Internet Appendix for "Nonbank Lending"

Sergey Chernenko, Isil Erel, Robert Prilmeier

This Internet Appendix reports three sets of additional results:

1. Section A.1 along with Figures IA1-IA2 and Tables IA1-IA3 report the results of *k*-medians cluster analysis to determine which lender types can be grouped together and which types should be viewed as distinct. This analysis validates the grouping of lender types used in the paper.

2. Table IA4 reports the results of additional analyses of performance after loan origination, including changes in profitability by lender type (Panel A) and subsequent stock returns (Panels B and C). Controlling for firm characteristics at loan origination, we do not find any significant differences in performance between bank and nonbank loans.

3. Tables IA5-IA9 replicate key results on nonbank borrower characteristics, loan contract terms, and the probability of bankruptcy after extending the sample period for our 750 sample firms to cover the years 2010-2017. Results are quantitatively and qualitatively highly similar to those obtained during the original sample period of 2010-2015.

4. Table IA10 provides estimates using matching techniques to create good covariate balance between bank (control) and nonbank (treated) borrowers. To construct our *control* sample, we use Mahalanobis matching with exact matching for loan origination year and dummy for EBITDA<0 and nearest-neighbor matching on profitability and leverage. The first two columns in Panel A report differences in means that are standardized by the subsample standard deviations while the last two columns provide variance ratios for the two subsamples (see Imbens and Rubin 2015). And the average treatment effect on the treated (ATET) with Abadie-Imbens (AI) robust standard errors are presented in Panel B of Table 9. These results of nonparametric matching analysis provide strong evidence that differences in loan terms documented in paper are unlikely to be due to nonlinearities or lack of covariate balance between bank and nonbank borrowers.

5. Panel A of Table IA11 shows comparisons in summary statistics for the annual panel from 2009-2015 of sample firms vs. the annual panel of all non-financial, non-utility, mid-size Compustat firms with U.S. incorporation as well as headquarters located in the U.S. Panel B further requires that the comparison firms have at least 5% leverage in at least one year. Standardized differences are reported as the difference in means between the two groups after standardizing each variable to have mean zero and a standard deviation of one. Compared to all mid-size Compustat firms, sample firms have lower cash flows and lower current ratios, more leverage, more PP&E and lower market-to-book ratios. Economically, the differences in leverage and current ratios are the largest at about 0.3 standard deviations. Panel B shows that, although statistically detectable differences remain, economically sample firms and firms that were not drawn by our randomization are very similar. Sample firms have lower market-to-book ratios and lower research expenses, but the difference is only 0.12 standard deviations. All other differences are less than 0.1 standard deviations, and only the difference in market-to-book is statistically significant for both the mean and the median of the sample distribution.

A.1 Cluster analysis

Cluster analysis provides an agnostic way of grouping individuals in a population based on observable characteristics. Specifically, we employ k-medians clustering, which uses an iterative, data-driven process to partition the data into k clusters organized around k centroids. A conceptually attractive feature of cluster analysis is that it does not allow the researcher to hypothesize which observations should be grouped together. Hence, cluster analysis can be used to obtain an additional look at which types of lenders behave similarly without being biased by the researcher's priors. A significant disadvantage of cluster analysis is that the researcher must decide how many clusters there are in the data.

K-medians clustering proceeds as follows. First, k observations are chosen at random as the initial cluster centroids. All observations in the sample are assigned to the cluster with the closest centroid based on the Manhattan distance. Next, the median of the observations in each cluster is calculated and becomes the new cluster center. Observations are reassigned to a different cluster if they are closer to the recalculated center of that cluster. These steps are repeated until additional iterations fail to produce any change in cluster composition. Because this process finds a local optimum that is contingent on the initially chosen centroids, we re-initiate the estimation 5,000 times and retain the solution with the lowest sum of absolute deviations (SAD) from the cluster center.

We assign deals to clusters based on the following loan and firm characteristics: deal size, maturity, whether or not the loan charges a fixed interest rate, the initial interest rate, whether or not the loan is senior, whether it is secured by a first lien, second lien, or unsecured, as well as the borrower's EBITDA, an indicator of negative EBITDA, leverage, and total assets in 2015 US dollars. We first turn to the choice of k. The elbow method can be used as a heuristic to determine the "optimal" number of clusters. The elbow method consists of plotting the sum of absolute deviations for $k = 1$ through n clusters.[1] If there are, e.g., four sharply distinct clusters in the data, the sum of absolute deviations will fall until $k = 4$ at which point there will be a kink in the SAD function and it will level off. Graphically, the kink resembles an elbow. Note that the SAD function will continue to fall as more clusters are added since, by construction, SAD equals zero if the

---

[1] The following analysis is analogue to Makles (2012), who describes the elbow method for k-means clustering.

number of clusters equals the number of observations. We search for an elbow for up to ten clusters. Figure A1 shows the result. Due to computational limitations, we use 500 cluster initiations for each k when producing these graphs.

The top left graph in Figure A1 plots the sum of absolute deviations. The top right graph plots the natural log of the SAD. The bottom left graph plots η^2, which is the percentage reduction in SAD from the one-cluster solution to the k-cluster solution. The bottom right graph plots *PRE*, which is the additional percentage reduction in SAD obtained by adding the kth cluster. It is obvious from Figure A1 that there is no elbow in the SAD function. This indicates there is no set number of clusters that are compact internally and distant from each other. This is perhaps not surprising given that a wide range of firm types can use multiple types of loans such as senior secured, junior, long and short maturity, etc. Nevertheless, it is instructive to see which lenders' loans the algorithm determines to be similar to each other as one increases the number of clusters. The *PRE* function levels off somewhat after four clusters, and adding clusters beyond six results in little improvement. Thus, for the sake of brevity, we choose to inspect the solutions for $k = 4$, 5, and 6.

Panel A of Table IA1 shows the four-cluster solution and Panel A of Table IA2 shows loan and firm characteristics for the clusters. There are three clusters dominated by banks and one cluster dominated by nonbanks. Cluster one consists of medium sized senior secured floating rate loans to unprofitable borrowers. Cluster two consists of fixed rate loans with an average interest rate of 10% and borrowers on average are unprofitable and have high leverage. Cluster two has the highest likelihood to include warrants and be convertible into equity and the lowest likelihood to include financial covenants. Cluster three consists of medium sized senior floating rate loans, mostly secured, to medium sized firms. Cluster four consists of very large senior secured floating rate loans, mostly secured and with financial covenants, to large, profitable borrowers. The vast majority of loans made by asset managers such as BDCs, hedge funds, investment managers, and PE/VCs are grouped into cluster two, although BDCs and PE/VCs both have some observations in cluster one. Bank-affiliated finance companies and insurance companies concentrate on clusters three and four, while unaffiliated finance companies are spread throughout the clusters. Investment banks cluster especially into large loans (cluster four).

Panels B of Tables A1 and A2 show the five-cluster solution with characteristics. The composition of clusters one and two is virtually unchanged. The algorithm creates an additional

4

cluster by removing unsecured loans from clusters three and four and creating a fifth cluster of senior unsecured loans with low interest rates to mature, profitable borrowers with low leverage and low stock return volatility. This cluster is dominated by banks.

Panels C of Tables A1 and A2 show the six-cluster solution and corresponding characteristics. The six-cluster solution leaves most clusters virtually unchanged. The exception is the asset manager-dominated cluster two, which is split into junior loans (now cluster five) and senior loans (now cluster two). Investment managers and finance companies appear to prefer senior loans. Otherwise, clusters two and five appear similar across most dimensions.

In summary, it appears that there is strong separation between clusters dominated by asset managers and clusters dominated by banks. Investment banks are unique in that they focus on large loans. Finance companies are active across all clusters, while bank-affiliated finance companies tend to be active in the bank-dominated clusters, but eschew senior unsecured loans in favor of senior secured loans.

We also examine the results of cluster analysis after excluding all bank loans from the sample in an effort to avoid making bank loans the anchor of a large number of clusters. Figure A2 shows the level and improvement in the objective function as one adds clusters. There is again no "elbow" in the object function, but the incremental improvement function levels off after four clusters. For the sake of brevity, we only discuss the four-cluster solution. Panels D of Tables A1 and A2 show that results are largely consistent with cluster solutions including bank loans, except that a clearer distinction emerges for insurance companies. There are again two clusters of loans that are dominated by the asset managers and have a high probability of having warrants or being convertible to equity (clusters two and four). Cluster one contains large, mostly fixed rate, senior loans with long maturities and comparatively low interest rates to large, profitable borrowers with a large amount of PP&E. Insurance companies almost exclusively lend in this cluster. Cluster three contains large floating rate loans with a high likelihood of including financial covenants. This cluster is dominated by FCOs, bank FCOs, and investment banks, with investment banks concentrating primarily on this cluster, while bank FCOs are also active in cluster one and FCOs are also active in cluster two.

