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## **The Month-of-the-Year Effect in Corporate Lending**

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## **1. Introduction**

There is a large body of literature testing for the presence of calendar anomalies on financial markets worldwide (e.g., Gultekin and Gultekin, 1983; Chang and Pinegar, 1991; Heston and Sadka, 2010, among others). It discusses the existence of anomalies such as the month-of-the-year effect implying that stock returns are higher for some months. However calendar influences have never been investigated for the alternative source of corporate financing: bank syndicated loans. This market is huge, on average exceeding \$4.0 trillion US Dollars per year since 2013 (<http://dmi.thomsonreuters.com>) and is led by the U.S. (approximately 50%) and Europe (close to 20%).

Calendar anomalies might take place in corporate lending for several reasons. First, behavioral factors affecting the mood and perception of financial market investors (Coval and Shumway, 2005; Bailey, Kumar and Ng, 2011) can also influence the behavior of banks' employees. Second, trade loading, i.e. the practice of inflating granted loans at the end of the quarter to hit quarterly targets, can also generate calendar anomalies in bank lending. Trade loading has been observed in banking through the manipulation of accounting values near quarter-end reporting dates (Allen and Saunders, 1992; Kotomin and Winters, 2006).

Both these reasons can provide foundations for a month-of-the-year effect in corporate lending, in the sense that banks would grant higher loan amounts during certain months. A third explanation deals with the selection effect. Firms with high credit quality can benefit from calendar anomalies in lending by requesting a loan during months associated with higher loan amounts. Reversely, firms with low credit quality could ask for a loan during months associated with lower loan amounts, in line with the idea that

they have more urgent funding needs. In that case, we would see higher loan amounts during months when firms with high credit quality would ask for a loan.

In this paper we examine whether there is a significant difference in bank lending across months. To this end, we exploit a cross-country dataset of 25,097 corporate loans provided by 4,856 lenders to 3,838 borrowers. We perform regressions of loan amount on monthly dummy variables, including a large set of loan and borrower control variables. Our work helps to understand what shapes corporate lending decisions and is therefore of importance to firms and banks.

We document a strong month-of-the year effect: banks grant more loans at the end of each quarter and at the end of the year. This is consistent with a trade loading behavior of banks.

The paper proceeds as follows. Section 2 describes data required for the study, as well as the methodology to examine the calendar effects. Section 3 presents the findings of the empirical analysis. Finally, Section 4 concludes.

## **2. Data and methodology**

We use a worldwide sample of syndicated loans from 1998 to 2016 from the LPC Dealscan database that provides detailed information on loans granted to large companies by a group of lenders (the syndicate). In line with former literature on corporate loans (e.g., Qian and Strahan, 2007), we remove loans to the financial industry (SIC 6) and to the public sector (SIC 9) because of their unique characteristics in terms of objectives and amounts. Moreover, we only keep loans for which we know the lender name, and the

amount this lender granted. Finally, we restrict the sample to borrowers with several loans during the period under study to control for borrower's unobservable characteristics using fixed effects in the estimations. As such, the final sample includes 247,622 observations.<sup>1</sup>

To test the existence of a month-of-the-year effect in lending decisions, we run regressions of the loan amount on calendar variables and a set of control variables. The dependent variable is the log of the loan amount granted by each bank. Calendar variables include month dummies for each month of the year, which are equal to one if the loan has been granted for the given month (January being the reference) and zero otherwise. We control for several loan characteristics that might affect its amount, at the loan-level: the type with dummies for revolver and term loans, the objective (dummy variable for loans with general corporate purpose), the currency (dummies for loans denominated in US Dollar and in euros), the number of lenders in the syndicate, the maturity, and a dummy to assess whether the loan is secured. We also control for a set of fixed effects with borrower, lender and year fixed effects. By including borrower fixed effects, we control for the quality of the borrower. As a consequence, we get rid of the selection effect in the estimations. It has to be stressed that the exclusion of borrower fixed effects in the estimations does not affect the results, suggesting that the selection effect does not play a role.

### **3. Results**

Table 1 reports the estimations for the month-of-the-year effect. We include year

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<sup>1</sup> Loans come from 68 countries with the vast majority (98%) from banks in OECD countries.

and lender fixed effects in Model 1, while we consider lender $\times$ year fixed effects in Model 2. We observe that all month dummies are significantly positive in both models. January being the omitted month, this result means that January is the month associated with the lowest amounts granted by banks. We therefore conclude to the existence of calendar effects in corporate lending. The estimated coefficients also have economic significance. For example, in Model 2, *December* and *February* have a coefficient of 0.125, suggesting that a change from January to December or February generates an increase of 12.5% in loan amounts granted by banks.

Behavioral factors can explain some of these anomalies. For example, Hirshleifer and Shumway (2003) have shown that morning sunshine is positively related to stock returns, because of the beneficial influence of sunlight on mood of investors. In a related way, the poor sunlight in January can contribute to bank employees' bad mood resulting in lower granted loan amounts.

