Information, Incentive Alignment, and Company Loan Financing of Insider Trades

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Insider acquisitions of shares are supposed to align the interests of managers and shareholders. Thus, purchases are typically viewed as positive signals. However, if the transactions do not put insiders' wealth at risk, perhaps this conclusion is premature. We test this idea by focusing on loan financing of insider share acquisitions. We find that loan-financed insider purchases and option exercises earn lower profits than do counterparts that are not loan financed. Our results also suggest that loan-financed insider purchases are an additional method to move an executive quickly to a target level of incentives.

The late 1990s will likely be remembered as one of the greatest periods of corporate excess in American history. Alleged misuse of corporate loans to executives at companies such as Tyco and Enron typify agency problems with the firm and are often cited as evidence of a failure of corporate governance. However, a significant proportion of these loans are specifically for purposes of acquiring company stock and increasing managerial ownership.

In this paper we examine insider purchases of stock that are financed by loans from the insider's firm and test whether these loans harm uninformed shareholders. Numerous studies suggest that insiders' trading activities act as signals about the value of their firm. Results in Jaffe (1974), Finnerty (1976), Seyhun (1986), and Pettit and Venkatesh (1995) support the argument that insiders have access to information about future performance that outside investors do not have, and that insiders are likely to trade in a direction that is consistent with this private information. Nevertheless, it is well-recognized that the above results reflect average behavior and that not all insiders' transactions reflect private information. We argue that loan-financed purchases are less likely to represent attempts to profit from inside information. Consequently, the returns to loan-financed insider purchases should be less positive than the returns following purchases that are not financed by company loans.

We also examine insiders' option exercises, since share acquisitions can occur through either open market purchases or option exercises. As with loan-financed purchases, we expect loan-financed option exercises to show lower returns than exercises that are not financed by company loans. However, one difference between loan-financed stock purchases and loan-financed option exercises is that insiders might exercise options and then sell the acquired shares on the open market. To control for this possibility, we distinguish between option exercises that are followed by insider sales and those that are not.

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Finally, we examine whether these loans influence executive pay-performance sensitivity. Recent studies show that firms use annual grants of options and restricted stocks to maintain the optimal level of CEO equity incentives. In this context, we could view loan-financed purchases as an alternate mechanism to move an executive towards an optimal level of pay-performance sensitivity (PPS). This viewpoint suggests that the PPS of executives who receive loans to purchase common stock should be lower than optimal prior to the loan-financed purchase.

We find that loan-financed purchases and option exercises are associated with poorer excess return performance than are those trades that are not financed by executive loans. Further, our general result that loan-financed trades yield lower excess returns than other trades is strongest in our sample of forgivable loans. In addition, loan-financed purchases (options exercises) that are not repaid are associated with lower (higher) profits. Finally, our results indicate that loanfinanced purchases move the average executive from negative residual pay-performance sensitivity (relative to a benchmark level) in the year prior to the purchase, to positive residual pay-performance sensitivity in the year of the purchase.

Our contributions are as follows: first, we contribute to the broad literature on the role of insiders in price discovery and the flow of information in the capital markets. Prior work that argues that insider purchases are informative requires reconsideration in the presence of executive loans designed to finance such purchases. More broadly, studies that view insider trading activity as a signal about future firm performance must be cognizant of the motives behind such transactions.¹

Second, we contribute to the literature on the mechanisms used to align managerial incentives with those of shareholders and on whether these mechanisms expose uninformed traders to trading by informationally-advantaged insiders. In a related paper, Kahle and Shastri (2004) find that whether executive loans increase managerial ownership depends on the ownership level of the executive receiving the loan. High ownership managers tend to sell most of the shares purchased with the loan whereas low ownership managers tend to hold the shares. The fact that low ownership managers are purchasing and holding the stock suggests that these managers are attempting to increase their ownership level rather than trading based on informational advantages. Our results support this argument.

Finally, our work complements recent work by Rajan and Wulf (2006) on perquisite usage by firms. They find evidence that executive perks are offered mostly in situations where they are likely to enhance managerial productivity. They conclude that a view of managerial perks as purely an agency cost is incorrect. Our results support their interpretation. Loan-funded share acquisitions are less profitable than non-loan-funded acquisitions, while still moving the executive closer to target pay-performance sensitivity. Overall, our results indicate that these loans are not necessarily an indication of an agency problem within the firm.

The paper is organized as follows. Section I places our study in the context of the insider trading literature and develops our testable hypotheses. Section II describes our data and empirical methods. Section III contains results. Section IV concludes.

I. Literature Review and Hypotheses

Our paper examines the effects of loan financing on both the profitability of insider trades and the pay-performance sensitivity of managers.

¹We are not the first study to suggest that not all insider trades are alike. For example, recent studies have shown that profitability varies by the rank of the insider, by whether the trade is during a "blackout period," by the proximity of the trade to earnings announcements and analyst changes, and by the method of disclosure. See Jeng (1999), Bettis, Coles, and Lemmon (2000), Roulstone (2001), Cheng, Nagar, and Rajan (2004), and Coles, Juergens, and Martin (2005).

A. The Profitability of Insider Purchases

Early work examining the profitability of insider trading generally finds that insiders earn significant excess returns on their trades (Lorie and Niederhoffer, 1968; Jaffe, 1974; and Finnerty, 1976). However, the results are typically stronger for insider purchases than for sales. This evidence is consistent with a higher likelihood that insider sales (versus purchases) are for liquidity purposes, which motivates our focus on insider share acquisition activity. More recent evidence also suggests that purchases, but not sales, are informative. Seyhun (1998) finds that sales are less informative than purchases and that the profitability of sales declined in the 1990s. Lakonishok and Lee (2001) find that insider purchases are useful in predicting market movements, but insider sales are not.

One potential explanation for the minimal profits above transaction costs is that these studies typically examine all open market purchases and sales by officers and directors of the firm. Many of these trades might not be motivated by a desire to profit from inside information. Certainly, the common finding of weaker results for sales is consistent with this notion, since sales are more likely to be undertaken for liquidity reasons than purchases. To discriminate between insider purchases that are motivated by a desire to profit from private information and those that are not, we examine the source of funding for the purchase. This examination underlies our first hypothesis.

Hypothesis (1a): Insider purchases funded by company loans should be less profitable than purchases not funded by loans.