The analysis thus far yields four lender groups: banks, finance companies, investment banks, and asset managers. However, it is not clear whether bank-affiliated finance companies should be grouped with unaffiliated finance companies or with banks or neither. It is also not clear whether there are distinctions among the asset managers that are masked by the cluster summary statistics. Next, we test whether these lenders should be grouped together or separately.

Table IA3 reports tests for differences across the aforementioned lender types. Covariates are standardized to have a mean of zero and a standard deviation of one to allow for easy comparison of which covariates are economically most important. Column 1 compares bank FCOs to banks. Bank FCOs are more likely to make smaller, secured loans with a fixed interest rate and their borrowers are larger, less profitable and have higher leverage. Column 2 compares Bank FCOs to unaffiliated FCOs. Their borrowers and loan structure appear similar, but Bank FCOs charge substantially lower interest rates. In light of this evidence, we treat Bank FCOs as a separate category of lender that is neither equivalent to banks nor equivalent to unaffiliated FCOs.

Columns 3 through 6 assess which of the asset managers are similar to each other so they can be grouped together. While all four types of vehicles have organizational differences, BDCs and investment managers have few observations, necessitating grouping them with other lenders. In each column, we split one of the lender types from the group of asset managers and test whether and how they differ from the other vehicles. Both hedge funds and investment managers engage in deals with firms that have lower research expenses than firms borrowing from other asset managers. Investment managers lend to firms with lower EBITDA. PE and VC firms prefer less levered borrowers. BDCs focus on borrowers with high research expenses. We use two criteria to determine whether and which lenders can be grouped together: First, while the paucity of observations may reduce statistical power, we check for which types of lenders the estimation most often results in the same coefficient signs. Second, since covariates are standardized to have a mean of zero and a standard deviation of one, the difference in regression t-statistics between two types of lenders represents the economic difference weighted by statistical precision. Hence, we cumulate the absolute difference in t-statistics for each pair of lenders. The first criterion suggests that investment managers are most similar to hedge funds, with seven out of 13 coefficients having the same sign. BDCs are most similar to PE/VC firms, with eight coefficients having the same sign. By the second criterion, again investment managers have the smallest precision-weighted

distance to hedge funds and BDCs have the smallest precision-weighted distance to PE/VC firms. Thus, we group BDCs with PE/VC firms and investment managers with hedge funds. Column 7 tests whether these two groups are indeed significantly different from each other. Hedge funds and investment managers are significantly more likely to make fixed rate loans than PE firms, VCs and BDCs. In addition, PE firms, VCs and BDCs target borrowers with lower leverage and higher research intensity. We note that our chosen grouping is not perfect. Hedge funds have a stronger tendency than other asset managers to focus on junior loans, while investment managers more strongly focus on senior loans. However, as shown in the body of the paper, asset managers collectively appear to differ from banks in largely similar ways.

Internet Appendix References

Imbens, Guido and Jeffrey Wooldridge, 2009, Recent developments in the econometrics of program evaluation, *Journal of Economic Literature* 47, 1–81.

Makles, Anna, 2012, Stata tip 110: How to get the optimal k-means cluster solution, *The Stata Journal* 12, 347-351.
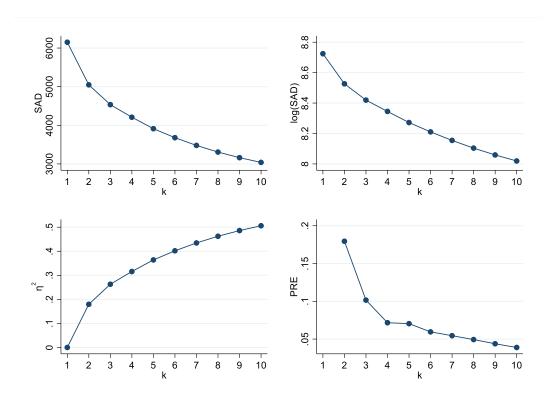
Figure IA1: Improvement in the objective function with increasing *k* (all loans)

This figure shows the level and improvement in the objective function of the *k*-medians cluster analysis for different choices of *k*. All sample loan observations are clustered based on deal size, maturity, whether or not the loan charges a fixed interest rate, initial interest rate, whether or not the loan is senior, whether it is secured by a first lien, second lien, or unsecured, as well as borrower's EBITDA, leverage, and total assets in 2015 US dollars. The figure shows the sum of absolute deviations (top left), the natural log of the SAD (top right), η^2, the percentage reduction in SAD from the one-cluster solution to the *k*-cluster solution (bottom left), and *PRE*, the additional percentage reduction in SAD obtained by adding the kth cluster (bottom right).

Figure IA2: Improvement in the objective function with increasing *k* (excluding bank loans)

This figure shows the level and improvement in the objective function of the *k*-medians cluster analysis for different choices of *k* after excluding bank loans from the sample. Nonbank loan observations are clustered based on deal size, maturity, whether or not the loan charges a fixed interest rate, initial interest rate, whether or not the loan is senior, whether it is secured by a first lien, second lien, or unsecured, as well as borrower's EBITDA, leverage, and total assets in 2015 US dollars. The figure shows the sum of absolute deviations (top left), the natural log of the SAD (top right), η^2, the percentage reduction in SAD from the one-cluster solution to the *k*-cluster solution (bottom left), and *PRE*, the additional percentage reduction in SAD obtained by adding the *k*th cluster (bottom right).
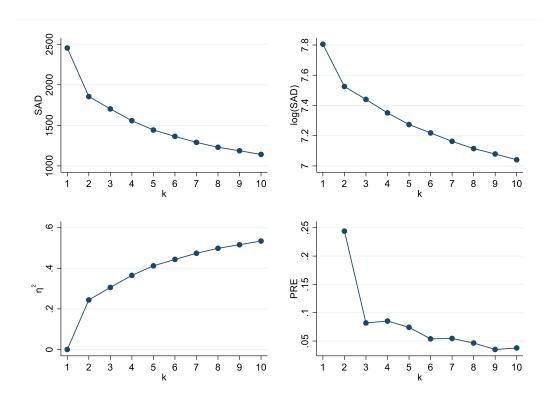
Table IA1: Cluster analysis solutions

For different values of *k*, this table shows the grouping of loans determined by *k*-medians clustering on deal size, maturity, whether or not the loan charges a fixed interest rate, initial interest rate, whether or not the loan is senior, whether it is secured by a first lien, second lien, or unsecured, as well as borrower's EBITDA, an indicator of negative EBITDA, leverage, and total assets in 2015 US dollars. The table reports how many loans by each type of lender are grouped into each cluster. Panels A through C use the entire sample of loans issued by the 750 sample firms from 2010-2015. Panel D excludes bank loans.

Panel A: Four clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
BDC	9	6	1	0
Bank	93	10	356	291
Bank FCO	7	0	26	17
FCO	18	21	30	13
Hedge fund	6	47	3	6
Insurance	0	3	7	11
Investment bank	3	5	10	20
Investment manager	2	27	2	0
Other	0	3	0	1
PE/VC	12	44	9	1

Panel B: Five clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
BDC	9	6	1	0	0
Bank	93	10	314	238	95
Bank FCO	7	0	24	17	2
FCO	18	21	27	12	4
Hedge fund	6	45	2	5	4
Insurance	0	3	6	5	7
Investment bank	3	4	9	18	4
Investment manager	2	27	1	0	1
Other	0	2	0	1	1
PE/VC	12	42	7	0	5

Panel C: Six clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
BDC	1	6	0	0	0	8
Bank	333	11	218	95	0	93
Bank FCO	24	0	17	2	0	7
FCO	31	20	8	4	1	18
Hedge fund	1	26	5	1	23	6
Insurance	6	3	5	7	0	0
Investment bank	9	3	18	4	1	3
Investment manager	1	22	0	1	5	2
Other	0	2	1	1	0	0
PE/VC	7	25	0	2	20	12

Panel D: Four clusters, excluding banks

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
BDC	0	15	1	0
Bank FCO	18	2	30	0
FCO	7	33	40	2
Hedge fund	3	32	8	19
Insurance	17	3	1	0
Investment bank	5	6	27	0
Investment manager	0	16	6	9
Other	1	1	2	0
PE/VC	2	41	8	15

Table IA2: Cluster summary statistics

For different values of *k*, this table shows the grouping of loans determined by *k*-medians clustering on deal size, maturity, whether or not the loan charges a fixed interest rate, initial interest rate, whether or not the loan is senior, whether it is secured by a first lien, second lien, or unsecured, as well as borrower's EBITDA, leverage, and total assets in 2015 US dollars. The table reports means of loan and firm characteristics for the observations in each cluster. Panels A through C use the entire sample of loans issued by the 632 sample firms from 2010-2015. Panel D excludes bank loans.

