Does Insider Trading around Loan Amendments Predict Stock Returns? *

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Abstract

This paper analyzes the effects of loan contract amendments and insider trading on stock returns. Loan renegotiations are frequent and contain potentially relevant information about the financial health of firms. Because managers and officers are better informed about the outcome of such amendments compared to other market participants, their trading behavior around loan amendments is likely to be informative about the firm's financial situation. Using a large sample of loan amendments of US firms, this paper shows that stock returns are 2.07% higher (0.65% lower) following a month with both insider purchases (sales) and a loan amendment. These findings suggest that insider trades provide valuable information to market participants about the outcome of loan renegotiations and the future prospects of firms.

Keywords: Stock returns, Loan renegotiation, Insider trading, Information complementarity.
JEL Classification Numbers: G32, G14

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1 Introduction

Banks invest in research and screening when they issue new loans to firms and when they renegotiate a loan contract. They are sophisticated market participants with the ability to process information efficiently and form their proper opinion about the borrower's financial health. In addition, banks can access private information about the firm through interactions with the firm's management. It is therefore plausible that loan contract amendments contain relevant incremental information about the firm's prospects. The interpretation of loan amendments, however, is not straightforward for outside market participants, as loan amendments can be both positive or negative for the firm. The high confidentiality inherent to loan renegotiation further complicates the interpretation as outsiders only observe the outcome (Fight (2004)). By contrast, corporate insiders, such as the firm's top management, are involved in the renegotiation process and have superior knowledge about whether the loan amendment is positive or negative for the firm. Hence, the trades of corporate insiders around loan amendments could inform outside market participants about whether the loan amendment is good or bad for shareholders.

Insider trading has been analyzed in connection to a variety of corporate events such as debt issues (Kahle (2000)), SEOs and share repurchases (Cziraki, Lyandres, and Michaely (2021)), and takeovers (Agrawal and Nasser (2012)). However, insider trading around bank loan amendments has so far remained unexplored. This lack of evidence is surprising. First, amendments to loan agreements happen frequently (see, e.g., Roberts and Sufi (2009); Roberts (2015)). Second, loan amendments receive less attention compared to other corporate events such as acquisitions, share repurchases, or earnings announcements. Therefore, loan amendments are more opaque and harder to interpret for outside market participants. Hence, the *incremental* information revealed through insider trades around loan amendments is potentially high.

In this paper, we analyze stock returns after loan amendments when corporate insiders trade shares of their firm. Because managers and officers are better informed about the outcome of the loan renegotiation compared to other market participants, we expect their trading behavior around loan amendments to be informative about future returns. Specifically, loan amendments that are accompanied by inside purchases predict higher returns, and loan amendments that are

accompanied by inside sales predict lower returns.

We test this hypothesis using a large sample of 5,149 loan amendments of 1,360 distinct U.S. companies between 2001 and 2020. As amendments to multiple tranches in the same firm-month are frequent, we aggregate our sample to the firm-month level, resulting in 3,636 months with at least one amendment. We collect data on monthly stock returns from CRSP, and annual firm fundamentals from Standard & Poor's Compustat. The data on loan amendments come from the SDC Plantinum Syndicated Loans Database. For all firms that can be matched to CRSP and Compustat, we identify all loan amendments. Data on insider trading is from the Refinitiv Insider Trading Database. Following existing literature on insider trading, we only look at open market trades in ordinary shares that are shared with the public in Table 1 of SEC Form 4. This focus on open market trades implies proportionally more sales compared to purchases in our sample because, while managers and directors regularly sell shares in the market, they typically receive them through their compensation plans (i.e., through non open market transactions). We then measure insider trading activities as an indicator variable that equals one when insiders either purchase or sell stock in a given firm-month, and zero otherwise.

To analyze if loan amendments and insider trading predict stock returns, we regress the stock return of next month on the current month loan amendment indicator variable, the current month insider trading indicator variable, and the interaction between the two variables. In addition, we include the book-to-market ratio, the market capitalization, the return in the current month, and the return in the previous year (from 12 months to one month before the month of the amendment) as firm-specific control variables, and month fixed effects to absorb aggregate shocks that affect all firms. We cluster standard errors at the firm-level. We show that loan amendments by themselves do not predict stock returns. This result is consistent with the existing literature that finds mixed evidence on the cumulative abnormal short-run returns around the announcement of loan amendments (see, e.g., Godlewski (2015); Silaghi, Martín-Oliver, and Sewaid (2022)). However, once we interact loan amendments with insider trading, we find significant positive effects on next-month returns for months with insider purchases and loan amendments, and negative effects when the amendment is accompanied by insider sales. The results are economically large. The

monthly return following a month with insider purchases and a loan announcement is 2.07% higher compared to a month with none of these events. For months that are followed by a month with both amendments and insider sales, stock returns are 0.65% lower.

Our main result is robust to several robustness tests. First, we show that the result is robust to alternative specifications and estimation methods. Specifically, we re-estimate the main specification and include firm fixed effects, or double cluster standard errors by firm and month. Alternatively, we re-estimate the model with Fama-MacBeth, allowing for serial correlation in stock returns. The results remain unchanged using these alternative specifications. Second, we use alternative measures of insider trading, notably the net purchase ratio developed by Lakonishok and Lee (2001) and the measure of opportunistic trading introduced by Cohen, Malloy, and Pomorski (2012)). We confirm our main results using these alternative measures of insider trading.

Third, we investigate the robustness to our definition of loan amendment. Because we are using loan events as classified by SDC Platinum, the accuracy of our analysis depends on the classification's accuracy. To reduce this dependence, we complement our sample by announcements of amendments that we determine based on strings of notes in SDC. Alternatively, we use the publicly available, hand-collected sample of loan renegotiations from Roberts (2015), match these data with our sample, and re-estimate the main specification. We confirm the main result that next month returns are positive after months with loan amendments and inside purchases, and negative after months with loan amendments and inside sales.

Fourth, we address concerns related to potential confounding events and exclude all months from our sample that feature an earnings announcement. Our coefficient estimates remain largely unchanged. Finally, we further strengthen the interpretation of the results by analyzing the timing of the amendments. Specifically, we show that the main effect is driven by amendments taking place in the second half or even the last few days of the month. This finding suggests that it takes market participants some time to digest the news about the amendments. Neuhierl, Scherbina, and Schlusche (2013) find that earnings announcements are priced in after three trading days. It seems reasonable that loan amendments, which are less standardized and less straightforward to interpret, take more time to be priced in compared to earnings announcements.

In additional analyses, we exploit the cross-sectional dimension of our sample to further support the interpretation of the results. First, we split the sample at the 25^{th} and the 75^{th} percentiles of the distance-to-default. We confirm our main results in the sample of firms that are neither too far nor too close from default (middle group). This result is consistent with the idea that a loan amendment of such firms is harder to interpret for outside market participants. The trading of insiders allows market participants to obtain incremental information about the effects of the loan amendment on the firm. Second, we distinguish between material and non-material amendments. We show that results are more pronounced for non-material amendments. Similar to the argument related to the distance-to-default, non-material amendments are potentially harder to interpret for outside market participants or it is more difficult for them to identify the amendments that contain relevant information. Therefore, the interaction of such loan amendments with insider trading is predictive of stock returns.

Our paper makes two contributions to the literature. First, it contributes to the literature on loan renegotations. Recent papers show that loan renegotiations are frequent and consistent with loan contract theory (e.g., Roberts and Sufi (2009); Garleanu and Zwiebel (2009); Roberts (2015)). Other papers analyze announcement returns to loan amendments (e.g., Godlewski (2015); Nikolaev (2018); Silaghi, Martín-Oliver, and Sewaid (2022)). We add to this literature by showing that loan renegotiation contains information that is potentially hard to interpret by outside market participants. Importantly, however, relating loan amendments to insider trades is predictive of returns. Second, our paper contributes to the literature on insider trading. Several papers explore insider trading around corporate events such as debt issues (Kahle (2000)), SEOs and share repurchases (Cziraki, Lyandres, and Michaely (2021)), and takeovers (Agrawal and Nasser (2012)), and how they relate to returns. Our focus is on so far unexplored loan amendment events, which are events that occur frequently and contain important information about the financial situation of a firm.

The paper is organized as follows. Section 2 summarizes the relevant literature and develops the hypothesis. Section 3 presents the sample, the description of the variables and methodology, and summary statistics. Section 4 presents the main results and robustness tests. Section 5 shows additional analyses. Section 6 concludes.