The main arguments that support our hypothesis are that corporate monitoring of insider trades and the possibility of *ex post* settling up cause insiders to abstain from using company loans to exploit uninformed shareholders. In many companies, insider trading is subject to the company's code of ethics and is monitored by the corporate secretary or legal counsel.² We expect such monitoring to be more stringent for insider purchases financed by company loans, as shareholders would be extremely displeased to learn that not only had insiders exploited access to material inside information, but that it was shareholders' money, by way of a loan, that financed the transaction. In addition, insiders would have less incentive to trade on private information using loan-financed purchases if these actions are likely to lead to legal sanctions (Seyhun, 1992 and Garfinkel, 1997).³

In terms of *ex post* settling up and the market for managers, previous work has shown that performance and reputation affect the internal and external labor market for both executives and directors (see evidence in Gilson (1989, 1990) on bankruptcy; Kaplan and Reishus (1990) on dividends, and Brickley, Linck, and Coles (1999) on stock and accounting performance.) In this context, firms would be less receptive to employing an executive who had exploited shareholders in a previous managerial or directorial position. This implies that managers would avoid exploiting insider information when using company money because of the potential for severe labor market consequences. These arguments suggest that insider purchases financed by company loans would be less profitable than purchases not funded by loans, and that loan-financed purchases in which the loan is forgiven should be less profitable than purchases in which the loan is not forgiven.

²See Bettis, Coles, and Lemmon (2000) for details on enforcement of company policies on insider trading.

³Seyhun presents a model in which an increase in the probability of sanctions related to insider trading reduces the positive relation between insider private information and shares traded. This result suggests that the profitability of insider trades should be reduced if higher profits earned on insider trades increases the probability of sanctions. In the context of company loan-financed insider purchases, this argument suggests that these purchases would be less profitable than ones that are not funded by loans.

Alternatively, our hypothesis also receives support from the behavioral finance literature. The prospect theory of Kahneman and Tversky (1979) suggests that investors view the disutility of a loss to be much larger than the utility of a gain of the same magnitude. This implies that insiders who trade using their own money would need to be compensated for their potential loss from purchasing the stock with a much larger potential gain, compared to those who purchase stock using a company loan that could potentially be forgiven.

A similar argument in support of our hypothesis can be made by appealing to the house money effect suggested in Thaler and Johnson (1990), in which people are more willing to take risks with money they obtain easily or unexpectedly. Again, if one were to argue that insider purchases financed by company loans fall into this category as compared to a purchase financed by their own funds, one would expect the former to be less profitable than the latter.

The above hypotheses also suggest that forgivable loans and non-repaid loans further reduce the incentive of insiders to exploit uninformed shareholders and expose the insider to less downside risk than loans that are not, leading to our second hypothesis.

Hypothesis (1b): The profitability of purchases should be lower for trades funded by forgivable loans and non-repaid loans.

B. The Profitability of Option Exercises

While numerous studies have found that insider purchases are informative, few papers have examined the profitability of option exercises. Seyhun (1998) finds that returns after option exercise are slightly positive from 1975-1994, but slightly negative if restricted to top executives after 1991. Carpenter and Remmers (2001) examine whether insiders use private information to time the exercise of executive stock options. They find little evidence of timing after May 1991, when the SEC changed the starting date of Section 16(b)'s six-month short-swing rule from the exercise date to the grant date of the option, thus allowing insiders to immediately sell shares acquired through exercise. Carpenter and Remmers (2001) argue that if insiders can sell shares immediately after exercise, then option exercises are like sales in that they allow insiders to reduce their exposure to their firm's stock. Thus exercises, like sales, might be driven mainly by liquidity needs rather than information and are generally uninformative.

We contribute to this literature by examining returns following option exercises, disaggregated by whether they are loan funded, which should affect the incentive to earn profits.

Hypothesis (2a): As in the case of stock purchases, we predict that option exercises financed by executive loans will be associated with lower ex-post excess returns than non-loan-financed option exercises.

One potential problem with the above hypothesis is that when option exercises are not loanfinanced, insiders might have to sell at least some of the shares obtained on exercise to pay the exercise price or the taxes on the profit, regardless of the ex-post stock return. In this case, we might find no difference in the ex-post abnormal returns across the two groups. To disentangle these two effects, we pay additional attention to option exercises that are not followed by insider sales. We then discriminate between loan-funded and non-loan-funded option exercises for this subsample, and ascertain whether the loan reduces the incentive to earn positive excess returns on the option exercise.

Hypothesis (2b): Following Hypothesis (1b), we expect forgivable and non-repaid loans for option exercises that are not followed by open market insider sales will be associated with lower ex-post excess returns than their non-loan-financed counterparts.

C. Pay-Performance Sensitivity

Recently, there has been increased focus on the pay-performance sensitivity (PPS) of managers' stock and option holdings. Over time, managerial incentives deviate from their optima due to shifts in optimal levels or changes in the incentives provided by managers' portfolios. Core and Guay (1999) find that firms use annual grants of options and restricted stock to CEOs to manage the optimal level of equity incentives. Li (2002) finds evidence that firms and managers coordinate their equity grant and portfolio rebalancing decisions to maintain optimal CEO incentive levels. Studies also examine the effect of option repricing on CEO incentives. Rogers (2005) and Coles, Daniel, and Naveen (2005) conclude that firms reprice stock options to reduce the risk-taking incentives of managers and move managerial incentives closer to target incentive levels. Taken together, the PPS literature suggests that managerial incentives can be optimized through adjustments to equity-based compensation.

In this context, we argue that providing loans to insiders for purchasing stock or exercising options is an additional mechanism, beyond stock and option grants/repricing, to move an executive quickly to a target level of incentives. This argument motivates our final hypothesis.

Hypothesis (3): Insiders receiving company loans for the purpose of purchasing stock have pay-performance sensitivities prior to the awarding of the loan that is below what is optimal.

II. Data and Methodology

Our sample begins with all companies on Standard and Poor's ExecuComp database with data available during fiscal years 1996 through 2000. There are a total of 8,071 company years available. For these companies, we use proxy statements and annual reports to collect detailed data on any loans made during these years to any of the executives covered in the ExecuComp database. We examine a total of 32,453 executive years from 1996 through 2000.

Insider trading data comes from the Ownership Reporting System (ORS) tapes. The database includes the insider's name, the firm's name and cusip, the date of the insider trade, the number of shares traded, the insider's title, and the nature of the transaction. To identify loan-funded insider purchases, we match insider trades from the ORS tapes with our sample of executive loans made for stock purchase. These loans are often outstanding for multiple years. In total, the number of executive years associated with outstanding loans for share purchases is 722. We are able to match these loan years with actual open market purchases by the insider for 146 executive-year observations.⁴

We require that insider purchases take place in the calendar years that the loan is outstanding. Our reasoning is as follows. If a loan is made in 1996, but remains outstanding in 1997 and 1998, an insider purchase in 1998 might in fact be funded by the loan. In other words, the insider might have waited to execute the loan-funded purchase, and we do not wish to ignore it. Moreover, it is possible that several insider purchases might be funded by a single executive loan, i.e., the insider might spread his purchasing activity over several years.

Conversely, we assume that if a loan is not outstanding in a particular year, it has already been repaid or forgiven, and purchases in those years are not loan financed. We lose a number of observations because the insider's acquisition is not classified as an open market transaction.⁵

⁴We are able to match loans to executives with trades by these executives using their names, which are provided in both data sources.

⁵Insiders can purchase stock using private transactions or other non-open market activities. Reporting requirements differ for these transactions and they are not always listed on the ORS.