Panel A: Four clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Deal size	36.00	17.89	55.60	377.33
Maturity	3.02	2.87	3.94	5.12
Fixed rate loan	0.01	0.99	0.09	0.09
Interest rate	601.92	995.28	372.50	317.96
Performance pricing	0.15	0.00	0.28	0.41
Senior	0.99	0.71	0.99	0.99
Secured	0.98	0.69	0.88	0.82
Second lien	0.02	0.03	0.02	0.02
Financial covenants	0.70	0.28	0.85	0.91
Warrants	0.18	0.36	0.02	0.00
Convertible debt	0.03	0.28	0.01	0.01
Upfront fee	40.29	61.49	17.27	17.09
Annual fee	11.81	5.14	2.04	0.86
Total assets	138.02	101.75	235.16	1259.86
EBITDA	-17.17	-7.26	24.05	170.70
Profitability	-0.25	-0.24	0.12	0.15
PP&E	0.15	0.19	0.26	0.33
Leverage	0.23	0.40	0.22	0.35
Firm age	21.43	21.69	38.39	40.25
Volatility	0.68	0.81	0.58	0.44
Market-to-book	2.11	2.02	1.51	1.53
Research expense	0.17	0.13	0.03	0.02
Current ratio	2.29	1.67	2.40	2.35
Sales growth	0.14	0.13	0.14	0.14

Panel B: Five clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Deal size	36.00	17.04	55.96	390.34	189.80
Maturity	3.02	2.80	4.02	5.08	4.44
Fixed rate loan	0.01	0.99	0.09	0.07	0.18
Interest rate	601.92	995.41	391.00	334.10	276.70
Performance pricing	0.15	0.00	0.27	0.39	0.43
Senior	0.99	0.72	1.00	1.00	0.93
Secured	0.98	0.72	1.00	1.00	0.00
Second lien	0.02	0.03	0.03	0.02	0.00
Financial covenants	0.70	0.28	0.86	0.91	0.84
Warrants	0.18	0.38	0.03	0.00	0.01
Convertible debt	0.03	0.28	0.00	0.01	0.05
Upfront fee	40.29	63.88	19.95	20.48	1.45
Annual fee	11.81	5.34	2.37	0.62	0.98

Total assets	138.02	92.82	229.18	1193.42	952.36
EBITDA	-17.17	-8.57	22.80	157.59	136.06
Profitability	-0.25	-0.25	0.11	0.15	0.15
PP&E	0.15	0.19	0.26	0.33	0.28
Leverage	0.23	0.40	0.23	0.38	0.20
Firm age	21.43	21.41	35.39	38.38	52.94
Volatility	0.68	0.83	0.60	0.46	0.41
Market-to-book	2.11	2.04	1.51	1.41	1.82
Research expense	0.17	0.13	0.03	0.02	0.03
Current ratio	2.29	1.66	2.30	2.32	2.76
Sales growth	0.14	0.12	0.15	0.14	0.11

Panel C: Six clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Deal size	60.37	19.81	413.37	197.88	12.66	36.16
Maturity	4.05	2.88	5.12	4.41	2.94	3.02
Fixed rate loan	0.08	0.99	0.08	0.13	0.97	0.01
Interest rate	386.62	978.60	333.17	241.17	1026.28	597.52
Performance pricing	0.27	0.00	0.40	0.45	0.00	0.15
Senior	1.00	1.00	1.00	0.97	0.00	1.00
Secured	1.00	0.78	1.00	0.00	0.51	0.98
Second lien	0.02	0.04	0.03	0.00	0.00	0.02
Financial covenants	0.87	0.30	0.90	0.86	0.25	0.70
Warrants	0.02	0.42	0.00	0.01	0.25	0.18
Convertible debt	0.01	0.22	0.00	0.03	0.42	0.03
Upfront fee	18.12	78.14	21.74	1.53	27.83	5.33
Annual fee	2.45	4.91	0.39	1.04	5.33	11.90
Total assets	245.26	113.20	1254.31	979.10	88.80	138.59
EBITDA	24.39	-9.67	167.16	141.15	-0.23	-17.13
Profitability	0.11	-0.27	0.15	0.15	-0.18	-0.25
PP&E	0.27	0.21	0.33	0.28	0.13	0.15
Leverage	0.24	0.36	0.38	0.20	0.45	0.23
Firm age	35.62	20.68	38.22	54.63	23.96	21.40
Volatility	0.59	0.81	0.46	0.40	0.78	0.68
Market-to-book	1.50	2.01	1.42	1.85	2.03	2.10
Research expense	0.03	0.14	0.02	0.03	0.11	0.17
Current ratio	2.31	1.75	2.31	2.79	1.48	2.30
Sales growth	0.15	0.14	0.14	0.09	0.12	0.14

Panel D: Four clusters, excluding banks

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Deal size	105.58	19.12	147.93	12.41
Maturity	7.76	3.01	4.16	2.45
Fixed rate loan	0.92	0.70	0.07	1.00
Interest rate	465.94	987.58	578.04	1049.02
Performance pricing	0.01	0.00	0.14	0.00
Senior	0.98	0.90	0.98	0.22
Secured	0.79	0.89	0.92	0.22
Second lien	0.08	0.06	0.08	0.00
Financial covenants	0.52	0.35	0.86	0.11

Warrants	0.06	0.45	0.04	0.18
Convertible debt	0.04	0.19	0.05	0.43
Upfront fee	12.66	62.75	53.95	49.32
Annual fee	0.00	9.04	6.37	2.24
Total assets	988.51	81.85	547.12	104.84
EBITDA	150.54	-14.90	41.00	0.29
Profitability	0.14	-0.30	0.07	-0.19
PP&E	0.38	0.19	0.26	0.14
Leverage	0.30	0.30	0.41	0.54
Firm age	38.77	21.05	36.08	18.40
Volatility	0.44	0.77	0.59	0.85
Market-to-book	1.24	2.20	1.32	2.03
Research expense	0.01	0.17	0.02	0.09
Current ratio	1.82	1.83	2.09	1.25
Sales growth	0.09	0.13	0.15	0.21

Table IA3: OLS regressions for similarities and differences across loans made by different types of lenders

Binary dependent variable is stated as "Type A vs. Type B". It is equal to one if the loan is made by lender type A and to zero if it is made by type B. Loans made by other lender types are excluded. Independent variables are standardized to have mean zero and a standard deviation of one. Observations are aggregated to the deal level. Standard errors are clustered at the firm level. FCO denotes finance companies. HF denotes hedge funds. BDC denotes business development companies. IM denotes investment managers. PE/VC denotes private equity firms and venture capital firms. The seniority variable is excluded from columns (1) and (2) since bank FCOs do not make junior loans. *, **, and *** indicate statistical significance at 10%, 5%, and 1%.

	Bank FCO vs. Bank	Bank FCO vs. FCO	HF vs. BDC/ PE/VC/IM	IM vs. BDC/HF/ PE/VC	PE/VC vs. BDC/HF/IM	BDC vs. HF/IM/ PE/VC	BDC/PE/VC vs. HF/IM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Deal size)	-0.065**	-0.065	0.163**	-0.048	-0.117	0.002	-0.116
	(-2.33)	(-1.54)	(2.05)	(-0.71)	(-1.40)	(0.05)	(-1.52)
Maturity	0.000	-0.059	0.000	-0.019	0.009	0.009	0.018
	(0.04)	(-1.00)	(0.01)	(-0.37)	(0.12)	(0.44)	(0.25)
Fixed rate loan	0.127**	0.045	0.078*	0.030	-0.063	-0.045	-0.108**
	(2.37)	(1.16)	(1.85)	(0.97)	(-1.36)	(-1.44)	(-2.50)
Initial interest rate	-0.047	-0.303***	-0.004	-0.039	0.040	0.003	0.043
	(-1.62)	(-6.95)	(-0.08)	(-1.17)	(0.99)	(0.20)	(1.11)
Senior			-0.048*	0.042**	0.005	0.001	0.006
			(-1.90)	(2.41)	(0.20)	(0.14)	(0.26)
Second lien	0.053*	0.045*	-0.007	-0.016	0.023	-0.000	0.023
	(1.72)	(1.95)	(-0.33)	(-1.22)	(1.00)	(-0.00)	(1.22)
Secured	0.017*	0.068	0.037	-0.069*	0.018	0.014	0.032
	(1.94)	(1.11)	(1.16)	(-1.97)	(0.55)	(1.06)	(0.99)
EBITDA	-0.013**	0.176	0.110	-0.154*	0.115	-0.071	0.044
	(-2.14)	(1.09)	(0.75)	(-1.75)	(0.76)	(-0.80)	(0.27)
EBITDA < 0	0.006	-0.062	0.050	0.005	-0.054	-0.000	-0.055
	(0.41)	(-1.18)	(1.06)	(0.13)	(-1.12)	(-0.02)	(-1.13)
Leverage	0.024*	-0.026	0.053	0.014	-0.072**	0.004	-0.068*
	(1.83)	(-0.59)	(1.46)	(0.50)	(-2.04)	(0.25)	(-1.93)
Ln(Assets)	0.058**	-0.067	-0.016	0.026	-0.025	0.014	-0.011
	(2.00)	(-0.84)	(-0.21)	(0.38)	(-0.35)	(0.42)	(-0.16)
Research expense	-0.019*	-0.039	-0.065**	-0.043**	0.040	0.068***	0.108***
	(-1.89)	(-1.37)	(-2.23)	(-2.11)	(1.12)	(2.81)	(3.64)
Growth	0.000	-0.020	-0.028	-0.007	0.004	0.031	0.035
	(0.00)	(-0.54)	(-0.92)	(-0.28)	(0.10)	(1.53)	(1.15)
Constant	0.094***	0.519***	0.355**	0.136	0.357**	0.153*	0.510***
	(3.11)	(4.78)	(2.43)	(1.28)	(2.37)	(1.95)	(3.38)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	769	123	159	159	159	159	159
R-squared	0.17	0.42	0.20	0.21	0.17	0.25	0.27

