Internet Appendix

Short Squeezes and Their Consequences

I. The Share Lending Market and the Mechanics of Short Selling

Naked short selling consists of selling shares without borrowing them. This practice has been banned by regulators in the U.S. and most other countries. Covered short selling is the legal and legitimate way to profit from overpriced securities. It requires the short seller to borrow shares and return them to the lender when the position is closed.

Institutional investors are the main source of share loans. As of early 2018, 46% of shares available for lending came from mutual funds, 20% from pension funds, and 8% from insurance companies.[1] Institutions that follow passive or indexing investment strategies are particularly large suppliers of shares, and use share lending as a means to augment returns.

There is no centralized market for borrowing shares.[2] Typically, an institution lends shares through a lending agent, often the custodian that handles the institution's securities. The lending agent generally serves as custodian for a number of institutions that have agreed to lend shares and uses an algorithm to allocate shares from the different potential lenders to loans. The borrower of shares, a hedge fund for example, will typically borrow the shares through a prime broker rather than directly from the lending agent. Lending agents prefer to lend to prime brokers. Lending agents indemnify lenders against losses from a borrower default, and prime brokers, who are usually bank subsidiaries, present less counterparty risk than hedge funds. So, in a typical short sale, the ultimate lender will leave shares with a lending agent, who lends the shares to a prime broker, who in turn sells the shares on behalf of the ultimate borrower, the hedge fund. Institutional investors can lend shares without a lending agent, but there are a couple

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[1] See Bassler and Oliver (2018).
[2] Reed (2013) provides details of the operation of the securities lending market.

of reasons why they seldom do so. First, it is easier to locate shares with a lending agent who represents numerous potential lenders than with a single institution. Hence prime brokers usually approach a lending agent when they need to borrow shares. In addition, direct lending requires the lending institution to bear the costs of the personnel and infrastructure needed to carry out a securities lending program.

In return for the securities, the lender (through its lending agent) will receive collateral typically worth 102% of the value of the securities. Or, in other words, the collateral is the proceeds from the short sale plus 2%. The loan is marked to market daily and more collateral is required if the stock price increases. Most collateral is cash, but non-cash forms of collateral, like U.S. government securities are becoming more common. In addition, the Federal Reserve's Regulation T has traditionally required short sellers to post 50% of the value of a short sale with the prime broker as collateral. Hence for every $2 worth of stock sold short, the short seller needs to put up $1 in margin. Hedge funds have been able to circumvent this requirement by locating overseas and trading through a foreign prime broker. The leverage permitted short sellers under these arrangements depends on local laws and the prime broker's assessment of the risk presented by the hedge fund.

The lender receives a fee for lending shares. If the collateral is in cash, the lending agent will invest it in short term securities and pay a rebate rate to the borrower that is less than the interest earned. The difference between the short term interest rate and the amount rebated to the borrower on his collateral is the fee. A portion of this fee is retained by the lending agent, but most goes to the lender. In cases where the stock is hard-to-borrow or on special, the rebate rate may be negative. In this case the borrower receives no interest on his collateral and instead pays the lender. When the rebate rate is negative the fee is the interest earned by the lender on the

collateral and the extra payments made by the borrower. If securities are used as collateral, a daily fee is paid directly. For most stocks, fees are minimal at less than 40 basis points per year. For stocks that are on special, fees can easily exceed 10% per year.

The great majority of loans are open, meaning that the lender can recall the loaned shares at any time. Some lenders, like mutual funds or pension funds are required by regulatory agencies to be able to recall loaned shares at any time. Term loans are loans with a fixed duration. They provide less flexibility for the lender but generate higher fees.

II. Short Squeezes and Borrowing Fee Increases

Short squeezes are associated with increases in borrowing fees. But, while short squeezes can be said to cause trading costs and missed returns, it is not as clear that they cause increased borrowing fees. Both short squeezes and fee increases may be said be a result of a decreased supply of available shares. D'avolio (2002) (p 280) notes that there "is a market convention for existing lenders not to reprice outstanding loans." In this case, fees are increased after loans are recalled. Engelberg, Reed, and Ringgenberg (2018) observe that the risk of fee increases is closely tied to the risk of short squeezes. They state (page 760) that "share recalls and loan fee increases both reflect the same underlying event: changes in lending conditions that leave the loan market temporarily out of equilibrium. As a result, recalls and fee changes are not independent risks: a share recall can be seen as an extremely high loan fee."