Our tests are based on the sample of 146 open market insider purchases that occur in years that the insider has an outstanding loan to buy stock. We refer to these purchases simply as loan-funded insider purchases.

We repeat this procedure for insider option exercises funded by loans, resulting in 132 such option exercises. We refer to these as loan-funded option exercises.

To understand the effects of executive loans on the profitability of insider purchases or option exercises, we also require a sample of non-loan-funded trades. If loan-funded share acquisitions are truly associated with different insider motives, then insider share acquisitions that are not financed by executive loans will likely exhibit differential profitability. For ease of exposition, our discussion focuses on open market insider purchases. We construct our sample of non-loanfunded option exercises in an analogous manner.

To construct our sample of non-loan-funded purchases, we focus on insider activity in the firms that did not make loans for stock purchases at any time during 1996-2000. We then match each loan-funded purchase with a non-loan-financed purchase peer, chosen to have the same two-digit SIC code, and minimizing the summed absolute percentage deviations in firm size and book-to-market equity. Using these criteria, we find adequate matches for 117 of the 146 purchase loans and 109 of the 132 option exercise loans.⁶

Our primary measure of insider profitability is based on market-adjusted returns.⁷ Specifically, the "profit" on each insider trade (loan-funded or peer) is the cumulated value of daily market-adjusted returns (raw returns minus CRSP's value-weighted index returns) over the 250 trading days following the trade.⁸ For each loan-funded insider purchase, we then calculate the adjusted abnormal return as the market-adjusted return on the loan-funded trade minus the market-adjusted return on its non-loan-funded peer. These are referred to as peer-adjusted abnormal returns.

Our approach to measuring insider profits is similar in spirit, but differs in a few details when compared to other studies of insider trading profits. Seyhun (1986) follows a standard market model approach, with estimation of the parameters over two windows; one preceding the insider trade, the other following it. However, evidence suggests that insiders tend to sell following share price runups, implying a high market model α which effectively biases the profit measure upward. Alternatively, Bettis, Coles, and Lemmon (2000) cumulate abnormal returns where the benchmark is the return to a portfolio of size and book-to-market equity matched firms. This approach recognizes the empirical influence of firm size and book-to-market equity on returns. However, Barber and Lyon (1997) show that such reference portfolios' returns suffer from rebalancing and skewness differences when compared to the individual firms' returns that they are subtracted from. Bettis, Coles, and Lemmon (2002) therefore create portfolios of event firms and conduct Fama/French regressions (including Carhart's momentum factor). The intercept from these regressions measures abnormal profits.

We require individual firm abnormal return measures for our cross-sectional tests. We eschew the market model approach of Seyhun (1986) because of the tendency of insiders to buy (sell) after stock price declines (runups), and calculate individual firm returns as cumulated marketadjusted returns. However, this does not control for the empirical influence of firm size and bookto-market equity on returns. We therefore follow Barber and Lyon's (1997) suggestion and carefully choose peers matched on those criteria, as well as industry. This also avoids the rebalancing and skewness issues associated with using a portfolio return to benchmark.

⁶Inadequate matches are when the closest peer in terms of size is more than 30% larger or smaller than the sample firm (see Barber and Lyon, 1997). Relaxation of this criterion does not affect our results.

³See Seyhun (1986) for a discussion of the pitfalls to using market model abnormal returns to measure abnormal profits to insider trading.

⁸Our results are robust to using CRSP's equal-weighted index to proxy market returns.

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Table I describes firm characteristics for four sub-samples of firms from the overall executive loan sample. The firm characteristics are measured at the end of the year preceding the first loan made by that firm to any executive. The four sub-samples are: 1) firms with at least one loan for purchase during the sample period, 2) firms with at least one loan for option exercise during the sample period, 3) firms with no loans for purchase, and 4) firms with no loans for option exercise. Within a share acquisition category (purchase or option exercise), there are a few differences between the loan and no-loan subsamples. We discuss the subsample medians rather than means because a few large values skew the means.

Firms with loans for stock purchase are typically larger than their no-loan counterparts. Median assets for the loan group are \$1.005 billion, compared to \$664 million for the no loan group. A Wilcoxon signed rank test for differences in the medians rejects the null at the 1% level. Book and market equity are also significantly larger in firms with a loan for stock purchase. Finally, firms with purchase loans also have significantly more shares outstanding. However, there are no significant differences between the two groups of firms in terms of book-to-market ratios. These results suggest caution when comparing the performance of insider trades between the two groups since firm size is a known determinant of stock returns. We attempt to control for this concern through our peer-adjusted return design.

In contrast to the stock purchase sample, there are few differences between the firms with loans for option exercise and their no-loan counterparts. Only median stock price relative to cash flow and book equity relative to market equity appear to be different across the groups. There are also no differences between the samples in the value of the corporate governance index, as measured by the Corporate Governance index from Gompers, Ishii, and Metrick (2003).⁹

III. Results

A. Differences in Profits to Loan-Funded versus Non-Loan-Funded Purchases

Table II contains descriptive statistics on the market-adjusted returns from insider trading both for share acquisitions funded by executive loans and for acquisitions that are not funded by executive loans, as well as for peer-adjusted returns. The first half of the table examines stock purchases and the second half examines option exercises.

Insider purchases that are funded by executive loans earn significantly positive returns over the 250 trading days following the purchase, on average. The mean market-adjusted return to the sample of 146 purchases is 17.6%, which is significant at the 1% level. The corresponding median value is 18.25%, which is also significant at the 1% level. Insider purchases not financed by executive loans earn larger market-adjusted returns. The mean 250 trading day profit is 54.8% while the median is 44.3%; both are significant at the 1% level.

The difference in the profitability of insider purchases that are loan funded and those that are not (our peer-adjusted abnormal returns) is confirmed in the third column of Table II. The mean peer-adjusted return is -28.5%, which is significant at the 1% level. Loan-funded purchases are associated with significantly lower profits than their non-loan-financed counterparts. The median differential profit is -2.2%, which is significant at the 1% level according to a signed rank test.

⁹However, it can be argued that governance indices might not be a useful measure of governance quality since they double count some items and do not allow for the distinctions between mechanisms that substitute for one another versus those that are complements in organization design.

Table I. Descriptive Statistics for Firms Making Executive Loans

This table presents descriptive statistics for firms making executive loans, at the end of the year associated with the first loan. If a firm has no loan, data are from the first year between 1996-2000 for which data is available on ExecuComp. Size is total assets; Book Equity is the book value of equity; Price/CF is the stock price divided by cash flow per share; Shares Out is the number of shares outstanding; Market Equity is the market value of equity; Book/Market is the book value of equity divided by the market value of equity; Governance index from Gompers, Ishii, and Metrick (2003). Larger values of Governance Index imply governance structure that is less favorable towards outside shareholders.

