Appendix for "Contagion in the Market for Leveraged Loans"

A   Data Matching

This section describes the matching process to link loans in the CLO-i dataset with loans in the SDC Platinum dataset. Matching datasets on the U.S. syndicated loan market is a challenging task and no agreed upon procedure exists (Cohen et al., 2018). The task is even more challenging for the CLO-i dataset: due to the fact that information on loan holdings and transactions are obtained from CLOs' reports, there is no guarantee of consistency across time and deals. This implies that, in order to guarantee the integrity of the data, most of the matching procedure requires human discretion. In what follows I will describe the steps I have undertaken to match CLO-i with SDC Platinum, which - to the best of my knowledge - is the first attempt in these regards.

The procedure starts from CLO holdings in the CLO-i dataset from which I keep only the following types: "Term Loan B", "Term Loan C", "Term Loan D", "Term Loan (Other)" and "Other". These types represent the greatest majority of CLO holdings as Figure C5 shows. For each of these securities I proceed to compute the first and last date it appears in sample together with the maturity date provided on the report; Figure C6 plots histograms of these figures. I then proceed by recoding the maturity date as the maximum between the last time a security appears in sample and the reported maturity date, given that a security cannot appear on a balance sheet past its maturity and the resulting maturity date likely stems from a reporting mistake. I then proceed to compare the information at the security level across different deals. Whenever a security presents different maturity dates I keep the modal date across CLOs reports.

Unfortunately, for the greatest part of the sampe, CLO-i does not provide a unique identifier for each security[1]. In order to make sure that the same security does not appear twice or more because of spelling mistakes in the report, I consider two securities as the same if the agree on the name of the borrower, type and maturity date, implying that all the analysis in the paper is carried out at the level of the tranche type. In order to guarantee the integrity of the match, issuer an security names are removed of irrelevant information: special characters like are removed, all the names have been converted into lower cased letters, commonly used abbreviations (e.g., "corp", "grp", etc...) have been fixed, similarly to Cohen et al. (2018). Once a security has been uniquely identified on CLO-i, I keep information regarding the first time it has appeared in sample, the maturity date, the first rating and the first interest rate when they are available.

I then proceed to apply the same procedure to the universe of loans in SDC Platinum, which - however - does not require to be fixed for duplicates. First, I obtain the distinct observations by borrower, announcement date, facility and tranche. Then the borrower names are adjusted as previously described.

The refined samples of loans in CLO-i and SDC Platinum have then been matched using the following criteria: first, the announcement date in SDC Platinum needs to be no more than one year away from the first time the loan appears in CLO-i, second the maturity date in SDC Platinum is no more than one year away from the maturity date

---

[1]CLO-i provides a unique loan identifier only after 2019.

in the CLO-i, third at least one word in the borrower name reported in SDC Platinum needs to appear in either the issuer or the security name in CLO-i[2]. This leaves me with approximately 300,000 matches. These matches have been manually inspected in order to avoid false positives. When a security in CLO-i has been matched with more than one security in SDC Platinum I have kept the closest security according to the following criteria: first, I have given priority to those securities sharing the same maturity date and loan type; second, if one of the two was differring across the datasets, I have kept securities whose types were consistent[3]; third, if more than one tranche was matched I have then proceeded to keep the closest loan in terms of maturity and interest rate.

Figure C15 reports the matching rate by year for the securities in the CLO-i dataset, while Figure C16 for securities in SDC Platinum.

---

[2]Applying fuzzy string matching routines provides a reduced matching rate compared to this procedure.

[3]CLO-i provides information regarding the loan type which has been augmented with information present in the security name whenever possible. The following matching rules have been adopted. "Term Loan B" has been matched with the following SDC Platinum types: "1stLienTermLoan", "Other", ""RevCred/Term Ln", "RevCred/TLB", "Term Loan", and"Term Loan B". "Term Loan C" has been matched with the following SDC Platinum types: "1stLienTermLoan", "Other", ""RevCred/Term Ln", "RevCred/TLC", "Term Loan","Term Loan C", and "Term Loan/LC". "Term Loan D" has been matched with the following SDC Platinum types: "1stLienTermLoan", "Other", ""RevCred/Term Ln", "RevCred/TLD", "Term Loan","Term Loan D". "Term Loan (Other)" and "Other" have been mtched with all the previous.

B Additional Tables

Table B1 : Largest Deals and Management Teams

The table reports the twenty largest CLO managers, in Panel A, and CLO deal, in Panel B, based on the average total assets in sample. For managers, total assets are the sum of the current balance of holdings managed in a given month, while for CLO deals the sum of the current balance of holdings held in a given report. Assets are measured in $Mlns.

Panel A: Managers				
Name	Mean	Median	Min.	Max.
GSO Capital Partners	15536.34	15075.26	5813.30	27456.15
Carlyle Group	11932.33	10541.84	1620.47	24850.72
KKR Financial Advisors	11376.15	11419.91	9645.77	13058.09
Och Ziff	11136.66	11622.85	8459.28	13089.39
Credit Suisse Asset Management	11093.56	8881.74	2718.49	28504.00
Ares Management	7819.85	7326.49	1999.78	19644.97
Barings	7701.79	7383.15	3856.02	17866.87
PGIM	7606.96	5128.54	1653.70	24309.48
Alcentra	7457.40	7629.65	2525.83	13718.95
CIFC Asset Management	7011.29	6284.61	493.14	18429.52
KKR	6994.95	6402.08	2700.69	18720.42
Apollo Global Management	6918.01	6946.41	1303.09	14200.04
CBAM	6581.15	7750.09	1231.18	10223.07
CVC Credit Partners	6205.31	5197.08	2134.08	13792.22
Barclays Capital	6151.88	5772.62	4755.84	9752.23
MJX Asset Management	5584.94	4169.99	852.10	17248.10
Investcorp Credit Management	5510.20	5238.23	2053.56	11178.54
Sculptor	5082.09	5269.00	588.07	14447.15
Octagon Credit Investors	4859.36	2993.79	670.60	18102.80
Onex Credit Partners	4848.65	3993.32	501.63	10095.17
Panel B: CLO Deals				
Name	Mean	Median	Min.	Max.
Heta Funding	5331.63	4938.22	4721.55	7897.35
GoldenTree Credit Opportunities Financing I	3652.07	3652.07	3652.07	3652.07
Fortress Credit Opportunities I	3441.43	3454.84	1251.67	18336.84
KKR Financial CLO 2007-1	2817.67	3196.07	56.26	3424.96
GSO Domestic Capital Funding	2101.24	2101.24	170.94	4031.53
Antares CLO 2017-1	2100.21	2111.52	2016.51	2171.98
Prospect Funding I	1817.85	1431.03	1189.79	3750.56
CBAM 2017-2	1552.42	1554.13	1532.76	1572.30
RR 3	1479.54	1489.09	1306.71	1523.67
Ares XXXI-R	1362.82	1266.47	1243.70	2546.44
Genesis CLO 2007-2	1324.87	1313.84	1275.03	1371.04
Fortress Credit Opportunities IX	1318.64	1407.09	1108.52	1491.66
CBAM 2017-3	1288.33	1286.42	1262.60	1309.47
Tennenbaum Opportunities Partners V	1246.03	1331.87	623.67	3839.90
CBAM 2017-1	1239.99	1240.39	1225.05	1257.22
Ares XXXI	1213.49	1228.08	1075.40	1266.95
Antares CLO 2017-2	1208.99	1215.78	1164.59	1241.41
Churchill Financial Cayman	1198.26	1176.02	192.14	5162.72
Woodmont 2017-2 Trust	1171.74	1171.65	1103.75	1210.65
Zohar II 2005-1	1137.45	1153.06	919.02	1202.65

Table B2 : Holding vs. Market Prices - All Transactions

The table compares the discount of loans as they are reported by CLOs with the closest market price in the following year by running the following regression: $\text{discount}_{j,t} = \alpha_j + \alpha_t + \beta_1 \text{Transaction}_{j,t} + X_{j,t}\delta + \varepsilon_{j,t}$, where $\text{discount}_{j,t} = 100 \times \log(100/P_{j,t})$ is the discount at which a loan is recorded or traded compared to par, Transaction_{jt} is an indicator variable equal to one whenever the price comes from an actual transaction (sale or purchase) and zero otherwise, α_j and α_t are issuer and time fixed effects, while $X_{j,t}$ includes a set of fixed effects for rating, industry and interest rate of the loan. Panel A consider the universe of matched loans, while Panel B focuses on loans rated CCC.