If borrowing fees increase with squeezes, it is challenging to calculate how much the fee increase affects short selling profits. Borrowing fees are mean reverting. An increase in fees that accompanies a squeeze is likely to be eliminated within days or weeks.

Table IA1 reports regressions of daily fee changes on the previous day's fee and dummy variables for all lender and current lender squeezes on that day. All regressions include fixed effects for the date. For comparison, the sample period used here is 2015-2019. Panel A reports regression results by utilization on the previous day.

The first row reports results when all stock days are used. The coefficient on fee is -0.0125, indicating that high fees do decrease toward their mean. The coefficient on the all lender squeeze dummy is 0.0051, indicating that all else equal, borrowing fees increase by 51 basis points when an all lender squeeze occurs. The coefficient the dummy variable for a current lender squeeze is 0.0027, implying a 27 basis point increase on days when there is a current lender squeeze. Both of these dummy variables are highly significant. Regression estimates are similar for different utilization categories in which utilization is less than 90%. In each case, the coefficient on the previous day's fee is negative and highly significant, indicating that fees regress toward their mean. In each case, the coefficients on each squeeze dummy variable is positive and significant. Coefficients are larger on the all lender squeeze dummies suggesting that these squeezes are associated with larger changes in fees. Results are a bit different when utilization is 90% or more. The coefficient on the previous day's fee is still negative and significant, but the coefficients on the squeeze dummies are now small in absolute value and insignificant.

Panel B reports regressions results by the previous day's fee. The coefficient on the previous day's fee is negative and significant for all but the fee range of 0.5% to 1.0%. In that regression the coefficient is positive but insignificant. In each regression the dummy variable for each type of squeeze is positive and highly significant. It is instructive to consider the regression for fees of 10% or more. The coefficient on the previous day's fee is -0.0201. So, without a

squeeze, a fee of 10% would be expected to fall by 0.10 x 0.0201 or 20 basis points. The coefficient on an all lender squeeze is 0.0069, so the squeeze would be associated with a 69 basis point increase in fees. So, much of the increase in fees associated with a squeeze is actually reflected in a slower decline in fees. And, if fees are dropping by 2% per day, fees can be expected to decrease to the level they had before the squeeze in less than four days.

I next use the regression coefficients from Table IA1 to estimate the increase in fees that results from short squeezes. If, for example, there is an all lender squeeze for a stock with utilization between 25% and 50%, I assume that the annual borrowing fee increases by 68 basis points on that day. That extra borrowing fee will decrease (with the rest of the borrowing fee) by 1.84% per day. I assume 252 trading days in a year and calculate the extra borrowing fee paid on any particular day as

$$Daily\ Extra\ Fee = \sqrt[252]{(1 + Annual\ Extra\ Fee)} - 1.$$

I then average the total paid in extra fees across all stock months. Table IA2 reports the expected value of fee increases along with the total of squeeze costs from trading costs and missing returns. Panel A reports monthly results by utilization while Panel B reports quarterly results by utilization.

Table IA2 indicates that fee increases directly attributed to short squeezes have only a small impact on total short selling costs. When monthly holding periods are considered, the expected cost of fee increases from short squeezes is less than 1 basis point. With quarterly holding periods, the increase in fees from short squeezes is highest when utilization is greater than 90%, and then it is only 3.8 basis points. This is not surprising when the coefficients in Table IA1 are considered. The coefficient on dummy variables for a squeeze indicates that

annual fees increase less than 1% when a squeeze occurs. The expected monthly increase in fees would be 1/12 of that *if a squeeze occurred.*

III. The Costs of All Lender Squeezes Only

Table IA3 reports excess returns along with the costs of short squeezes by utilization. For this table though, only all lender squeezes are considered. Most squeezes are current lender squeezes. All lender squeezes, however, generally result in a much larger reduction in shares on loan.