Panel A. Firms With at Least One Loan							
		For Purchase			For Option Exercise		
Variable Name	N	Mean	Median	N	Mean	Median	
Size (\$MM)	108	3,955.6	1,005.0***	130	1,907.1	679.4	
Book Equity (\$MM)	108	1,139.6	404.4***	130	625.2*	301.1	
Price/CF	108	28.5	25.7	130	28.5	20.9***	
Shares Out (\$MM)	107	87.0	45.0**	130	70.0	35.1	
Market Equity (\$MM)	102	4,478.6**	770.5**	128	2,508.2	807.2	
Book/Market	102	0.621	0.494	128	0.527	0.382***	
Governance	61	9.4	9.0	68	8.9	9.0	
		Panel B. Firm	s with No Loans				
Size (\$MM)	1,855	3,061.8	664.0	1,833	3,169.3	688.1	
Book Equity (\$MM)	1,856	1,027.8	284.0	1,834	1,065.5	290.1	
Price/CF	1,854	30.7	26.4	1,832	30.7	26.5	
Shares Out (\$MM)	1,853	82.3	32.8	1,830	83.5	33.4	
Market Equity (\$MM)	1,801	2,731.1	638.9	1,773	2,782.4	665.4	
Book/Market	1,800	0.552	0.466	1,772	0.554	0.468	
Governance	946	9.4	9.0	937	9.4	9.0	
*** Significant at the 0.01 le	evel.						

** Significant at the 0.05 level.

* Significant at the 0.10 level.

The peer-adjusted return results confirm that insider purchases financed by executive loans are atypical. The lower profits to these purchases strongly suggest that insiders are less interested in timing these trades based on private information. There are three potential explanations for this result. First, the firm might simply discourage buying before good news when they lend money for purchases. Alternatively, the firm might be experiencing poor stock performance and wish to signal a turn-around via insider buying activity. They finance this purchase, but the poor performance continues. Third, insiders that receive loans for purchases might feel that they are "playing with someone else's money," implying less of a need to profit from this trade. While we cannot prove that one explanation dominates the others, we present evidence below that is consistent with the third possibility.

In the last two rows of Table II, we examine the runup prior to the purchase and the number of shares purchased. Although there is no significant difference in runup between the two samples, loan-financed insider purchases are typically for a larger number of shares. The mean number of shares purchased is nearly 56,000 and the median is approximately 10,000. For non-loan-funded purchases, the average number of shares purchased is 8,418 and the median is 4,100. Only the median result is significant.

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Table II. Insider Purchases and Option Exercises, Financed by Executive Loans and Otherwise

This table presents descriptive statistics for insider purchases that are financed by executive loans and peers that are not. Peers are matched by two-digit SIC code, size, and book-to-market equity. Abnormal Return is the cumulated 250 day market-adjusted return over [t+1, t+250] where t is the insider trading date and the market return is proxied by the CRSP value-weighted index. The peer-adjusted abnormal return is the market-adjusted return on the loan-funded trade minus the market-adjusted return on its non-loan-funded peer. Runup is the cumulated 250 day market-adjusted return over [t-250, t-1]. Shares Purchased is the number of shares bought by the insider in the transaction. Cell values are means. Numbers in brackets are medians. The test of median difference from zero is the signed rank test.

	Insider Purchase			Insider Option Exercise		
	Loan- Funded (N=146)	Non-Loan- Funded Peer (N=117)	Peer- Adjusted (N=117)	Loan- Funded (N=132)	Non-Loan- Funded Peer (N=109)	Peer- Adjusted (N=109)
Abnormal	.1758***	.5482***	-0.2847***	0.1021	0.5387***	-0.4840***
Return	[.1825]***	[.4435]***	[-0.0220]***	[0.0309]	[0.6384]***	[-0.4098]***
Runup	-0.0060** [-0.0021]	-0.0066* [-0.0066]	0.0005	-0.0021	0.0076** [0.0152]***	-0.0090 [0.0001]
Shares	55,608*	8,418***	55,605	42,962***	32,714***	34,500***
Purchased	[9,500]***	[4,100]***	[3,800]***	[15,000]***	[15,000]***	[3,554]***

*** Significant at the 0.01 level.

** Significant at the 0.05 level.

* Significant at the 0.10 level.

The last three columns of Table II repeat the results for option exercises. As in the stock purchase results, option exercises funded by loans are less profitable. The mean peer-adjusted abnormal return is -48.4%, while the median peer-adjusted abnormal return is -40.98%. Both are significant at the 1% level.

As in the purchase sample, there is no significant difference in runup prior to the exercise between the two samples. However, option exercises financed by loans are typically for a larger number of shares. The mean difference in shares obtained is 34,500, which is significant at the 1% level. The median difference is only 3,554 shares, but this is still significant at the 1% level.

B. Determinants of Differential Profits

The differential profits to loan-funded and non-loan-funded stock acquisitions begs the question of why. This section examines whether the evidence is consistent with the hypothesis that insiders believe they are not risking their own wealth in these transactions. We begin with univariate examinations of differential profits, categorized by whether the loan is forgivable, repaid, or secured. We follow with multivariate tests that illustrate the marginal contribution of each category.

1. Univariate Results

Table III presents statistics on the peer-adjusted abnormal returns to insider purchases and option exercises, categorized by variables that are likely to affect the insiders' incentives to trade

Table III. Peer-Adjusted Abnormal Returns: Categorized by Loan Characteristics

This table presents means and tests of significance on peer-adjusted abnormal returns, categorized by the characteristics of the loan. The peer-adjusted abnormal return is the abnormal return earned on the loan-funded insider trade minus the abnormal return earned on non-loan-financed peer trades. Abnormal returns are the cumulated 250 day market-adjusted returns over [t+1, t+250] where t is the insider trading date and the market return is proxied by the CRSP value-weighted index. Peers are matched by two-digit SIC code, size, and book-to-market equity.

		i	Panel A: Insia	ler Purc	hases		
Loan Characteristics	Characteristic Variable = YES		Characteristic Variable = NO			P-Value for Test of Difference	
	N	Mean	t-stat	N	Mean	t-stat	Across Characteristics
Forgivable Principal and Interest	19	-0.7505	-17.09***	98	-0.1944	-2.45**	0.0027
Forgivable Interest Only	1	-0.0843	n/a	116	-0.2864	-4.09***	0.7898
Repaid	15	0.2862	1.93*	102	-0.3687	-5.04***	0.0013
Secured	43	-0.1149	-0.76	74	-0.3834	-6.04***	0.0617
		Pan	el B: Insider	Option l	Exercises		а _л уу <u>ал</u> уу алтан таратта
Forgivable Principal and Interest	23	-0.9113	-5.64***	86	-0.3697	-3.34***	0.0227
Forgivable Interest Only	1	-1.5592	n/a	108	-0.4740	-4.93***	0.2432
Repaid	23	-0.5703	-3.37***	86	-0.4609	-4.08***	0.9809
Secured	66	-0.5047	-3.69***	43	-0.4522	-3.06***	0.2676

*** Significant at the 0.01 level.

****** Significant at the 0.05 level.

* Significant at the 0.10 level.

on private information. Since overall mean and median results are similar (see Table II), we present mean peer-adjusted abnormal returns. Median results are available from the authors by request. The categorization variables are defined below:

Forgivable Interest and Principal: Equals zero if the loan is not forgivable, and one if both principal and interest are forgivable.