	Panel A: All Loans				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Transaction	0.700***	0.709***	0.709***	0.709***	0.708***
	(0.160)	(0.161)	(0.161)	(0.161)	(0.161)
Fit statistics					
Observations	2,598,448	2,580,708	2,580,708	2,580,708	2,598,448
R^2	0.570	0.602	0.603	0.603	0.729
Within R^2	0.003	0.003	0.003	0.003	0.005
	Panel B: CCC Loans				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Transaction	2.96***	2.97***	2.97***	2.97***	3.01***
	(0.669)	(0.669)	(0.669)	(0.669)	(0.670)
Fit statistics					
Observations	228,440	228,440	228,440	228,440	228,440
R^2	0.628	0.648	0.650	0.650	0.739
Within R^2	0.0083	0.00884	0.0089	0.0089	0.01218
Fixed-Effects					
Year×Month	Yes	Yes	Yes	Yes	No
Issuer	Yes	Yes	Yes	Yes	No
Rating	No	Yes	Yes	Yes	Yes
Industry	No	No	Yes	Yes	Yes
Interest	No	No	No	Yes	Yes
Year×Month×Issuer	No	No	No	No	Yes

Two-way (Year×Month & Issuer) standard-errors in parentheses
*Signif Codes: ***: 0.01, **: 0.05, *: 0.1*

Table B3 : Par Building and OC Test Slack

Columns (1) and (2) report the results of the following regressions: $\text{gain}_{i,j,t} = \sum_{s=1}^{S} \mathbb{1}_s + \varepsilon_{i,t}$, where $\text{gain}_{i,j,t} = (100 - P_{j,t-1}) \times \frac{\text{Nr. loans bought}_{i,j,t}}{\text{Principal Balance}_{i,t}}$ for purchases and $\text{gain}_{i,j,t} = -(100 - P_{j,t-1}) \times \frac{\text{Nr. loans sold}_{i,j,t}}{\text{Principal Balance}_{i,t}}$ for sales; $\mathbb{1}_s$ is a dummy variable equal to one whenever the Junior (column (1)) or Senior (column(2)) slack belongs to bucket s of the following $S = 7$ buckets: [-1.00,-0.05), [-0.05,0), [0,0.05), [0.05,0.10), [0.10,0.15), [0.15,0.20), [0.20,1.00). Columns (3) and (4) report the results of the following regressions: $\text{gain}_{i,t} = \sum_{s=1}^{S} \mathbb{1}_s + \varepsilon_{i,t}$, where $\text{gain}_{i,t} = \sum_j (100 - P_{j,t-1}) \times \frac{\text{Nr. loans bought}_{i,j,t}}{PrincipalBalance_{i,t}} - \sum_j (100 - P_{j,t-1}) \times \frac{\text{Nr. loans sold}_{i,j,t}}{PrincipalBalance_{i,t}}$; $\mathbb{1}_s$ is a dummy variable equal to one whenever the Junior (column (3)) or Senior (column(4)) slack belongs to bucket s.

	Individual Transactions		Multiple Transactions	
	(1)	(2)	(3)	(4)
$\mathbb{1}[-1.00, -0.05)$	-0.037***	-0.008	-0.158***	-0.067
	(0.012)	(0.012)	(0.043)	(0.091)
$\mathbb{1}[-0.05, 0.00)$	0.012	0.0004	0.030	0.030
	(0.012)	(0.014)	(0.048)	(0.098)
$\mathbb{1}[0.00, 0.05)$	0.041***	0.004	0.249***	0.008
	(0.012)	(0.012)	(0.043)	(0.093)
$\mathbb{1}[0.05, 0.10)$	0.036***	0.009	0.143***	0.068
	(0.012)	(0.012)	(0.043)	(0.091)
$\mathbb{1}[0.10, 0.15)$	0.014	0.009	0.0007	0.066
	(0.012)	(0.012)	(0.050)	(0.092)
$\mathbb{1}[0.15, 0.20)$	0.001	0.006	-0.082	0.043
	(0.014)	(0.012)	(0.069)	(0.093)
$\mathbb{1}[0.20, 1.00)$	0.013	-0.006	-0.075	-0.038
	(0.014)	(0.012)	(0.068)	(0.093)
Fit statistics				
Observations	301,770	301,669	18,539	17,676
R^2	0.01193	0.00368	0.04887	0.01655
Adjusted R^2	0.01191	0.00366	0.04856	0.01621
OC Test	Junior	Senior	Junior	Senior

Two-way (CLO Deal & Year×Month) standard-errors in parentheses
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

6

Table B4 : Rating Factor and OC Test Slack

The table presents the average rating factor for loans sold, in column (1), and purchased, column (2), by CLOs as a function of the slack of their Junior OC tests, by reporting the co-efficients of the following regression: $RF_{i,j,t} = \sum_{s=1}^{S} \beta_s \mathbb{1}_s + \varepsilon_{i,j,t}$; where $RF_{i,j,t}$ is the rating factor of loan j, sold by CLO i at time t; $\mathbb{1}_s$ is a dummy variable equal to one whenever the Junior slack belongs to bucket s of the following $S = 7$ buckets: [-1.00,-0.05), [-0.05,0), [0,0.05), [0.05,0.10), [0.10,0.15), [0.15,0.20), [0.20,1.00). Column (3) aggregates the results by reporting the coefficients of the following regression: $\Delta WARF_{i,t} = \sum_{s=1}^{S} \beta_s \mathbb{1}_s + \varepsilon_{i,t}$, where $\Delta WARF_{i,t} = \sum_j RF_{i,j,t} \times \frac{\text{Amt. Purchased}_{i,j,t}}{\sum_j \text{Amt. Purchased}_{i,j,t}} - \sum_j RF_{i,j,t} \times \frac{\text{Amt. Sold}_{i,j,t}}{\sum_j \text{Amt. Sold}_{i,j,t}}$. Standard errors clustered by CLO Deal & Year×Month are reported in parentheses.