16

Table IA4: Future performance by lender type – additional panels

This table reports the results of regressions of year-to-year changes in borrower's profitability and subsequent stock returns on lender type dummies and borrower characteristics. Industry fixed effects are based on Fama-French 12 industries. t-statistics adjusted for firm-level clustering are reported in parentheses. *, **, and *** indicate statistical significance at 10%, 5%, and 1%.

Panel A: Changes in profitability by nonbank lender type

	(1) [t,t+1]	(2) [t+1,t+2]	(3) [t+2,t+3]	(4) [t,t+1]	(5) [t+1,t+2]	(6) [t+2,t+3]
Bank FCO	-0.00	0.01	0.01	0.00	0.01	-0.00
	(-0.17)	(0.99)	(0.78)	(0.20)	(0.49)	(-0.02)
FCO	-0.03**	-0.02	-0.03	-0.02	-0.02	-0.02
	(-2.29)	(-0.77)	(-1.34)	(-1.06)	(-0.98)	(-0.96)
Investment bank	-0.01	-0.02	0.01	-0.00	-0.01	0.01
	(-0.36)	(-1.09)	(0.51)	(-0.22)	(-0.65)	(0.60)
PE/VC/BDC	0.00	-0.04*	-0.04	0.02	-0.04	-0.06
	(0.04)	(-1.70)	(-0.96)	(0.61)	(-1.31)	(-1.20)
Hedge fund/IM	-0.03	-0.00	0.01	-0.01	-0.00	0.01
	(-1.11)	(-0.10)	(0.38)	(-0.45)	(-0.17)	(0.35)
Insurance	0.01	-0.02	0.01	-0.01	-0.01	0.01
	(0.41)	(-1.29)	(0.86)	(-0.30)	(-0.82)	(0.75)
Ln(Assets)	0.01**	0.00	-0.01	0.01	0.00	-0.01*
	(2.31)	(0.96)	(-1.30)	(1.40)	(0.45)	(-1.85)
Profitability	-0.58***	-0.10*	0.03	-0.56***	-0.09	-0.04
	(-9.90)	(-1.68)	(0.33)	(-8.36)	(-1.25)	(-0.51)
EBITDA < 0	-0.08***	-0.01	0.04*	-0.06**	-0.01	0.03
	(-3.57)	(-0.66)	(1.66)	(-2.43)	(-0.66)	(0.93)
Leverage	0.04	0.03	0.02	0.06**	0.02	0.02
	(1.57)	(0.91)	(0.77)	(2.03)	(0.71)	(0.73)
ΔLeverage	-0.01	-0.09*	0.10*	0.01	-0.13**	0.17**
	(-0.19)	(-1.80)	(1.77)	(0.24)	(-1.98)	(2.42)
Abs (asset growth)	0.05***	0.02	-0.00	0.03	0.03*	-0.01
	(2.86)	(1.20)	(-0.22)	(1.62)	(1.85)	(-0.74)
Research expense	-0.12	-0.05	-0.09	-0.18*	-0.11	-0.04
	(-1.30)	(-0.68)	(-1.02)	(-1.90)	(-1.22)	(-0.43)
PP&E	0.02	-0.00	0.02	0.02	-0.01	0.03
	(0.90)	(-0.21)	(0.69)	(1.11)	(-0.44)	(0.97)
Current ratio	-0.01**	-0.00	0.00	-0.00	-0.00	-0.00
	(-2.07)	(-0.26)	(0.48)	(-1.52)	(-0.63)	(-0.43)
Ln(Firm age)	-0.00	0.00	-0.00	0.00	-0.00	0.00
	(-0.71)	(0.38)	(-0.21)	(0.47)	(-0.07)	(0.40)
Market-to-book				0.00	0.00	-0.01
				(0.14)	(0.98)	(-1.36)
Sales growth				0.02	-0.02	0.06**
				(1.19)	(-0.80)	(2.50)
Volatility				-0.05**	-0.01	-0.02
				(-2.29)	(-0.42)	(-0.66)
Past return				0.01	-0.03**	0.02
				(0.56)	(-2.12)	(1.07)
Constant	0.03	-0.04	0.03	0.05	-0.01	0.06
	(0.94)	(-1.23)	(0.62)	(1.37)	(-0.29)	(1.31)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1150	1066	904	1080	1000	844
R-squared	0.46	0.07	0.06	0.40	0.08	0.09

Panel B: Subsequent returns

	(1) [t,t+1]	(2) [t+1,t+2]	(3) [t+2,t+3]	(4) [t,t+1]	(5) [t+1,t+2]	(6) [t+2,t+3]
Nonbank	-0.01	-0.01	0.08	0.01	-0.03	0.06
	(-0.18)	(-0.14)	(1.14)	(0.20)	(-0.49)	(0.95)
Ln(Assets)	0.00	-0.00	-0.00	-0.01	0.01	0.00
	(0.19)	(-0.12)	(-0.07)	(-0.45)	(0.58)	(0.11)
Profitability	0.50***	-0.09	0.02	0.64***	-0.02	0.00
	(2.86)	(-0.33)	(0.06)	(3.99)	(-0.08)	(0.02)
EBITDA < 0	0.09	-0.15	-0.05	0.15*	-0.19	-0.05
	(1.13)	(-1.44)	(-0.48)	(1.95)	(-1.62)	(-0.46)
Leverage	-0.02	-0.05	-0.16	0.10	-0.06	-0.20
	(-0.21)	(-0.35)	(-1.17)	(0.88)	(-0.42)	(-1.41)
ΔLeverage	-0.15	0.01	-0.21	-0.17	0.01	-0.12
	(-1.05)	(0.06)	(-0.96)	(-1.11)	(0.05)	(-0.49)
Abs (asset growth)	-0.10*	-0.08*	-0.06	-0.11***	-0.05	-0.02
	(-1.95)	(-1.67)	(-0.70)	(-2.88)	(-0.93)	(-0.27)
Research expense	0.47**	0.09	0.64*	0.54**	0.17	0.61
	(2.02)	(0.34)	(1.77)	(2.19)	(0.52)	(1.56)
PP&E	0.01	0.05	-0.14	0.01	0.03	-0.11
	(0.08)	(0.44)	(-0.81)	(0.06)	(0.22)	(-0.67)
Current ratio	0.00	0.00	-0.01	-0.00	0.00	-0.00
	(0.20)	(0.21)	(-0.54)	(-0.06)	(0.10)	(-0.25)
Ln(Firm age)	-0.01	0.03	0.05	-0.01	0.03	0.04
	(-0.38)	(1.12)	(1.48)	(-0.51)	(1.13)	(1.22)
Market-to-book				-0.02	-0.00	-0.05**
				(-1.24)	(-0.14)	(-2.18)
Sales growth				-0.07	-0.10	-0.05
				(-0.95)	(-1.12)	(-0.38)
Volatility				-0.18*	0.16	0.10
				(-1.68)	(1.22)	(0.60)
Past return				0.03	-0.07	-0.02
				(0.58)	(-1.01)	(-0.20)
Constant	0.02	0.08	0.11	0.19	-0.12	0.11
	(0.10)	(0.46)	(0.70)	(0.92)	(-0.56)	(0.50)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1150	1094	1017	1118	1062	987
R-squared	0.09	0.11	0.07	0.11	0.12	0.07