Forgivable Interest Only: Equals zero if the loan is not forgivable, and one if only interest is forgivable.

Repaid: Equals zero if the loan was not repaid (by the time this data was collected), equals one if the loan was repaid.

Secured: Equals zero if the loan was unsecured, and one if it was secured by stock.

The first rows in Table III indicate that forgivable loans (both principal and interest) finance insider purchases that earn significantly smaller peer-adjusted returns than non-forgivable loans. The average peer-adjusted abnormal returns for the sub-sample with *forgive* equal to one is -75.05%, significant at the 1% level. By contrast, non-forgivable loans to fund insider purchases

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are associated with peer-adjusted abnormal returns of -19.44%. The difference between the two groups is statistically significant at the 1% level. We examine the effects of interest only forgiveness on our results in the multivariate analysis below.

Apparently, forgivable loans lead insiders to trade less on private profitable information than is typical. This is consistent with our earlier argument that insiders might view forgivable loan-funded purchases as "playing with other people's money" and therefore might not require as high profits. The other two potential explanations for differential profits to loan-funded purchases do not suggest that the effect will be concentrated among forgivable loans.¹⁰

We confirm the above intuition by examining peer-adjusted abnormal returns for repaid versus non-repaid loans to fund purchases. Here, the vast majority of loans are not repaid as of the collection date, according to our data.¹¹ Repaid loans are associated with positive peer-adjusted abnormal returns. This implies that the loan-financed insider purchases are followed by larger market-adjusted returns than the non-loan-financed peer insider purchases. By contrast, non-repaid loans are associated with significantly negative peer-adjusted abnormal returns. The difference in the two peer-adjusted abnormal returns is statistically significant at the 0.13% level. If insiders can accurately forecast which loans will have to be repaid, this evidence supports the hypothesis that loan-funded purchases yield smaller profits because insiders believe they are not risking their own wealth in the transaction. Alternatively, it is possible that the reason the loan has not been repaid is because the stock has performed poorly, and the executive's wealth has been adversely affected.

Table III also indicates that unsecured loans are at the heart of the underperformance of loanfinanced insider purchases. Loans secured by stock have peer-adjusted returns that are negative, but not significant. In contrast, unsecured loans are associated with peer-adjusted abnormal returns that are significantly negative. The difference in the two peer-adjusted abnormal returns is statistically significant at the 6.17% level. One interpretation of this result is that insiders perceive secured loans as more likely to require repayment, necessitating reasonable return performance. As we show in the multivariate results, the marginal effect of the security status is negligible when we control for whether the loan is repaid.

Panel B of Table III examines the determinants of profitability for option exercises. We find that the returns to options exercises are significantly negative, regardless of whether the loan is forgivable, repaid, or secured. However, the magnitude of the returns is much more negative for the forgivable loans than for the non-forgivable loans. Specifically, the average peer-adjusted abnormal return is -91.13% for the forgivable sample in contrast to -36.97% for the non-forgivable sample. The difference in the two peer-adjusted abnormal returns is statistically significant at the 2.27% level.

Overall, our results support the idea that the poor performance of loan-financed insider share acquisitions is driven by the insiders' view that these trades do not involve risk to their own wealth.

2. Multivariate Results

We next examine the marginal contributions of loan forgiveness, repayment and security status on peer-adjusted abnormal returns in a multivariate framework. Table IV presents results from three regressions. We include two additional control variables that are specific to the insider making the loan-funded purchase: the amount of restricted stock held (restricted stock %) and the number of shares owned (share own %), both scaled by shares outstanding. Models I and II

¹⁰There is a causation issue here. The loan could be forgiven ex-post in response to poor performance.

¹¹It is possible that firms did not report that the loan was repaid or they have not yet requested repayment but plan to in the future. Finally, categorizing on the basis of future actual repayment presumes that insiders can accurately forecast whether repayment will be necessary, when the loan is originally made. Therefore, we believe the results using the forgivable characteristic are more representative of insiders' motivations, and simply present the repayment results for robustness.

Table IV. Multivariate Determinants of Abnormal Returns

This table presents regressions of the determinants of abnormal returns. In the first two regressions, the abnormal return is the peer-adjusted abnormal return (the abnormal return earned on the loan-funded insider trade minus the abnormal return earned on non-loan-funded peer trades). Abnormal returns are the cumulated 250 day market-adjusted returns over [t+1, t+250] where t is the insider trading date and the market return is proxied by the CRSP value-weighted index. The final column is for insider purchases with the average profit from all non-loan-funded purchases as "control." Forgivable Interest & Principal equals one if both interest and principal are forgivable, and zero otherwise. Forgivable Interest Only equals one if only interest is forgivable, and zero otherwise. Repaid equals one if loan is repaid (by date of data collection), and zero otherwise. Secured equals zero if loan is unsecured, and one if loan is secured by stock. Restricted Stock % is the number of shares of restricted stock the insider holds, scaled by shares outstanding. Share Own % is the total number of shares the insider owns, scaled by shares outstanding.

Variable	Ι.	11.	111.	
	Insider Purchases (Peer-Adjusted)	Option Exercises (Peer-Adjusted)	Insider Purchases (Portfolio Control)	
	-0.2699	0.2549	-0.0687	
Intercept	(-2.86)***	(1.22)	(-1.08)	
Forgivable Interest &	-0.6506	-0.8923	-0.4911	
Principal	(-3.18)***	(-3.84)***	(-3.18)***	
Forgivable Interest	0.1970	0.6173	-1.4294	
Only	(0.27)	(0.62)	(-7.65)***	
Repaid	0.5568	-0.6365	0.0792	
	(2.20)*	(-2.36)**	(0.44)	
	0.0216	-0.5263	0.3660	
Secured	(0.11)	(-2.45)**	(2.87)***	
D (1) 10 10/	0.1067	-0.4220	0.1786	
Restricted Stock %	(1.00)	(-4.43)***	(2.24)**	
	-0.0028	-0.000005	0.4415	
Share Own %	(-0.95)	(-0.00)	(0.20)	
N	117	109	154	
Adj. R^2	0.1264	0.1882	0.3470	
F-statistic	3.80***	5.17***	14.55***	

Significant at the 0.01 level.

** Significant at the 0.05 level.

* Significant at the 0.10 level.

examine peer-adjusted returns for stock purchases and option exercises, respectively. Model III differs from model I in the construction of the dependent variable: it is the return on loan-funded insider purchases minus the average return from all non-loan-funded purchases.

The estimates from model I confirm that forgivable loans are associated with poorer peeradjusted abnormal returns than their non-forgivable counterparts, while repaid loans are associated with better performance than their non-repaid counterparts. The coefficient on *forgive* (repaid) is negative (positive) and significant, with a t-statistic of -3.18 (2.20). The coefficient on *secured* is not significant.