| | Individual Transactions | | Multiple Transactions |
	(1)	(2)	(3)
$\mathbb{1}[-1.00, -0.05)$	4392.7***	2669.5***	-397.4
	(597.4)	(78.5)	(467.8)
$\mathbb{1}[-0.05, 0.00)$	46.1	54.2	79.2
	(631.8)	(98.2)	(475.6)
$\mathbb{1}[0.00, 0.05)$	-1951.6***	138*	751.1
	(597.7)	(80.5)	(468.3)
$\mathbb{1}[0.05, 0.10)$	-1576.2***	39.1	-59.9
	(597.2)	(80.8)	(469.3)
$\mathbb{1}[0.10, 0.15)$	-1135.7*	84.6	-736.6
	(628.1)	(211.6)	(538.5)
$\mathbb{1}[0.15, 0.20)$	-459	501.9	-1840.4**
	(854.1)	(390.5)	(762.2)
$\mathbb{1}[0.20, 1.00)$	-1617.9***	5.06	-438.1
	(601)	(100.7)	(559.2)
Fit statistics			
Observations	155,079	162,629	21,043
R^2	0.05856	0.00231	0.1135
Adjusted R^2	0.05843	0.00222	0.11295

Two-way (CLO Deal & Year×Month) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table B5 : Price Pressure

The table reports the results of the following regression: $\text{discount}_{j,t} = \beta_1 \text{Shocked}_{i,j,t} + \beta_2 \text{Shocked}_{j,t} \times \text{Post}_{i,j,t} + X_{j,t}\delta + \varepsilon_{i,j,t}$, where $\text{discount}_{j,t} = 100 \times \log(100/P_{j,t})$, $P_{j,t}$ is the price of loan j at time t, $\text{Shocked}_{j,t}$ is a dummy variable equal to one when loan j selling volume by shocked CLOs is above median, $\text{Post}_{i,j,t}$ is a dummy equal to one after loan j has received an above median selling volume by shocked CLOs, $X_{j,t}$ is a matrix containing various fixed effects and controls. Column (1) includes issuer and year×month fixed effects; column (2) adds year×month×time-to-maturity fixed effects; column (3) adds year×month×rating fixed effects; column (4) adds year×month×industry fixed effects; column (5) adds year×month×interest rate fixed effects. Interest and time-to-maturity fixed effects are constructed after bucketing the continuous variable in ten groups. Two-way clustered standard errors at the year×month and issuer level are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Shocked	-0.520***	-0.144*	-0.069	-0.073	-0.067
	(0.095)	(0.078)	(0.056)	(0.051)	(0.054)
Shocked×Post	1.02***	0.690***	0.525***	0.514***	0.499***
	(0.144)	(0.121)	(0.091)	(0.086)	(0.089)
Fixed-Effects					
Issuer	Yes	Yes	Yes	Yes	Yes
Year×Month	Yes	No	No	No	No
Year×Month×TTM	No	Yes	Yes	Yes	Yes
Year×Month×Rating	No	No	Yes	Yes	Yes
Year×Month×Industry	No	No	No	Yes	Yes
Year×Month×Interest	No	No	No	No	Yes
Fit statistics					
Observations	738,354	738,354	738,354	738,354	738,354
R^2	0.421	0.432	0.533	0.564	0.540
Within R^2	0.324	0.312	0.224	0.218	0.223

Two-way (Year×Month & Issuer) standard-errors in parentheses
*Signif Codes: ***: 0.01, **: 0.05, *: 0.1*

Table B6 : Price Pressure - Purchases

The table reports the results of the following regression: $\text{discount}_{j,t} = \beta_1 \text{Shocked}_{i,j,t} + \beta_2 \text{Shocked}_{j,t} \times \text{Post}_{i,j,t} + X_{j,t}\delta + \varepsilon_{i,j,t}$, where $\text{discount}_{j,t} = 100 \times \log(100/P_{j,t})$, $P_{j,t}$ is the price of loan j at time t, $\text{Shocked}_{j,t}$ is a dummy variable equal to one when loan j selling volume by shocked CLOs is above median, $\text{Post}_{i,j,t}$ is a dummy equal to one after loan j has received an above median selling volume by shocked CLOs, $X_{j,t}$ is a matrix containing various fixed effects and controls. Column (1) includes issuer and year×month fixed effects; column (2) adds year×month×time-to-maturity fixed effects; column (3) adds year×month×rating fixed effects; column (4) adds year×month×industry fixed effects; column (5) adds year×month×interest rate fixed effects. Interest and time-to-maturity fixed effects are constructed after bucketing the continuous variable in ten groups. Two-way clustered standard errors at the year×month and issuer level are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Shocked	-1.4***	-1.03***	-0.582***	-0.581***	-0.558***
	(0.140)	(0.121)	(0.089)	(0.089)	(0.086)
Shocked×Post	-0.068	-0.338***	-0.199	-0.199	-0.207
	(0.110)	(0.121)	(0.131)	(0.131)	(0.134)
Fixed-Effects					
Issuer	Yes	Yes	Yes	Yes	Yes
Year×Month	Yes	No	No	No	No
Year×Month×TTM	No	Yes	Yes	Yes	Yes
Year×Month×Rating	No	No	Yes	Yes	Yes
Year×Month×Industry	No	No	No	Yes	Yes
Year×Month×Interest	No	No	No	No	Yes
Fit statistics					
Observations	746,956	746,956	600,004	600,004	598,787
R^2	0.48686	0.48926	0.56682	0.56815	0.5695
Within R^2	0.0068	0.00438	0.00173	0.00172	0.00165

Two-way (Year×Month & Issuer) standard-errors in parentheses
*Signif Codes: ***: 0.01, **: 0.05, *: 0.1*

Table B7 : The Dynamics of the Shock - Purchases

The table reports the results of the following regression: $\text{discount}_{j,t} = \gamma\text{Shocked}_{j,t} + \sum_{s=-6}^{12}\beta_s\text{Shocked}_{j,t} \times \mathbb{1}(t+s) + X_{j,t}\delta + \varepsilon_{j,t}$, where $discount_{j,t} = 100 \times \log(100/P_{j,t})$, $P_{j,t}$ is the price of loan j at time t, $\text{Shocked}_{j,t}$ is a dummy variable equal to one when loan j purchasing volume by shocked CLOs is above median, $\mathbb{1}(t+s)$ is a set of dummies that are equal to one $s = -6, -5, ..., 11, 12$ months around the event of the purchase at time t, $X_{j,t}$ is a matrix containing various fixed effects. Column (1) includes year×month fixed effects; column (2) adds year×month×time-to-maturity fixed effects; column (3) adds year×month×rating fixed effects; column (4) adds year×month×industry fixed effects; column (5) adds year×month×interest rate fixed effects. Interest and time-to-maturity fixed effects are constructed after bucketing the continuous variable in ten groups. Two-way clustered standard errors at the year×month and issuer level are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Shocked×$\mathbb{1}(t-6)$	-0.122	-0.122	-0.042	-0.095	-0.090
	(0.114)	(0.114)	(0.099)	(0.086)	(0.084)
Shocked×$\mathbb{1}(t-5)$	-0.228**	-0.228**	-0.121	-0.108	-0.069
	(0.103)	(0.103)	(0.088)	(0.082)	(0.080)
Shocked×$\mathbb{1}(t-4)$	-0.144	-0.144	-0.081	-0.128*	-0.072
	(0.088)	(0.088)	(0.084)	(0.072)	(0.073)
Shocked×$\mathbb{1}(t-3)$	-0.106	-0.106	-0.017	-0.014	0.025
	(0.126)	(0.126)	(0.108)	(0.109)	(0.106)
Shocked×$\mathbb{1}(t-2)$	-0.164	-0.164	-0.037	-0.021	0.033
	(0.146)	(0.146)	(0.137)	(0.128)	(0.126)
Shocked×$\mathbb{1}(t-1)$	-0.188*	-0.188*	-0.108	-0.096	-0.027
	(0.105)	(0.105)	(0.112)	(0.110)	(0.107)
Shocked×$\mathbb{1}(t)$	-0.342***	-0.342***	-0.229**	-0.197*	-0.120
	(0.111)	(0.111)	(0.112)	(0.108)	(0.105)
Shocked×$\mathbb{1}(t+1)$	-0.466***	-0.466***	-0.322***	-0.305***	-0.228**
	(0.100)	(0.100)	(0.103)	(0.103)	(0.102)
Shocked×$\mathbb{1}(t+2)$	-0.502***	-0.502***	-0.334***	-0.299***	-0.233**
	(0.107)	(0.107)	(0.111)	(0.107)	(0.104)
Shocked×$\mathbb{1}(t+3)$	-0.445***	-0.445***	-0.277**	-0.245**	-0.198*
	(0.109)	(0.109)	(0.112)	(0.108)	(0.107)
Shocked×$\mathbb{1}(t+4)$	-0.492***	-0.492***	-0.333***	-0.309***	-0.251**
	(0.102)	(0.102)	(0.104)	(0.101)	(0.099)
Shocked×$\mathbb{1}(t+5)$	-0.269**	-0.269**	-0.117	-0.171	-0.162
	(0.128)	(0.128)	(0.128)	(0.109)	(0.103)
Shocked×$\mathbb{1}(t+6)$	-0.254***	-0.254***	-0.090	-0.127	-0.102
	(0.092)	(0.092)	(0.102)	(0.100)	(0.101)
Shocked×$\mathbb{1}(t+7)$	-0.121	-0.121	-0.0010	-0.042	-0.036
	(0.108)	(0.108)	(0.116)	(0.107)	(0.109)