18

Panel C: Subsequent returns by nonbank lender type

	(1) [*t,t+1*]	(2) [*t+1,t+2*]	(3) [*t+2,t+3*]	(4) [*t,t+1*]	(5) [*t+1,t+2*]	(6) [*t+2,t+3*]
Bank FCO	0.03	0.02	0.08	0.03	0.03	0.06
	(0.23)	(0.36)	(0.82)	(0.24)	(0.43)	(0.58)
FCO	0.02	0.12	0.22	0.07	0.09	0.23
	(0.24)	(1.15)	(1.07)	(0.67)	(0.83)	(1.05)
Investment bank	0.09	0.13	0.20*	0.10	0.10	0.17
	(0.84)	(1.41)	(1.65)	(0.92)	(1.12)	(1.41)
PE/VC/BDC	-0.16*	-0.09	-0.21*	-0.16*	-0.12	-0.23*
	(-1.78)	(-0.69)	(-1.71)	(-1.94)	(-0.90)	(-1.73)
Hedge fund/IM	-0.01	-0.19*	0.09	0.05	-0.23**	0.06
	(-0.06)	(-1.80)	(0.62)	(0.49)	(-2.12)	(0.45)
Insurance	-0.03	-0.03	0.03	-0.05	-0.00	0.06
	(-0.40)	(-0.29)	(0.28)	(-0.56)	(-0.04)	(0.59)
Ln(Assets)	-0.00	-0.01	-0.01	-0.01	0.01	-0.00
	(-0.01)	(-0.39)	(-0.25)	(-0.59)	(0.28)	(-0.11)
Profitability	0.47***	-0.11	-0.05	0.61***	-0.05	-0.06
	(2.71)	(-0.41)	(-0.17)	(3.88)	(-0.16)	(-0.22)
EBITDA < 0	0.09	-0.13	-0.06	0.15*	-0.16	-0.05
	(1.11)	(-1.24)	(-0.56)	(1.91)	(-1.40)	(-0.47)
Leverage	-0.02	-0.03	-0.17	0.09	-0.04	-0.20
	(-0.23)	(-0.19)	(-1.30)	(0.83)	(-0.24)	(-1.50)
ΔLeverage	-0.14	0.03	-0.19	-0.16	0.03	-0.08
	(-0.97)	(0.12)	(-0.85)	(-1.04)	(0.12)	(-0.35)
Abs (asset growth)	-0.10*	-0.08	-0.04	-0.12***	-0.05	-0.02
	(-1.88)	(-1.59)	(-0.54)	(-2.86)	(-0.91)	(-0.22)
Research expense	0.54**	0.09	0.77**	0.61**	0.16	0.71*
	(2.30)	(0.31)	(2.01)	(2.52)	(0.46)	(1.71)
PP&E	0.01	0.04	-0.13	0.01	0.02	-0.10
	(0.07)	(0.35)	(-0.76)	(0.07)	(0.13)	(-0.62)
Current ratio	0.00	0.00	-0.01	-0.00	-0.00	-0.01
	(0.10)	(0.07)	(-0.63)	(-0.19)	(-0.03)	(-0.39)
Ln(Firm age)	-0.01	0.03	0.05	-0.01	0.03	0.04
	(-0.38)	(1.14)	(1.50)	(-0.42)	(1.17)	(1.31)
Market-to-book				-0.02	-0.00	-0.04**
				(-1.03)	(-0.12)	(-1.97)
Sales growth				-0.05	-0.09	-0.03
				(-0.75)	(-0.96)	(-0.25)
Volatility				-0.19*	0.17	0.08
				(-1.75)	(1.23)	(0.52)
Past return				0.03	-0.08	-0.03
				(0.49)	(-1.15)	(-0.27)
Constant	0.04	0.11	0.13	0.20	-0.09	0.14
	(0.23)	(0.61)	(0.82)	(0.99)	(-0.45)	(0.64)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1146	1090	1014	1114	1058	984
R-squared	0.10	0.12	0.08	0.12	0.13	0.08

Table IA5: Probability of borrowing from a nonbank lender (2010-2017)

This table reports the results from linear probability models of whether a loan is extended by a nonbank lender. The sample includes all non-bond borrowings of a random sample of 750 middle-market firms originated during the 2010-2017 period. Observations are aggregated to the deal level using the average value of each variable across the tranches in a deal. Industry fixed effects are based on Fama-French 12 industries. *t*-statistics adjusted for firm-level clustering are reported in parentheses. *, **, and *** indicate statistical significance at 10%, 5%, and 1%.

	(1)	(2)	(3)	(4)	(5)
Ln(Assets)	0.01	0.03*	0.02	-0.04	-0.03
	(0.76)	(1.88)	(1.63)	(-0.75)	(-0.48)
EBITDA	-0.00***	-0.00**	-0.00**	-0.00	-0.00
	(-2.74)	(-2.39)	(-2.39)	(-0.61)	(-0.34)
EBITDA < 0	0.32***	0.25***	0.24***	0.24***	0.16*
	(7.73)	(5.60)	(5.45)	(3.19)	(1.96)
Leverage	0.41***	0.32***	0.26***	0.47***	0.31**
	(5.25)	(3.72)	(3.34)	(3.46)	(2.28)
ΔLeverage	0.35***	0.32***		0.35**	0.34**
	(4.06)	(3.27)		(2.43)	(2.31)
|Asset growth|	0.12***	0.12***		0.06	0.10**
	(3.88)	(3.90)		(1.32)	(2.14)
Research expense	0.06	0.16	0.16	-0.02	0.36
	(0.51)	(1.11)	(1.15)	(-0.04)	(0.69)
PP&E	0.02	0.03	0.03	0.32	0.12
	(0.24)	(0.38)	(0.33)	(1.02)	(0.36)
Current ratio	-0.03***	-0.02**	-0.02**	-0.02	-0.02
	(-3.22)	(-2.53)	(-2.11)	(-1.47)	(-1.17)
Ln(Firm age)	-0.02	-0.02	-0.02	-0.02	-0.09
	(-1.07)	(-0.72)	(-0.73)	(-0.12)	(-0.50)
Market-to-book		-0.01	-0.00		-0.02
		(-0.77)	(-0.14)		(-0.78)
Sales growth		0.01	0.01		-0.08
		(0.17)	(0.35)		(-1.02)
Volatility		0.22***	0.23***		0.27***
		(3.73)	(4.07)		(2.84)
Past return		-0.14***	-0.14***		-0.11**
		(-4.28)	(-4.08)		(-2.30)
Constant	0.15	-0.08	-0.05	0.21	0.44
	(1.50)	(-0.57)	(-0.38)	(0.29)	(0.54)
Year effects	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	No	No
Borrower effects	No	No	No	Yes	Yes
Observations	1396	1318	1329	1396	1318
R-squared	0.23	0.24	0.23	0.65	0.67

Table IA6: Multinomial logit regression for borrowing from a specific type of nonbank lender (2010-2017)

This table reports relative risk ratios from multinomial logit regressions predicting lender type. Bank loans are the base outcome in all models. Model 1 aggregates nonbank lenders into 1) finance companies (FCOs) and bank-affiliated FCOs; 2) investment banks; 3) asset managers; and 4) insurance companies. Model 2 splits FCOs into bank-affiliated versus unaffiliated ones. Model 3 splits assets managers into BDC/PE/VC versus hedge fund/investment manager. For models 2 and 3, the full model is estimated, but only results for the labeled categories are tabulated. Year and Fama-French 12 industry fixed effects are included in all specifications. z-statistics adjusted for clustering by firm are reported in parentheses. *, **, and *** indicate statistical significance at 10%, 5%, and 1%. Total number of observations is 1,313.

	Model 1				Model 2		Model 3	
	FCO / Bank FCO	Investment bank	Asset managers	Insurance	Bank FCO	Unaffiliated FCO	BDC / PE / VC	Hedge fund / IM
Ln(Assets)	1.38***	2.23***	1.05	1.36	1.35	1.36**	1.02	1.11
	(2.68)	(3.10)	(0.39)	(0.96)	(1.58)	(2.20)	(0.11)	(0.65)
EBITDA	0.99**	1.00	0.99***	1.00	1.00	0.99***	0.99**	0.99***
	(-2.15)	(-0.95)	(-3.32)	(-0.18)	(-1.10)	(-3.00)	(-2.35)	(-2.85)
EBITDA < 0	1.87**	5.12***	4.36***	4.99	0.62	2.69***	3.29***	5.61***
	(2.05)	(3.00)	(5.02)	(1.41)	(-0.85)	(2.68)	(3.11)	(4.64)
Leverage	4.04*	6.14**	13.88***	1.05	1.04	7.39***	7.84***	18.08***
	(1.81)	(2.07)	(3.97)	(0.04)	(0.03)	(3.00)	(2.59)	(4.25)
ΔLeverage	1.53	199.32***	16.37***	0.27	0.05**	4.37	22.09***	16.22***
	(0.43)	(3.05)	(3.41)	(-0.57)	(-2.00)	(1.30)	(3.26)	(3.03)
Abs (asset growth)	1.49	3.44***	2.05***	2.75	3.22***	1.17	1.57	2.21***
	(1.19)	(3.42)	(2.92)	(1.45)	(2.62)	(0.36)	(1.54)	(3.01)
Research expense	3.15	0.00	3.34	0.00	0.07	3.24	20.86***	0.30
	(0.92)	(-1.49)	(1.19)	(-1.43)	(-0.70)	(0.83)	(2.73)	(-0.86)
PP&E	0.91	1.16	1.05	18.62*	0.98	0.87	0.91	1.28
	(-0.17)	(0.15)	(0.07)	(1.73)	(-0.03)	(-0.21)	(-0.12)	(0.31)
Current ratio	0.85*	0.89	0.80***	0.94	0.81	0.88	0.74**	0.85*
	(-1.82)	(-1.42)	(-2.78)	(-0.42)	(-1.41)	(-1.54)	(-2.43)	(-1.87)
Ln(Firm age)	0.83	0.87	0.80	1.45	0.56*	1.11	0.98	0.72
	(-0.73)	(-0.53)	(-1.25)	(1.43)	(-1.89)	(0.59)	(-0.10)	(-1.63)
Market-to-book	0.90	0.85	0.96	1.11	0.40***	1.00	1.09	0.86
	(-0.81)	(-0.77)	(-0.46)	(0.29)	(-2.90)	(0.04)	(0.96)	(-1.23)
Sales growth	0.93	1.15	1.30	0.39	1.02	0.97	2.57**	0.76
	(-0.20)	(0.19)	(0.80)	(-0.93)	(0.04)	(-0.06)	(2.45)	(-0.69)
Volatility	3.18***	3.03*	3.16***	0.08	0.87	4.73***	2.74	3.84***
	(2.80)	(1.65)	(2.95)	(-0.77)	(-0.15)	(3.01)	(1.55)	(3.19)
Past return	0.45***	1.10	0.33***	2.54	0.67	0.36***	0.30***	0.36***
	(-2.94)	(0.22)	(-4.47)	(0.84)	(-0.82)	(-3.34)	(-2.88)	(-3.70)
Non-zero obs. in category	143	42	195	23	51	92	77	118