Panel A reports results for one-month periods. For low levels of utilization, the costs of all lender short squeezes are very small. When utilization is less than 25%, the expected trading costs from all lender squeezes range from 0.5 to 0.7 basis points. When both all lender and current lender squeezes was considered in Panel A of Table 8, trading costs ranged from 5.7 to 7.1 basis points. All lender squeezes are far less common than current lender squeezes when utilization is low. On the other hand, when utilization is 90% or more, the direct costs of short squeezes is mostly attributable to all lender squeezes. When both all lender and current lender squeezes are considered in Table 8, the lost excess return over the month for short sellers from being out of the market after squeezes is -30.9 basis points. In Table IA3, when only all lender squeezes are considered, the lost excess return is -29.4 basis points. The estimated extra trading costs from short squeezes ranges from 56.4 basis point to 73.0 basis points when both all lender and current lender squeezes are considered. When only all lender squeezes are considered, in Table IA3, the estimated extra trading costs are only slightly lower at 53.4 to 68.9 basis points.

Note that the estimated borrowing fees are slightly higher when only all lender squeezes are included. This is true for all utilization categories. When utilization is 90% or more,

borrowing fees average 2.531% per month when all squeezes are considered. When only all lender squeezes are included in Panel A of Table IA3, borrowing fees are 2.550% per month. Borrowing fees are not paid when a short seller is forced to close a position and remain out of the market. That is more common when both all lender and current lender squeezes are considered. Hence expected borrowing fees are higher when just all lender squeezes are considered.

Panels B, C and D include quarterly results for stocks sorted on utilization and monthly and quarterly results for stocks sorted on fees. For high utilization stocks, most of the costs of short squeezes come from all lender squeezes, so results are little changed when only all lender squeezes are considered. For stocks with borrowing fees of 25% or more, trading costs over one month from short squeezes range from 28.6 basis points to 36.6 basis points when both all lender and current lender squeezes are considered, but only 12.1 basis points to 15.8 basis points when only all lender squeezes are considered.

The expected costs of short squeezes are small for most stocks most of the time. The expected costs of short squeezes are large when fees are high and particularly when utilization is high. For high utilization stocks, the expected costs of short squeezes eliminate most of the excess returns to short selling, even when only all lender squeezes are considered.

IV. Turnover and Short Squeezes

D'Avolio (2002) observes that share turnover is high for stocks with recalled loans. He suggests that high turnover means that it is more likely that a share lender will sell stock and recall his loan. Cohen, Diether, and Malloy (2007) also note that recall risk is highest on high volume days. High turnover may be associated with being hard-to-borrow for two reasons. First, the only reason why some investors would hold hard-to-borrow shares while others pay large

fees to short them is that they disagree strongly about the value of the stock. Disagreement leads to trade and high turnover. A second reason, articulated by Cochrane (2002), is that investors may buy stocks that they know will provide poor long-run returns for short-term trading. Hence investors who buy hard-to-borrow stocks without lending them may expect to hold them for very short periods of time. This again means that turnover should be very high for hard-to-borrow stocks.

Panel A of Table IA4 reports mean and median daily stock turnover (volume divided by shares outstanding) for different levels of borrowing fees. Days with turnover greater than 500% are omitted.[3] Across all stock days, the median turnover is 0.49% and the mean is 0.88%. Turnover is right-skewed with many days with moderate turnover and a few days of very high turnover. Mean turnover is highest at 1.26% for stock-days in which borrowing fees are greater than 10%. There is no clear relation between borrowing fees and turnover for lower fee levels.

Turnover by levels of utilization is reported in Panel B. Here the relation between turnover and being hard-to-borrow, as measured by utilization, is strong. Turnover for stock days with utilization below 25% has a mean of 0.68% and a median of 0.42%. Turnover increases monotonically with utilization and reaches 2.71% per day when utilization is over 90%. It is interesting that the median turnover does not seem to have much relation with utilization. When utilization is high, high turnover is driven by a few days with large volume.