Continued on next page

Table B7 – *Continued from previous page*

	(1)	(2)	(3)	(4)	(5)
Shocked$\times\mathbb{1}(t+8)$	-0.212**	-0.212**	-0.069	-0.088	-0.084
	(0.106)	(0.106)	(0.118)	(0.116)	(0.117)
Shocked$\times\mathbb{1}(t+9)$	-0.148	-0.148	-0.047	-0.045	-0.043
	(0.099)	(0.099)	(0.106)	(0.105)	(0.106)
Shocked$\times\mathbb{1}(t+10)$	-0.140	-0.140	-0.040	-0.061	-0.054
	(0.098)	(0.098)	(0.105)	(0.102)	(0.102)
Shocked$\times\mathbb{1}(t+11)$	0.070	0.070	0.154	0.148	0.124
	(0.120)	(0.120)	(0.123)	(0.119)	(0.120)
Shocked$\times\mathbb{1}(t+12)$	0.020	0.020	0.075	0.070	0.055
	(0.097)	(0.097)	(0.088)	(0.081)	(0.081)
Fixed-Effects					
Year×Month	Yes	No	No	No	No
Year×Month×TTM	No	Yes	Yes	Yes	Yes
Year×Month×Rating	No	No	Yes	Yes	Yes
Year×Month×Industry	No	No	No	Yes	Yes
Year×Month×Interest	No	No	No	No	Yes
Fit statistics					
Observations	435,712	435,712	435,712	435,712	435,712
R^2	0.5226	0.5226	0.57876	0.61972	0.63059
Within R^2	0.00238	0.00238	0.00152	0.00129	0.00096

Two-way (Year×Month & Issuer) standard-errors in parentheses
*Signif Codes: ***: 0.01, **: 0.05, *: 0.1*

Table B8 : Probability of Default Conditional on Having a Defaulted Loan

The table reports the results of the following regressions: $y = \alpha + \beta default_{i,t} + \varepsilon_{ijt}$. The outcome variable is $y = default_{i,j,t}$ or $y = default_{i,j,t \to t+12}$. $default_{i,j,t}$ is a dummy variable equal to one if loan j from issuer i is in default at time t; $default_{i,j,t \to t+12}$ is a dummy variable equal to one if loan j from issuer i defaults between time t and $t+12$. The independent variable is $default_{i,t}$, a dummy variable equal to one when any of the loans of issuer i are in default at time t. Two-way clustered standard errors at the year×month and issuer level are reported in parentheses. The sample contains only loans from issuers with more than one issue currently on CLOs portfolios.

	$default_{i,j,t}$	$default_{i,j,t \to t+12}$
(Intercept)	0.000	0.000
	(0.000)	(0.000)
$default_{i,t}$	0.200***	0.285***
	(0.012)	(0.014)
Fit statistics		
Observations	2,548,697	2,548,697
R^2	0.15203	0.22163
Adjusted R^2	0.15203	0.22163

Two-way (Year×Month & Issuer) standard-errors in parentheses
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Table B9 : Par Building - Alternative Placebo Test

The table reports the difference in par built between CLOs that have received a shock to the bucket of securities rated B2. Columns (1) and (2) report the results of the following regressions: $\text{gain}_{i,j,t} = \alpha + \beta_1 \text{Constrained}_{i,t} + \beta_2 \text{Shocked}_{i,t} + \beta_3 \text{Constrained}_{i,t} \times \text{Shocked}_{i,t} + \varepsilon_{i,t}$, where $\text{gain}_{i,j,t} = 100 \times \left((100 - P_{j,t-1}) \times \frac{\text{Nr. loans bought}_{i,j,t}}{\text{Principal Balance}_{i,t}} \right)$ for purchases and $\text{gain}_{i,j,t} = -100 \times \left((100 - P_{j,t-1}) \times \frac{\text{Nr. loans sold}_{i,j,t}}{\text{Principal Balance}_{i,t}} \right)$ for sales; $\text{Constrained}_{i,t}$ is a dummy variable equal to one whenever the Junior (column (1)) or Senior (column(2)) slack of CLO i is between 0% and and 5% in period t; $\text{Shocked}_{i,t}$ is a dummy variable equal to one whenever the loans of CLO i have been downgraded to B2. Columns (3) and (4) report the results of the following regressions: $\text{gain}_{i,t} = \alpha + \beta_1 \text{Constrained}_{i,t} + \beta_2 \text{Shocked}_{i,t} + \beta_3 \text{Constrained}_{i,t} \times \text{Shocked}_{i,t} + \varepsilon_{i,t}$, where $\text{gain}_{i,t} = 100 \times \left(\sum_j (100 - P_{j,t-1}) \times \frac{\text{Nr. loans bought}_{i,j,t}}{\text{Principal Balance}_{i,t}} - \sum_j (100 - P_{j,t-1}) \times \frac{\text{Nr. loans sold}_{i,j,t}}{\text{Principal Balance}_{i,t}} \right)$ and the other variables are defined as above. $\text{Constrained}_{i,t}$ refers to Junior tests in column (3) and to Senior tests in column (4). Standard errors are reported in parentheses and they are double clustered at the Year×Month & CLO Deal level.