2 Literature and Hypotheses

2.1 Loan Amendments

There is a variety of reasons why bank loans are frequently renegotiated. First, it is not possible for the parties in a loan agreement to contract upon all profitable projects that might arise for the borrower in the future. Also, there is an information gap between lender and borrower concerning the borrower's intentions. Maskin and Moore (1999) provide evidence in an incomplete contract setting that after a shock to the borrower, it is Pareto-optimal to renegotiate the contract instead of forcing compliance, as there is an ex-post bargaining surplus. Roberts and Sufi (2009) argue from an information asymmetry perspective, stating that new information on the borrower's credit quality or on the outside options to obtain financing should trigger renegotiation. Similarly, Garleanu and Zwiebel (2009) show that covenants in loan contract are strict at the beginning to allow the lender to take control in certain states, and that these covenants are frequently loosened as information asymmetry decreases.

The announcement of an amendment reveals information to the public that was private and only known to the lender and the borrower. Creditors' main concern is the borrower's ability to repay. Therefore, they primarily collect information helping them to assess the probability of default. They obtain this information through the ongoing relationship with the borrower that is not limited to the loan contract (Petersen (1999)). The public release of information about amendments should lead to a significant stock price reaction (Nikolaev (2018)). Roberts (2015) argues that an update of the contract should in principle make it more efficient. Godlewski (2015) mentions the certification role of bank loans as they reflect a positive lending decision by the lending bank. This effect should become stronger with the decrease of information asymmetry over time. On the other hand, Silaghi, Martín-Oliver, and Sewaid (2022) interpret the market reaction to loan amendments as reflecting a decrease in uncertainty that might lead to a wealth transfer from shareholders towards lenders.

These different explanations for why amendments can trigger stock price reactions suggest that contrary to other corporate events, such as share repurchases or equity issuance, the direction of

the price reaction is not clear. If there is positive information about the borrower, its relative bargaining power and the share of the renegotiation surplus it can capture is rising and vice versa. A loan amendment can therefore be good or bad news for the borrower. The borrower could, for example, initiate a renegotiation to finance a growth opportunity, or a renegotiation might become necessary to prevent default.

Early research on loans finds positive abnormal returns to loan announcements (James (1987)) and renegotiations (Lummer and McConnell (1989)). However, Maskara and Mullineaux (2011) argue that these abnormal returns are an artifact of sample selection, due to small firms with greater informational asymmetry having a stronger incentive to publish announcements related to loans (see Diamond and Verrecchia (1991)). In the sample of Maskara and Mullineaux (2011), which reflects the universe of bank loans, the authors find no significant reaction to such events except for the smallest firm in the sample.

More recently, several studies have produced mixed results for the short-term market reaction to bank loan amendments. Godlewski (2015) finds positive abnormal returns to covenant renegotiations, but negative reactions to less important amendments such as changes to definitions. The positive effect is stronger for larger firms, for firms with higher leverage, and for growth firms. The borrower's rating status, however, has no influence. The sample contains 833 loan tranches from European borrowers, and the reported CARs are for the three trading days surrounding the renegotiation announcement.

Using a sample drawn from SEC filings, Nikolaev (2018) reports significantly positive CARs for the five days surrounding the loan amendment, with the effect stemming largely from the announcement day. In contrast to this finding, Silaghi, Martín-Oliver, and Sewaid (2022) find a negative, but not significant reaction both for a three- and a ten-day trading window around amendments.

All three studies are concerned with short-term effects and do not consider long-term effects on returns. Looking at longer-term horizon, Billett, Flannery, and Garfinkel (2006) find that companies perform worse than their matched peers in the three years after having obtained a bank loan.

2.2 Insider Trading

It is a well established fact in the literature that trading by corporate insiders such as officers, managers, board members, or investors holding a large fraction of shares predicts future stock returns. In fact, Gao et al. (2022) provide evidence that not only insider trading, but also the absence thereof can predict returns. There are several channels through which insiders obtain the private information that gives their trades predictive power. Seyhun (1992) makes the distinction between insiders' ability to predict future cash flows faster than other market participants and their superior capacity to discover misvaluation. He finds that both effects have a positive impact on predictive power. Piotroski and Roulstone (2005) confirm that insiders act as contrarian investors and that they possess superior knowledge (i.e. their expectations differ from market beliefs) also at the firm-level, not only for the aggregated stock market.

With higher information asymmetry, the ability to predict cash flows can lead to a higher profitability of trades, as is shown in R%D firms by Aboody and Lev (2000). With up to nine quarters into the future, insiders have a long forecasting horizon for their firm's cash flows (Ke, Huddart, and Petroni (2003)). Insiders' proficiency in spotting misvaluation is shown around events that are more likely to take place when a company's stock is seen as inadequately priced. Examples include seasoned equity offerings (see e.g. Lee (1997) or Clarke, Dunbar, and Kahle (2001)) and share repurchases (Jenter (2005)). More recently, higher attention to publicly available information has been established as a third channel through which insiders gain an information advantage that they can exploit. Alldredge and Cicero (2015) provides evidence for profitable informed trading on public information about the principal customer. Chabakauri, Fos, and Jiang (2022) investigate trading at the onset of activist investor involvement.

Independent of the channel through which insiders obtain private information, they reveal this information to the public by trading stocks of their company. This is the reason why share price movements tend to be in the same direction as the insider trades preceding them. Damodaran and Liu (1993) present an example of insiders obtaining valuable private information - in their case through a valuation of the firm's real estate portfolio - and trading on it. These trades send a strong enough signal of private information to market participants that the stock price reaction

anticipates the actual public release of the valuation's outcome, even though the valuation is shown to produce information in itself.

Lakonishok and Lee (2001) find that insider purchases are more predictive for future returns than sales. But since then, a series of papers has found that in numerous scenarios, purchases *and* sales predict the direction of returns. This is the case for surprising trades (Cohen, Malloy, and Pomorski (2012), Akbas, Jiang, and Koch (2020)), and for trades by insiders, which have executed profitable trades in the past (Cline, Gokkaya, and Liu (2017)) or shown opportunistic behavior (Ali and Hirshleifer (2017)). Jagolinzer et al. (2020) also find that the trade direction and subsequent stock performance coincide when insiders are politically well-connected. Biggerstaff, Cicero, and Wintoki (2020) analyze the longevity of insiders' information advantage and confirm the previous finding.

2.3 Information Complementarity

Besides equity issues and earnings announcements, insider trading has been analyzed in connection to a variety of other corporate events such as debt issues (Kahle (2000)), SEOs and share repurchases (Cziraki, Lyandres, and Michaely (2021)), or takeovers (Agrawal and Nasser (2012)). However, to the best of our knowledge, insider trading around bank loan amendments has so far remained unexplored. This lack of evidence is surprising. First, amendments to loans should complement the information about misvaluation or future cash flows that is signaled by insider trading. The reason is that banks' decision to amend a loan signals information about the firms' future prospects (e.g., default likelihood, expansion, etc.). Insiders are the first to know about the decisions and the underlying reasons. Second, since amendments are not as widely discussed by financial market participants as other corporate events, such as acquisitions or earnings announcements, non-inside market participants depend more heavily on the trading behavior of insiders. That is, due to this opacity, we expect that the marginal information revealed through insider trades around amendments to be relatively high.

Before turning to the empirical analysis, we summarize the main testable hypothesis, which we call information complementarity hypothesis:

Hypothesis: *Loan amendments that are accompanied by inside stock purchases (sales) predict higher (lower) stock returns. This effect should be more pronounced when the information contained in the loan amendment is more difficult to interpret for non-inside market participants.*

3 Data and Empirical Method

3.1 Sample

To construct our sample, we collect data from four different sources: SDC Platinum's Syndicated Loans Database, Thomson Reuters' Insider Trading Database, and CRSP/Compustat for stock returns and balance sheet data. From the intersection of these four data sets, we restrict our sample to US companies listed on the NYSE or Nasdaq. We exclude firms in the utility (SIC codes 4000-4499) or financial industry (SIC 6000-6999). We impose that firms must have at least one amendment to their bank loan and insider trading activities during our sample period. Since we investigate the impact of renegotiations, we only include firm-months in which the company has an outstanding loan. Our sample has 1,360 distinct companies with a total of 193'102 firm-months between 2001 and 2020.

3.2 Variables and Descriptive Statistics

3.2.1 Loans and Amendments

We find 8'085 distinct loan packages that have been active at some point during our sample period. 5'149 loan amendments resulted from these loans. Because it happens frequently that multiple tranches are amended simultaneously, we aggregate our data to the firm-month level to prevent overestimating months with multiple amendments. This leads to 3'636 firm-months with one or multiple amendments. Our sample compares well to the one used by Maskara and Mullineaux (2011). This indicates that we are able to adequately represent the loan universe and that we are not affected by the selection bias towards small firms which is inherent in the early literature on loan announcements and amendments. On the contrary, our average tranche amount tends to be

larger than in Maskara and Mullineaux (2011). The number of lead banks which varies from one up to consortia of 25 financial institutions and the variation in tranche amounts (see Tab. 1) also reflect the diversity of loans in the sample.