Table IA7: Non-price terms of bank versus nonbank loans (2010-2017)

This table reports the results of OLS regressions of non-price terms on lender type indicators, loan and firm characteristics. The sample includes all borrowings of a random sample of 750 middle-market firms originated during the 2010-2017 period. Fixed rate loans are dropped from the regressions for performance pricing. Even-numbered columns include research expense, PP&E, current ratio, log firm age, market-to-book, sales growth, volatility and past returns as additional controls. The coefficients on these variables are not reported to save space. Variable definitions are in Appendix B. Industry fixed effects are based on Fama-French 12 industries. t-statistics adjusted for firm-level clustering are reported in parentheses. *, **, and *** indicate statistical significance at 10%, 5%, and 1%.

Panel A: Basic non-price terms

	(1) Ln(Amount)	(2) Ln(Amount)	(3) Maturity	(4) Maturity	(5) Seniority	(6) Seniority	(7) Security	(8) Security
Bank FCO	-0.96***	-1.06**	0.69	0.67*	0.01*	0.00	0.10***	0.07*
	(-2.83)	(-2.54)	(1.53)	(1.73)	(1.83)	(0.17)	(2.95)	(1.95)
FCO	-1.00***	-0.30**	-0.12	0.42	-0.01	-0.01	0.05	0.01
	(-4.84)	(-2.16)	(-0.39)	(1.63)	(-1.12)	(-0.65)	(1.53)	(0.24)
Investment bank	0.71	0.19	0.77**	0.58**	-0.05	-0.05	-0.01	-0.01
	(1.65)	(0.76)	(2.45)	(2.50)	(-1.44)	(-1.27)	(-0.23)	(-0.12)
PE/VC/BDC	-1.73***	-0.28**	-0.59**	0.61**	-0.23***	-0.23***	-0.05	-0.12**
	(-7.86)	(-2.07)	(-2.56)	(2.49)	(-4.09)	(-4.18)	(-1.07)	(-2.39)
Hedge fund/IM	-1.67***	-0.24	-1.08***	0.17	-0.25***	-0.25***	-0.22***	-0.29***
	(-6.92)	(-1.54)	(-4.66)	(0.82)	(-3.36)	(-3.93)	(-3.43)	(-4.62)
Insurance	0.11	-0.76***	6.02***	5.54***	0.00	-0.01	-0.26**	-0.23**
	(0.37)	(-3.14)	(8.55)	(9.58)	(0.40)	(-0.60)	(-2.23)	(-2.06)
Ln(Assets)		0.89***		0.34***		0.01*		-0.02*
		(25.40)		(6.49)		(1.70)		(-1.69)
Profitability		-0.11		0.22		-0.09*		-0.04
		(-0.37)		(0.60)		(-1.75)		(-0.44)
EBITDA < 0		-0.37***		-0.74***		-0.02		-0.04
		(-2.74)		(-4.27)		(-0.85)		(-0.99)
Leverage		0.37*		-0.31		-0.09		0.10
		(1.84)		(-1.07)		(-1.54)		(1.55)
Constant	3.56***	-1.73***	3.46***	1.44***	0.98***	0.92***	0.84***	1.08***
	(24.52)	(-5.17)	(22.94)	(3.08)	(75.43)	(16.57)	(29.36)	(10.20)
Additional controls	No	Yes	No	Yes	No	Yes	No	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1323	1323	1306	1306	1324	1324	1324	1324
R-squared	0.14	0.69	0.18	0.34	0.21	0.24	0.05	0.10

Panel B: Performance-related non-price terms

	(1) Financial covenants	(2) Financial covenants	(3) Performance pricing	(4) Performance pricing	(5) Warrants	(6) Warrants	(7) Convertible	(8) Convertible
Bank FCO	-0.19**	-0.18**	-0.10	-0.06	0.02	0.03	-0.01**	-0.01
	(-2.16)	(-2.10)	(-1.26)	(-0.82)	(0.56)	(1.01)	(-2.02)	(-1.40)
FCO	-0.22***	-0.13**	-0.35***	-0.24***	0.12***	0.09**	0.03	0.02
	(-3.65)	(-2.13)	(-10.46)	(-5.90)	(3.00)	(2.49)	(1.52)	(0.80)
Investment bank	-0.13*	-0.15**	-0.12	-0.13*	0.03	0.04	0.09*	0.09*
	(-1.68)	(-2.23)	(-1.51)	(-1.65)	(0.85)	(1.05)	(1.93)	(1.79)
PE/VC/BDC	-0.37***	-0.25***	-0.39***	-0.32***	0.35***	0.24***	0.18***	0.15***
	(-5.80)	(-3.68)	(-14.49)	(-8.09)	(6.22)	(4.18)	(3.90)	(3.09)
Hedge fund/IM	-0.58***	-0.44***	-0.22***	-0.20**	0.25***	0.17***	0.29***	0.25***
	(-10.79)	(-7.15)	(-2.73)	(-2.39)	(4.90)	(3.17)	(6.87)	(6.08)
Insurance	-0.03	-0.09	-0.46***	-0.62***	0.02	0.04	-0.00	0.02
	(-0.52)	(-1.35)	(-9.65)	(-9.22)	(0.44)	(1.20)	(-1.02)	(1.18)
Ln(Assets)		0.04***		0.06***		-0.01		-0.00
		(2.78)		(4.11)		(-0.85)		(-0.10)
Profitability		0.10		0.04		-0.23***		-0.06
		(1.05)		(0.31)		(-3.02)		(-0.74)
EBITDA < 0		-0.10*		-0.03		0.00		0.01
		(-1.93)		(-0.54)		(0.07)		(0.30)
Leverage		-0.02		-0.22***		0.00		0.01
		(-0.22)		(-2.80)		(0.06)		(0.25)
Constant	0.84***	0.78***	0.35***	0.11	0.03*	0.12*	0.01	0.08
	(28.47)	(7.34)	(9.05)	(0.84)	(1.79)	(1.88)	(0.47)	(1.21)
Additional controls	No	Yes	No	Yes	No	Yes	No	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1323	1323	1023	1023	1321	1321	1321	1321
R-squared	0.19	0.27	0.08	0.14	0.17	0.24	0.19	0.23