Panel C documents the relation between turnover and short squeezes more directly. For those stock-days without an all lender or a current lender short squeeze, the mean turnover is 0.89% and the median turnover is 0.51%. When there is an all lender squeeze, the median

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[3] These days are omitted because data errors could be behind high turnover in some cases. With high frequency trading though, turnover rates this high are possible. In many cases, these extremely high turnover are accompanied by returns that are also very large in absolute value. Results are similar when these observations are included and the relation between turnover and utilization (or fees) is slightly stronger.

turnover barely changes at 0.53%, while the mean increases to 3.30%. When there is a current lender squeeze, the mean turnover is 1.46% and the median is 0.20%. Short squeezes are associated with high mean levels of turnover.

V. Short Squeezes and Uncertain Returns to Short Selling

The previous table reported the expected short squeeze costs that a short seller would face over a month or quarter. The actual costs of short squeezes vary significantly across stocks and months. They are zero for the many stocks that do not have a squeeze during a month. On the other hand, some high utilization stocks, may experience several squeezes during a month or quarter.

Table IA5 reports the expected monthly and quarterly standard deviations of costs from squeezes for stocks sorted on utilization and fees. Standard deviations are reported for both the costs of trading from squeezes and the total of trading costs plus costs of missing excess returns. Trading costs are calculated using each of the four spread measures. Panel A reports monthly standard deviations for stocks sorted by utilization. When all months are included, the standard deviation of trading costs from squeezes ranges from 0.515% when effective spreads are used to 0.620% when TAQ quoted spreads are used. Abnormal returns that are missed as a result of a squeeze can be large, so the standard deviations of the total costs from squeezes are much larger than the standard deviation of trading costs from squeezes. They range from 2.27% with effective spreads to 2.296% with time-weighted quoted spreads from TAQ.

The standard deviation of costs attributable to squeezes increases with utilization. When utilization is 90% or more, the standard deviation of trading costs from squeezes ranges from

1.252% to 1.601% and the standard deviation of total costs from squeezes ranges from 8.357% to 8.415%. As shown in Panel B, the standard deviation of squeeze costs also increases with fees. For stocks with fees of 25% or more, the standard deviation of trading costs from short squeezes ranges from 1.001% to 1.266%. The standard deviation of total costs ranges from 5.469% to 5.537%.

Panels C and D report standard deviations of quarterly squeeze costs by utilization and by fee. The standard deviations of squeeze costs are much larger over entire quarters than months, and are much higher than the expected squeeze costs in Table 9. The standard deviation of costs increases both in fees and in utilization.

Table IA5 reports the standard deviation of costs that are directly attributable to squeezes as a proportion of the value of the short position. They are large and add to the uncertainty that short sellers face. Even so, the uncertainty is understated. The calculations assume that whenever a short squeeze occurs, all short sellers have an equal proportional reduction in their short positions. That of course is not true. For a given stock during a given month, the costs of short squeezes vary across investors. Some do not have their shares recalled and do not bear any costs. Others may have to close their entire short position and will bear much larger costs. Short squeezes inflict direct costs on short sellers and these costs are uncertain when positions are initiated.

Table IA1

Short Squeezes and Lending Fee Changes, 2015-2019.

Daily fee changes are regressed on the fee the previous day and dummy variables that equal one if here was an all lender or current lender squeeze on that day. Each regression includes fixed effects for the date.