[Insert Table 1 about here]

We use a dummy variable indicating the occurrence of one or multiple amendments per firm-month. The variable is based on *amended* and *amendedrestated* in SDC Platium which are themselves indicator variables denoting that an entry is either an amendment or an amended and restated loan. Roberts (2015) mentions that the economic interpretation of these events as well as for rollovers is similar because they all represent changes in the loan contract's terms. Because we can only clearly identify the former two categories, we concentrate on them.

A renegotiation can be initiated by either the borrower or the lender side. Intuitively, one could think that lenders tend to pull the trigger to negotiate new terms when the borrower's financial situation worsens or after a covenant violation. In practice however, the majority of amendments are induced by borrowers (see e.g. Campbell et al. (2014) or Roberts (2015)). We do not include the outcome of the amendment in our analysis. One reason is that we only have this information for roughly half of the amendments in our sample.[1] The second reason is that they do not provide information on whether or not the outcome is good or bad for the borrower. For example, even if the outcome is an increase in the committed amount, we cannot infer if it fulfills the borrower's (or lender's) expectations formed ahead of the negotiation.

We report considerably fewer amendments per firm-month as compared to Roberts (2015). This might be due to a number of reasons: to classify firm-months as having an active loan, we also consider loans which started before our sample period, as long as the event is listed in SDC Platinum. Therefore, a certain month might be in the sample even if the first sample amendment of the company happened later on. Also, as described above, we only include a subset of renegotiation events.

[1] Of these, the majority are extensions to the maturity, changes in pricing, or changes in the commitment (mostly increases).

3.2.2 Insider Trading

In the US, corporate insiders have to disclose their trading activities according the Securities Exchange Act of 1934 (sec. 16a). This law mandates disclosure for directors, officers and beneficial owners of at least 10% of the company's shares. For our analysis we do not include the trades of large shareholders if they do not hold either a directorial or a managerial position.

In accordance with previous papers measuring insider trading, we only look at open market trades in ordinary shares that are shared with the public on Table 1 of SEC Form 4. The focus on open market trades explains the dominance of sales as described in Table 2 of our paper. While managers regularly sell shares in the market, they mostly receive them through their compensation plans (i.e. non open-market transactions).

Our main measure for insider trading activity is an indicator variable equal to one if an insider purchases (sells) company stock in a given firm-month, and zero otherwise. The variables in Table 2 describe the actual number of trades. In a robustness analysis (Sec. 4.3), we use different measures for insider trading, namely those used by Cohen, Malloy, and Pomorski (2012) and Lakonishok and Lee (2001). Cohen, Malloy, and Pomorski (2012) argue that routine insider trades (i.e. transactions in the same calendar month by the same insider over multiple years) as compared to opportunistic trades are less informative, because they do not reflect new developments in the company, but merely liquidity or diversification needs by the manager.

Lakonishok and Lee (2001) calculate the Net Purchase Ratio (NPR) based on the number of purchase- relative to sales transactions. The ratio is continuous and ranges from -1 for months with sales only to 1 for months with only purchases. A value of zero indicates either the same number of purchase and sale transactions or no trading at all. We consider trades in the event month. The ratio is defined as follows:

$$\text{NPR} = \frac{\text{No. of purchases} - \text{No. of sales}}{\text{No. of purchases} + \text{No. of sales}} \tag{1}$$

Consistent with the higher amount of insider sales relative to purchases, the average NPR in our sample is negative.

[Insert Table 2 about here]

3.2.3 Returns

We define the month in which we observe insider trading and amendments as t, and the month in which we measure the returns as $t+1$. We control for momentum and reversal using the event month's return and the return of the 12 months starting with month $t-12$ and ending with month $t-1$. For all categories of monthly returns that we present in Table 3, the range is broad with strongly negative and positive returns.[2] Nevertheless, the summary statistics support our view, because they show higher (lower) returns following months with an amendment and insider purchases (sales). T-tests confirm that the differences are indeed statistically significant. The numbers reported in Table 4 (5) denote the difference between months with only insider trading, only an amendment, or none of these events and months with both insider purchases (sales) and an amendment. A negative (positive) difference therefore indicates higher (lower) returns for the second group.

[Insert Table 3 about here]

[Insert Table 4 about here]

[Insert Table 5 about here]

3.2.4 Firm-specific Variables

We control for firm size and the book-to-market ratio, two variables commonly known to influence stock returns. Following Cohen, Malloy, and Pomorski (2012), we use the natural logarithm of these variables (values in Table 6 are not in log). Also, we treat B/M-ratios above 100 and below zero as mistakes in the data and set them as missing. The distance to default is calculated using Bharath and Shumway (2008)'s naïve approach. As an accounting alternative to the distance to default, we construct the Z-score following Altman (1968). In around 20% of firm-months, the Z-score is below the critical level of 1.8, indicating proximity to bankruptcy.

[2]The almost identical values of minima and maxima are due to winsorising at the 1%- and 99%-level.

The sample firms have a S&P Domestic Long Term Issuer rating for roughly half of the firm-years, suggesting that the sub-sample of firms present in all aforementioned databases is slightly biased towards larger, less opaque firms.

[Insert Table 6 about here]

3.3 Empirical Approach

To test our main hypothesis, we follow Cohen, Malloy, and Pomorski (2012) and regress monthly stock returns on our measure for loan amendment, insider trading, and the interaction of the two variables. Specifically, the regression we estimate is as follows:

$$\begin{aligned}\text{Return}_{i,t+1} =& \alpha + \beta_1 * \text{Amendment}_{i,t} + \beta_2 * \text{Insider Purchase}_{i,t} + \beta_3 * \text{Insider Sale}_{i,t} \\ &+ \beta_4 * \text{Amendment} \times \text{Ins. Purch.}_{i,t} + \beta_5 * \text{Amendment} \times \text{Ins. Sale}_{i,t} \\ &+ \gamma_1 * \mathbf{FirmControls_{i,t}} + \gamma_2 * \mathbf{PastReturns_{i,t}} + \delta * \text{Month Fixed Effects}_t + \epsilon\end{aligned} \tag{2}$$

To account for potential time effects, we employ a panel regression including month fixed effects in our main specification, while also including firm fixed effects in robustness analyses. We cluster standard errors at the firm-level, and in robustness analyses both at the firm and month level (see, e.g., Petersen (2009)). In the additional analyses, we also use Fama and MacBeth (1973) regressions. Besides the regular specification, we calculate Newey and West (1987) standard errors with a six-month lag, assuming that this time period is long enough for the auto-correlation of returns to become negligible.

4 Amendments, Insider Trading, and Stock Returns

In this section, we first present the main results (Section 4.1). We then demonstrate the robustness of the results to alternative estimation methods, alternative measures of insider trading, alternative definitions for loan amendments, and to other potential confounding events.

4.1 Main Results

In Table 7, we present evidence on the impact of insider trading, loan renegotiations, and the combination of the two events on future returns. In the first column, we regress monthly returns (in month $t+1$) on indicator variables for loan amendments and insider trading, firm-level control variables (all in month t) and past returns. We can confirm existing research in that insider sales predict negative stock returns (see e.g. Jagolinzer (2009) specifically for rule 10b-5-1 trades, or Cline, Gokkaya, and Liu (2017)), and insider purchases precede months with positive returns (see, e.g., Gao et al. (2022) or Cohen, Malloy, and Pomorski (2012)). We attribute this effect to the fact that insiders, such as managers or officers, are generally better informed about their company as compared to other market participants (e.g. Piotroski and Roulstone (2005)) and that their trades reveal relevant information about the firm.

[Insert Table 7 about here]

We hypothesize that contrary to other corporate events such as share repurchases or seasoned equity offerings (SEOs), loan amendments do not have a straightforward interpretation. They follow the accrual of new information on the borrower's credit quality, investment opportunities, collateral, or macroeconomic fluctuations (Roberts and Sufi (2009)). The resulting shift in relative bargaining strength between lender and borrower can thus go both ways, depending on whether the new information reflects a positive or a negative shock to the borrower. This - together with earlier empirical work finding inconclusive results - leads us to expect no significant relation with stock returns. In column 1 of Table 7, we find a positive, but not statistically significant coefficient estimate on the loan amendment indicator variable, which is consistent with our expectation.

In columns 2 to 4, we add the interaction terms of insider trading and loan amendments to the regression specifications. Our hypothesis predicts a positive interaction coefficient for insider purchases and a negative interaction coefficient for insider sales. Indeed, Table 7 reports significant positive effects on next-month returns for months with insider purchases and loan amendments and negative effects when the amendment is accompanied by insider sales. In other words, insider trading classifies loan amendments into three groups. Amendments that are accompanied by purchases

(sales) are interpreted as positive (negative) news for shareholders while those with no surrounding insider trading are seen as neutral. The effects are economically significant. The monthly return following a month with both insider purchases and a loan announcement is 2.07% higher compared to a month with none of these events. For amendments and insider sales combined, we find a negative effect of -0.65% in the next month.