Panel C: Other loan terms

	(1) Fixed rate loan	(2) Fixed rate loan	(3) Upfront fee (bp)	(4) Upfront fee (bp)	(5) Annual fee (bp)	(6) Annual fee (bp)	(7) Second lien	(8) Second lien
Bank FCO	0.33**	0.33**	-3.19	-3.02	-2.21**	-1.88	0.04	0.04
	(2.10)	(2.15)	(-0.48)	(-0.56)	(-2.55)	(-1.52)	(1.29)	(1.35)
FCO	0.23***	0.19***	58.67***	39.68**	19.74**	17.73**	0.05**	0.06**
	(4.34)	(3.61)	(2.70)	(2.50)	(2.16)	(2.03)	(2.06)	(2.38)
Investment bank	0.18**	0.19***	39.18**	33.22**	-2.59***	-2.51	0.09*	0.09**
	(2.43)	(2.91)	(2.50)	(2.06)	(-2.71)	(-1.44)	(1.94)	(2.03)
PE/VC/BDC	0.63***	0.55***	21.29**	-10.50	0.49	-4.32	0.10**	0.13***
	(10.81)	(8.87)	(2.04)	(-0.75)	(0.18)	(-1.15)	(2.36)	(2.67)
Hedge fund/IM	0.77***	0.69***	45.90***	16.43	0.52	-4.70	0.04**	0.05**
	(17.80)	(14.25)	(2.64)	(0.85)	(0.26)	(-1.56)	(2.09)	(2.54)
Insurance	0.87***	0.91***	-1.91	2.73	-3.37***	-1.99	0.04	0.02
	(19.00)	(19.03)	(-0.14)	(0.27)	(-3.52)	(-0.97)	(0.94)	(0.47)
Ln(Assets)		-0.03***		-4.25**		-0.37		0.00
		(-3.24)		(-2.25)		(-0.53)		(0.09)
Profitability		-0.09		-22.04		9.04		0.07**
		(-1.21)		(-0.70)		(1.58)		(2.26)
EBITDA < 0		-0.01		11.07		10.75***		-0.00
		(-0.33)		(0.92)		(2.80)		(-0.15)
Leverage		0.02		18.58		0.20		0.03
		(0.34)		(1.20)		(0.07)		(1.49)
Constant	0.07***	0.34***	19.51***	38.51*	5.93**	4.90	-0.00	-0.07
	(3.51)	(3.77)	(3.81)	(1.73)	(2.46)	(0.57)	(-0.01)	(-1.40)
Additional controls	No	Yes	No	Yes	No	Yes	No	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1290	1290	1106	1106	1105	1105	1324	1324
R-squared	0.48	0.51	0.07	0.12	0.06	0.11	0.05	0.10

Table IA8: Initial interest rate charged on bank versus nonbank loans (2010-2017)

This table reports the results of regressions of the initial interest rate on lender type indicators, loan and firm characteristics. Initial interest rate is equal to the fixed rate for fixed rate loans and to 3-month LIBOR plus spread for floating rate loans. The sample includes all borrowings of a random sample of 750 middle-market firms originated during the 2010-2017 period. Variable definitions are in Appendix B. Industry fixed effects are based on Fama-French 12 industries. Columns (1) through (6) use all sample loans. Column (7) uses only first lien senior secured floating rate loans with financial covenants that do not have warrants and are not convertible to equity. Column (8) limits the sample to loans without financial covenants. *t*-statistics adjusted for firm-level clustering are in parentheses. *, **, and *** indicate statistical significance at 10%, 5%, and 1%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank	463.16***	342.80***	241.44***	209.75***		229.05***	182.14***	244.87***
	(16.53)	(13.18)	(9.72)	(8.92)		(5.05)	(7.15)	(4.26)
Bank FCO					-61.29**			
					(-2.05)			
FCO					270.86***			
					(7.13)			
Investment Bank					179.15***			
					(5.27)			
PE/VC/BDC					415.01***			
					(9.34)			
Hedge fund/IM					384.02***			
					(8.42)			
Insurance					73.84*			
					(1.79)			
Ln(Amount)			6.35	10.74	-4.03	18.13	0.14	18.89
			(0.82)	(1.36)	(-0.66)	(1.17)	(0.02)	(1.14)
Performance pricing			-50.96***	-45.29***	-43.22***	-46.67*	-44.32***	-219.42**
			(-4.43)	(-3.98)	(-4.02)	(-1.86)	(-4.01)	(-2.04)
Warrants			117.74***	120.10***	77.35**	88.68		18.84
			(3.18)	(3.04)	(2.16)	(1.10)		(0.34)
Convertible debt			-235.78***	-244.20***	-286.90***	-245.27**		-219.21***
			(-4.57)	(-4.51)	(-5.12)	(-2.03)		(-2.87)
Financial covenants			18.71	22.88	40.18**	31.04		
			(0.91)	(1.07)	(2.14)	(0.78)		
Security			53.27***	40.50**	47.01***	1.21		20.34
			(2.68)	(2.08)	(2.81)	(0.03)		(0.43)
Second lien			415.33***	448.71***	391.85***	471.83***		270.95***
			(5.70)	(5.43)	(4.35)	(3.41)		(3.34)
Maturity			-12.32***	-9.71**	-4.58	-2.12	-1.69	-7.22
			(-2.71)	(-2.46)	(-1.20)	(-0.37)	(-0.43)	(-1.17)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fixed rate loan			173.04***	176.68***	154.32***	179.97***		67.31
			(4.35)	(4.46)	(4.37)	(3.24)		(1.27)
Seniority			-176.70***	-203.25***	-105.60**	-93.89		-156.65*
			(-3.16)	(-3.81)	(-1.97)	(-0.81)		(-1.88)
Ln(Assets)		-39.84***	-27.49**	-28.00***	-15.89**	-0.66	-19.68**	-20.82
		(-5.89)	(-2.55)	(-2.71)	(-2.24)	(-0.02)	(-2.20)	(-1.16)
Profitability		-53.09	-69.68	-51.61	-29.56	-177.10	-68.68	-138.79
		(-0.73)	(-1.09)	(-0.79)	(-0.46)	(-1.33)	(-0.90)	(-1.15)
EBITDA < 0		131.10***	121.79***	103.60***	84.09***	100.13**	67.49**	119.13*
		(4.61)	(4.58)	(3.96)	(3.30)	(2.22)	(2.45)	(1.97)
Leverage		251.46***	189.69***	161.68***	152.49***	27.24	166.12***	181.84**
		(6.25)	(5.29)	(4.49)	(4.66)	(0.26)	(4.50)	(2.20)
ΔLeverage		154.22***	121.11**	85.78	48.93	-39.10	22.88	276.09**
		(2.65)	(2.08)	(1.19)	(0.73)	(-0.28)	(0.23)	(2.24)
Abs (asset growth)		5.49	-0.42	31.42*	47.27***	29.30	74.63**	-17.17
		(0.29)	(-0.02)	(1.80)	(3.04)	(0.79)	(2.34)	(-0.48)
Research expense		19.99	-62.81	-8.24	-45.09	297.69	-56.08	-64.57
		(0.26)	(-0.90)	(-0.11)	(-0.67)	(0.88)	(-0.70)	(-0.42)
PP&E		-3.44	-6.58	2.17	-3.30	60.22	-14.48	-18.17
		(-0.09)	(-0.19)	(0.06)	(-0.12)	(0.32)	(-0.43)	(-0.25)
Current ratio		-0.63	-2.19	-1.63	-1.68	-8.97	-2.83	7.52
		(-0.15)	(-0.53)	(-0.41)	(-0.51)	(-0.98)	(-0.71)	(0.64)
Ln(Firm age)		-7.63	-6.52	-11.37	-14.21*	-96.82	-16.81**	-29.90
		(-0.72)	(-0.62)	(-1.08)	(-1.94)	(-1.11)	(-2.33)	(-0.90)
Market-to-book				-16.62***	-18.94***	-20.13	-15.69***	-7.11
				(-4.02)	(-4.75)	(-1.30)	(-2.96)	(-0.53)
Sales growth				31.07	19.71	-0.97	-14.22	58.55
				(1.18)	(0.79)	(-0.02)	(-0.56)	(0.99)
Volatility				91.29**	62.49*	75.74	114.16***	10.52
				(2.46)	(1.82)	(1.27)	(3.11)	(0.15)
Past return				-68.90***	-49.20***	-45.40*	-59.75***	-80.99
				(-4.11)	(-2.98)	(-1.75)	(-3.41)	(-1.55)
Constant	432.87***	551.46***	651.10***	645.75***	537.82***	790.59*	455.38***	840.18***
	(16.48)	(10.73)	(8.36)	(8.01)	(6.78)	(1.80)	(7.85)	(4.25)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Firm effects	No	No	No	No	No	Yes	No	No
Observations	1379	1301	1286	1212	1207	1212	695	274
R-squared	0.45	0.56	0.64	0.67	0.71	0.83	0.50	0.55

Table IA9: Probability of bankruptcy for bank versus nonbank loans (2010-2017)
This table reports the results from linear probability models of borrower's bankruptcy over the three years after loan origination. The sample includes all borrowings of a random sample of 750 middle-market firms originated from January 2010 through September 2016. Bankruptcy dates as of September 30, 2019 are from Capital IQ. There are 68 deals by 39 borrowers that result in bankruptcy within three years. Variable definitions are in Appendix B. Industry fixed effects are based on Fama-French 12 industries. z-statistics adjusted for firm-level clustering are reported in parentheses. *, **, and *** indicate statistical significance at 10%, 5%, and 1%.