Utilization$_{t-1}$	Intercept	Fee$_{t-1}$	D$_{All Lender}$	D$_{Current Lender}$	Obs.	Adj. R^2
Panel A. Regressions with Firms Sorted on Utilization						
All	0.0004	-0.0125	0.0051	0.0027	3,722,337	0.0064
	(39.76)	(-151.64)	(27.32)	(23.31)		
< 25%	0.0004	-0.0291	0.0034	0.0028	2,885,645	0.0149
	(52.39)	(-206.35)	(5.43)	(28.11)		
25% - 50%	0.0006	-0.0184	0.0068	0.0026	455,206	0.0129
	(20.66)	(-75.74)	(6.88)	(10.12)		
50% - 75%	0.0011	-0.0120	0.0094	0.0043	217,161	0.0069
	(15.25)	(-37.24)	(7.86)	(7.97)		
75% - 90%	0.0035	-0.0142	0.0060	0.0044	89,605	0.0086
	(17.43)	(-25.76)	(3.63)	(4.38)		
90%+	0.0121	-0.0211	-0.0006	0.0011	66,646	0.0125
	(22.35)	(-26.47)	(-0.44)	(0.74)		
Panel B. Regressions with Firms Sorted on Borrowing Fees						
All	0.0004	-0.0125	0.0051	0.0027	3,722,337	0.0064
	(39.76)	(-151.64)	(27.32)	(23.31)		
< 0.5%	0.0018	-0.4589	0.0107	0.0128	2,506,596	0.0063
	(62.83)	(-56.29)	(32.16)	(80.67)		
0.5% - 1%	0.0001	0.0136	0.0039	0.0053	257,053	0.0045
	(1.30)	(1.34)	(6.34)	(18.77)		
1% - 5%	0.0007	-0.0266	0.0031	0.0017	472,032	0.0025
	(12.31)	(-13.20)	(9.17)	(10.25)		
5% - 10%	0.0010	-0.0242	0.0032	0.0010	194,424	0.0032
	(4.42)	(-7.96)	(8.31)	(4.49)		
10%+	0.0053	-0.0201	0.0069	0.0018	292,232	0.0099
	(29.03)	(-51.86)	(8.72)	(3.19)		

Table IA2.
Expected Fee Increases from Squeezes Compared to Squeeze Costs and Fees

Utilization$_{t-1}$	Obs	Fee Increase	Fee	Mean Low Squeeze Costs	Mean High Squeeze Costs
Panel A. Costs of Fee Increases from Squeezes Over the Next Month					
All Months	190,700	0.001%	0.244%	0.077%	0.095%
< 25%	148,945	0.001%	0.109%	0.059%	0.073%
25% - 50%	22,799	0.002%	0.261%	0.044%	0.059%
50% - 75%	10,910	0.004%	0.764%	0.110%	0.125%
75% - 90%	4,442	0.007%	1.552%	0.151%	0.175%
≥90%	3,604	0.006%	2.531%	0.873%	1.039%

Utilization$_{t-1}$	Obs	Fee Increase	Fee	Mean Low Squeeze Costs	Mean High Squeeze Costs
Panel B. Costs of Fee Increases from Squeezes Over the Next Quarter					
All Quarters	68,792	0.008%	0.689%	0.161%	0.202%
< 25%	53,691	0.005%	0.305%	0.132%	0.169%
25% - 50%	8,125	0.009%	0.661%	-0.005%	0.002%
50% - 75%	3,952	0.020%	1.956%	0.237%	0.270%
75% - 90%	1,582	0.032%	4.069%	0.130%	0.185%
≥90%	1,442	0.038%	5.585%	1.977%	2.276%

Expected Missing Excess Returns and Trading Costs from All Lender Squeezes, 2015-2019.

Excess returns are the difference between the stock return and the CRSP value-weighted return. Missing excess returns are the excess returns that occurred while a short squeeze forced shot sellers to reduce positions, multiplied by the proportion of positions reduced. Fees are the borrowing fees paid while short positions are in effect. Trading costs from squeezes are the percentage reduction in shares on loan on the day of a short squeeze times half the spread, plus an additional half of the spread when shares on loan increase to the level before the squeeze.

