans made in recessions and/or to strong borrowers, hinting at a potential competitive advantage that can be used to drive growth in difficult economic conditions when the leading lenders curtail their advances.

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1. Introduction

Loan announcements, uniquely among other security issuances, are marked by a positive market reaction. This has been documented by numerous studies since Fama (1985) but a more recent line of literature has found the opposite. In particular, an influential study by Maskara and Mullineaux (2011) cast doubt on this finding, by arguing that prior studies were marred by incomplete sampling that excluded unannounced loans, and that their results were driven by asymmetric information problems, attributable to the dominance of the sample by small and weak borrowers. The first contribution of this paper is to undertake an empirical re-examination of the loan announcement effect in a bid to settle this controversy. It investigates with an event study whether sample selection bias, size or valuation effects are sufficient to explain the loan announcement effect, as recent criticism has suggested. A

randomized, two-level stratification sampling procedure is applied to a universe that includes all loans drawn from the 2004-09 period, whether announced or not, and is used to test whether a significant loan announcement effect exists that cannot be explained by sample selection bias, size or valuation. A second, related contribution of this paper is to investigate the relative salience of the loan announcement and activation dates, by studying the market reaction on both of these calendar milestones in the life of a loan. This is important because prior studies have juggled both dates in their analyses of the loan announcement effect and clarity is needed on which of the two dates is most important from the perspective of investors.

The theoretical literature has explained the specialness of bank loans as a function of the expert monitoring services that the bank is uniquely placed to provide to its borrowers, due to the bank's inside knowledge. The other explanations for the specialness of bank loans revolve around the features of the loan contract which make ex post renegotiation possible, the mitigation of information asymmetry through loan screening, and liquidity provision. Banks create liquidity on the asset-side of their balance sheets through loans which provide liquidity to borrowers and on the liabilities-side of their balance sheets through deposits which provide liquidity to lenders. Prior literature has pointed to the monitoring of borrowers and the provision of liquidity as core banking functions that go to the heart of what it means to be a bank. However, the existing literature has not so far connected these key attributes or explored their relation to each other. The third contribution of this paper is to make that connection and investigate whether the banks that create the most liquidity are also the best monitors.

The literature is divided on whether firms benefit by borrowing from banks which are better at creating liquidity. Some strands of the literature suggest the likelihood of a positive relationship between bank monitoring efficiency and borrower wealth through the positive relationships found between deposit liquidity and monitoring efficiency on the one hand, and between monitoring efficiency and borrower wealth, on the other hand. Other strands of the literature point to a negative relation between bank liquidity creation and borrower wealth through a number of channels: the greater ability to lend in times of economic crisis by banks with more illiquid liabilities, the combined effect of the positive relation between borrower corporate governance and bank monitoring efficiency and the negative relation between corporate governance and firm wealth, and the interaction between the positive relation of bank liquidity creation to bank value and the negative relation between bank and borrower values, respectively. The fourth contribution of this paper is to contribute to the resolution of this open question by investigating whether the market rewards firms that transact with banks that create the most liquidity.

If liquidity creation is a core banking function, it is likely to be rewarded by positive spreads, especially if it is positively related to borrower wealth. On the other hand, if borrowers benefit more by transacting with banks that create relatively less liquidity, especially in recessionary markets when banks with illiquid liabilities are

better able to lend, it is likely that banks that create more liquidity earn lower spreads. The literature has not so far addressed this question which is ripe for empirical resolution. The fifth contribution of this paper is to determine whether the liquidity creation abilities of lenders are attended by spread gains, and to study the distribution of such spread gains within the lending syndicate of banks.

Finally, while the market reaction to loan announcements has been heavily studied from the borrowers' perspective, the current literature is relatively thin on analyses of this phenomenon from the lenders' perspective. The sixth contribution of this paper is to study the behavior of lenders' loan announcement effects in various scenarios including expansionary and recessionary economic conditions, and positive and negative borrowers' loan announcement effects. This paper also studies the distribution of the loan announcement effect across the individual banks in the lending syndicate and uncovers the existence of a market tax paid by the lower ranked lenders, in exchange for the opportunity to grow their loan books in weaker economic environments.

2. Literature Review

Numerous studies have documented positive abnormal market returns for borrowers on their announcements of bank loans, in diverse contexts: Fama (1985), James (1987), Lummer and McConnell (1989), Slovin et al. (1992), Best and Zhang (1993), Preece and Mullineaux (1994), Billet et al. (1995), Johnson (1997), Aintablian (2000), Hadlock and James (2002) and Lee and Sharpe (2009). In addition, Dahiya (2003) and Guner (2006) have found negative abnormal market returns for firms' loan sale announcements. In contrast, a thinner but more recent line of literature argues the opposite case: Fields et al. (2006) find the loan announcement effect declining to insignificance over 2000-03 and Billet et al. (2006) find negative abnormal returns over the long run (3 years). Maskara and Mullineaux (2011) argue that the sample used by Billet et al. (1995) fails to represent the total loan universe and find no evidence of a positive abnormal return in a representative sample including unannounced loans. This paper empirically revisits the loan announcement effect to resolve this unsettled question and investigates the relative importance of the loan announcement and activation dates from the perspective of the market.

One strand of the literature attributes the positive wealth effect of loan announcements to borrower characteristics [size – Slovin et al. (1992), earnings forecast errors – Best and Zhang (1993), financial distress – Aintablian (2000), undervaluation – Hadlock and James (2002) and weak corporate governance – Byers et al. (2008)]. A second strand links the positive wealth effect to loan characteristics [renewals – Lummer and McConnell (1989), favorable revisions – Aintablian (2000), maturity – Rajan (1992), contractual flexibility – Preece and Mullineaux (1996), type of facility (revolvers/term loans) – Gasbarro et al. (2004) and loan purpose (general) – Fery et al. (2002)]. A third strand relates the positive wealth effect to lender characteristics [banks – Preece and Mullineaux (1994), credit ratings – Billet et al. (1995), reputation – Johnson (1997), monitoring ability – Lee and Sharpe (2009),

foreign banks – Byers et al. (1998), large international banks – Fery et al. (2002), dominant banks – Ross (2010) and existence of a secondary market for loans – Gande and Saunders (2011)].

A related literature explains why firms choose bank loans over public debt or equity. Blackwell and Winters (1997) find that deeper firm-bank relationships and lighter monitoring are accompanied by lower interest rates. James and Smiths' (2000) review of prior literature concludes that bank loans are most valuable for information-sensitive borrowers and that covenants and short maturities aid monitoring. Hadlock and James (2002) show that greater asymmetric information pushes firms towards inside debt. Denis and Mihov (2003) find that firms at the extremes of credit quality, default risk and performance rely either on private debt (weaker firms) or public debt (stronger firms), while firms in between tap banks. Cook et al. (2003) find that reputed lenders sans collateral command higher rates and that inferior borrowers pay higher rates. Using a salary expense ratio to capture bank monitoring ability, Coleman et al. (2006) find that the superior monitors lend longer and charge more. Ahn and Choi (2009) find another benefit of bank monitoring – it reduces borrower earnings management behavior.

Theoretical explanations for the observed uniqueness of bank loans have focused on the benefits of expert monitoring by a bank with inside knowledge of the borrower, on the suitability of the loan contract for renegotiation, on the reduction of information asymmetry through loan screening and monitoring, and on the provision of liquidity to both borrowers and depositors [Leland and Pyle (1977), Diamond (1984, 1991), Allen (1990), Bhattacharya and Thakor (1993), Kashyap et al. (2002), Diamond and Rajan (2000, 2001)]. One of the key drivers of the loan announcement effect is the monitoring efficiency of the lender, as discussed in Lee and Sharpe (2009). This paper examines the empirical link between lender monitoring efficiency and liquidity provision which are both central to the banking function.

Diamond and Rajan (2001) argue that the fragile capital structure that underpins bank liquidity creation on both sides of the balance sheet (loans as assets and deposits as liabilities) is essential to the bank's intermediary role. While bank liquidity creation is clearly welfare positive there is room for conflicting arguments on whether it increases the shareholder wealth of borrowing firms. A positive relation is possible through Qi (1998) which theorizes about a positive relation between deposit liquidity and monitoring efficiency and Lee and Sharpe (2009) which finds a positive empirical relation between monitoring efficiency and borrower wealth. On the other hand, empirical evidence in support of a negative relation between bank liquidity creation and borrower wealth is offered by Cornett et al. (2010) who find that banks with illiquid liabilities lent the most in the 2007-09 financial crisis. A second channel for a negative relation is offered by Ahn and Choi (2009) who find a positive relation between borrower corporate governance and bank monitoring efficiency and Byers et al. (2008) who find a negative relation between

corporate governance and firm wealth for borrowers. A third conduit for a negative relation is offered by Berger and Bouwman (2009) who find a positive relation between bank liquidity creation and bank value and Kang and Liu (2008) who find a transfer of wealth from banks to borrowers around loan announcements (negative relation). The question of whether the market rewards firms that borrow from banks that create the most liquidity or not is thus ripe for empirical resolution and this paper attempts to do so.