The control variables are not important determinants of the peer-adjusted abnormal returns. The overall regression is significant (at the 1% level) and we are able to explain a large amount of the cross-sectional variation in differential profits to loan-funded insider purchases (adjusted $R^2 = .126$). A test of homoskedastic standard errors is rejected with 90% confidence (p-value = .07).

All of our conclusions hold when we calculate t-statistics using White's (1980) heteroskedasticity consistent standard errors.

The results for model I in Table IV are based on peer-adjusted abnormal returns. One problem with this approach is that our sample is limited to 117 observations. Therefore, we re-examine whether there is an association between the profitability of insider purchases and the financing mode of the purchases, for a sample of 7,706 observations that includes all firms, all insiders and all purchases during the period from 1996 to 2000. For this sample we run a multivariate regression with the dependent variable being the market-adjusted return over the 250 trading days following the insider purchase. The independent variables are based on results in Jeng (1999) and Bettis, Coles, and Lemmon (2000, 2002) and are as follows: a dummy variable equal to one if the insider purchase was financed with an executive loan (Loanbuy), the beta from a market model regression over the window starting 200 days and ending 51 days before the date of the insider purchase (Beta), the cumulative raw return over the window starting 250 days and ending one day before the date of the insider purchase (Runup), the natural log of the firm's bookto-market equity ratio at the end of the fiscal year preceding the insider purchase (BM), and the natural log of the firm's market value of equity at the end of the calendar year preceding the insider purchase (ME), a dummy variable equal to one if the insider is the CEO. President, or Chairman of the Board (Topexec), a dummy variable equal to one if the insider is an officer but not a top executive (Officer), a dummy variable that takes on a value of one if the insider is a Director but not an officer (Director), the standard deviation of firm stock returns over the period starting 250 days and ending one day before the insider trade date (Sdret), and a dummy variable equal to one if the insider purchase was in the typical allowed window after an earnings announcement.¹² The results are reported in Table V. The second column presents the results without dummy variables for SIC codes while the results in the third column are from regressions that include dummy variables for SIC codes.

The results in Table V indicate that the profitability of insider trades increases with firm systematic risk (beta) and the book-to-market equity ratio, and decreases with firm size, whether the insider is a Director, and whether the trade takes place in the allowed window. In addition, consistent with model I of Table IV, the larger sample indicates that insider purchases financed with company loans are less profitable than those that are not loan-financed.

Returning to Table IV, model II replicates the analysis in model I for the sample of option exercises. Here, we see that forgivable loans, repaid loans, *and* secured loans are all associated with poorer differential performance. The forgivable loans result is in line with what we see for open market insider purchases. The latter two results differ. One possible explanation for the difference is that option exercises need not always result in a net acquisition of shares. Insiders might choose to sell the shares obtained through option exercise on the open market. In our robustness checks, we control for this possibility and find that loan-funded option exercises that definitively increase insider shareholdings are similar to loan-funded open market purchases. Finally, we see that insiders with higher restricted stock holdings perform worse on a differential (relative to non-loan-funded purchases) basis.¹³

Model III re-examines the results for insider purchases, with the average profit from *all* nonloan-funded purchases as the "control." As in model I, we find that loans with forgivable interest and principal are associated with worse performance. However, in model III, secured loans are

¹²This period is $\{t+3, t+12\}$, where t is the earnings announcement date. See Bettis, Coles, and Lemmon (2000) for more details.

 $^{^{13}}$ We also select loan-funded option exercises that definitively increase insider holdings and examine whether their profits differ from all other option exercises using a regression similar to the one reported above. The coefficient on the loanbuy dummy is again significantly negative (t = -2.15).

Table V. Multivariate Determinants of Market Adjusted Returns

This table presents regressions of market-adjusted returns on the following variables: Loanbuy=1 if the insider purchased shares with executive loan financing; Beta is the firm's market model beta calculated over [-200, -51] where 0 is the insider trade date; Runup is the cumulative raw return to the firm over [-250, -1]; $\log(B/M)$ is the natural log of the book equity to market equity ratio; $\log(ME)$ is the natural log of firm market value of equity; Topexec=1 if the insider is either the CEO, President, or Chairman of the board, and zero otherwise; Officer=1 if the insider is an officer but not top executive, and zero otherwise; Director=1 if the insider is a director but not officer, and zero otherwise; Sdret is the standard deviation of firm stock returns over [-250, -1]; DumAllow=1 if the insider purchase was in the typical allowed window for trading after an earnings announcement [t+3, t+12] where t is the earnings date (see Bettis, Coles, and Lemmon, 2000). SIC code dummies are for the first digit of the SIC code. T-statistics are in parentheses.

Variable Included	No SIC Code Dummies	SIC Code Dummies
	1.22***	1.38***
Intercept	(13.25)	(14.53)
· ·	-0.15***	-0.16***
Loanbuy	(-2.80)	(-3.11)
D. (0.05***	0.02
Beta	(2.99)	(1.07)
D	0.10	0.13
Runup	(0.57)	(0.68)
	0.03**	0.03**
log(B/M)	(2.22)	(2.52)
	-0.05***	-0.05***
log(ME)	(-9.64)	(-8.35)
T e	-0.01	-0.01
Topexec	(-0.22)	(-0.19)
0.000	-0.05	-0.04
Umcer	(-1.08)	(-0.86)
D' /	-0.09**	-0.09**
Director	(-2.17)	(-2.11)
0.1	-0.002	-0.005
Saret	(-0.26)	(-0.67)
Dumplian	-0.05***	-0.05***
Dumanow	(-3.18)	(-3.61)
Ν	7,706	7,706
Adj. R ²	0.0259	0.0437
F-statistic	21.45***	20.57***
*** Significant at the 0.01 level.		

** Significant at the 0.05 level.

associated with better performance, as are higher insider holdings of restricted stock. These differences from the model I results would seem to be due to the use of control firms that are not as closely matched to loan-funded insider purchase firms as the peers.

C. The Relation Between Insider Purchases and Pay-Performance Sensitivity

One possible reason for providing loans to insiders for purchasing stock and exercising options is that it is an additional mechanism, beyond stock and option grants/repricing, to move an executive quickly to a target level of incentives. In this section we provide a direct test of this hypothesis.¹⁴ Specifically, we use the Core and Guay (1999) methodology to estimate the deviation of the actual pay-performance sensitivity (PPS) from the target level, i.e., we estimate the residual PPS. A positive (negative) residual implies that the actual PPS is higher (lower) than the benchmark level. We examine these residuals in both the year before and the year of the insider purchase and then analyze whether loan-financed insider purchases result in a change in residual PPS. As stated in Hypothesis 3, we expect insiders who are awarded loans to have negative residual PPS prior to the awarding of the loan.