| | | Excess Return | | Fees | Spread Trading Costs from Squeezes | | | |
| | | | | | CRSP | TAQ | | Vol. Wgt |
Utilization$_{t-1}$	Obs	Total	Missing	Total	Quoted	Quoted	Effective	Eff.
Panel A. Monthly excess returns and expected short squeeze costs by utilization.								
All Months	190,700	-0.023%	-0.010%	0.249%	0.021%	0.023%	0.018%	0.019%
< 25%	148,945	0.149%	-0.002%	0.113%	0.006%	0.007%	0.005%	0.005%
25% - 50%	22,799	-0.080%	0.001%	0.269%	0.009%	0.010%	0.007%	0.008%
50% - 75%	10,910	-1.125%	-0.029%	0.774%	0.031%	0.033%	0.026%	0.026%
75% - 90%	4,442	-1.759%	-0.049%	1.563%	0.070%	0.077%	0.058%	0.067%
≥90%	3,604	-1.293%	-0.294%	2.550%	0.613%	0.689%	0.534%	0.570%
Panel B. Monthly excess returns and expected short squeeze costs by borrowing fees.								
All Months	190,725	-0.023%	-0.010%	0.249%	0.021%	0.023%	0.018%	0.019%
< 0.5%	121,976	0.168%	-0.001%	0.033%	0.000%	0.000%	0.000%	0.000%
0.5% - 1%	16,250	-0.115%	-0.004%	0.061%	0.001%	0.001%	0.001%	0.001%
1% - 5%	24,034	0.070%	-0.006%	0.201%	0.032%	0.036%	0.028%	0.028%
5% - 10%	10,018	0.084%	0.045%	0.555%	0.070%	0.086%	0.064%	0.068%
10% - 25%	8,175	-0.847%	0.012%	1.059%	0.112%	0.131%	0.104%	0.108%
≥ 25%	10,247	-1.810%	-0.206%	2.285%	0.147%	0.158%	0.121%	0.129%
Panel C. Quarterly excess returns and expected short squeeze costs by utilization.								
All Quarters	68,792	-0.066%	-0.011%	0.688%	0.048%	0.060%	0.041%	0.043%
< 25%	53,691	0.396%	0.000%	0.334%	0.017%	0.021%	0.015%	0.016%
25% - 50%	8,125	0.115%	0.069%	0.780%	0.027%	0.031%	0.023%	0.025%
50% - 75%	3,952	-3.415%	-0.092%	2.044%	0.067%	0.072%	0.058%	0.058%
75% - 90%	1,582	-3.206%	0.140%	4.220%	0.169%	0.175%	0.132%	0.157%
≥90%	1,442	-5.650%	-0.829%	5.928%	1.128%	1.216%	0.947%	0.987%

Panel D. Quarterly excess returns and expected short squeeze costs by borrowing fees.

All Months	68,792	-0.066%	-0.011%	0.688%	0.048%	0.060%	0.041%	0.043%
< 0.5%	42,247	0.328%	0.001%	0.095%	0.000%	0.000%	0.000%	0.000%
0.5% - 1%	7,232	0.064%	-0.000%	0.169%	0.004%	0.005%	0.004%	0.004%
1% - 5%	8,652	0.615%	-0.035%	0.581%	0.080%	0.093%	0.066%	0.068%
5% - 10%	3,697	-0.310%	0.152%	1.811%	0.146%	0.169%	0.133%	0.142%
10% - 25%	3,030	-1.603%	0.129%	2.976%	0.247%	0.278%	0.217%	0.225%
≥ 25%	3,934	-4.618%	-0.368%	5.493%	0.327%	0.347%	0.270%	0.286%

Table IA4

Daily Turnover, Borrowing Fees, Utilization and Short Squeezes

Turnover is the daily volume divided by shares outstanding. Borrowing fees are the annualized cost of borrowing shares. Utilization is the proportion of shares available to lend that are on loan. The sample period is July 2006 through December 2019. Days with turnover of 500% or more are deleted

Borrowing Fee	Observations	Mean Turnover	Median Turnover
Panel A. Daily Turnover by Borrowing Fee			
All Stock Days	12,289,505	0.88%	0.49%
< 0.5%	8,874,244	0.83%	0.55%
0.5% - 1.0%	709,621	1.03%	0.49%
1.0% - 5.0%	1,125,009	0.84%	0.27%
5.0% - 10%	561,849	0.91%	0.25%
10.0% ≤	1,018,782	1.26%	0.20%
Panel B. Daily Turnover by Utilization			
All Stock Days	12,289,505	0.88%	0.49%
< 25%	9,294,809	0.68%	0.42%
25% - 50%	1,725,140	1.26%	0.77%
50% - 75%	800,236	1.65%	0.87%
75% - 90%	304,759	2.03%	0.88%
≥ 90%	164,561	2.71%	0.58%
Panel C. Turnover on Days with Squeezes and other Days			
None	11,811,323	0.89%	0.51%
All Lender	22,093	3.30%	0.53%
Current Lender	51,213	1.46%	0.20%

Table IA5

The Standard Deviation of Trading Costs from Short Squeezes

Spread trading costs are the sum of trading costs from closing positions as a result of squeezes and possibly reestablishing them later. The total trading costs from squeezes are the sum of the trading costs and the costs of missing returns from being forced to close positions as a result of squeezes.