Depending on the relation between bank liquidity creation and borrower wealth, there could be a positive or negative relation between banks' liquidity creation and their interest rate spreads. As noted in the preceding paragraph, the existing literature only indirectly addresses the first relationship referenced (between bank liquidity creation and borrower wealth) and is entirely silent on the second relationship (between bank liquidity creation and spreads). If there is a positive relation, banks that create more liquidity may be able to earn higher spreads and the converse might be true if the relation is negative. This paper seeks to determine whether lenders' liquidity creation influences the spreads they can command from borrowers and studies the distribution of any spread gains within the lending syndicate.

Finally, this paper examines the loan announcement effect for lenders. Kang and Liu (2008) document a negative relation between bank and borrower excess returns around the loan announcement and attribute it to a transfer of wealth from healthy banks to unhealthy borrowers. This paper goes beyond current literature by approaching this question with a multi-layered framework that studies the lender loan announcement effect for various sub-samples including expansionary and recessionary economic conditions, positive and negative borrower loan announcement effects and by lender seniority in the syndicate.

3. Hypotheses

3.1. Cumulative abnormal loan announcement returns (CAR) for borrowers

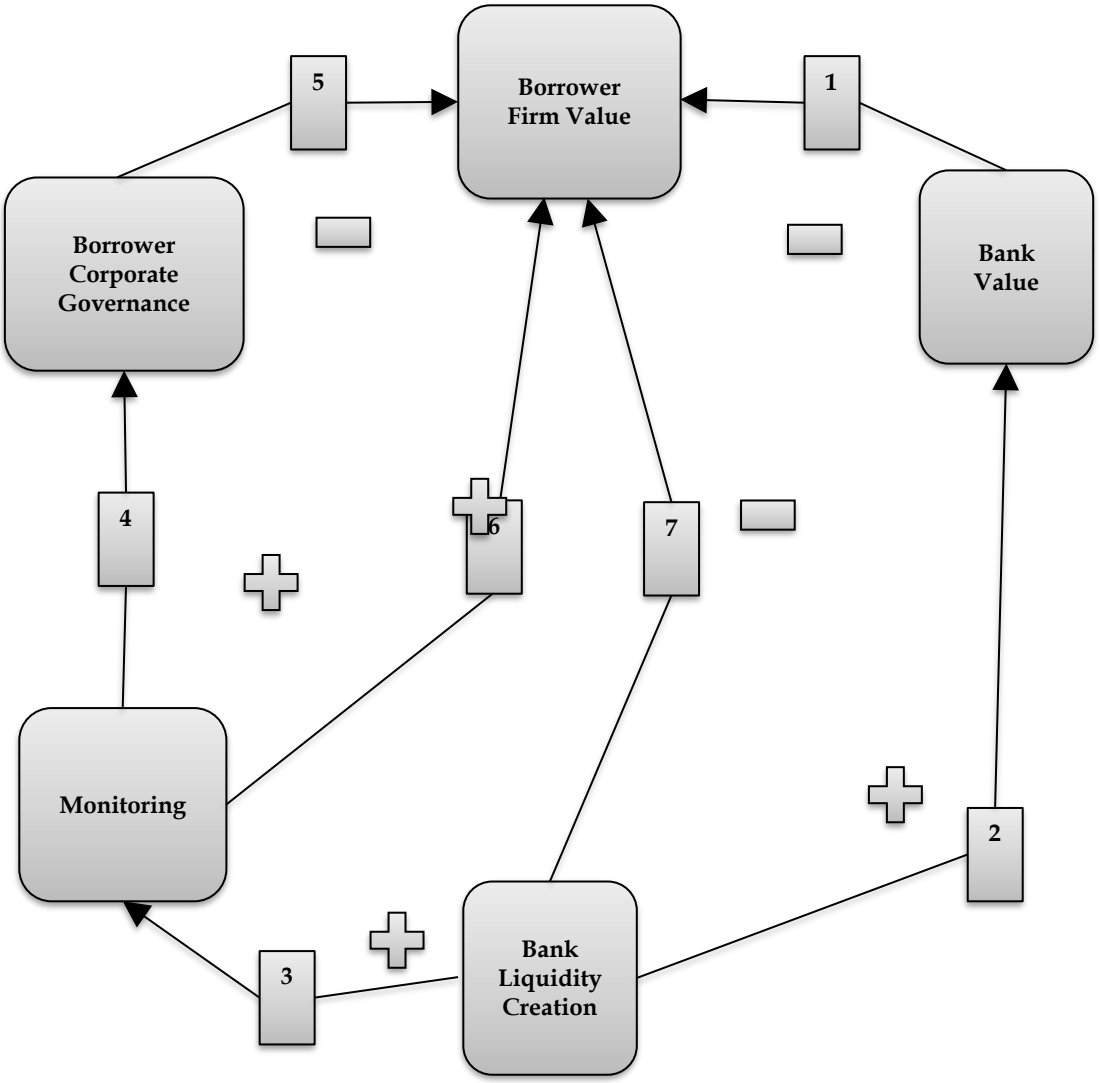
As noted previously, prior literature is conflicted on the significance and direction of the loan announcement effect. Firstly, the cumulative abnormal loan announcement return is calculated for various windows around the event and a simple test of significance is applied to determine whether it is positive. Secondly, the market reactions on the loan announcement and activation dates are compared to see if there is a significant difference between the two.

3.2. Bank liquidity creation and monitoring efficiency

The relation between monitoring efficiency and lender liquidity creation is expressed as follows:

$$\boldsymbol{SER_i = a_0 + a_1 LCA_i + \sum_j a_j X_j + \varepsilon_i} \quad (1)$$

Figure I: Flow Chart of Hypotheses



Legend:
+ and – denote positive and negative relationships, respectively

1. **Kang and Liu (2008) – Empirical –** Negative relation between bank and borrower excess loan announcement return (wealth transfer from healthy banks to unhealthy firms)
2. **Berger and Bouwman (2009) – Empirical –** Positive relation between bank liquidity creation and bank value
3. **Qui (1998) – Theoretical –** Positive relation between bank deposit liquidity and monitoring efficiency
4. **Ahn and Choi (2009) – Empirical –** Positive relation between borrower corporate governance and monitoring strength
5. **Byers et al. (2008) – Empirical –** Negative relation between borrower excess loan announcement return and corporate governance
6. **Lee and Sharpe (2009) – Empirical –** Positive relation between borrower excess loan announcement return and monitoring efficiency
7. **Cornett et al. (2010) – Empirical –** Banks with illiquid liabilities lent more in the 2007-09 crisis, implying an indirect negative relation between firm value and bank liquidity creation

where SER_i is the salary expense ratio (Coleman et al. (2006) proxy for monitoring efficiency) for of the i^{th} bank, LCA_i is the liquidity creation of bank i, X_i are controls for other bank characteristics, ϵ_i is a random error term and a_1 and a_j represent the coefficients on the liquidity creation and control variables respectively. The hypothesis to be tested can be stated as $a_1 > 0$.

3.3. Bank liquidity creation and borrower wealth (CAR)

There are theoretical and empirical reasons for the relation between bank liquidity creation and borrower wealth to be either positive or negative. The related literature is summarized in Figure I.

The relation between borrower wealth (CAR) and bank liquidity creation can be expressed as follows:

$$CAR_i = b_0 + b_1 LCA_i + \sum_j b_j Y_j + \varepsilon_i \quad (2)$$

where CAR_i is the abnormal announcement return for loan i, LCA_i is the liquidity creation of an individual bank (or the average of all banks) for loan i, Y_i are controls for borrower and loan characteristics, ϵ_i is a random error term and b_1 and b_j represent the coefficients on the liquidity creation and control variables respectively. The hypothesis to be tested can be written as $|b_1| > 0$.

3.4. Loan spread and bank liquidity creation

Depending on whether the relation between bank liquidity creation and firm value is positive or negative (see Figure I), there may be a positive or negative relation, respectively, between the spreads earned by banks and their liquidity creation. The relation between loan spreads and bank liquidity creation can be expressed as follows:

$$SPR_i = c_0 + c_1 LCA_i + \sum_j c_j Z_j + \varepsilon_i \quad (3)$$

where SPR_i is the spread for loan i, LCA_i is the liquidity creation of an individual bank (or the average of all banks) for loan i, Z_i are controls for borrower and loan characteristics, ϵ_i is a random error term and c_1 and c_j represent the coefficients on the liquidity creation and control variables respectively. The hypothesis to be tested can be written as $|c_1| > 0$.

3.5. Control variables and motivation

This section lists the control variables considered in the hypothesis tests listed previously and cites the literature in support of their inclusion.