	(1)	(2)	(3)	(4)	(5)
Nonbank	0.072***	0.062***	0.042**	0.015	0.026
	(3.32)	(2.84)	(2.05)	(0.85)	(0.78)
Ln(Assets)		0.003	0.005	0.015**	0.010
		(0.57)	(0.99)	(2.42)	(1.14)
Profitability		-0.096*	-0.079	-0.056	-0.136
		(-1.84)	(-1.20)	(-0.81)	(-1.22)
EBITDA < 0		0.006	0.020	0.000	-0.030
		(0.22)	(0.64)	(0.01)	(-0.76)
Leverage			0.121**	0.062	0.133**
			(2.53)	(1.56)	(2.41)
ΔLeverage			0.157**	0.101	0.211**
			(2.06)	(1.20)	(2.35)
|Asset growth|			0.030	0.058**	0.001
			(1.10)	(2.06)	(0.03)
PP&E			0.017	0.017	0.008
			(0.32)	(0.33)	(0.14)
Current ratio			-0.005	-0.003	-0.003
			(-1.24)	(-0.65)	(-0.70)
Research expense			-0.027	0.000	0.102
			(-0.36)	(0.00)	(0.77)
Ln(Firm age)			-0.005	-0.008	-0.009
			(-0.41)	(-0.71)	(-0.66)
Market-to-book				-0.006	-0.005
				(-1.21)	(-0.89)
Sales growth				-0.007	-0.008
				(-0.23)	(-0.23)
Volatility				0.114***	0.042
				(3.07)	(0.96)
Past return				-0.102***	-0.118***
				(-4.24)	(-3.48)
Constant	-0.009	-0.035	-0.057	-0.142**	-0.061
	(-0.46)	(-1.15)	(-1.12)	(-2.21)	(-0.78)
Year effects	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes
Observations	1346	1292	1265	1192	663
R-squared	0.05	0.07	0.10	0.15	0.15

Table IA10: Matching estimates for loan characteristics

This table provides results of a nearest-neighbor matching using Mahalanobis distance between borrowers from nonbanks (*treated*) and banks (*control*). To create the control group, we utilize Mahalanobis matching with exact matching for loan origination year and dummy for EBITDA<0 in addition to (nearest neighbor) matching on borrowing firm Profitability and Leverage. Panel A provides the covariate balance of the sample before and after the matching used to estimate the ATET for interest rates (as presented in the first column of Panel B). Panel B reports average treatment effect on the treated (ATET) with Abadie-Imbens (AI) robust standard errors in the parentheses for loan amount, initial interest rate, and maturity in columns 1-3, respectively. The sample includes all borrowings of a random sample of 750 middle-market firms originated during the 2010-2015 period. Observations are aggregated to the deal level using the average value of each variable across the tranches in a deal. Initial interest rate is equal to the fixed rate for fixed rate loans and to 3-month LIBOR plus spread for floating rate loans. Variable definitions are in Appendix B. ATET is bias-adjusted by using industry, firm size (Ln (Assets)), Profitability, Leverage, ΔLeverage, Abs (Asset Growth), Research expense, PP&E, Current Ratio, Ln (Firm Age), Volatility, Past stock returns. Symbols *, **, *** denote significance at the 10%, 5%, and 1% respectively.

Panel A: Covariate Balance after Matching

	Standardized Difference		Variance Ratio	
	Raw	Matched	Raw	Matched
Ln (Assets)	-0.472	-0.191	1.321	1.063
Profitability	-0.700	-0.116	3.430	1.422
EBITDA<0	0.761	0.000	2.210	1.000
Leverage	0.447	0.129	1.718	1.296
ΔLeverage	0.049	0.071	3.222	3.843
Abs (Asset Growth)	0.297	0.272	3.964	3.150
Research expense	0.258	-0.020	2.944	1.167
PP&E	-0.120	0.023	0.891	0.892
Current ratio	-0.313	-0.310	0.851	0.556
Ln (Firm Age)	-0.305	-0.190	1.015	1.013
Market-to-book	0.059	0.037	1.451	1.265
Sales growth	0.039	0.141	1.680	1.224
Volatility	0.658	0.338	2.183	1.519
Past Returns	-0.391	-0.229	1.701	1.392

Panel B: Matching Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Interest Rate	Ln (Amount)	Seniority	Security	Financial Covenants	Warrants
ATET						
Nonbank Dummy	330.67***	-0.516***	-0141***	-0.149***	-0.259***	0.141***
(AI robust *std. errors*)	(23.10)	(0.114)	(0.019)	(0.032)	(0.040)	(0.025)
N (Matched Observations)	668	696	696	696	696	696
Bias-adj. Variables	Industry, Ln (Assets), Profitability, Leverage, ΔLeverage, Abs (Asset Growth), Research expense, PP&E, Current Ratio, Ln (Firm Age), Volatility, and Past Returns					

Table IA11: Summary statistics for sample firms vs. mid-size Compustat firms

This table reports firm characteristics for the panel of sample firms and the remainder of the full population of mid-size Compustat firms that was not chosen by the random selection algorithm. Both groups of firms are recorded as an annual panel from 2009 through 2015. Financials, utilities, and firms with a foreign incorporation code or foreign headquarters location are excluded. Panel A applies all Compustat filters except for the minimum 5% leverage criterion. Panel B additionally imposes the leverage criterion. Variable definitions are in Appendix B. *, **, and *** indicate statistical significance for differences between bank loans and nonbank loans at 10%, 5%, and 1%. Statistical significance for differences in means is assessed using univariate regressions allowing for firm-level clustering of standard errors. Statistical significance for differences in medians is assessed using univariate median regressions, with standard errors obtained from a bootstrap with firm-level resampling clusters and 500 repetitions. Standardized differences represent the difference in mean after standardizing each variable to have mean zero and a standard deviation of one.

Panel A: All mid-size Compustat firms

	Sample firms				Undrawn mid-size Compustat firms				Standar-dized diff.
	Obs.	Mean	Median	St.dev.	Obs.	Mean	Median	St.dev.	
Total assets	4113	567.14	241.78	1068.97	10916	552.19	198.99*	1304.91	0.01
EBITDA	4103	53.68	15.77	170.20	10884	43.77*	9.99**	160.58	0.06
EBITDA < 0	4103	0.26	0.00	0.44	10884	0.30**	0.00	0.46	-0.08
Profitability	4101	0.02	0.09	0.23	10883	0.01	0.08**	0.25	0.05
Leverage	4104	0.27	0.22	0.24	10840	0.19***	0.07***	0.25	0.34
ΔLeverage	4043	0.01	0.00	0.15	10699	0.01	0.00	0.14	0.03
|Asset growth|	4054	0.27	0.12	0.49	10804	0.30**	0.13	0.56	-0.05
Market-to-book	4059	1.71	1.18	1.67	10655	1.99***	1.32***	1.90	-0.15
Research expense	4113	0.08	0.00	0.19	10916	0.13***	0.01***	0.25	-0.19
PP&E	4111	0.26	0.16	0.25	10900	0.22***	0.12***	0.24	0.16
Current ratio	4028	2.50	1.96	2.16	10711	3.38***	2.40***	3.21	-0.29
Sales growth	4006	0.09	0.06	0.32	10639	0.09	0.06	0.35	0.00
Volatility	3625	0.60	0.51	0.37	9614	0.57**	0.49**	0.34	0.09
Past return	3625	-0.03	0.01	0.41	9614	-0.02	0.02	0.39	-0.03

Panel B: Mid-size Compustat firms with at least 5% leverage

	Sample firms				Undrawn mid-size Compustat firms				Standar-dized diff.
	Obs.	Mean	Median	St.dev.	Obs.	Mean	Median	St.dev.	
Total assets	4113	567.14	241.78	1068.97	7909	665.38*	237.86	1503.82	-0.07
EBITDA	4103	53.68	15.77	170.20	7892	52.29	13.10	184.20	0.01
EBITDA < 0	4103	0.26	0.00	0.44	7892	0.29*	0.00	0.45	-0.06
Profitability	4101	0.02	0.09	0.23	7891	0.01*	0.08	0.26	0.07
Leverage	4104	0.27	0.22	0.24	7878	0.26	0.19**	0.26	0.06
ΔLeverage	4043	0.01	0.00	0.15	7761	0.01	0.00	0.16	0.00
|Asset growth|	4054	0.27	0.12	0.49	7808	0.32***	0.13*	0.59	-0.09
Market-to-book	4059	1.71	1.18	1.67	7717	1.93***	1.27***	1.91	-0.12
Research expense	4113	0.08	0.00	0.19	7909	0.11***	0.00	0.24	-0.12
PP&E	4111	0.26	0.16	0.25	7896	0.25	0.15	0.26	0.01
Current ratio	4028	2.50	1.96	2.16	7727	2.76***	2.03	2.61	-0.10
Sales growth	4006	0.09	0.06	0.32	7689	0.10	0.06	0.35	-0.03
Volatility	3625	0.60	0.51	0.37	6846	0.59	0.50	0.36	0.03
Past return	3625	-0.03	0.01	0.41	6846	-0.03	0.02	0.40	-0.00