Utilization$_{t-1}$	Obs	CRSP Quoted		TAQ Quoted		Effective		VW Effective	
		Spread	Total	Spread	Total	Spread	Total	Spread	Total
Panel A. Standard Deviations of Monthly Costs by Utilization.									
All Months	190,700	0.572%	2.286%	0.620%	2.296%	0.515%	2.270%	0.561%	2.278%
< 25%	148,945	0.544%	1.643%	0.597%	1.659%	0.506%	1.628%	0.550%	1.642%
25% - 50%	22,799	0.490%	2.381%	0.504%	2.375%	0.367%	2.363%	0.401%	2.366%
50% - 75%	10,910	0.432%	3.574%	0.454%	3.573%	0.388%	3.562%	0.364%	3.559%
75% - 90%	4,442	0.564%	3.924%	0.557%	3.933%	0.506%	3.910%	0.664%	3.902%
≥90%	3,604	1.498%	8.407%	1.601%	8.415%	1.252%	8.357%	1.383%	8.361%
Panel B. Standard deviations of monthly costs by borrowing fee.									
All Months	190,700	0.572%	2.286%	0.620%	2.296%	0.515%	2.270%	0.561%	2.278%
< 0.5%	121,976	0.143%	0.315%	0.149%	0.317%	0.126%	0.314%	0.199%	0.366%
0.5% - 1%	16,250	0.286%	1.006%	0.310%	0.999%	0.228%	0.968%	0.241%	0.976%
1% - 5%	24,034	0.871%	2.888%	0.952%	2.918%	0.822%	2.885%	0.858%	2.878%
5% - 10%	10,018	1.013%	4.939%	1.106%	4.956%	0.938%	4.924%	0.953%	4.910%
10% - 25%	8,175	1.321%	5.058%	1.368%	5.030%	1.131%	4.976%	1.272%	5.016%
≥ 25%	10,247	1.137%	5.501%	1.266%	5.537%	1.001%	5.469%	1.087%	5.481%
Panel C. Standard deviations of quarterly costs by utilization.									
All Quarters	68,792	1.099%	5.193%	1.161%	5.191%	0.940%	5.146%	1.003%	5.167%
< 25%	53,691	0.992%	3.590%	1.101%	3.619%	0.904%	3.562%	0.971%	3.594%
25% - 50%	8,125	0.879%	6.439%	0.753%	6.442%	0.589%	6.455%	0.646%	6.453%
50% - 75%	3,952	0.721%	6.936%	0.782%	6.946%	0.663%	6.941%	0.630%	6.939%
75% - 90%	1,582	1.049%	9.401%	0.920%	9.395%	0.733%	9.373%	1.107%	9.415%
≥90%	1,442	3.572%	18.47%	3.456%	18.18%	2.671%	18.02%	2.691%	18.05%
Panel D. Standard deviations of quarterly costs by borrowing fee.									
All Quarters	68,792	1.099%	5.193%	1.161%	5.191%	0.940%	5.146%	1.003%	5.167%
< 0.5%	42,247	0.309%	0.729%	0.303%	0.714%	0.230%	0.700%	0.234%	0.703%
0.5% - 1%	7,232	0.545%	1.805%	0.626%	1.838%	0.482%	1.776%	0.483%	1.781%
1% - 5%	8,652	1.588%	5.693%	1.727%	5.760%	1.409%	5.656%	1.570%	5.721%
5% - 10%	3,697	1.754%	9.749%	1.911%	9.757%	1.665%	9.693%	1.675%	9.700%
10% - 25%	3,030	2.598%	11.85%	2.718%	11.91%	2.148%	11.83%	2.318%	11.88%
≥ 25%	3,934	2.181%	13.77%	2.186%	13.64%	1.752%	13.58%	1.853%	13.62%

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