	Individual Transactions		Multiple Transactions	
	(1)	(2)	(3)	(4)
(Intercept)	-0.004***	-0.002***	-0.080***	-0.048***
	(0.0004)	(0.0002)	(0.009)	(0.003)
Shocked	0.0005	0.000	0.010	-0.0009
	(0.0004)	(0.0001)	(0.009)	(0.003)
Constrained	0.002***	-0.006***	0.034***	-0.065**
	(0.0004)	(0.002)	(0.009)	(0.027)
Shocked × Constrained	-0.0005	-0.0001	-0.011	-0.001
	(0.0004)	(0.002)	(0.009)	(0.028)
Fit statistics				
Observations	309,028	303,160	30,156	29,034
R^2	0.000	0.000	0.001	0.001
Adjusted R^2	0.000	0.000	0.000	0.001
OC Test	Junior	Senior	Junior	Senior

Two-way (Year×Month & CLO Deal) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table B10 : Price Pressure - Alternative Placebo Test

The table reports the results of the following regression: $\text{discount}_{j,k,t} = \beta_1 \text{Shocked}_{j,t} + \beta_2 \text{Shocked}_{j,t} \times Post_{j,t} + X_{j,t}\delta + \varepsilon_{j,t}$, where $\text{discount}_{j,k,t} = 100 \times \log(100/P_{j,k,t})$, $P_{j,k,t}$ is the price of loan j issued by firm k at time t, $\text{Shocked}_{j,t}$ is a dummy variable equal to one when loan j selling volume by CLOs that experienced downgrades to B2 is above median and their slack is between 0% and 5%, $Post_{j,t}$ is a dummy equal to one after loan j has received an above median selling volume by CLOs with downgrades to B2, $X_{j,t}$ is a matrix containing various fixed effects and controls. Column (1) includes year×month fixed effects; column (2) adds year×month×time-to-maturity fixed effects; column (3) adds year×month×rating fixed effects; column (4) adds year×month×industry fixed effects; column (5) adds year×month×interest rate fixed effects. Interest and time-to-maturity fixed effects are constructed after bucketing the continuous variable in ten groups. All the regressions include the lagged average discount on the issuer computed as Avg. $\text{discount}_{k,t-1} = \frac{1}{J_k \times (t-1)} \sum_{j=1}^{J_k} \sum_{s=1}^{t-1} \text{discount}_{j,k,s}$, where J_k is the number of loans by issuer k actively traded. Two-way clustered standard errors at the year×month and issuer level are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Shocked	0.713***	0.565***	0.506***	0.403***	0.335***
	(0.172)	(0.145)	(0.112)	(0.106)	(0.106)
Shocked×Post	-0.180	0.039	0.083	0.088	0.109
	(0.135)	(0.117)	(0.098)	(0.093)	(0.092)
Avg. Discount$_{t-1}$	0.852***	0.838***	0.709***	0.693***	0.690***
	(0.033)	(0.034)	(0.032)	(0.031)	(0.031)
Fixed-Effects					
Year×Month	Yes	No	No	No	No
Year×Month×TTM	No	Yes	Yes	Yes	Yes
Year×Month×Rating	No	No	Yes	Yes	Yes
Year×Month×Industry	No	No	No	Yes	Yes
Year×Month×Interest	No	No	No	No	Yes
Fit statistics					
Observations	332,118	332,118	332,118	332,118	332,118
R^2	0.489	0.504	0.597	0.636	0.644
Within R^2	0.406	0.388	0.290	0.276	0.274

Two-way (Year×Month & Issuer) standard-errors in parentheses
*Signif Codes: ***: 0.01, **: 0.05, *: 0.1*

Table B11 : Probability of Subscribing a Loan

The table provides the results of the following regression in column (1): $\text{Subscribed}_{i,j,t} = \alpha + \beta\text{Previously Held}_{i,j,t} + \varepsilon_{i,j,t}$, where $\text{Subscribed}_{i,j,t}$ is dummy variable equal to one when a CLO deal i subscribed a loan issued by borrower j at time t and $\text{Previously Held}_{i,j,t}$ is a dummy variable equal to one when the CLO i has held a different loan from borrower j before time t. Column (2) reports the results of the following model: $\text{Subscribed}_{i,j,t} = \alpha_t + \beta\text{Previously Held}_{i,j,t} + \varepsilon_{i,j,t}$ where α_t are Year×Month fixed effects. Column(3) adds the age of a CLO Deal and the logarithm of total assets under management as controls: $\text{Subscribed}_{i,j,t} = \alpha_t + \beta\text{Previously Held}_{i,j,t} + \gamma_1\text{Age}_{i,t} + \gamma_2\text{Total Assets}_{i,t} + \varepsilon_{i,j,t}$. Column (4) adds CLO deals fixed effect interacted with the issuer's industry fixed effect $\alpha_{j,s}$: $\text{Subscribed}_{i,j,t} = \alpha_t + \alpha_{j,s} + \beta\text{Previously Held}_{i,j,t} + \gamma_1\text{Age}_{i,t} + \gamma_2\text{Total Assets}_{i,t} + \varepsilon_{i,j,t}$. Standard errors clustered at the Year×Month level are reported in parentheses.

	(1)	(2)	(3)	(4)
(Intercept)	0.033***			
	(0.001)			
Previous Held	0.098***	0.098***	0.121***	0.089***
	(0.006)	(0.006)	(0.008)	(0.008)
Age			-0.006***	-0.147***
			(0.0003)	(0.046)
Total Assets			0.023***	0.010***
			(0.001)	(0.002)
Fixed-effects				
Yesr×Month	No	Yes	Yes	Yes
CLO Deal×Industry	No	No	No	Yes
Fit statistics				
Observations	9,626,651	9,626,651	6,439,971	6,439,971
R^2	0.021	0.026	0.050	0.091
Within R^2	–	0.021	0.041	0.014

One-way (Year×Month) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

C   Plots

Figure C1 : Fraction of CCC and Defaulted Securities - Time Series

The upper plot displays the times series of the median fraction of securities rated CCC or below. The lower plot displays the times series of the median fraction of defaulted securities. Shaded areas indicate the 25th and 75th percentiles of the distribution.
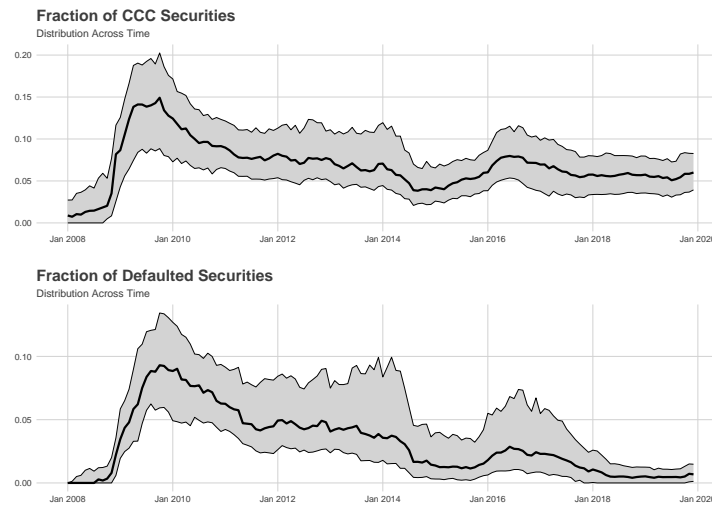
Figure C2 : Fraction of CCC and Defaulted Securities by CLO Deal's Age

The plots report the median fraction of securities rated CCC or below, on the left, and the median fraction of defaulted securities, on the right, as a function of a CLO deal's age. The upper plots measure age as a fraction of the total age of each deal, while the bottom plots measure age in years.Shaded areas indicate the 25th and 75th percentiles of the distribution.