We argue that managers and directors have an informational advantage over market participants when it comes to their firm. Similarly, we also expect lenders to be well informed about their borrowers. In the lending process, they receive confidential information about the borrowing firm (Standard&Poor's (2011)). Since lenders in large corporate loan deals are sophisticated market participants such as banks, institutional investors, and other financial companies, they have the ability to process the information they receive and form their proper opinion on the borrower's financial situation. This assessment will in turn influence the outcome of loan (re-)negotiations and provide managers with a well-informed outside opinion about their company, similar to information that is contained in share prices.[3] The information complementarity that we report could stem from the fact that lenders and managers focus on different aspects when collecting information about the company. To lenders for example, the most important aspect is the borrowing firm's ability to service loan payments. Therefore, managerial trading around loan amendments might reflect an update on their beliefs about their company's default probability. Since regular market participants cannot participate in the renegotiations and since outcomes of loan amendments are difficult to interpret, it seems plausible that traders use insider trading around loan renegotiations to assist them in assessing whether the outcome is good or bad for shareholders.

The firm-specific control variables in all four specifications are as expected. Firms with higher market capitalization display lower returns. Similarly, value firms (companies with a higher book-to-market ratio) have on average higher returns than growth firms. This finding is consistent with Jenter (2005)'s overpricing argument postulating that value firms have experienced an overreaction by investors' bad news or a low amount of attention. Higher future returns correct for this. It is also consistent with Fama and French (1996)'s argument of higher exposure to distress factors

[3]For more information on learning from share prices, see, e.g., Foucault and Frésard (2014).

for high book-to-market firms, which has to be compensated by higher returns. We also include past returns in the baseline model. The coefficient of the return of the month in which we observe trading and amendments is statistically significant and negative, indicating short term reversal. We also document a long-term momentum effect. However, at around 1.5bps for the event month and even less for the past year, the economic effects are small.[4]

4.2 Robustness to Estimation Method

Cross-sectional correlation (i.e., a time effect) is more prevalent than time-series dependence (or firm effects) in stock return data (see, e.g., Petersen (2009)). While our baseline model with month fixed effects and standard errors clustered at the firm-level accounts for the occurrence of both effects, we show that our results are robust to the choice of estimation method. First, we double-cluster standard errors by firm and months. Column 1 in Table 8 shows the results. We find that the standard errors are largely unchanged. Both interaction terms remain statistically significant at the 95% level. In column 2, we estimate our the baseline model and include firm fixed-effects. Again, our baseline results remain unaffected. In the last two columns of Table 8, we estimate Fama and MacBeth (1973) regressions. Column 3 uses unadjusted standard errors, and in column 4, we use Newey and West (1987) standard errors with a lag of six months. In both columns, we confirm the main result. The interaction between amendments and insider purchases is positive and statistically significant, and the interaction between amendments and insider sales is negative and statistically significant. Overall, our main result is robust to changes in the main regression specification and to alternative estimation methods.

[Insert Table 8 about here]

4.3 Robustness to Insider Trading Measure

Our main results are based on all open-market trades by managers and directors. The literature provides a multitude of ways to measure insider trading. In our baseline results, we use indicator

[4]In the appendix (Table A1), we specify returns as in Cohen, Malloy, and Pomorski (2012), using the return of the month preceding the event month and then the eleven months before. However, this has no material impact on any of our results (unreported for other specifications).

variables to capture months with insider trading. In this section, we show that our results hold when we classify insider trades following two well-established approaches. In columns 1 and 2 of Table 9, we show the results using the net purchase ratio (NPR) following Lakonishok and Lee (2001). The definition of NPR is described in equation 1. More insider purchases relative to sales predict higher returns in the following months. In column 1, we confirm our main finding of information complementarity between the announcement of bank loan amendments and insider trading, as the interaction term between the two variables is positive and statistically significant. A potential caveat with this measure is that it offsets purchases against trades and thus does not allow for a distinction between months with positive and negative net numbers of purchases. To address this issue, we use dummy variables indicating months with a strictly positive or negative NPR. The results using these indicator variables are shown in column 2. Interestingly, when using this more granular approach, the coefficient for loan amendments is no longer significant, which coincides with our main results. Our main findings are also confirmed as a positive (negative) NPR predicts higher (lower) returns in the next month and that there is complementarity between the information provided by loan amendments and insider trading. More purchases than sales in the time period surrounding the loan amendment sends a stronger positive signal as compared to other months and vice versa.

[Insert Table 9 about here]

The advantage of using all available insider trades is that we obtain more firm-months in which we observe both trading and an amendment. However, this approach might come at a cost: our findings could be driven by noise introduced by routine trades, which do not reflect the insiders' opinion about the company, but merely their need for liquidity or a desire for diversification. To alleviate this concern, we classify our sample of trades into routine and opportunistic trades according to the method developed by Cohen, Malloy, and Pomorski (2012). The classification should reduce noise, but not completely eradicate it, as trades done for liquidity reasons - just as opportunistic trades based on private information - might not necessarily occur on a regular basis (e.g., fire sales). Column 3 presents the results for opportunistic trades. The interaction term of insider sales with amendments is negative and significant. However, neither for purchases nor

for their interaction with loan announcements does this classification yield significant results. We believe that one explanation for this is the low number of observations with opportunistic trading and loan amendments. There are only 47 such firm-months in our entire sample.

4.4 Robustness to Loan Events

Because we are using loan events as classified by SDC Platinum, the accuracy of our analysis depends on the classification's accuracy. We perform two tests to check the robustness of our results to alternative classifications. First, we complement our sample by announcements of amendments that we determine based on strings of notes in SDC.[5] All results remain similar in magnitude and significance with this alternative classification.

[Insert Table 10 about here]

Second, we use the publicly available sample of loans from Roberts (2015). Roberts (2015) uses data on loan origination, renegotiations, and termination for a sample of 114 firms that are present in the Compustat and DealScan databases. These data are manually collected from SEC filings. We apply the same restrictions as we do to our original sample. It is considerably smaller, as it only represents the months with an active loan by the intersection of Roberts' firms with the Refinitiv Insider Trading database. Furthermore, the sample period ends in 2011, excluding the last nine years of our sample. We use events classified by Roberts either as *Amendment* or *Amended & Restated*. The results show that insider sales do not predict future returns in this sample, and the coefficient's sign switches. Our main focus, however, is on information complementarity, which we can confirm for sales. The interaction of amendment with insider sales is negative and statistically significant. The interaction of insider purchases and amendments is similar to the baseline in magnitude, but the effect is not statistically significant. The weaker predictive ability of sales and the interaction is likely due to the smaller sample size.

[5] List of terms searched in SDC Platinum's *purposenotes* and *amendmentnotes*: strings containing "AMENDS AND RESTATES", "A&R", "AMENDMENT AND RESTATEMENT", "AMENDED AND RESTATED", "AMEND" and "RESTATE" identify *amended & restated* loans. Strings containing "AMDT", "REPRICING", "AMEND" but not "RESTATE", and none of the above identify an *amended* loan.

4.5 Timing and Confounding Events

With our choice of estimation method, we are confident that we can properly address the biases which could possibly distort our results. Another question is whether we truly measure what we think we measure. For example, one could imagine that firms are able to time loan renegotiations. They could be more inclined to renegotiate following an upswing in the stock price, since it could strengthen their position in talks with lenders.[6] We attempt to solve this issue by lagging all explanatory variables by one month and by controlling for event month and past year returns. At the time when trading and amendments happen, the next month's return is unknown and can therefore not influence current behavior. In addition, we also use abnormal returns to tackle the potential timing of amendments.

While lagging explanatory variables alleviates concerns of reverse causality, it potentially introduces two other issues. Since we observe amendments and trading in calendar month t and the returns in the following month, we first rely on market participants taking some time to fully incorporate the information revealed by the combination of insider trading and loan amendments. If these events were priced within hours or a few days, they would only have an impact on next month's returns if they take place towards the end of the calendar month. Second, the lag allows for possible confounding events to take place. If this were the case, the effect of insider trading and amendments on stock returns could be contaminated by other events.

We perform a number of tests to address these concerns. The results are presented in the appendix. We start with the time that it takes for the observed events to be incorporated in the stock price (see Table A2). If the information is processed quickly, we should only observe a significant effect for amendments happening in the last days of the month. We compare amendments taking place in the first half of the month with those happening in the second half or even in the last few days (i.e., those on or after the 25^{th} day). The results show that indeed, our finding seems to be driven by amendments being announced after the 15^{th} day, but there is no qualitative difference between the second half of the month and the last few days. We interpret this result as an

[6] In unreported tests, we find that the distribution of returns in the year preceding loan amendments is almost identical to the returns before the other firm-months in the sample.

indication that it takes the market some time to fully digest the signal that insiders' trading activity around loan amendments sends to market participants. As a comparison, Neuhierl, Scherbina, and Schlusche (2013) find that the bulk of the effect of earnings announcements is priced in after three trading days. For other events, it takes longer. Intuitively, it seems reasonable to assume that loan amendments, which are less standardized and less straightforward to interpret, take more time to be incorporated than earnings announcements, which are standardized and more broadly discussed in the market. Further evidence for this intuition is provided by Cziraki, Lyandres, and Michaely (2021), who find significant 1-year abnormal returns for insider trading ahead of SEOs and share repurchases.