3.5.1. Borrower characteristics

Firm ***age*** may be inversely related to the CAR and spread. Allen and Gale (1995, 1997), Petersen and Rajan (1995) and Berlin and Mester (1999) variously argue that relationship lending can lead to higher spreads through inter-temporal smoothing. ***Credit ratings*** on public debt complement bank monitoring according to Carey et al. (1998), Datta et al. (1999) and Boot et al. (2006) and may determine the

CAR. Firm ***size*** may be inversely related to the loan announcement return and spread according to Gande et al. (1999). The price-to-book (P/B) ratio may proxy for corporate governance [Byers et al. (2008), Ahn and Choi (2009) and Huang et al. (2011)] and future capital issues [Diamond (1991), Hoshi et al. (1993)] and thus have a positive relation to CAR and spread. Chemmanur and Fulgieri (1994), Petersen and Rajan (1994), Houston and James (1996) and Song and Thakor (2007) provide various arguments and evidence based on the complementarity of private and public debt to support a positive relation between the cost or value of relationship lending (monitoring, firm wealth and spread) and lender quality (liquidity creation).

3.5.2. Loan and relationship characteristics

Loan size relative to the firm is likely to have a positive relation with the CAR. Dewatripoint and Maskin (1995), Bolton and Scharfstein (1996), Diamond (1993), Berglof and Von Thadden (1994) and Gorton and Kahn (2000) present arguments and evidence based on the ex-post re-negotiability of loans and the tradability of seniority and interest rates to suggest a positive relation between ***loan spread*** (used to proxy for seniority) and the CAR. ***Loan tenor*** reflects relationship quality and may relate positively to the CAR, and, depending on the term structure, it may relate positively or negatively to the spread. Simons (1936), Boot et al. (1993), Stein (2002) and Berger et al. (2005) support this hypothesis with arguments based on soft, relationship-derived information in lending and discretionary, ex-post contracting and Brick and Palia (2007) document a 21 bp fall in the interest rate from a one standard deviation increase in relationship length. Dummy variables are used to proxy for ***revisions and their direction***, based on the findings of Lummer and McConnell (1989) and Aintablian (2000) who find positive effects on CAR of overall and positive revisions, respectively. DeYoung et al. (2008) present evidence on the increasing geographic ***distance*** between lenders and borrowers leading to higher loan defaults, thus suggesting a negative relation with the CAR.

3.5.3. Lender characteristics

The lender's ***total assets*** reflect economies of scale or scope, as suggested by Byers et al. (1998). Merton (1977) models ***deposit insurance*** as a put option for the bank's creditors, making this variable (scaled by deposits) a measure of risk in the loan book that is likely to have an inverse relation with monitoring efficiency. Other structural variables likely to affect monitoring efficiency are the geographical spread of a bank's operations (proxied by the ***percentage of domestic to total offices***), the cost of funding measured by the ***ratio of interest-bearing to total deposits*** and the distribution of income measured by the ***ratio of non-interest to total income***. Calomiris and Kahn (1991) and Diamond and Rajan (2000) argue that fragility underpins liquidity creation while Nier and Baumann (2006) argue that uninsured creditors are the strongest monitors, supporting the use of the ratio of ***subordinated debt to total liabilities***. Boot et al. (1991), Shockley (1995), Shockley and Thakor (1997)

and Kashyap et al. (2002) show that loan commitments lower borrower moral hazard thereby reducing monitoring expenses. This suggests a negative relation between the ***loan commitment ratio*** and monitoring efficiency.

4. Data

This analysis begins with detailed loan data from the Loan Pricing Corporation (Dealscan), spanning 1987 – 2010, and including 44,465 total and 31,197 unique loans, after dropping loans missing a lead lender, loan maturity or loan size. This sample was then manually matched to the merged CRSP-Compustat (CCM) database, using the borrower ticker and name data from the Dealscan dataset. After filtering out missing CRSP data, non-US borrowers and inactive stock issues, there were 10,036 records with matching price and financial information on the borrowers. Next, lender information from Dealscan was manually matched with the CCM database and the sample was restricted to US commercial bank lenders (GIC code 401010), excluding financials and utilities (SCI codes 6 and 49, respectively), leaving a final universe of 7,040 unique loans. The next stage of data filtration involved extensive manual work and the period of analysis had to be restricted to 2004 – 09 in order to make the exercise manageable. The sample of 3,610 loans that remained was then broken down by year and divided into quartiles by market capitalization and price-to-book ratios. A stratified sample was then drawn from the 4 x 4 = 16 bins through random draws of 15% of this population. This yielded a target sample of 542 loans. Finally, a search on the news database Factiva (including press releases, SEC filings and other news) was carried out for the announcements of these randomly sampled loans because the Dealscan database only includes the loan activation date and not the announcement date. For press releases before 4:00 pm, the loan announcement date is the same as the date of the release, otherwise it is the next trading date for the borrower. Loans lacking announcements and those contaminated by other news (earnings, dividend etc.) were dropped from the final sample and the sampling fraction was increased to compensate for these losses. 944 out of the universe of 3,610 loans (26%) during 2004 – 09 were screened, yielding a sample of 536 loans (14.85%). The final sample has 526 loans after dropping cases with missing liquidity creation data.

5. Methodology

5.1. Cumulative abnormal returns (CAR)

The abnormal return for security i on event day t is calculated using the market model as:

$$AR_{i,t} = R_{it} - \left(a_i + b_{i1}R_{m,t+1} + b_{i2}R_{m,t} + b_{i3}R_{m,t-1}\right) \quad (4)$$

where $R_{i,t}$ and $R_{m,t}$ are the rates of return on security i and the market index return on event day t, and $R_{m,t+1}$ and $R_{m,t-1}$ are its return on day $t + 1$ after the event and day $t - 1$ prior to the event, respectively. The coefficients a_i, b_{i1}, b_{i2} and b_{i3} are OLS estimates of the intercept and slopes of the regression, which includes the leading, contemporaneous and lagging market return to allow for asynchronous trading [see

Scholes and Williams (1977)]. The model parameters are estimated over a 100-day period prior to the event: [t – 120, t – 21]. Standard event study methodology is employed to compute cumulative abnormal returns and test statistics, for various 1 – 3 day windows spanning the event. The CAR is estimated against three different market models for robustness – the CRSP equal-weighted (CRSP-EW) index, the CRSP value-weighted (CRSP-VW) index and the Fama-French 4-Factor (FF4) model.

5.2. Estimating the value of the deposit insurance guarantee

Following Merton (1977) and Marcus and Shaked (1984) deposit insurance is modeled as a put option. Consider a bank with total assets A and total deposits B, appraised annually by the insurer and closed on failure. If the value of the assets follows a diffusion process, then the fair market value of FDIC insurance at time 0, is given by:

$$I = B_T e^{-rT}[1 - N(x_2)] - e^{-\delta T} A_0[1 - N(x_1)] \quad (5)$$

where δ = rate of return per dollar of bank assets, r = risk-free rate of interest, σ = the standard deviation of the rate of return on A, **T** = maturity date of the deposit insurance,

$x_1 = \frac{\left[log\left(\frac{A_0}{B_T}\right) + \left(r + \frac{\sigma^2}{2} - \delta\right)T\right]}{\sigma T^{\frac{1}{2}}}$, $x_2 = x_1 - \sigma T^{\frac{1}{2}}$ and $N(.)$ is the cumulative normal distribution. Equation (5) is the formula for a put option with exercise price B_T on an asset with a current value A_0 that yields δ.[1] Insurance effectively gives depositors an option to sell their claims on the bank to the FDIC at price B_T. As A and σ are unobservable, but the sum of the market values of debt and equity is observable, equation (5) cannot be directly estimated but an implicit solution for I in terms of the observable values of D and E can be obtained[2] with the identity:

$A + I = D + E$. This implies that the firm's value ($D + E$) exceeds its assets A by the value of the FDIC insurance. Following Merton (1974), the variance of the return on the bank's assets, σ, is estimated using the variance of the return on equity prices: $\sigma = \sigma_E \left[1 - \frac{B_T e^{-rT} N(x_2)}{e^{-\delta T} A_0 N(x_1)}\right]$ where σ_E, the standard deviation of the return on the bank's equity, is estimated using 60 days of daily data over the period [t – 65, t – 6]. Implicit solutions for I are derived through recursive substitution[3] of these identities into equation (5). Values of I are determined before loan announcements using the nearest quarterly financial data and scaled by total deposits to obtain relative measures. A

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[1] δ is the market yield on U.S. Treasury securities at 1-year constant maturity, quoted on investment basis, sourced from FRED. The expiration date of the option is set to 1 year.

[2] The book value of debt proxies for market value because of the relatively short maturities of most classes of bank debt and the existence of deposit insurance coverage for bulk of the deposit holdings.

[3] The seed value for σ is σ_E **(** E **/ (** $E + D$ **))**. Multiple starting values equal to 0, 100, and 200 percent, respectively, of equity were used for I as a guard against the existence of multiple solutions. This check was redundant as all solutions quickly converged to the same value, irrespective of the seed value of I selected.

more detailed explanation of the methodology employed in this section can be found in Changarath et al. (2017).