If we look at each coefficient, the greatest values are obtained for February, December, September, and March, meaning three of the four quarter-end months. This finding suggests the existence of an end-of-quarter effect which accords with a potential trade loading behavior of banks. Hence, to test this effect, we create a variable (*End of Quarter*) equal to 1 if the month is the end of a quarter (March, June, September, December) and 0 otherwise. The results are displayed in Table 2. *End of Quarter* is always significantly positive, showing that the last month of each quarter is significantly associated with higher loan amounts. In terms of economic significance, for example in Model 2, the coefficient of 0.024 means that a change from another month to a quarter-end month leads to an increase of 2.4% of the amount granted by banks. This finding

supports the trade loading hypothesis: banks grant larger loan amounts at the end of the quarter to reach their quarterly targets.

The incentives to increase loan amounts to reach quarterly targets should also matter to hit yearly targets, because of the key importance of yearly annual statements. Hence, if the trade loading hypothesis is true, we should also observe some end-of-the-year effect. We test this effect with a variable (*End of Year*), equal to 1 if the month belongs to the last quarter of the year (October, November, December) and 0 otherwise. Table 3 reports the results. We find that *End of Year* is significantly positive, whatever the specification, supporting the trade loading behavior of banks offering higher loan amounts at the end of the year to hit their yearly targets. The economic significance for *End of Year* is lower than for *End of Quarter*, supporting the greater importance of the end-of-quarter effect. In Model 2, moving to an end-year month leads to an increase of 1% to be compared to 2.4% when moving to an end-quarter month.

In summary, our results provide support for the influence of calendar effects on corporate lending through greater loan amounts granted at the end of the quarter and at the end of the year, in line with the trade loading hypothesis.

#### **4. Conclusion**

This paper explores the existence of calendar effects in corporate lending. We find evidence that the loan amount granted by banks significantly varies across months. We observe a positive effect of quarter-end and year-end months on loan amounts. We attribute these effects to trade loading behavior, i.e. banks would inflate granted loans at the end of the quarter and at the end of the year to hit financial targets. These findings are

of importance for firm managers, to know when asking for a loan, but also for bank managers, since higher loan amounts associated with the month – i.e. a characteristic not related to the repayment probability of the loan – can lead to suboptimal lending decisions.

Our work opens avenues for further research on calendar anomalies in corporate lending. Research could be performed to investigate how loan rates and loan requirements like collateral use can also be influenced by calendar anomalies. Furthermore alternative calendar anomalies like a day-of-the-week effect can also occur.

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**Table 1**  
**Month-of-the-Year Effect**

This table reports coefficients and standard errors (in parentheses). The dependent variable is the log of loan amount granted by each bank. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, 1% level respectively. The regressions are robust to heteroscedasticity.

	(1)	(2)
February	0.127*** (0.013)	0.125*** (0.013)
March	0.110*** (0.012)	0.111*** (0.012)
April	0.087*** (0.012)	0.087*** (0.012)
May	0.072*** (0.012)	0.071*** (0.012)
June	0.065*** (0.011)	0.064*** (0.012)
July	0.074*** (0.012)	0.079*** (0.012)
August	0.085*** (0.012)	0.082*** (0.013)
September	0.124*** (0.012)	0.120*** (0.013)
October	0.056*** (0.012)	0.057*** (0.012)
November	0.105*** (0.012)	0.100*** (0.012)
December	0.124*** (0.012)	0.125*** (0.012)
Constant	-0.550 (0.486)	-0.162 (0.506)
Loan characteristics	Yes	Yes
Borrower FE	Yes	Yes
Lender FE	Yes	No
Year FE	Yes	No
Lender $\times$ Year FE	No	Yes
Observations	247,622	247,622
$R^2$	0.634	0.655
Adjusted $R^2$	0.621	0.624

**Table 2**  
**End-of-Quarter Effect**

This table reports coefficients and standard errors (in parentheses). The dependent variable is the log of loan amount granted by each bank. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, 1% level respectively. The regressions are robust to heteroscedasticity.

	(1)	(2)
End of Quarter	0.023*** (0.004)	0.024*** (0.004)
Constant	-0.455 (0.491)	-0.072 (0.512)
Loan characteristics	Yes	Yes
Borrower FE	Yes	Yes
Lender FE	Yes	No
Year FE	Yes	No
Lender $\times$ Year FE	No	Yes
Observations	247,622	247,622
$R^2$	0.634	0.655
Adjusted $R^2$	0.621	0.623

**Table 3**  
**End-of-Year Effect**

This table reports coefficients and standard errors (in parentheses). The dependent variable is the log of loan amount granted by each bank. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, 1% level respectively. The regressions are robust to heteroscedasticity.

	(1)	(2)
End of Year	0.010** (0.005)	0.010** (0.005)
Constant	-0.479 (0.494)	-0.095 (0.514)
Loan characteristics	Yes	Yes
Borrower FE	Yes	Yes
Lender FE	Yes	No
Year FE	Yes	No
Lender $\times$ Year FE	No	Yes
Observations	247,622	247,622
$R^2$	0.634	0.655
Adjusted $R^2$	0.620	0.623