Because there is a time lag between the events and the returns in our regression, it is possible that there are other events taking place that could influence stock returns. To account for this possibility, we exclude all months in which a quarterly earnings announcement (QEA) takes place (results in Table A3).[7] In this analysis, we are sure to eliminate the possible contaminating effects of earnings announcements. We pick QEAs because they take place on a regular basis and can cause significant stock price reactions. If these announcements were driving our results, we should not find significant effects anymore after excluding announcement months. However, this is not the case. Our results are largely unaffected in quality and quantity. While we cannot completely rule out the possibility that other categories of corporate events influence our results, we believe the odds to be small.

In Table A4 of the appendix, we additionally use cumulative abnormal returns (CAR) and Buy-and-hold abnormal returns (BHAR) [8] as dependent variable, instead of the regular returns. For comparability, we calculate the abnormal returns for the same time period as the returns used in the baseline setting. We find that insider trading is a strong predictor of abnormal returns. Amendments without any insider trading in the same calendar month predicts positive abnormal returns. We find information complementarity for sales around loan amendments. For purchases, the interaction coefficient shows the expected sign, however, is not statistically significant.

[7] The announcement dates are drawn from I/B/E/S.
[8] Both types of abnormal returns are calculated using the "Event Study by WRDS" tool.

5 Additional Analyses

In this section, we perform several additional analyses to strengthen our argument of information complementarity between insider trading and announcements of bank loan amendments. We split the sample by distance to default (sec. 5.1), book-to-market ratio (sec. 5.4) and firm size (sec. 5.3). Additionally, we distinguish between material amendments announced through SEC's form 8-K and non-material amendments in sec. 5.2.

5.1 Distance to Default

As loans are a type of debt financing, lenders are particularly concerned with borrowers' capacity to repay. Loan amendments can therefore be seen as an update to the assessment of how far a borrower is from defaulting on the loan. Based on this, we suspect that the relative importance of trading by informed investors, loan amendments, and the interaction of the two variables varies with the borrower's proximity to default. To investigate this suspicion, we split our sample at the yearly 25^{th} and 75^{th} percentiles of distance to default. We assign companies below the 25^{th} percentile to the "Close to Default" group [9] (column 1 in Table 11). Similarly, the quarter of sample months with the highest distance to default is grouped under "Far from Default" (column 3) and the other 50% of the sample are assigned to the "Middle Group" (column 2). Our hypothesis is that the impact of amendments on future returns increases as the distance to default decreases. If a default is highly unlikely, a new assessment of the borrower's capacity to repay should in most cases not contain any relevant, new information. However, in debtors for which default is a probable scenario, any reassessment of the situation through an amendment may provide valuable pieces of information. For investors in the group of firms located in the middle of these two extremes, it might be more difficult to interpret the outcome of renegotiations. This group is neither immediately threatened by default, nor is it a completely unlikely scenario. Therefore, we expect the highest degree of information complementarity in these companies, as investors turn to informed insiders' trading activity to assess the information content of the amendment.

[9] This is roughly equivalent to the number of firm-months with a Z-score below 1.8 (see Sec. 3.2.4).

[Insert Table 11 about here]

Our coefficient estimate for loan amendments is not significant in any of the three groups. However, we find its magnitude to be strongest and its t-statistic to be highest in the group of firm-years in which the borrower is closest to default. This supports our claim that the information contained in loan amendments is higher the closer the debtor is to default. If a borrower is far away from default, neither amendments nor insider trading can significantly predict future returns. The absence of any impact of insider trading might be due to firm size being attributed unevenly between groups. We expect large firms to be over-represented in the "Far from Default" group and vice versa. As Lakonishok and Lee (2001) show, insider trading loses relevance as the firm size increases. Turning to the interaction term between insider trading and loan amendments, we find that it is significant only in the "Middle Group". These results confirm our hypothesis formulated above that information complementarity is strongest when the effect of a loan amendment alone is not inherently clear. Complementarity occurs for both purchases and sales.

Firm size has the expected negative sign and is statistically significant across all three groups. We also find evidence for short-term reversal effects across the sample and confirm the expected positive coefficient for the book-to-market ratio for firms closest to default. However, the sign switches in the group furthest from default, indicating that in this group, value firms earn lower future returns than growth firms.

5.2 Materiality of Amendment

Our second additional analysis also tries to identify situations, in which we expect information complementarity to be particularly strong. We take advantage of the cross-sectional variation in the source of loan amendments as listed by SDC Platinum. One source of variation stems from a regulatory requirement: the necessity of timely publication of unscheduled, material changes through Form 8-K as stated in the Securities Exchange Act of 1934. This rule applies to loan amendments as well, as long as they materially impact the firm. We classify amendments as material if their primary source in SDC Platinum is "8-K Filing". This applies to roughly 10% of all amendments in our final regression sample. In contrast to the sample split in Section 5.1, we

assign separate indicator variables for material and non-material amendments, which allows us to use the entire sample in the regressions.

[Insert Table 12 about here]

Similarly to the distance to default, we expect information complementarity in the cases in which amendments themselves carry relatively less information or are more difficult to interpret. Applied to amendment materiality, we predict a stronger effect of material as compared to non-material amendments, but higher complementarity to insider trading in the latter group of amendments. Column 3 of Table 12 shows a higher point estimate for 8-K amendments than for non-material amendments. And while both amendment groups do not have a significant effect on future returns, the t-statistic for material changes to loans is slightly higher. Insider trading has the expected effect for both purchases and sales. The data confirms our hypothesis about information complementarity in that the interaction of non-material amendments with insider purchases has a significant and positive effect on future returns, while the effect is negative for the combination with informed sales. For amendments published via Form 8-K, both coefficient estimates are negative, but statistically not significant. One interpretation of this finding is that the impact of material changes in the loan characteristics for shareholder wealth is clearer compared to minor amendments. Therefore, the opinion expressed by insiders through their trades does not provide additional information when the amendment is material. Another, mutually non-exclusive, explanation is that minor (i.e. non 8-K) amendments are expected to be non-informative, but are considered as important by market participants once there is insider trading around the same time as the amendment is announced.

5.3 Firm Size

Lakonishok and Lee (2001) find a negative relationship between firm size and the ability of insider trades to predict stock returns. Also, due to information asymmetry, smaller firms' access to external capital tends to be more constrained. A possible consequence of this constraint is that changes to the terms of financing which is already in place (which leads to e.g. loan amendments), might have a stronger impact on shareholder wealth in smaller firms, as compared to larger ones.

Given the differential impact of trades and amendments on firms of different size, we hypothesize that information complementarity varies as well. We bring our presumption to the data by splitting the sample by the yearly median of market capitalization, our proxy for firm size.

[Insert Table 13 about here]

First, we can confirm the finding of Lakonishok and Lee (2001) (Columns 2 and 3 in Table 13). Second, the data does hint at variance in the impact of loan amendments on future returns. Our estimated coefficient for amendments is higher and closer to being statistically significant on a conventional level for the group below the firm size median, which is consistent with the results of Maskara and Mullineaux (2011). We find that both interaction terms are significant on the 5%-level in large firms, whereas in smaller firms, only the sales-interaction is significant (and only on the 10%-level). This is again consistent with information complementarity playing a more important role in situations where the consequences of loan amendments are less evident or less grave.

5.4 Book-to-Market Ratio

Corporate insiders are usually seen as having contrarian beliefs about their own firm (see e.g. Jenter (2005) or Piotroski and Roulstone (2005)). Their contrarian views lead to more frequent purchases when they believe to have spotted undervaluation (coinciding with a low Book-to-Market ratio) and vice versa. Building on this evidence, we would expect that insider trading predicts returns in firms with high and low B/M-ratios. However, the results of our regressions estimated on our sample split by the yearly median of the B/M-ratio show significant predictive power only in value (i.e. high B/M) firms. The results for the two subsamples are presented in Table 14 (Columns 2 and 3). A possible explanation for our finding is that value firms receive less investor attention, leading to less noise distracting from the signal that insider trades send.

When we turn to the interaction term, we find that there is no information complementarity between loan amendments and contrarian insider trades. However, the terms are significant and show the expected sign when managers buy (sell) additional stock when their company already exhibits high (low) market valuation.