16
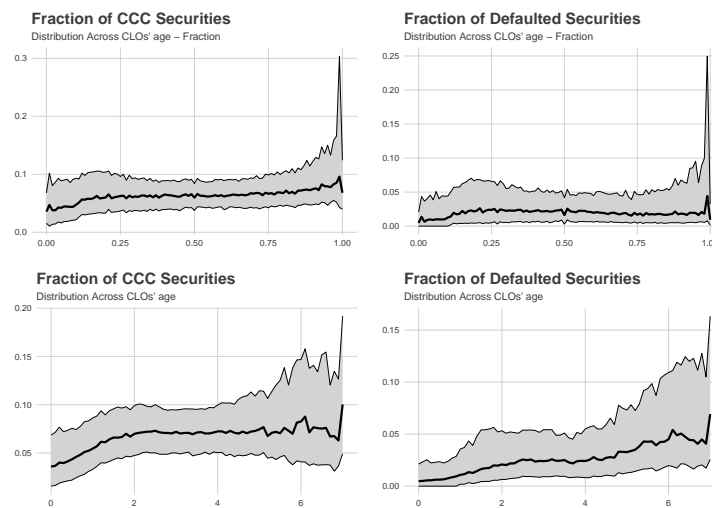
Figure C3 : Loan Prices

The upper plot reports the time series of the median price of loans traded by CLOs by month, while the lower plot refers to the average price weighted by the volume of trades. Blue lines include all the transactions by CLOs, red lines include only loans purchased by CLOs while green lines include only loans sold by CLOs.

Median Price

Volume Weighted Price
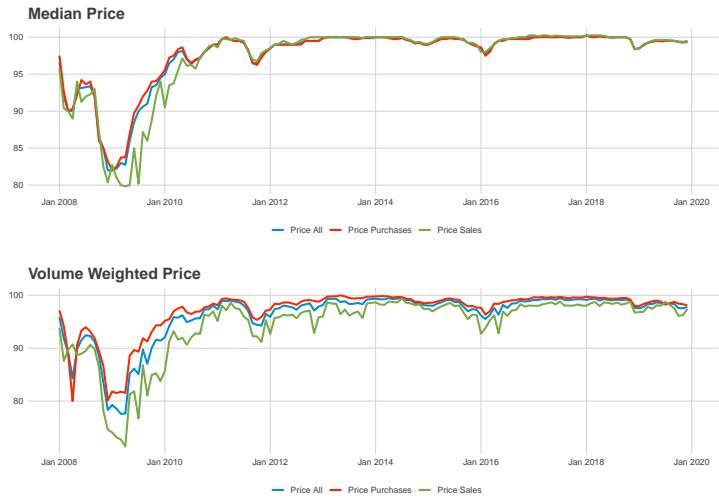
Figure C4 : Fraction of Variation in Discounts Explained

The plots reports the fraction of variation in discounts explained by various characteristics as the R^2 of a regression of discounts on various fixed effects, i.e. $discount_{j,t} = X_{j,t}\beta + \varepsilon_{j,t}$, where $discount_{j,t} = 100\times\log\left(100/P_{j,t}\right)$, $P_{j,t}$ is the price of loan j at time t and $X_{j,t}$ is a matrix of fixed effects. (1) includes Year $\times$ Month fixed effects; (2) interested rate fixed effects interacted with Year $\times$ Month fixed effects, where the interest rate of a loan is grouped in ten buckets; (3) includes time-to-maturity fixed effects interacted with Year $\times$ Month fixed effects, where time-to-maturity is grouped in ten buckets; (4) includes industry fixed effects interacted with Year $\times$ Month fixed effects; (5) includes rating fixed effects interacted with Year $\times$ Month fixed effects; (6) includes loan issuer fixed effects; (7) includes all the previous fixed effects; (8) includes issuer $\times$ Year $\times$ Month fixed effects; (9) includes issuer $\times$ Year $\times$ Month fixed effects and, separately, interest, time-to-maturity, industry and rating fixed effects interacted with Year $\times$ Month fixed effects.
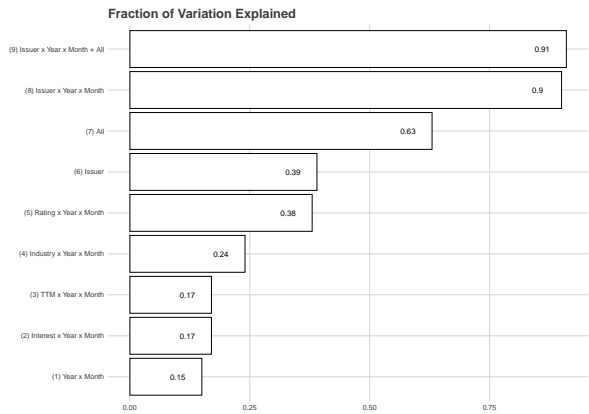
Figure C5 : Securities Held by CLOs by Type

The figure plots a histogram of the securities held by CLOs bucketed by their type. The upper plot counts the number of securities, while the bottom plot refers to each security has a fraction of CLO assets.
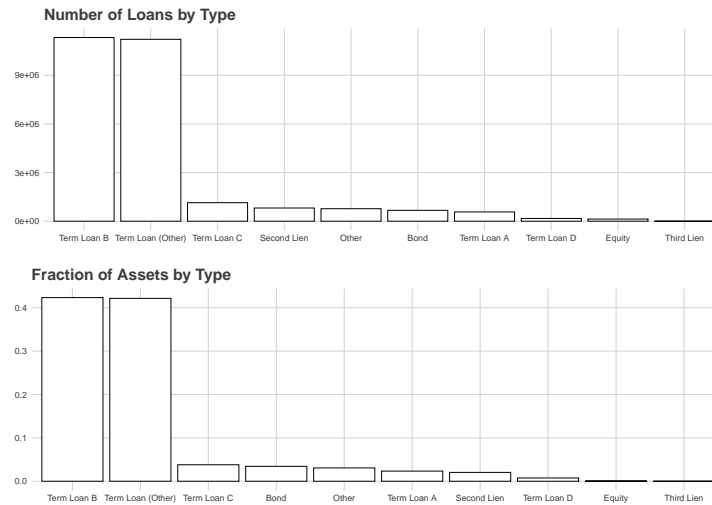
Figure C6 : Securities Held by CLOs

The topmost figure plots a histogram of the securities held by CLOs bucketed by the first time they appear in sample. The middle histogram refers to the last date each security appears in sample. The bottom histogram refers to the maturity date of each security.
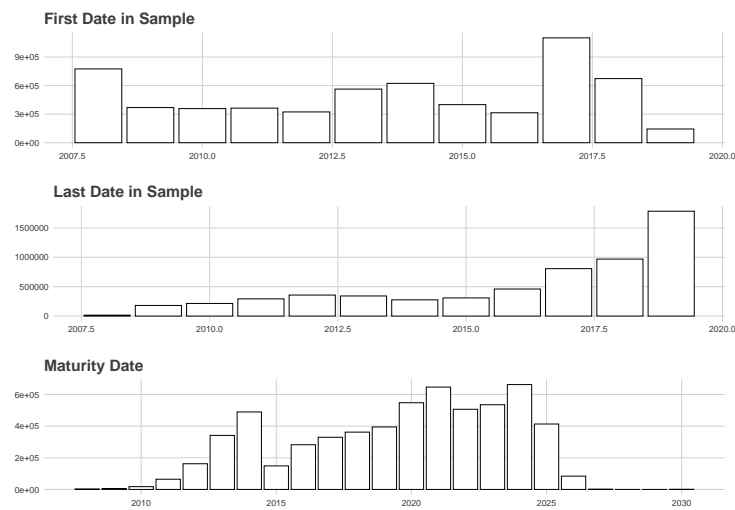
Figure C7 : OC Tests Slack