5.3. Estimating bank liquidity creation

The liquidity creation measures used in this paper are based on the methodology and data of Berger and Bouwman (2009). A brief explanation of their methodology is excerpted here; a more detailed review can be obtained from their paper. "Consistent with liquidity creation theory, banks create liquidity when they convert illiquid assets into liquid liabilities. Positive weights of +½ are assigned to both illiquid assets and liquid liabilities, while their semi-liquid counterparts are assigned weights of 0 each. In contrast, negative weights of –½ are assigned to liquid assets and illiquid liabilities, with weights of 0 each being assigned to their semi-liquid counterparts. Thus when $1 of an illiquid asset is transformed into $1 of a liquid liability, $1 of liquidity is created [½ * $1 + ½ * $1 = $1]. Conversely, when $1 of an illiquid liability such as equity is used to finance a purchase of $1 of a liquid asset such as Treasury securities, $1 of liquidity is destroyed [–½ * $1 – ½ * $1 = –$1]. Using these weights, banks do not create liquidity when they use liquid liabilities (e.g., transaction deposits) to finance liquid assets (e.g., treasuries), or when they use illiquid liabilities or equity to finance illiquid assets (e.g., business loans). All balance sheet and off-balance sheet items are classified as liquid, semi-liquid or illiquid based on the ease, cost and time with which they can be liquidated for cash." This paper uses the 4 liquidity creation measures (LCM) constructed by Berger and Bouwman (2009). Their first and second measures, "catfat" and "catnonfat" (LCM1 and LCM2 here) are both based on the category classification of loans but include and exclude, respectively, off-balance sheet items. Their third and fourth measures, "catfatsecadj" and "catnonfatsecadj" (LCM3 and LCM4 here) adjust the previous two measures, respectively, by the extent of loan securitization. All the liquidity creation measures are scaled by size by dividing by Gross Total Assets (nominal) before further analysis.

6. Results

6.1. Sample selection bias – evidence of absence

Maskara and Mullineax (2011) find announcements for only 232 loans out of a randomly sampled set of 800 loans (29%) from 1987-2004[4] and argue that there is a selection bias in the reporting of loans. As Table 1, Panel A shows, 746 loans out of a randomly sampled set of 944 loans were announced in the press (79%), although 210 of those loan announcements had to be dropped from the sample due to contaminating news. The final sample here, even after dropping contaminated announcements, is 57% or nearly double of what Maskara and Mullineaux report. They also suggest that the positive loan announcement effect is likely driven by small borrowers with asymmetric information problems. In contrast, the sampling here

[4] The overlap in time period between their study and this paper is limited to 1 year; 2004 is the last year in their sample and the first year in this paper.

Table 1: Descriptive Statistics – Loans

Panel A			**Panel B**		
Loan Announcements	**Count**	**%**	**Loan Type**	**Count**	**%**
Not found	198	20.97	New Loans	97	18.44
Contaminated	210	22.25	Revisions	429	81.56
Final Sample	536	56.78	Total	526	100
Total Screened	944	100			
Panel C			**Panel D**		
Revisions: Overall	**Count**	**%**	**Revisions: Size**	**Count**	**%**
Up	264	61.54	Up	226	52.68
Down	39	9.09	Down	47	10.96
Same	126	29.37	Same	156	36.36
Total	429	100	Total	429	100
Panel E			**Panel F**		
Revisions: Fees	**Count**	**%**	**Revisions: Covenants**	**Count**	**%**
Up	112	26.11	Up	95	22.14
Down	29	6.76	Down	7	1.63
Same	288	67.13	Same	327	76.22
Total	429	100	Total	429	100

Note: Panel A shows 944 loans randomly screened from the universe of 3,610 loans over 2004–09, from 4 x 4 bins by market capitalization and P/B ratio. Panel B breaks down the loans by initiations and revisions. Revisions are categorized as up, down and same on three parameters – size, fees (interest rates) and covenants. Loan size increases, interest rate reductions and covenant relaxations are beneficial to the borrower and marked as 'Up', and the opposites are marked 'Down'. Unchanged revisions or those without information are marked 'Same'. Overall revisions are determined by a majority of the 3 parameters. Panel C breaks down the revisions by the overall direction and Panels D, E and F break down the direction of the individual parameters of revision.

Table 2: Descriptive Statistics – Lenders

	Lender Rank			
	1	**2**	**3**	**4**
Assets ($m)	802,059	615,316	521,014	494,459
LCM1	0.44	0.53	0.56	0.56
LCM2	0.17	0.13	0.15	0.17
LCM3	0.49	0.59	0.62	0.62
LCM4	0.22	0.18	0.21	0.22
Count	461	340	325	321

Note: This table shows the mean distribution by total assets and the 4 liquidity creation measures (LCM) from Berger and Bouwman (2009) discussed earlier. The columns show lender rank within the syndicate.

was based on randomized stratification by market capitalization and P/B quartiles, to adjust for possible selection biases arising out of size and valuation. The relatively low incidence of non-announcements, despite these controls, casts doubt on their report of asymmetric information driving a selection bias. As subsequent results will show, this paper finds significantly positive CARs, even after these factors are rigorously controlled for, in multivariate analysis. To summarize, this paper finds evidence that the selection bias from non-announcement reported by Maskara and Mullineax (2011) is absent, and further finds evidence of a significant loan announcement effect even with controls for selection and asymmetric information.

6.2. Sample distribution – loan type, lender size and liquidity creation

Table 1, Panel B shows that revisions of existing loans account for 82% of the sample while initiations make up the rest. Panel C shows that 62% of the overall revisions are positive while only 9% are negative and 29% are flat or unchanged. Revisions upward exceed those downward in Panels D (size), E (fees) and F (covenants) but only size revisions (Panel D) report an absolute majority; in Panels E and F, the majority are unchanged. In subsequent analysis of the CAR, the possibility of the unchanged group masking under-reported downward revisions is tested by clubbing these groups together.

Table 2 shows the distribution of size and liquidity creation among the various lenders in order of seniority rank. The average lender's size drops with its rank, implying that the biggest lenders occupy the upper rungs of the syndicate while the smaller lenders take the lower rungs. With liquidity creation, an increase is evident as lenders drop in rank, implying that the bottom ranked lenders appear to create more liquidity (on a size-adjusted basis) than those ranked at the top. This is especially true for the first and third measures of liquidity creation which, unlike the second and fourth, include off-balance sheet items in their calculation and may be regarded as more comprehensive.

6.3. Importance of the loan announcement

Dealscan reports loans with the facility activation date (when the contract takes effect), which has been used in some studies, such as Gande and Saunders (2011), to determine the CAR. This approach is questionable, as Maskara and Mullineaux (2011) also point out, as the activation date rarely coincides with the announcement date. A majority of the loans in the sample (56%) have a gap of more than 3 days between the two dates and as much as 23% have a gap of more than 6 days. Table 3 provides a detailed look at the CARs around both dates, with returns being calculated against 3 different benchmarks. There is no evidence of a significant CAR on the activation date, or the day immediately preceding or succeeding it, or within the 2 or 3 day windows that include it. In contrast, CARs on the announcement date are significant at the 5% level against all three benchmarks, with a magnitude from 16 – 18 bp. The 2-day CAR including the announcement day and the day before

is also significant at the 5% level against the CRSP indices and at the 10% level against the FF4 index and its magnitude ranges from 26 – 33 bp. These results show that the loan announcement has a material effect on the share price that is not evident in the mere activation of the contract. They also support the first hypothesis – that there is a significantly positive loan announcement effect, contrary to the findings by Fields et al. (2006). As the sample is stratified by size and P/B ratio, this effect is not attributable purely to size and asymmetric information as suggested by Maskara and Mullineaux (2011). These are key contributions to the debate on the 'specialness' of loans.

Table 3: Cumulative Abnormal Returns (CAR)

Event Day/ Window	VW CRSP		EW CRSP		FF4
	Activation	Announcement	Activation	Announcement	Announcement
-1	0.0230	0.151*	0.0392	0.156*	0.0983
0	0.0574	0.1589**	0.0544	0.1753**	0.1597**
1	0.0596	0.0428	0.0846	0.0220	0.0252
[-1,0]	0.0805	0.3099**	0.0936	0.3313**	0.2581*
[-1,1]	0.1401	0.3526*	0.1782	0.3534*	0.2832
[0,1]	0.1170	0.2016*	0.1390	0.1973*	0.1849

Note: This table shows the cumulative abnormal return (CAR) % benchmarked against the value weighted CRSP index (VW CRSP), the equal weighted CRSP index (EW CRSP) and the 4-factor Fama French index (FF4), respectively. CARs are shown for both the loan activation date and the loan announcement date for the CRSP index and for the loan announcement date for the FF4 index. CARs are shown for the event day (0) and one day on either side (-1 and 1) and also for various 2 and 3-day windows spanning day 0. CARs that are significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

6.4. Distribution of CAR by borrower characteristics

Table 4 shows the distribution of CAR by borrower size (market capitalization) and P/B ratio for a 3 x 3 tertile sample split. Except for the largest, growth stocks (top right bin) CAR values are not significantly different from 0; for this group there is a 151 bp CAR over the 3-day window around the event that is significant at the 5% level. The stratified sampling procedure adopted appears to have removed or even reversed the usual tilt in favor of value but the conventional tilt towards small stocks continues to be manifest. The continued significance of both these attributes motivates their inclusion as control variables in the multivariate analysis to follow.

CAR was also broken down by the borrowers' GICS sector classifications, but except for Consumer Staples which reported a CAR of 142 bp on the event day, significant at the 5% level, none of the other sectors reported CARs significantly different from zero.