The results of this analysis are presented in Table VI. Panel A presents the mean and median residual PPS in the year before the insider purchase, while panel B presents the corresponding results for the year of the insider purchase. As can be seen from the table, in the year prior to the loan-funded insider purchases, insiders that execute the loan-funded purchase have a negative residual PPS, while the residual PPS for executives who do not have a loan-funded purchase is approximately zero. In contrast, in the year of the loan-funded purchase, the residual PPS for executives who do not have a loan-funded purchase is positive and significantly higher than the residual PPS for executives who do not have a loan-funded purchase moves the average executive to a significantly more positive PPS and supports our hypothesis that loan-financed insider purchases are an additional method to move an executive quickly to a target level of incentives.

D. Robustness

Until now, our treatment of option exercises as share acquisitions assumes that insiders exercise the options and keep the shares acquired on exercise, thus increasing their ownership in the firm. However, this need not be the case. Some options exercises are followed by open market insider sales.¹⁵ In fact, loan financing might impact the likelihood that this happens. Since loan financing of option exercises helps defray the insider's out-of-pocket expense, it might reduce the need to sell shares obtained through the option exercise to help pay taxes due or exercise costs. Alternatively, if the loan is designed to increase the manager's pay-performance sensitivity, sales following the exercise would defeat this purpose and might be restricted.

In Panel A of Table VII, we examine a contingency table relating the incidence of open market insider sales (OMIS) within one year of option exercise to whether the option exercise was loanfunded or not. There are 154 loan-funded option exercises (without regard to other data availability) and 18,688 non-loan-funded option exercises. The null hypothesis is that loan funding of the option exercise and the incidence of open market insider sale are independent.

The test statistic from the contingency table equals 3.48. This implies rejection of the null hypothesis with better than 90% confidence (the critical value for 90% confidence is 2.706). This result provides some evidence that loan funding of option exercise, and whether the insider sells shares within one year after the option exercise, are not independent. Examining the actual and expected numbers (which are in brackets and are based on the null hypothesis of independence) suggests that loan-funded option exercises are less likely than non-loan-funded option exercises to have an open market insider sale within a year following the exercise.

The above result implies two countervailing effects that might impact our previous results on the relation between loan repayment and peer-adjusted returns following option exercises. In particular, loan financing reduces the incentive of the insider to earn significant peer-adjusted returns because of the reduced wealth at risk. However, it also raises the incentive to earn excess

¹⁴We thank the referee for this suggestion.

¹⁵Chen and Zhao (2005) provide evidence that option exercises followed by stock sales contain different information than stand-alone option exercises.

Table VI. Loan-Funded Insider Purchases and Pay-Performance Sensitivity

This table presents results from comparing residuals of pay-performance sensitivity (PPS) from executiveyears that either contained or did not contain loan-funded insider purchases. PPS is calculated using the method outlined in Core and Guay (1999). Panel A examines the PPS residual in the year prior to the purchase, and Panel B examines the residual in the year of the purchase. The sample is all open market insider purchases during 1996 through 2000.

Panel A: Year –1					
	Loan-Funded Purchases	Non-Loan-Funded Purchases	Difference		
Mean PPS Residual	-0.1998	-0.0002	F = 2.89*		
Median PPS Residual	-0.0372	-0.0282	$\chi^2 = 0.74$		
	Panel B:	Year 0			
Mean PPS Residual	0.4633	-0.0004	F = 17.62***		
Median PPS Residual	0.5590	-0.0283	$\chi^2 = 29.57 * * *$		
*** Significant at the 0.01 leve	2]. 2]				

returns because loan financing implies a higher likelihood that insiders retain the shares acquired through exercise, thus reducing their diversification.

The results in Panel A of Table VII do not control for the effects of firm-specific characteristics on the incidence of open market insider sales following an option exercise. To control for factors such as firm size, book-to-market ratio and price to cash flow, we run a logistic regression with these variables as controls. The results are presented in Panel B of Table VII. The sample for the logistic regression is all 154 loan-funded option exercises and a subset of the non-loan-funded option exercises. In Panel A, the sample of non-loan-funded option exercises was all option exercises by insiders in firms that never have loan funding for option exercises during the sample period. We do not use all of the latter observations in the logit since the number of ones (loan funding) in the dependent variable would be vastly outnumbered by the number of zeroes (no loan funding).¹⁶ Instead, we choose a subset of non-loan-funded option exercises made by insiders in a matched sample. As usual, the matching is on two-digit SIC code, size, and book-to-market equity. Matching restrictions led to 101 matched pairs of loan-funded and non-loan-funded option exercise; the other 42 did not. The sample is smaller (101 versus 109) than in Tables II through IV because of the additional data requirements to calculate the total assets and price to cash flow control variables.

To run the logit, we stack the individual observations from each matched pair. In other words, each pair has a loan-funded option exercise and a non-loan-funded option exercise. These are treated as separate observations. The logit has 202 observations: 101 loan-funded and 101 non-loan-funded. Among these 202 observations, some are option exercises that are followed by an open market insider sale within one year (118), and others are not (84).

¹⁶Palepu (1986) discusses the tradeoff between using a sample with an equal representation of ones and zeros for the dependent variable and using a full but unbalanced sample. Since the purpose of our regression is solely to determine whether loan financing is associated with the probability of an open market insider sale following the option exercise, we do not use the Palepu (1986) correction. The constant term is the only parameter affected by this correction. If we were to use the regression to classify firms into those predicted to have open market sales versus those not, then it would be necessary to make an appropriate correction to the intercept to avoid any bias.

Table VII. Insider Sales Following Option Exercises

Panel A is a contingency table relating incidence of open market insider sale (OMIS) within one year of option exercise to whether the option exercise was loan funded or not. Numbers in brackets are expected number of cases under the null hypothesis that loan funding of option exercise and insider sale after option exercise are independent. Numbers not in brackets are actual occurrences. Panel B (C) shows a logistic regression where the dependent variable equals one if there is an open market insider sale within one year (month) of the option exercise, zero otherwise. Variables are defined in Table 1.

	Panel A: Contingent	cy Table	
	OMIS Within One Year of Option Exercise	No OMIS Within One Year of Option Exercise	Totals
Loan Funded	94 [105]	60 [49]	154
Not Loan Funded	12,722 [12,711]	5,966 [5,977]	18,688
Totals $\chi^2 = 3.4781*$	12,816	6,026	18,842
F	Panel B: Logit (OMIS Within One Y	lear of Option Exercise)	
Variable	Parameter Estimate	Wald (Chi-Square)	P-Value
Intercept	-16.3340	15.6713***	<.0001
Loan	-0.7919	4.4457**	0.0350
log(size)	-1.1720	7.7792***	0.0053
log(market equity)	1.6652	14.1182***	0.0002
Book/Market	2348.7	4.0254**	0.0448
Price/CF	0.0216	10.9302***	0.0009
Ра	nnel C: Logit (OMIS Within One M	onth of Option Exercise)	
Variable	Parameter Estimate	Wald (Chi-Square)	P-Value
Intercept	-20.7520	21.6111***	<.0001
Loan	-0.8194	5.0364**	0.0248
log(size)	-1.6982	14.6488***	0.0001
log(market equity)	2.1920	21.1568***	<.0001
Book/Market	2684.6	4.9352**	0.0263
Price/CF	0.0142	7.5397***	0.0060
*** Significant at the 0.01 le ** Significant at the 0.05 le * Significant at the 0.10 le	evel. evel. evel.		