[Insert Table 14 about here]

6 Conclusion

In this paper, we empirically analyze the extent to which the interplay of insider trading and loan amendments predicts one-month ahead stock returns. We expect information complementarity between the two types of events, meaning insider trading around announcements of loan amendments has a higher impact on future returns as compared to insider trading at other times. Information complementarity stems from the differential focuses that banks (acting as lenders) and insiders have. While banks are interested in assessing the future capacity of the borrower to repay the loan, managers can possess private information on their firm that allows them to better predict cash flows or discover misvaluation. When they trade, they send signals on this knowledge to other market participants.

The findings we obtain from our dataset of loans to listed companies in the U.S. support our hypothesis. We find that insider purchases (sales) executed in the same month as the loan amendment predict higher (lower) stock returns in the following month. This effect is stronger than the effect that we find for shares traded by insiders in other months. Previous work establishes information complementarity of informed trading and corporate events using Seasoned Equity Offerings (SEO) and share repurchases. We expand this field by showing that information complementarity is not limited to insider trading around equity-related events, but occurs also in connection to debt instruments. Since bank loans and amendments to them are not as extensively discussed as e.g. SEOs, a possible problem for our analysis is that amendments are simply overlooked and we capture the effect of other, confounding events. However, we can alleviate the concern by including Quarterly Earnings Announcements (QEA). We show that amendments in months with no QEA have an effect of similar magnitude as if we include all amendments.

In further analyses, we find evidence supporting the view that information complementarity is most prevalent in situations in which loan amendments alone either tend to have a smaller impact or are harder to interpret for non-insiders. Non-material loan amendments (i.e., those that do not

trigger an SEC Form 8-K) are a noteworthy example for such a situation.

7 Appendix

Recreation of baseline results using past returns as we understand them being specified in Cohen, Malloy, and Pomorski (2012) (see Sec. 4.1).

Table A1: Opportunistic Insider Trading and Amendments

This table reports regressions of monthly returns on indicators for opportunistic insider trading (based on Cohen, Malloy, and Pomorski (2012)) and loan amendments in the previous month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any opportunistic insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with opportunistic insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1)	(2) Purchases	(3) Sales	(4) Both
Loan Amendment	0.135	0.025	0.423*	0.300
	(0.803)	(0.142)	(1.901)	(1.315)
Insider Purchase	0.427***	0.394***		0.398***
	(4.325)	(3.969)		(4.008)
Insider Sale	−0.164***		−0.144***	−0.148***
	(−3.610)		(−3.153)	(−3.228)
Insider Purchase × Amendment		1.441**		1.372**
		(2.080)		(1.985)
Insider Sale × Amendment			−0.843***	−0.800**
			(−2.644)	(−2.506)
Ln(Market Cap)	−0.133***	−0.140***	−0.134***	−0.133***
	(−8.039)	(−8.523)	(−8.119)	(−8.046)
Ln(Book-to-Market)	0.094**	0.102***	0.097**	0.094**
	(2.449)	(2.651)	(2.530)	(2.445)
Prev. Month Return	0.002	0.001	0.001	0.002
	(0.497)	(0.333)	(0.302)	(0.501)
Prev. Year Return	0.001	0.001	0.001	0.001
	(1.356)	(1.156)	(1.264)	(1.353)
Observations	193102	193102	193102	193102
Adjusted R^2	0.245	0.245	0.245	0.245
Month FE	*Yes*	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A2: Amendment Timing within Calendar Month

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month split by periods within said month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment*, *Amend. in 1st (2nd) half of month*, and *Amend. after 25th* are indicators with value one for firm-months in which a loan amendment takes place in the respective period, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment (...)* are the interaction terms of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment in the respective period, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) Baseline	(2) Early vs. late	(3) Early vs. end
Loan Amendment	0.309		
	(1.355)		
Amend. in 1st half of month		0.125	0.123
		(0.366)	(0.360)
Amend. in 2nd half of month		0.421	
		(1.406)	
Amend. after 25th			0.611
			(1.360)
Insider Purchase	0.384***	0.384***	0.391***
	(3.874)	(3.875)	(3.959)
Insider Sale	−0.134***	−0.134***	−0.141***
	(−2.958)	(−2.959)	(−3.128)
Insider Purchase × Amendment	1.375**		
	(1.988)		
Insider Sale × Amendment	−0.802**		
	(−2.514)		
Purch. × Amend. bef. 16th		0.938	0.949
		(0.876)	(0.887)
Sale × Amend. bef. 16th		−0.267	−0.264
		(−0.547)	(−0.540)
Purch. × Amend. after 15th		1.786**	
		(2.033)	
Sale × Amend. after 15th		−1.175***	
		(−2.820)	
Purch. × Amend. after 25th			2.850**
			(2.180)
Sale × Amend. after 25th			−1.255**
			(−2.005)
Ln(Market Cap)	−0.134***	−0.134***	−0.134***
	(−8.102)	(−8.101)	(−8.090)
Ln(Book-to-Market)	0.086**	0.086**	0.086**
	(2.221)	(2.222)	(2.218)
Curr. Month Return	−0.014***	−0.014***	−0.014***
	(−4.459)	(−4.460)	(−4.460)
Prev. Year Return	0.002**	0.002**	0.002**
	(2.215)	(2.220)	(2.219)
Observations	193102	193102	193102
Adjusted R^2	0.245	0.245	0.245
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Quarterly Earnings Announcements (QEA)

This table reports regressions of monthly returns on indicators for insider trading, loan amendments, and quarterly earnings announcements (QEA) in the previous month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Month with QEA* is an indicator with value one for firm-months with a QEA, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Insider Purchase* (*Sale*) × *QEA* is the interaction of the insider trading and the QEA indicator taking on value one in firm months with insider trading and a QEA, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) Baseline	(2) No QEA	(3) Placebo test
Loan Amendment	0.309	0.383	
	(1.355)	(1.368)	
Month with QEA			−0.006
			(−0.086)
Insider Purchase	0.384***	0.369***	0.402***
	(3.874)	(2.774)	(3.043)
Insider Sale	−0.134***	−0.113*	−0.134**
	(−2.958)	(−1.928)	(−2.340)
Insider Purchase × Amendment	1.375**	1.652**	
	(1.988)	(1.974)	
Insider Sale × Amendment	−0.802**	−0.737*	
	(−2.514)	(−1.861)	
Insider Purchase × QEA			0.032
			(0.168)
Insider Sale × QEA			−0.049
			(−0.542)
Ln(Market Cap)	−0.134***	−0.120***	−0.134***
	(−8.102)	(−5.654)	(−8.097)
Ln(Book-to-Market)	0.086**	0.103**	0.086**
	(2.221)	(2.169)	(2.229)
Curr. Month Return	−0.014***	−0.027***	−0.014***
	(−4.459)	(−6.197)	(−4.437)
Prev. Year Return	0.002**	0.002*	0.002**
	(2.215)	(1.899)	(2.218)
Observations	193102	132653	193102
Adjusted R^2	0.245	0.239	0.245
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Abnormal Returns

This table reports regressions of monthly abnormal returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable in column 1 is the monthly return one month ahead of explanatory variables, expressed in percent. In column 2 (3), it is the monthly cumulative abnormal return (CAR) (buy-and-hold abnormal return (BHAR)). *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) Returns (CAR sample)	(2) CARs	(3) BHARs
Loan Amendment	0.412*	0.477**	0.473**
	(1.748)	(2.078)	(2.040)
Insider Purchase	0.395***	0.977***	0.970***
	(3.879)	(9.474)	(9.259)
Insider Sale	−0.153***	−0.521***	−0.535***
	(−3.316)	(−10.934)	(−11.068)
Insider Purchase × Amendment	1.350*	0.918	0.827
	(1.887)	(1.320)	(1.162)
Insider Sale × Amendment	−0.872***	−0.823**	−0.804**
	(−2.656)	(−2.496)	(−2.409)
Ln(Market Cap)	−0.131***	−0.084***	−0.004
	(−7.834)	(−5.250)	(−0.242)
Ln(Book-to-Market)	0.078**	0.325***	0.273***
	(1.970)	(8.650)	(7.229)
Curr. Month Return	−0.017***	−0.015***	−0.013***
	(−4.950)	(−4.941)	(−4.017)
Prev. Year Return	0.001	−0.055***	−0.056***
	(1.138)	(−66.314)	(−66.990)
Observations	178381	178381	178381
Adjusted R^2	0.247	0.095	0.093
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return (col. 1); CAR (col. 2); BHAR (col. 3)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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8 Tables

Table 1: Descriptive Statistics - Loan Characteristics

This table reports summary statistics on the loans and amendments in our sample. The sample period is Jan 2001 to Dec 2020. *Amendments per Firm* describes the number amendments per firm during our sample period. *Amendments per Firm-month* is the number of amendments per firm-month in our sample. *Spread* is the spread above the base rate for the loans for which we observe amendments. *Tranche Amount* is the amount in mio. USD per loan. *No. of Tier 1 Agents* is the number of agents and co-agents per loan. The last three variables are based on the average per firm-month (for firms with multiple amendments in the same calendar month).