Table 5 shows the distribution of CAR by the credit rating on borrowers' senior debt – S&P and Moody's ratings. Multiple notches in the ratings have been compressed into 4 or 5 groups for simplification. In line with prior literature that suggests that intermediate quality borrowers are more likely to benefit from bank borrowing, event day (0) CARs of 41 bp and 29 bp are seen for borrowers rated 'B', significant at the 1% and 5% levels, for S&P and Moody's ratings, respectively. In contrast, the event day CAR is negative for borrowers rated 'A', significant at the 5% level for Moody's ratings. These results motivate the inclusion of suitable dummy variables for the 'A' and 'B' categories respectively in subsequent multivariate analysis.

Table 4: CAR Breakdown by Borrower Market Capitalization and P/B Ratio

	Event Day 0			**Event Window [-1,1]**		
	MV Q1 (H)	**MV Q2 (M)**	**MV Q3 (L)**	**MV Q1 (H)**	**MV Q2 (M)**	**MV Q3 (L)**
PBR Q1 (H)	-0.0949	-0.0466	0.3521*	0.3627	0.3458	1.5104**
PBR Q2 (M)	0.2566	0.1033	0.0055	0.0166	-0.4142	0.8886
PBR Q3 (L)	0.4945	0.1425	0.2658	1.0833	0.8801	-0.4044

Note: This table shows a breakdown of the CAR (benchmarked against the VW CRSP index) around the loan announcement date for tertiles on market capitalization (MV) and price-to-book ratio (PBR), with Q1, Q2 and Q3 representing the high, medium and low values of both variables, respectively. CARs are shown for the event day (0) and a 3-day window covering a day each, before and after the event. CARs that are significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

Table 5: CAR Distribution by Borrower Senior Debt Ratings

	S&P Rating Group		**Moody's Rating Group**	
Event Day/Window	**[0,0]**	**[-1,1]**	**[0,0]**	**[-1,1]**
A	-0.2442	-0.0679	-0.4106**	-0.0544
B	0.4083***	0.069	0.2914**	0.02
C	0.3851	0.2675	2.3114	0.4296
N	-0.033	0.1473	0.0133	0.1339
W			-0.0134	2.2062

Note: This table shows the distribution of CAR (benchmarked against the FF4-Factor index) by the ratings on borrower senior debt for the event day (0) and a 3-day window covering a day each, before and after the event. S&P ratings are in the left panel and Moody's ratings are in the right panel. CARs that are significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

6.5. Distribution of CAR by loan characteristics

CAR was broken down by loan purpose. Working capital loans report an event day CAR of 46 bp, significant at the 1% level, but CARs are not significant for any other purposes. 50% of the loans in the sample have a tenor of 5 years and 43.34% have shorter tenors. When broken down by loan tenor (duration), 2-, 4- and 5-year loans report event day CARs of 109, 67 and 21 bp, significant at the 10%, 10% and 5% levels, respectively. These results motivate the inclusion of tenor as a control variable in the multivariate analysis to follow.

Table 6, Panel A shows that initiations have an insignificant CAR while revisions have a CAR of 18 bp on the event day, significant at the 5% level. The symmetric 3-day CAR around the event is 48 bp for revisions, significant at the 5% level and the difference in CAR between revisions and initiations for this window is 71 bp, significant at the 10% level. Panel B shows the distribution of CAR for overall revisions, which are classified as up (favorable), down (unfavorable) or unchanged by aggregating the signals from three sub-categories – loan size, fees and covenant intensity. Event day CARs are 40 bp and -96 bp for upward and downward overall revisions, respectively, while the difference between the two is 136 bp, all significant at the 1% level.

Table 6: CAR Breakdown by Loan Type

Event Day/ Window	Panel A: New and Revised Loans		
	Initiations (1)	Revisions (2)	Difference (2) - (1)
-1	0.0451	0.1749*	0.1298
0	0.0506	0.1834**	0.1328
1	-0.3186*	0.1244**	0.4430**
[-1,0]	0.0957	0.3583**	0.2627
[-1,1]	-0.2229	0.4828**	0.7057*
[0,1]	-0.2680	0.3078**	0.5759*

Panel B: Breakdown of Overall Revisions				
Event Day/ Window	Upward (3)	Downward (4)	Unchanged	Difference (3) - (4)
	0.1215	0.9786**	0.0444	-0.8571*
-1	0.4007***	-0.9560***	0.0795	1.3567***
0	0.1228**	0.3752	0.0602	-0.2524
1	0.5222**	0.0226	0.1238	0.4996*
[-1,0]	0.6450**	0.3978	0.1841	0.2472
[-1,1]	0.5235***	-0.5808	0.1397	1.1043***

Event Day/ Window	Panel C: Breakdown of Size Revisions			
	Upward (5)	Downward (6)	Unchanged	Difference (5) - (6)
-1	0.1233	0.7301	0.0824	-0.6067
0	0.4693***	-0.8185***	0.0711	1.2877***
1	0.1066*	0.5814*	0.0126	-0.4748
[-1,0]	0.5926**	-0.0884	0.1536	0.6810**
[-1,1]	0.6992**	0.4930	0.1662	0.2062
[0,1]	0.5759***	-0.2371	0.0837	0.8129**
	Panel D: Breakdown of Fee Revisions			
-1	0.3388	0.5805	0.0704	-0.2417
0	0.1478	-0.0033	0.2160*	0.1511
1	0.2362	0.3485	0.0584*	-0.1123
[-1,0]	0.4866	0.5772	0.2864	-0.0906
[-1,1]	0.7228	0.9257	0.3448	-0.2029
[0,1]	0.3840	0.3452	0.2745*	0.0388
	Panel E: Breakdown of Covenant Revisions			
-1	0.0032	-0.0933	0.2306**	0.0965
0	0.3469	-1.4510*	0.1709**	1.7979*
1	-0.0501	-1.2561	0.2047***	1.2060
[-1,0]	0.3501	-1.5442	0.4014**	1.8944**
[-1,1]	0.3001	-2.8003	0.6061**	3.1004**
[0,1]	0.2968	-2.7071	0.3756**	3.0039*

Note: This table shows the breakdown of CAR (benchmarked against the VW CRSP index) by loan type. Panel A breaks up loans into initiations and revisions, Panel B delves into the breakdown of the overall revisions and Panels C, D and E breakdown the revisions on individual parameters such as loan size, interest rate (fee) and covenants, respectively. Increases in size, reductions in fees and relaxations in covenants are considered upward revisions and vice versa. The direction of overall revisions is determined by a simple majority of the 3 parameters. The group classified as unchanged includes non-revisions and those for which information is lacking on the direction of the change. The last column in each panel shows the difference between the preceding groups in the same panel. CARs are shown for the event day (0) and a 3-day window covering a day each, before and after the event. CARs that are significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

Panel C shows event day CARs for size revisions are 47 bp and -82 bp for upward and downward overall revisions, respectively, while the difference between the two is 129 bp, all significant at the 1% level. Panel D shows event day CARs for fee revisions are mostly insignificant in both directions, except for a 22 bp CAR for the unchanged group, significant at the 10% level. Panel E reports an event day CAR

Table 7: CAR Breakdown by Lender Liquidity Creation

Panel A: Individual Lenders by Rank in Syndicate									
LCM	**Q1 (H)**	**Q2 (M)**	**Q3 (L)**	**Diff. (Q1 - Q3)**	**LCM**	**Q1 (H)**	**Q2 (M)**	**Q3 (L)**	**Diff. (Q1 - Q3)**
Lender 1					**Lender 3**				
1	0.040	0.255**	0.175	-0.134	1	0.062	-0.159	0.303**	-0.240
2	0.201*	0.152	0.134	0.066	2	0.046	0.075	0.227*	-0.181
3	0.067	0.052	0.299**	-0.232	3	0.061	-0.148	0.296**	-0.235
4	0.249**	0.132	0.117	0.132	4	0.022	0.119	0.221	-0.199
Lender 2					**Lender 4**				
1	0.235	0.041	0.176	0.058	1	0.435***	-0.132	0.167	0.268*
2	0.027	0.093	0.233**	-0.206	2	0.365**	-0.332	0.257**	0.108
3	0.187	0.065	0.184	0.002	3	0.412***	-0.078	0.153	0.258**
4	-0.083	0.197	0.235**	-0.318	4	0.450***	-0.377*	0.241*	0.208*

Panel B: Average Lender				
Liquidity Creation Measure	**Q1 (H)**	**Q2 (M)**	**Q3 (L)**	**Diff. (Q1 - Q3)**
Average Lender				
1	0.2257*	0.0786	0.1747	0.0510
2	0.1449	0.1435**	0.1910	-0.0461
3	0.2477*	0.0708	0.1616	0.0861
4	0.1710	0.1485**	0.1598	0.0112

Note: This table groups borrowers into tertiles by lender liquidity creation, calculated with the 4 measures (LCM) described earlier. Panel A shows event day (0) CARs for individual lenders in the syndicate by seniority rank, with 1 being the most senior and 4 the least. Panel B shows CARs for the average lender across the 4 ranks. The last column for each lender shows the difference in CAR between the top and bottom tertiles. CARs significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

of -145 bp for downward covenant revisions and 180 bp for the difference between upward and downward covenant revisions, both significant at the 10% level. However, the CAR for downward covenant revisions is based on a small sample of only 7 and so the conclusion must be taken with caution. It is also interesting that the group of unchanged covenant revisions in Panel E reports a CAR of 18 bp on the event day, significant at the 5% level. This hints at potential mis-classification due to the difficulty of inferring whether covenants have been tightened, relaxed or left

unchanged, in the absence of explicit mention in the loan announcement; it is possible that this group includes some upward revisions which would explain the positive CAR. In summary, the significance of revisions (over initiations) and of the direction of overall revisions provides reason to include dummy variables that reflect these characteristics in subsequent multivariate analysis.