The plot reports the monthly time series of the median slack for overcollateralization (OC) tests together with their 25th and 75th percentiles. Senior OC tests are in red, while Junior OC tests are in blue. For each deal the slack of tranche k is constructed as $\text{slack}_k = \frac{\text{test result}_k - \text{test threshold}_k}{\text{test threshold}_k}$. The senior slack for each deal is obtained as the median slack of tranches A and B, while the junior slack is obtained as the median slack of the remaining tranches.
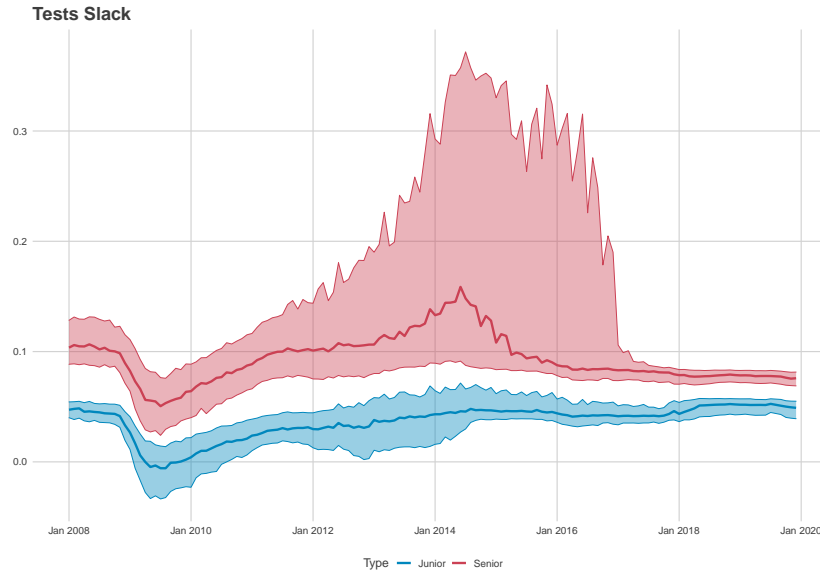
Figure C8 : Weighted-Average Rating Factor

The plot reports the time series of the median weighted-average rating factor, in red, and its average, in blue. Both statistics are computed from the cross-section of CLO deals reporting in any given month.
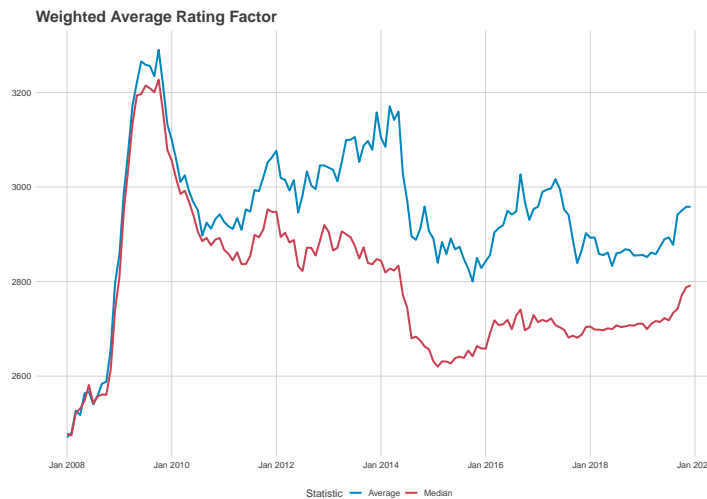
Figure C9 : Rating Factor and OC Test Slack

The plots show the average rating factor for loans sold (left) and purchased (right) by CLOs as a function of the slack of their Junior OC tests, by reporting the coefficients of the following regression: $RF_{i,j,t} = \sum_{s=1}^{S} \beta_s \mathbb{1}_s + \varepsilon_{i,j,t}$; where $RF_{i,j,t}$ is the rating factor of loan j, sold by CLO i at time t; $\mathbb{1}_s$ is a dummy variable equal to one whenever the Junior slack belongs to bucket s of the following $S = 7$ buckets: [-1.00,-0.05), [-0.05,0), [0,0.05), [0.05,0.10), [0.10,0.15), [0.15,0.20), [0.20,1.00).
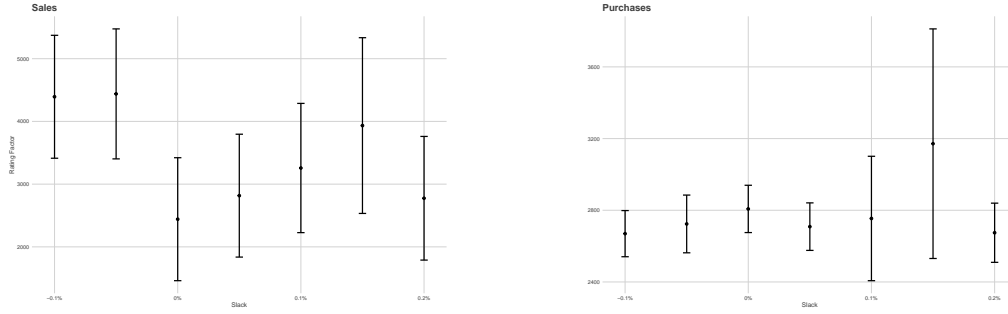
Figure C10 : Rating Factor and OC Test Slack

The plot reports the coefficients of the following regression: $\Delta WARF_{i,t} = \sum_{s=1}^{S} \beta_s \mathbb{1}_s + \varepsilon_{i,t}$, where $\Delta WARF_{i,t} = \sum_j RF_{i,j,t} \times \frac{\text{Amt. Purchased}_{i,j,t}}{\sum_j \text{Amt. Purchased}_{i,j,t}} - \sum_j RF_{i,j,t} \times \frac{\text{Amt. Sold}_{i,j,t}}{\sum_j \text{Amt. Sold}_{i,j,t}}$; $RF_{i,j,t}$ is the rating factor of loan j, sold by CLO i at time t; $\mathbb{1}_s$ is a dummy variable equal to one whenever the Junior slack belongs to bucket s of the following $S = 7$ buckets: [-1.00,-0.05), [-0.05,0), [0,0.05), [0.05,0.10), [0.10,0.15), [0.15,0.20), [0.20,1.00).
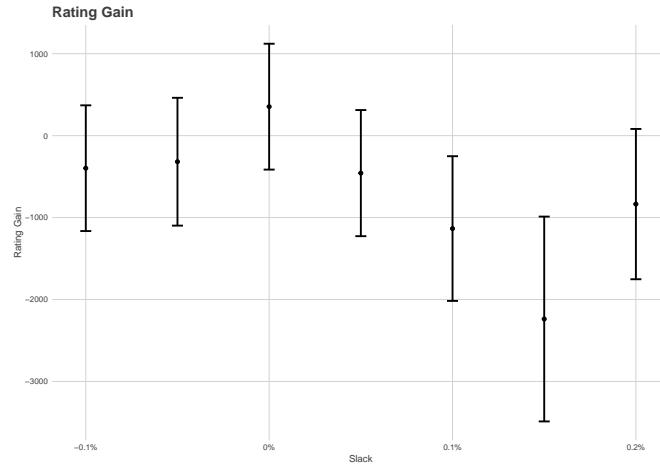
Figure C11 : The Dynamics of the Shock - Sales