	N	Mean	Median	Std. Dev.	Min.	Max.
Amendments per Firm	5,149	3.79	3.00	3.55	1	38
Amendments per Firm-month	5,149	0.03	0.00	0.21	0	18
Spread (bps)	7,125	170.14	150.00	111.27	0	1,225
Tranche Amount (mio USD)	7,760	794.52	375.00	1,417.75	1	35,700
No. of Tier 1 Agents	7,725	4.28	4.00	2.82	1	25

Table 2: Descriptive Statistics - Insider Trading

This table reports summary statistics on the insider trades in our sample. The sample period is Jan 2001 to Dec 2020. *No. of Insider Purchases (Sales)* describes the number of insider purchases (sales) during our sample period. *Net Purchase Ratio* summarizes the NPR as defined in equation 1. All variables are measured per firm-month.

	Firm-month-level					
	N	Mean	Median	Std. Dev.	Min.	Max.
No. of Insider Purchases	193,102	0.26	0.00	3.98	0	678
No. of Insider Sales	193,102	3.09	0.00	26.63	0	6,319
Net Purchase Ratio	193,102	-0.26	0.00	0.54	-1	1

Table 3: Descriptive Statistics - Monthly Returns

This table reports summary statistics on the monthly stock returns in our sample. The sample period is Jan 2001 to Dec 2020. *Monthly Return* summarizes the monthly return over all months in our sample. *Ret after Amend. & Purchase (Sale)* summarizes the monthly return in the firm-month following a firm-month with a loan amendment and insider purchase(s) (sale(s)). All variables are measured per firm-month.

	Firm-month-level					
	N	Mean	Median	Std. Dev.	Min.	Max.
Monthly Return	193,102	1.19	1.07	11.50	-35	46
Ret after Amend. & Purchase	205	3.37	3.06	14.80	-36	46
Ret after Amend. & Sale	1,154	0.61	0.80	9.58	-36	46

Table 4: Difference of Means - Purchases

Ret t+1	-2.196***	(-2.73)
Observations	191873	

t statistics in parentheses

Difference: months with only trades, only amendments, or none − months with purchases and amendment

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Difference of Means - Sales

Ret t+1	0.568*	(1.68)
Observations	192822	

t statistics in parentheses

Difference: months with only trades, only amendments, or none − months with sales and amendment

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Descriptive Statistics - Firm Characteristics

This table reports summary statistics on the characteristics of our sample firms. The sample period is Jan 2001 to Dec 2020. *Market Cap (mio USD)* denotes the market capitalization (common shares outstanding × share price) in mio USD. *Book-to-Market Ratio* describes the book-to-market ratio defined as the ratio of (book value per share × common shares outstanding) and market capitalization. *Distance to Default* is defined as in the naïve approach of Bharath and Shumway (2008). *Altman Z-Score* is 3.3 × EBIT/Total Assets + 0.99 × Net Sales/Total Assets + 0.6 × Market Value of Equity/Total Liabilities + 1.2 × Working Capital/Total Assets + 1.4 × Retained Earnings/Total Assets. *S&P Domestic Long Term Issuer* is an indicator taking on the value one if the firm is rated by Standard & Poor's, and zero otherwise. *Unique Companies* is the number of distinct firms by Refinitiv PermID. Except for *Unique Companies*, all variables are averaged by firm-year.

	Firm-(year)-level					
	N	Mean	Median	Std. Dev.	Min.	Max.
Market Cap (mio USD)	16,943	9,816.81	1,856.17	35,309.32	1	1474188.62
Book-to-Market Ratio	16,943	0.64	0.45	0.96	0	55.08
Distance to Default	15,434	8.94	7.79	6.28	-3	79.96
Altman Z-Score (WRDS)	16,915	4.40	3.40	4.80	-3	51.26
S&P Domestic Long Term Issuer	16,943	0.49	0.17	0.49	0	1.00
Unique Companies	1,360					

Table 7: Stock Returns, Insider Trading, and Amendments

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1)	(2) Purchases	(3) Sales	(4) Both
Loan Amendment	0.144	0.033	0.432*	0.309
	(0.854)	(0.191)	(1.942)	(1.355)
Insider Purchase	0.413***	0.381***		0.384***
	(4.193)	(3.841)		(3.874)
Insider Sale	−0.150***		−0.131***	−0.134***
	(−3.343)		(−2.890)	(−2.958)
Insider Purchase × Amendment		1.444**		1.375**
		(2.082)		(1.988)
Insider Sale × Amendment			−0.845***	−0.802**
			(−2.652)	(−2.514)
Ln(Market Cap)	−0.134***	−0.141***	−0.135***	−0.134***
	(−8.095)	(−8.536)	(−8.172)	(−8.102)
Ln(Book-to-Market)	0.086**	0.092**	0.089**	0.086**
	(2.226)	(2.397)	(2.299)	(2.221)
Curr. Month Return	−0.014***	−0.015***	−0.015***	−0.014***
	(−4.457)	(−4.583)	(−4.557)	(−4.459)
Prev. Year Return	0.002**	0.002**	0.002**	0.002**
	(2.217)	(1.989)	(2.082)	(2.215)
Observations	193102	193102	193102	193102
Adjusted R^2	0.245	0.245	0.245	0.245
Month FE	*Yes*	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Robustness to Estimation Procedure

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Column 1 reports a Fama and MacBeth (1973) regression, column 2 the same method with six month lagged Newey and West (1987) standard errors. Standard errors are clustered by firm and month in column 3 and by firm in column 4.

	(1) Cluster	(2) Firm FE	(3) Fama-MacBeth	(4) FMB 6m lag
Loan Amendment	0.309	0.351	0.340	0.340
	(1.351)	(1.544)	(1.222)	(1.393)
Insider Purchase	0.384***	0.348***	0.326***	0.326**
	(2.884)	(3.399)	(3.114)	(2.461)
Insider Sale	−0.134**	−0.167***	−0.109*	−0.109*
	(−2.149)	(−3.342)	(−1.920)	(−1.900)
Insider Purchase × Amendment	1.375**	1.488**	1.014**	1.014**
	(2.013)	(2.137)	(2.414)	(2.320)
Insider Sale × Amendment	−0.802**	−0.806**	−0.895**	−0.895**
	(−2.430)	(−2.534)	(−2.070)	(−2.031)
Ln(Market Cap)	−0.134***	−1.921***	−0.104**	−0.104**
	(−2.723)	(−19.170)	(−2.299)	(−2.059)
Ln(Book-to-Market)	0.086	0.093	0.048	0.048
	(1.063)	(1.099)	(0.827)	(0.697)
Curr. Month Return	−0.014	−0.013***	−0.013*	−0.013**
	(−1.498)	(−4.133)	(−1.906)	(−2.336)
Prev. Year Return	0.002	0.002***	−0.002	−0.002
	(0.705)	(3.036)	(−0.606)	(−0.481)
Observations	193102	193101	193102	193102
Adjusted R^2	0.245	0.254		
Month FE	*Yes*	*Yes*	–	–
Firm FE	*No*	*Yes*	–	–

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Robustness to Insider Trading Measure

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Net Purchase Ratio* is the ratio of the difference and the sum of the no. of purchases and sales (see formula 1). *Positive (Negative) Net Purchase Ratio* is an indicator with value one for firm-months with a strictly positive (negative) NPR, and zero otherwise. *(Positive (Negative)) NPR × Amendment* is the interaction of *(Positive (Negative)) Net Purchase Ratio* and *Amendment* which is one in firm-months where both variables are one, and zero otherwise. *Opportunistic Purchase (Sale)* is an indicator with value one for firm-months with opportunistic purchases (sales) based on the classification of Cohen, Malloy, and Pomorski (2012). *Opp. Purchase (Sale) × Amendment* is the interaction of the aforementioned variable with *Amendment* with value one for firm-months where both variables are one, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) NPR cont.	(2) NPR binary	(3) Opp. trading
Loan Amendment	0.387*	0.265	0.237
	(1.925)	(1.145)	(1.288)
Net Purchase Ratio	0.193***		
	(4.514)		
Positive Net Purchase Ratio		0.523***	
		(4.200)	
Negative Net Purchase Ratio		−0.090*	
		(−1.941)	
NPR × Amendment	0.912***		
	(3.138)		
Positive NPR × Amendment		1.510*	
		(1.770)	
Negative NPR × Amendment		−0.655**	
		(−1.978)	
Opportunistic Purchase			0.247
			(0.831)
Opportunistic Sale			−0.145***
			(−2.602)
Opportunistic Purchase × Amendment			−0.930
			(−0.579)
Opportunistic Sale × Amendment			−0.704*
			(−1.742)
Ln(Market Cap)	−0.131***	−0.134***	−0.138***
	(−7.911)	(−8.094)	(−8.331)
Ln(Book-to-Market)	0.084**	0.086**	0.091**
	(2.186)	(2.240)	(2.368)
Curr. Month Return	−0.014***	−0.014***	−0.015***
	(−4.451)	(−4.457)	(−4.608)
Prev. Year Return	0.002**	0.002**	0.001*
	(2.254)	(2.211)	(1.941)
Observations	193102	193102	193102
Adjusted R^2	0.245	0.245	0.245
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Robustness to Loan Events

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample period is Jan 2001 to Jul 2011. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. In column 1, amendments manually assigned by the authors are included. In column 2, only events classified by Roberts (2015) as *Amendment* or *Amended & Restated* are included as *Loan Amendment*. Standard errors are clustered by firm.