6.6. Distribution of CAR by lender liquidity creation (bivariate)

Table 7 shows the distribution of event day (0) borrower CAR, grouped into tertiles by the liquidity creation capacity of the lender(s). Four liquidity creation measures are considered, as described previously. CARs are shown for individual lenders by rank in the syndicate (Panel A) and also for the average of up to four lenders (Panel B). In Panel A, no clear pattern is evident in the distribution of CAR, except for the bottom ranked Lender 4 where there is evidence of positive CARs (37 – 45 bp) for the top tertile on all 4 liquidity creation measures, significant at the 5% level or better, and of a difference in CAR (21 – 27 bp) between the top and bottom tertiles on 3 out of 4 liquidity measures, significant at the 10% level or better. In Panel B, CAR is significantly positive (23 – 25 bp) on 2 out of 4 liquidity measures for the average lender in the top tertile, significant at the 10% level but the difference in CAR between the top and bottom tertiles is not significant. To sum up, the bivariate analysis presented here suggests that borrowers that contract with superior liquidity creating syndicates on average are benefited and also that this effect is particularly strong for the bottom-ranked lender in the syndicate.

6.7. Lender monitoring efficiency and liquidity creation (multivariate)

Table 8 presents the results of regressions of the monitoring efficiency of the lender(s), proxied by the salary/expense ratio, against their liquidity creation capacity and other controls. These results represent a test of the hypothesis that liquidity creation is a significant driver of bank monitoring efficiency (equation 1). The last panel reveals a positive relation between liquidity creation and monitoring efficiency for the average lender, on the 2nd and 4th measures (which exclude off-balance sheet items), significant at the 1% level.

When the regression is estimated for each individual lender by rank, the same relationships are significant for lenders ranked 2 – 4, but not for the lead lender. Among the other interesting relationships, size is positively related to monitoring efficiency as Byers et al. (1998) also found, pointing to the existence of economies of scale in this area. The deposit insurance put option value, a measure of the bank's portfolio risk, is found to be negatively related to monitoring efficiency, as previously hypothesized. The inverse relation between risk and monitoring efficiency is valid at the level of the average lender and highly significant for the top 2 lenders in the syndicate but the effect appears to fade into insignificance for lenders ranked lower down. The next three variables which reflect geographical spread (PDM), the cost of funding (IDR) and the distribution of income (NIIR) are all positively related to

monitoring efficiency, as they all contribute to the capacity for higher financial outlays for monitoring. The ratio of subordinated debt to total liabilities (SDTL) is not found to be significant at the level of the individual lender, except for the bottom-ranked lender and also for the average of the syndicate, in which cases a negative relation is seen, hinting at substitutability with salary expenses devoted to monitoring. Finally, as suggested by Kashyap et al. (2002), the loan commitment ratio reports a negative relation by lowering salary expenses on monitoring.

To recap, these results conclusively establish that, at the level of the lending syndicate, liquidity creation is a significant driver of monitoring efficiency and that this relationship is strongest for the junior-most lender who creates the most liquidity per unit of assets. Thus, the top liquidity creators are also the best monitors.

6.8. Borrower wealth (CAR) and lender liquidity creation (multivariate)

Table 9 presents the results of regressions of the 3-day CAR of the borrower, against lender liquidity creation, with other control variables. These results represent a test of the hypothesis that lender liquidity creation is a significant contributor of borrower wealth (equation 2). Results are shown for the full sample of loans, for samples broken down into periods of economic expansion and recession as defined by the National Bureau of Economic Research (NBER), respectively; and, for samples broken down by positive and negative CARs respectively.

With reference to the bottom panel in the table which features the regression results of borrower CAR against the liquidity creation of the average lender in the syndicate, the full sample results in the second column show some evidence of a positive relation but this is not particularly significant. In the third column, for the sample from the period of economic expansion, a significant (at the 10% level) positive relation is found on 2 out of the 4 liquidity measures (which include off-balance sheet items). In the fourth column, for the sample from the period of recession, the relationship stays positive but insignificant, as for the full sample. In the fifth column, for the sample with positive CARs, there is no evidence of any significant relationship. In the sixth column, however, for the sample with negative CARs, a significant (at the 10% level) positive relation is seen between borrower wealth and lender liquidity creation, on 2 out of the 4 measures of liquidity creation considered, similar to the economic expansion sample.

The first 4 panels repeat the analysis described above for the individual lenders by rank in the syndicate. The relation between borrower CAR and the liquidity creation of each of the top 3 lenders (panels 1 – 3) in the syndicate is mostly positive across the various samples but it is not significant except for the economic expansion sample of the second ranked lender in the syndicate (second panel, third column). However, the results of the recession sample of the bottom ranked lender in the syndicate (fourth column, fourth panel), provide strong evidence of a positive relation between borrower wealth and liquidity creation, significant at the 5% level for the first two measures of liquidity creation and at the 10% level for the next two.

It follows that during an economic downturn when credit market conditions are tight, borrowers benefit from the presence of more aggressive liquidity creating banks on the lower rungs of the syndicate. As Table 2 showed earlier, decreases in lender seniority and rank are accompanied by monotonic decreases in their mean size and increases in their size-adjusted liquidity creation capacities. Although the bigger lenders undoubtedly create more liquidity in aggregate, it is the smaller lenders who create more per dollar of assets, as also noted by Berger and Bouwman (2009), and it appears that investors recognize and reward this.

To recap, there is significant evidence that firms that borrow from banking syndicates that create more liquidity on average are rewarded by the market, especially when the economy is doing well. There is also significant evidence that contracting with a syndicate that creates more liquidity moderates the market reaction, in cases where the reaction is adverse, implying that weaker borrowers derive greater benefits from lender liquidity. There is also highly significant evidence that the liquidity creation capacity of the junior-most lender in the syndicate is an important contributor to borrower wealth.

6.9. Loan spreads and lender liquidity creation (multivariate)

Table 10 presents the results of regressions of the loan spread against lender liquidity creation, with other control variables. These results represent a test of the hypothesis that lender liquidity creation is a significant driver of the loan spread (equation 3). As with the CAR regression results in the previous section, results here are shown for the full sample of loans, for samples broken down into periods of economic expansion and recession as defined by the National Bureau of Economic Research (NBER), respectively; and, for samples broken down by positive and negative CARs respectively.

With reference to the bottom panel in the table which features the regression results of loan spread against liquidity creation for the average lender in the syndicate, the economic expansion sample results in the third column show a positive relation between the average liquidity creation of the lending syndicate and the average spread earned, on 2 out of 4 liquidity measures (that exclude off-balance sheet items), significant at the 5% level. This implies that lending syndicates that create more liquidity are rewarded by higher spreads on their loans on average, in a healthy economy with relaxed credit market conditions. Similarly, in the same panel, the results in the last column for loans with negative CARs also show a significant positive relation between the same variables. This suggests that syndicates that lend to weaker borrowers (whose loan announcements attract adverse market reaction) are able to extract a premium in the form of higher spreads, on average.