The dependent variable equals one if the option exercise is followed by an open market insider sale within one year, and equals zero otherwise. The key independent variable is whether the option exercise is loan funded or not. Other independent variables include log(total assets), log(market value of equity), book-to-market equity and price to cash flow. The results indicate that loan-funded option exercises are less likely to have an open market insider sale within one year following the exercise. This result supports the contingency table result in Panel A.

Panel C of Table VII repeats the logistic analysis, asking whether the likelihood of open market insider sales within one month of the option exercise is affected by loan funding or not. The conclusions are the same as in Panel B. Overall, loan funding of option exercise appears to reduce the need to sell shares for tax payment purposes.¹⁷

¹⁷This result also supports our hypothesis that loans help to increase the PPS for the insider.

In Table VIII, we rerun the basic regression from Table IV on the pooled samples of open market purchases and option exercises that are not followed by open market insider sales, where both samples are loan financed. By sampling only on situations when we know the insider acquired shares, we control for one side of the countervailing effects noted above. Specifically, the increase in shares and concomitant greater incentive to earn excess returns is built into the sample. Therefore, the effect of loan financing, especially forgivable and/or not repaid, is to strictly reduce the incentive to earn excess returns. Models I and II differ only by the inclusion of a dummy variable equal to one if the observation is an open market insider purchase, and equal to zero if it is an option exercise (Purchase Dummy).

The results mirror those in Table IV. Forgivable loan-funded share acquisitions are associated with worse peer-adjusted abnormal returns than non-forgivable ones. Also, when loans for share acquisition are not repaid, excess returns are lower than when the loan is repaid. Both results suggest that insiders recognize when their wealth is not at risk and have less incentive to trade on inside information.¹⁸ Finally, differential profits are higher when the share acquisition is through an open market purchase.

IV. Conclusion

The literature on signaling via insider trading is well established. However, prior studies view the typical insider transaction as an attempt to profit from private information. This supposition might be premature, but it has often been difficult to distinguish trades that are more versus less likely to represent such attempts. We examine insider trades financed by company loans. If such loans result in insiders assuming that they are less likely to be risking their own wealth, they might feel less need to earn significant profits on such trades. Consistent with this hypothesis, we find that loan-financed insider purchases are followed by less positive market-adjusted returns in the year following the trade than a set of matched peers. This result suggests different motives to insider purchases financed by executive loans. We find similar results for loan-financed option exercises when compared to their non-loan-financed counterparts.

We also find that the poorer return performance to loan-financed purchases is driven by forgivable loans and loans that are not repaid. These findings support our argument that insiders view loan-financed purchases as not warranting trading on private information. In contrast, poorer performance on loan-financed option exercises is associated with loans that are repaid. We investigate further and find that option exercises that are not followed by insider sales (i.e., those that are associated with increases in shareholdings) more closely resemble straight open market insider purchases. We argue that loan financing of option exercises has countervailing effects. It reduces the likelihood of a subsequent open market insider sale because the loan defrays the insider's out-of-pocket costs. The subsequent increase in shareholdings due to the option exercise reduces the insider sale diversification and raises the incentive to earn excess returns. However, loan financing in and of itself reduces the amount of wealth the insider perceives to be at risk, and therefore reduces the incentive to earn excess returns.

Finally, we find that in the year prior to loan-funded insider purchases, insiders that execute the loan-funded purchase have a negative residual PPS, while the residual PPS for executives who do not have a loan-funded purchase is approximately zero. In contrast, in the year of the loan-financed purchase, the average executive who executes a loan-financed purchase has a positive

¹⁸This result is also consistent with insiders not repaying loans if the stock price falls.

Table VIII. Multivariate Determinants of Abnormal Returns

This table presents regressions of peer-adjusted abnormal returns for the combined sample of insider purchases and option exercises that were not followed by open market insider sales within one year. The peer-adjusted abnormal return is the abnormal return earned on loan-funded insider trade minus the abnormal return earned on the non-loan-funded peer trades. Abnormal returns are the cumulated 250 day market-adjusted returns over [t+1, t+250] where t is the insider trading date and the market return is proxied by the CRSP value-weighted index. Peers are matched by two-digit SIC code, size, and book-to-market equity. Forgivable Interest & Principal equals one if both interest and principal are forgivable, and zero otherwise. Forgivable Interest Only equals one if only interest is forgivable, and zero otherwise. Repaid equals one if loan is repaid (by date of data collection), and zero otherwise. Secured equals zero if loan is unsecured, and one if loan is secured by stock. Restricted Stock % is the number of shares of restricted stock the insider holds, scaled by shares outstanding. Share Own % is the total number of shares the insider owns, scaled by shares outstanding. Purchase Dummy equals one if the observation is an open market insider purchase, and zero if it is an option exercise.

Variable	I	11
Intercent	-0.3034	-0.6481
Intercept	(-3.35)***	(-4.54)***
Foreinghle Interest & Dringing!	-0.5497	-0.5471
roigivable interest & rincipal	(-2.93)***	(-2.99)***
Forgivable Interest Only	-0.6199	-0.4829
r orgivable interest Only	(-1.09)	(-0.87)
Penaid	0.4249	0.4254
Repaid	(2.18)**	(2.24)**
Secured	-0.1086	-0.0291
Secured	(-0.79)	(-0.21)
Pestriated Stock %	0.0703	0.0429
Restricted Stock 76	(0.76)	(0.48)
Share Own %	-0.0028	-0.00004
Share Own 76	(-1.57)	(-1.40)
Purchase Dummy		0.4237
r urchase Dunniny		(3.06)***
N	159	159
Adj. R ²	0.0604	0.1096
F-Statistic	2.69**	3.78***
*** Significant at the 0.01 level.		

** Significant at the 0.05 level.

residual PPS that is significantly higher than that of the average executive that does not purchase stock with a loan. This suggests that loan-financed insider purchases are an additional method to move an executive quickly to a target level of incentives, and that they are not necessarily indicative of agency problems in the firm.

One concern with the applicability of our study is that the Sarbanes-Oxley Act of 2002 (SOX) makes it unlawful for any public company to provide loans to its executive officers and directors. Although this Act contains a few exemptions, it generally proscribes the type of activity that we study. However, while SOX bans new loans, this does not detract from the general interest of examining insider trades that are more or less likely to contain inside information. In addition, loans made prior to July 30, 2002 were "grandfathered" and could be outstanding for years. Finally, the U.S. General Accounting Office, Congress's investigative arm, has requested empirical evidence pertaining to the Act, and we believe our paper provides this.■

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