The figure plots the coefficients of models (1), (2), (3) and (5) in Table 11.
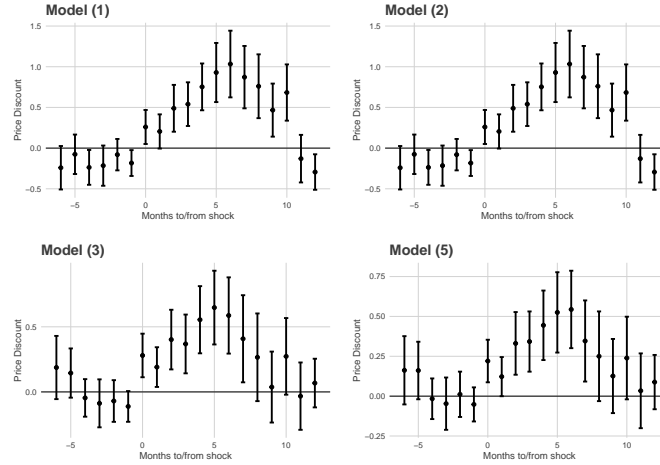

Figure C12 : Average Discount for the Treated Loans

The plots reports the average discount for treated loans by around the month they are sold by shocked CLOs obtained from the following regression: $discount_{j,t} = \sum_{s=-6}^{12} \beta_s \mathbb{1}(t+s) + \varepsilon_{jt}$, where $discount_{jt} = 100 \times \log(100/P_{jt})$, P_{jt} is the price of loan j at time t and and $\mathbb{1}(t+s)$ is a set of dummies that are equal to one $s = -6, 5, ..., 11, 12$ months around the event of the sale at time t. Error bars reports the two-standard errors confidence intervals. Standard errors are two-wat clustered at the year×month and issuer level.
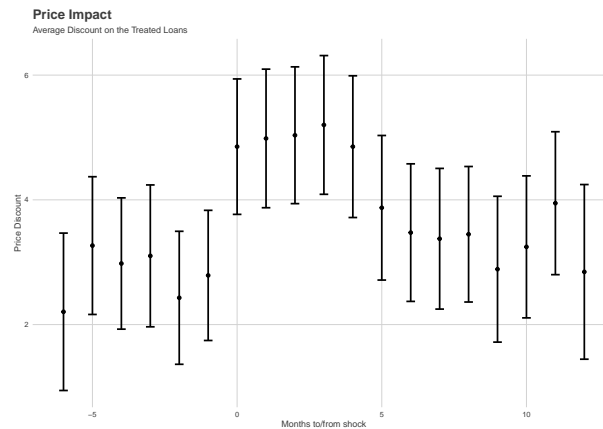
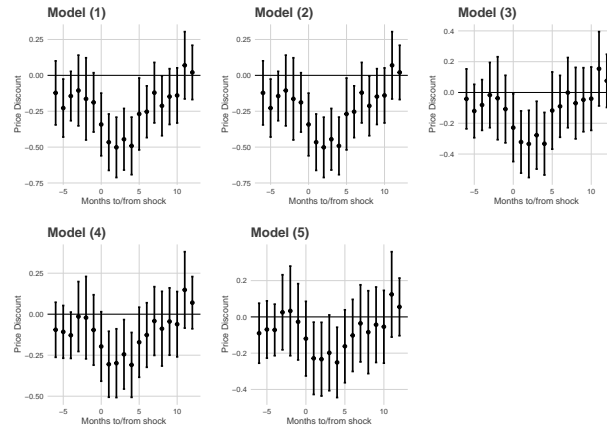**Figure C13** : The Dynamics of the Shock - Purchases

The figure plots the coefficients of models (1), (2), (3), (4) and (5) from Table B7.

Figure C14 : Loan Primary Use of Proceeds

The plots reports a histogram of the count of loans in the SDC Platinum dataset grouped by the primary use of proceeds. General includes general corporate purposes and payment of fees and expenses; Acquisition includes acquisition finance, future acquisitions, real estate and property acquisition and acquisition of securities; Refinancing includes general refinancing, bank refinancing, payments on previous borrowed money, payment on long-term borrowings, and down payments of previously borrowed money; LBO refers to leveraged buyouts; Lev. Recap. to any recapitalization; Proj. Finance to general project finance, recourse and non-recourse project finance; SBO refers to sponsored buyouts; Standby to standby facilities; Others contains all the remaining residual categories.
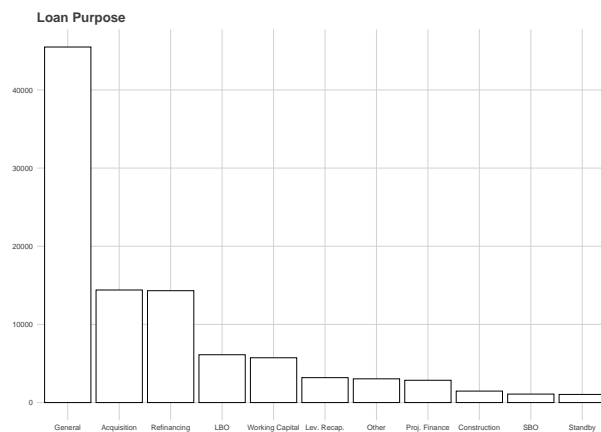
22

Figure C15 : Assets Under Management and Number of Facilities Matched in CLO-i

The upper panel reports the amount of assets under management in the CLO-i dataset measured in $
Billions. The lower panel reports the number of facilities by year. Blue lines refer to the full sample,
while red lines to the sample of securities matched with loans in the SDC Platinum dataset.
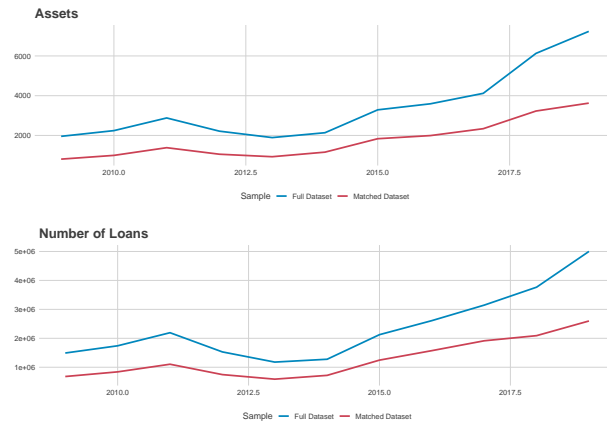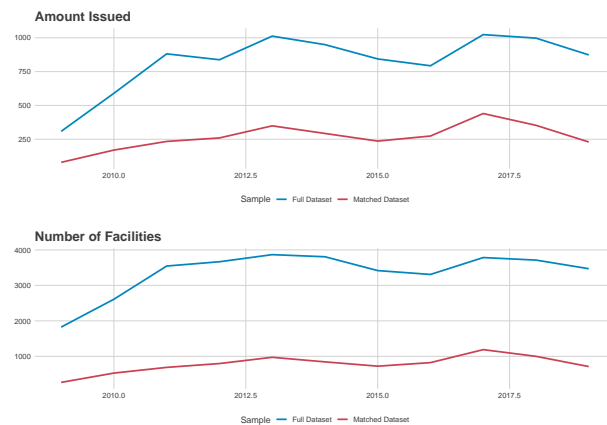

Figure C16 : Amount and Number of Facilities Matched in SDC Platinum

The upper panel reports the amount of loans issued by year in the SDC Platinum dataset measured in
$ Billions. The lower panel reports the number of facilities issued by year. Blue lines refer to the full
sample, while red lines to the sample of leveraged loans matched with loans in the CLO-i dataset.

References

Cohen, Gregory, Melanie Friedrichs, Kamran Gupta, William Hayes, Seung Jung Lee, W Blake Marsh, Nathan Mislang, Maya Shaton, and Martin Sicilian, "The us syndicated loan market: Matching data," *Federal Reserve Bank of Kansas City Working Paper*, 2018, (18-09).