Table 8: Regression of Lender Monitoring Efficiency against Liquidity Creation

LCM	TA	OVS	PDM	IDR	NIIR	SDTL	LCR	LCA	EDF	R^2
Lender 1										
1	0.25**	-0.11**	0.18***	0.13**	0.13***	0.12	-0.05***	0.02	156	49
2	0.21	-0.11**	0.19***	0.12*	0.11**	0.28	-0.05***	-0.02	156	49
3	0.26**	-0.11**	0.18***	0.13**	0.13***	0.13	-0.06***	0.02	156	49
4	0.22*	-0.11**	0.19***	0.12*	0.11**	0.22	-0.05***	-0.01	156	49
Lender 2										
1	0.10	-0.15**	0.29***	0.11**	0.15***	0.03	0.01	-0.08**	173	49
2	0.32***	-0.15***	0.17***	0.21***	0.31***	-1.00**	-0.01***	0.23***	173	55
3	0.09	-0.15**	0.30***	0.14**	0.13***	-0.03	0.01**	-0.10***	173	51
4	0.28**	-0.16***	0.19***	0.14**	0.29***	-0.59	-0.01***	0.15***	173	50
Lender 3										
1	0.20	-0.01	0.20***	-0.07	0.03	0.39	0.00	-0.03	189	29
2	0.47***	-0.01	0.09***	0.03	0.12***	-0.55	0.00**	0.23***	189	36
3	0.18	-0.01	0.21***	-0.06	0.02	0.32	0.00	-0.04	189	30
4	0.43***	0.00	0.10***	-0.03	0.11***	-0.05	-0.01***	0.19***	189	33
Lender 4										
1	0.06	0.08	0.24***	0.08	0.18***	-0.74*	-0.01	0.01	187	42
2	0.22*	0.11	0.19***	0.12***	0.26***	-1.28***	-0.01***	0.19***	187	47
3	0.00	0.07	0.27***	0.06	0.14***	-0.58	0.00	-0.04	187	42
4	0.16	0.10	0.19***	0.10**	0.23***	-0.97**	-0.01***	0.13***	187	44
Average Lender										
1	0.20***	-0.06**	0.21***	0.03**	0.13***	-0.28**	-0.01**	0.01	517	37
2	0.36***	-0.04**	0.15***	0.11***	0.19***	-0.82***	-0.01***	0.16***	517	40
3	0.18***	-0.06**	0.22***	0.03**	0.12***	-0.19	-0.01**	-0.01	517	37
4	0.30***	-0.04**	0.17***	0.07**	0.17***	-0.56**	-0.01***	0.11***	517	39

Note: This table presents the results of regressions of the lender monitoring efficiency, proxied by the salary/expense ratio, against the lender liquidity creation and other controls, for the top 4 individual lenders in the syndicate by seniority and for the average of the 4 lenders. The variables used in the regression are: TA: Total assets of the lender. Coefficients are multiplied by 10^{10} for readability; OVS: Deposit insurance put option value of the lender, scaled by the value of total deposits. Coefficients are multiplied by 10^{6} for readability; PDM: Percentage of domestic to total (domestic and foreign) branches of the lender; IDR: Ratio of interest-bearing to total deposits of the lender; NIIR: Ratio of non-interest income to total income of the lender; SDTL: Ratio of subordinated debt to total liabilities of the lender; LCR: Ratio of loan commitments to total loans of the lender; LCA: Liquidity creation of the lender. Four different measures of liquidity drawn from Berger and Bouwman (2009) are considered and these are listed in the first column (LCM). The last 2 columns report the error degrees of freedom of the regression and the adjusted R^2 (%). Coefficients significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

Table 9: Regression of CAR [-1,1] against Lender Liquidity Creation

LCM	Full Sample	Expansion Sample	Recession Sample	Positive CAR Sample	Negative CAR Sample
Lender 1					
1	11.22	5.32	46.26	-13.87	22.56
2	47.77	34.51	218.29	54.66	-4.34
3	11.87	7.87	38.62	-13.26	23.53
4	61.22	48.65	270.75	44.57	15.56
Lender 2					
1	12.61	12.82*	0.32	-0.26	4.70
2	28.61	20.74	126.15	80.76	28.89
3	11.84	12.37*	-6.53	-0.59	2.54
4	29.79	30.25	81.71	61.81	19.69
Lender 3					
1	4.49	6.29	114.08	5.49	10.81
2	40.66	29.30	124.35	-25.00	-3.85
3	4.54	6.49	66.46	5.45	10.64
4	53.52	52.84	78.19	-15.99	11.95
Lender 4					
1	3.88	3.18	353.13**	-0.76	5.08
2	9.24	-42.39	365.63**	56.80	17.11
3	3.58	3.07	321.91*	-0.71	4.93
4	3.59	-39.68	317.76*	56.15	17.97
Average Lender					
1	20.50	20.95*	121.98	-6.19	23.70*
2	31.67	12.58	199.38	66.02	9.57
3	20.42	21.31*	92.80	-6.21	23.39*
4	47.98	36.02	204.71	58.86	22.98

Note: This table presents the coefficients of the 4 liquidity creation measures regressed against the 3-day CAR (benchmarked against the FF4 index) around the announcement date. Apart from the liquidity creation measures, the other independent variables are: Age: Borrower age; RTA: A dummy that is valued at 1 if the S&P Rating on the borrower's senior debt is A and 0 otherwise; RTB: A dummy that is valued at 1 if the S&P Rating on the borrower's senior debt is B or C and 0 otherwise; MV: Borrower market capitalization; P/B: Borrower price-to-book ratio; RSZ: Ratio of the loan amount to the borrower total assets; SPR: The spread on the loan; TNR: The tenor of the loan; REN: A dummy that is valued at 1 if the loan is a renewal and 0 otherwise; RUP: A dummy that is valued at 1 if the overall direction of the revision is upward and 0 otherwise; RDN: A dummy that is valued at 1 if the overall direction of the revision is downward and 0 otherwise; LCA: Liquidity creation measure of lenders ranked 1 – 4 and the average lender. The 4 measures of liquidity described earlier are considered and these are listed in the first column (LCM). The table reports the regression coefficients of this variable. Two formulations were run, one with all the variables listed here and the second, excluding MV, SPR, TNR and DST to alleviate the effects of multicollinearity among these variables. Results for the second (reduced) formulation are presented here. The table only shows the coefficients of the liquidity creation measures and suppresses the other

independent variables to save space. All coefficients have been multiplied by 10,000 to aid readability. The first 4 panels show the results of the regressions for the individual lenders and the 5th panel shows the result of regressions for the average lender in the syndicate. The columns show results for the full universe, samples of loans announced during periods of economic expansion and recession, respectively, as defined by the National Bureau of Economic Research (NBER), and samples of loans with positive and negative CARs, respectively, for the 3-day window [-1,1]. Coefficients significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

Table 10: Regression of Loan Spread against Average Lender Liquidity Creation

LCM	Full Sample	Expansion Sample	Recession Sample	Positive CAR Sample	Negative CAR Sample
Lender 1					
1	25.04	31.30	20.29	-4.15	51.60**
2	1.34	12.83	-24.42	-57.93	37.99
3	23.36	29.31	23.34	-4.29	47.74**
4	11.38	23.23	27.28	-66.90	52.92
Lender 2					
1	-6.68	-3.28	-22.16	-9.30	-16.40
2	37.80	35.49	-112.70	21.65	67.45
3	-6.18	-3.05	-13.63	-8.86	-14.83
4	39.33	34.16	-103.67	14.41	63.38
Lender 3					
1	-8.92	-5.25	33.78	-25.37	-6.88
2	-2.29	10.18	130.12	2.40	2.98
3	-8.74	-5.14	54.12	-25.54	-6.38
4	-15.10	2.03	156.81	-50.99	9.54
Lender 4					
1	4.68	2.39	2.42	-0.37	6.84
2	-9.92	-34.73	185.12	46.19	-31.44
3	4.85	2.70	-52.05	-0.31	7.20
4	1.91	-18.91	121.13	44.99	-12.99
Average Lender					
1	-11.25	-9.16	46.93	-25.44	-1.35
2	64.21	83.24**	-68.46	44.04	89.12*
3	-10.43	-8.25	39.77	-24.41	-0.55
4	66.32	88.08**	-76.90	33.43	95.94**

Note: This table presents the coefficients of the 4 liquidity creation measures discussed earlier when regressed against the loan spread of the lenders in the syndicate. Apart from the liquidity creation measures, the other independent variables in the regression are: Age: Borrower age; RTA: A dummy that is valued at 1 if the S&P Rating on the borrower's senior debt is A and 0 otherwise; RTB: A dummy that is valued at 1 if the S&P Rating on the borrower's senior debt is B or C and 0 otherwise; MV: Borrower market capitalization; P/B: Borrower price-to-book ratio; RSZ: Ratio of the loan amount to the borrower total assets; TNR: The tenor of the loan; REN: A dummy that is valued at 1 if the loan is a renewal and 0

otherwise; RUP: A dummy that is valued at 1 if the overall direction of the revision is upward and 0 otherwise; RDN: A dummy that is valued at 1 if the overall direction of the revision is downward and 0 otherwise; DST: Average geographical (flying) distance between the head offices of the borrower and the four lenders in the syndicate; LCA: Liquidity creation measure of lenders ranked 1 – 4 and the the average lender. The 4 measures of liquidity described earlier are considered and these are listed in the first column (LCM). The table reports the regression coefficients of this variable. The table only shows the coefficients of the liquidity creation measures and suppresses the other independent variables to save space. The coefficients on MV and DST have been multiplied by 1,000 to aid readability. The first 4 panels show the results of the regressions for the individual lenders and the 5th panel shows the result of regressions for the average lender in the syndicate. The columns show the results for the full universe, samples of loans announced during periods of economic expansion and recession, respectively, as defined by the National Bureau of Economic Research (NBER), and samples of loans with positive and negative CARs, respectively, for a 3-day interval [-1,1]. Coefficients significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

The first 4 panels at the top of the table repeat this analysis for individual lenders by rank in the syndicate. None of the coefficients in these panels are significantly different from zero, with the exception of the negative CAR sample for the senior-most lender (top panel, last column), which shows a positive relation between liquidity creation and loan spread, on loans made by the top-ranked lender in the syndicate to weaker borrowers (whose loan announcements attract adverse market reaction), significant at the 5% level.