	(1) Manual Events	(2) Roberts (2015)
Loan Amendment	0.292	−0.049
	(1.290)	(−0.078)
Insider Purchase	0.385***	1.670**
	(3.882)	(2.047)
Insider Sale	−0.134***	0.245
	(−2.957)	(0.950)
Insider Purchase × Amendment	1.263*	1.032
	(1.878)	(0.722)
Insider Sale × Amendment	−0.776**	−2.160**
	(−2.461)	(−2.041)
Ln(Market Cap)	−0.134***	−0.359***
	(−8.105)	(−3.137)
Ln(Book-to-Market)	0.086**	0.757***
	(2.221)	(2.951)
Curr. Month Return	−0.014***	−0.021
	(−4.459)	(−1.545)
Prev. Year Return	0.002**	0.001
	(2.215)	(0.206)
Observations	193102	6642
Adjusted R^2	0.245	0.240
Month FE	*Yes*	*Yes*
Firm FE	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Sample Split by Distance to Default

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample is split by the yearly distance to default. Column 1 reports results for firm-years below the 25^{th} percentile, column 2 for firm-years between the 25^{th} and the 75^{th} percentiles, and column 3 for firm-years above the 75^{th} percentile. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) Close to Default	(2) Middle Group	(3) Far from Default
Loan Amendment	0.621	0.087	−0.273
	(1.207)	(0.317)	(−0.687)
Insider Purchase	0.364	0.238*	0.115
	(1.604)	(1.883)	(0.787)
Insider Sale	−0.309**	−0.119*	−0.081
	(−2.184)	(−1.902)	(−1.180)
Insider Purchase × Amendment	0.524	1.890**	1.000
	(0.400)	(2.316)	(0.648)
Insider Sale × Amendment	−0.343	−0.784*	−0.048
	(−0.362)	(−1.923)	(−0.095)
Ln(Market Cap)	−0.244***	−0.178***	−0.124***
	(−5.227)	(−7.796)	(−5.127)
Ln(Book-to-Market)	0.360***	−0.031	−0.139***
	(4.243)	(−0.658)	(−2.802)
Curr. Month Return	−0.023***	−0.025***	−0.024***
	(−4.077)	(−5.730)	(−3.570)
Prev. Year Return	0.002	0.000	−0.002
	(0.897)	(0.225)	(−0.989)
Observations	43581	87162	43581
Adjusted R^2	0.275	0.282	0.266
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Effect of material and non-material Loan Amendments

This table reports regressions of monthly returns on indicators for insider trading and (non-)material loan amendments in the previous month, and control variables. The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Material Amendment* is an indicator with value one for firm-months in which a loan amendment announced through form 8-K takes place, and zero otherwise. *Non-material Amendment* is an indicator with value one for firm-months in which a loan amendment announced through any other source takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *(Non-)mat. Amend.* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a (non-)material loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) Material	(2) Non-material	(3) Combined
Material Amendment	0.972		0.976
	(1.245)		(1.250)
Non-material Amendment		0.237	0.239
		(1.000)	(1.007)
Insider Purchase	0.417***	0.380***	0.384***
	(4.228)	(3.841)	(3.874)
Insider Sale	−0.148***	−0.136***	−0.134***
	(−3.290)	(−3.011)	(−2.955)
Insider Purchase × Mat. Amend.	−1.969		−1.935
	(−1.308)		(−1.285)
Insider Sale × Mat. Amend.	−1.139		−1.153
	(−0.922)		(−0.933)
Insider Purchase × Non-mat. Amend.		1.734**	1.730**
		(2.323)	(2.317)
Insider Sale × Non-mat. Amend.		−0.745**	−0.747**
		(−2.287)	(−2.293)
Ln(Market Cap)	−0.134***	−0.134***	−0.134***
	(−8.088)	(−8.103)	(−8.104)
Ln(Book-to-Market)	0.086**	0.085**	0.086**
	(2.234)	(2.219)	(2.224)
Curr. Month Return	−0.014***	−0.014***	−0.014***
	(−4.451)	(−4.456)	(−4.453)
Prev. Year Return	0.002**	0.002**	0.002**
	(2.214)	(2.213)	(2.209)
Observations	193102	193102	193102
Adjusted R^2	0.245	0.245	0.245
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Sample Split by yearly median Firm Size

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample is split by the yearly Firm Size. Column 2 reports the results for firm-years below the yearly median of size (*Small Firms*), and column 3 reports results for firm-years above the median (*Big Firms*). The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) Baseline	(2) Small Firms	(3) Big Firms
Loan Amendment	0.309	0.520	0.091
	(1.355)	(1.425)	(0.372)
Insider Purchase	0.384***	0.673***	−0.048
	(3.874)	(4.322)	(−0.446)
Insider Sale	−0.134***	−0.210***	−0.015
	(−2.958)	(−2.627)	(−0.290)
Insider Purchase × Amendment	1.375**	1.146	1.956**
	(1.988)	(1.136)	(2.317)
Insider Sale × Amendment	−0.802**	−1.010*	−0.702**
	(−2.514)	(−1.702)	(−2.088)
Ln(Market Cap)	−0.134***	−0.125**	−0.119***
	(−8.102)	(−2.495)	(−4.920)
Ln(Book-to-Market)	0.086**	0.205***	−0.045
	(2.221)	(2.912)	(−1.287)
Curr. Month Return	−0.014***	−0.014***	−0.018***
	(−4.459)	(−3.186)	(−4.053)
Prev. Year Return	0.002**	0.003***	0.000
	(2.215)	(2.630)	(0.061)
Observations	193102	96546	96546
Adjusted R^2	0.245	0.251	0.274
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Sample Split by yearly median Book-to-Market Ratio

This table reports regressions of monthly returns on indicators for insider trading and loan amendments in the previous month, and control variables. The sample is split by the yearly Book-to-Market ratio. Column 2 reports the results for firm-years above the yearly median of the ratio (*Value Firms*), and column 3 reports results for firm-years below the median (*Growth Firms*). The sample period is Jan 2001 to Dec 2020. The dependent variable is the monthly return one month ahead of explanatory variables, expressed in percent. *Loan Amendment* is an indicator with value one for firm-months in which a loan amendment takes place, and zero otherwise. *Insider Purchase* (*Sale*) is and indicator with value one if there are any insider purchases (sales) happening in the firm-month, and zero otherwise. *Insider Purchase* (*Sale*) × *Amendment* is the interaction of the aforementioned variables which is one in firm-months with insider purchases (sales) and a loan amendment, and zero otherwise. *Ln(Market Cap)* is the natural logarithm of market capitalization in mio. USD. *Ln(Book-to-Market)* is the natural logarithm of the Book-to-Market ratio, capped at zero and 100. *Curr. Month Return* is the monthly return in the month in which trading and amendments are observed (event month), expressed in percent. *Prev. Year Return* is the return of the period starting twelve months before the event month, and ending after the month preceding the event month, in percent. Standard errors are clustered by firm.

	(1) Baseline	(2) Value Firms	(3) Growth Firms
Loan Amendment	0.309	0.379	0.237
	(1.355)	(1.149)	(0.818)
Insider Purchase	0.384***	0.486***	0.199
	(3.874)	(3.324)	(1.640)
Insider Sale	−0.134***	−0.202***	−0.080
	(−2.958)	(−2.814)	(−1.396)
Insider Purchase × Amendment	1.375**	0.661	2.229**
	(1.988)	(0.688)	(2.567)
Insider Sale × Amendment	−0.802**	−1.020**	−0.612
	(−2.514)	(−2.055)	(−1.482)
Ln(Market Cap)	−0.134***	−0.102***	−0.106***
	(−8.102)	(−3.956)	(−4.784)
Ln(Book-to-Market)	0.086**	0.444***	−0.085*
	(2.221)	(3.603)	(−1.787)
Curr. Month Return	−0.014***	−0.017***	−0.011**
	(−4.459)	(−3.827)	(−2.563)
Prev. Year Return	0.002**	0.003***	0.001
	(2.215)	(2.585)	(1.520)
Observations	193102	96546	96546
Adjusted R^2	0.245	0.266	0.238
Month FE	*Yes*	*Yes*	*Yes*
Firm FE	*No*	*No*	*No*

t statistics in parentheses

Dependent variable: Following monthly return

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$