Overall, it can be concluded that although superior liquidity creation enables the syndicate as a whole to command higher spreads on loans in a healthy economy and/or from weak borrowers, the gains are cornered by and most significant for the highest ranked lender in the syndicate.

6.10 Loan announcement effect for lenders

Table 11 presents CARs for the 3-day window [-1,1] including the event day (0) for the lenders in the syndicate, both individually (by rank in the syndicate) and as an average for the syndicate as a whole. In addition to the full sample (column 2), results are also presented for samples based on economic expansions (column 3), economic recessions (column 4), positive borrower CARs (column 5) and negative borrower CARs (column 6), respectively.

With reference to CARs for the average lender (bottom panel), they are negative for nearly all samples but insignificant with one exception – loans made during periods of economic expansion produce a negative CAR for the syndicate, significant at the 5% level.

Panels 3 and 4 show that the lower ranked lenders (3 & 4) in the syndicate also report negative CARs, significant at the 5% level, in an expanding economy. In addition, the third and fourth ranked lenders also report negative CARs, significant at the 5% level, for loans to weak borrowers (those with negative CARs).

Table 11: Lender Abnormal Loan Announcement Return (CAR)

Statistic	Full Sample	Expansion Sample	Recession Sample	Positive Borrower CAR Sample	Negative Borrower CAR Sample
Lender 1					
CAR %	-0.04	-0.05	0.03	-0.04	-0.03
N	449	378	71	210	239
Lender 2					
CAR %	-0.02	-0.01	-0.09	-0.12*	0.08
N	311	265	46	150	161
Lender 3					
CAR %	-0.07	-0.10**	0.04	0.02	-0.16**
N	295	246	49	141	154
Lender 4					
CAR %	-0.07	-0.10**	0.06	0.08	-0.21**
N	298	244	54	140	158
Average Lender					
CAR %	-0.04	-0.06**	0.06	-0.03	-0.05
N	528	449	79	250	278

Note: The following table shows the cumulative abnormal return (benchmarked against the FF4 index) over the 3-day window [-1,1] spanning the loan announcement date for the lender. CARs and sample sizes (N) are presented for each individual lender by rank (first 4 panels) and also for the average lender (last panel) in the syndicate. As in the previous tables, the columns (2 – 6) present results for 5 samples – the full sample; samples restricted to periods of economic expansion and recession, respectively, based on the NBER definition; and, samples restricted to positive and negative borrower CARs, respectively. Coefficients significantly different from 0 at the 10, 5 and 1 percent level of significance are marked with 1, 2 and 3 asterisks (*), respectively.

As noted earlier, Kang and Liu (2008) have documented a transfer of wealth from healthy lenders to unhealthy borrowers on loan announcements but the results in this paper provide a deeper insight into this phenomenon. This paper finds that the lending syndicate as a whole is penalized by investors for loan announcements in periods of strong economic and loan growth. However, this market 'tax' falls most heavily on the lower ranked lenders in the syndicate and it is significant for loans made during economic expansions and/or to weak borrowers. It is also worth noting that this 'tax' is largely absent in a recessionary climate or when loans are made to stronger borrowers. Although the junior lenders in the syndicate face two blows through this market penalty and from being locked out of the spread gains enjoyed by the syndicate (which are cornered by the lead lender as noted in the previous

section), the fact that the market 'tax' does not operate in a recessionary environment offers these lenders an incentive to boost loan growth and grab market share in trying economic times.

7. Conclusions

Recent literature, including Fields et al. (2006), Billet et al. (2006) and Maskara and Mullineaux (2011), questions the long line of prior literature that argues in favor of the specialness of loans. In particular, Maskara and Mullineaux argue that announced loans represent only a small sample of the population of total loans, subject to selection bias in favor of smaller borrowers that are more susceptible to asymmetric information problems. After screening a sample of 944 loans from 2004 – 2009 (in comparison with Maskara and Mullineaux (2011) who screen 800 loans from 1987 – 2004), this paper finds evidence of the absence of any systematic selection bias; the proportion of announcements in the sample of this paper is 79% in contrast to 29% in their paper. In addition, this paper adopts a randomized stratified sampling procedure to wash out the effects of size and asymmetric information (proxied by the P/B ratio), and still finds a small but significant loan announcement effect that cannot be explained solely by borrower characteristics. The first contribution of this study is to verify that loans are special, based on a substantially representative sample.

A second contribution is to establish that the announcement date matters. This is important because some previous studies, such as Gande and Sanders (2001), have used the loan activation date instead. In this study, no significant abnormal return is observed on the day the facility becomes active; in contrast, clear evidence is found of a significant positive effect on and around the loan announcement (28 – 35 bp over a 3-day window). Furthermore, the difference in the abnormal return between the announcement and activation dates is also positive and significant. The announcement and activation events are usually separated by a number of days, with the former event exerting a material effect on the share price that is not evident with the latter.

Diamond and Rajan (2000, 2001) and other theorists have identified banks' unique ability to provide valuable monitoring services as an important reason for the special nature of loan contracts, as opposed to other forms of finance. Qi (1998) argues that deposit liquidity and monitoring efficiency are positively related. However, the existing literature has not so far made a connection between the core banking functions of liquidity provision and monitoring. This paper steps into the breach and provides strong evidence of a significant positive relation between lender liquidity creation and monitoring efficiency; banks that create the most liquidity per dollar of assets are also found to be the best monitors. This is the third contribution of this study.

Kashyap et al. (2002) argue that liquidity provision is a core banking function and Berger and Bouwman (2009) present empirical evidence of a positive relation between bank liquidity creation and bank value. While the welfare effects of bank liquidity creation seem obvious, the benefits to borrowers who transact preferentially

with lenders who create more liquidity are less apparent. If there is a positive relation between bank liquidity creation and monitoring efficiency (as found in this paper), there is a likely to be a positive relation between borrower wealth and lender liquidity creation as well. On the other hand, though it seems less intuitive, it could also be argued that borrowers might benefit from transactions with lenders that create less liquidity. As an example, Cornett et al. (2010) find that banks more reliant on illiquid liabilities lent more than other banks during the financial and liquidity crisis of 2007–09. Given the competing theoretical reasons to expect either positive or negative relations between firm wealth and lender liquidity creation, it is important to find empirical evidence that can address the question.

This paper's investigation into the issue comes up with a number of pertinent findings. Firstly, there is significant evidence that firms that borrow from banking syndicates that create more liquidity on average are rewarded by the market, especially when the economy is doing well. Secondly, there is also significant evidence that contracting with a syndicate that creates more liquidity moderates the market reaction, in cases where the market reaction to a loan announcement is adverse, implying that weaker borrowers derive greater benefits from lender liquidity. Thirdly, when an economic downturn in effect and credit markets are tight, borrowers tend to benefit from the presence of more aggressive liquidity creating banks on the lower rungs of the syndicate. This paper finds highly significant evidence that the liquidity creation capacity of the junior-most lender in the syndicate is an important contributor to borrower wealth. Although the bigger banks undoubtedly create more liquidity in aggregate, it is the smaller lenders who create more liquidity per dollar of assets, as also noted by Berger and Bouwman (2009), and it appears that investors recognize and reward this. These findings are crucial in establishing a positive nexus between borrower wealth and lender liquidity creation and represent the fourth contribution of this study.

If firms benefit by borrowing from banks that create more liquidity, what do the banks involved get in the bargain? This question represents a natural follow-up that this paper answers with several interesting results. Firstly, in a healthy economy with relaxed credit conditions, lending syndicates that create more liquidity are indeed rewarded by higher spreads on their loans. Secondly, syndicates that lend to weaker borrowers (whose loan announcements are punished by the market) are able to extract a premium in the form of higher spreads. Thirdly, the syndicate's gains from higher spreads through superior liquidity provision are unevenly distributed; the gains are most significant for the top ranked lender and not so much for those lower down. The discovery that lenders reap concrete rewards for their liquidity creation and that a lender's rank in the syndicate determines the strength of this relationship represents the fifth contribution of this essay.

The sixth and final contribution of this paper is to examine the market's reaction to the lenders when loans are announced. On average, the lending syndicate experiences a significant negative loan announcement effect when the economy is

expanding. The distribution of this adverse wealth effect is tilted to the detriment of the lower half of the syndicate by seniority rank, similar to the cornering of spread gains by the lead lender noted earlier. In addition, the bottom half of the syndicate also suffers a significant negative market reaction for loans to weak borrowers who report a negative loan announcement effect. To summarize, banks are penalized by investors for loan announcements in periods of strong loan growth and/or for extending finance to weaker borrowers. The burden of this market 'tax' or risk premium is borne primarily by the lower ranked lenders in the syndicate. Thus, a low rank in the syndicate appears to hurt a lender twice over; first, through the unequal distribution of spreads noted earlier and second, through the market penalty discussed here. Notwithstanding this double whammy, there is a silver lining for the lower ranked banks; they do not have to pay the market 'tax' on loans made in a recessionary environment or those offered to stronger borrowers. This offers the lagging banks a silver lining via a stealth route to growth by lending more relative to the leading banks in difficult economic conditions.

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