清华大学国家金融研究院
TSINGHUA UNIVERSITY NATIONAL INSTITUTE OF FINANCIAL RESEARCH

研究报告

2015 14 14

2015 10 23

中国家族财富研究中心

26.4%

(Duffie, 2010)

清华大学国家金融研究院
TSINGHUA UNIVERSITY NATIONAL INSTITUTE OF FINANCIAL RESEARCH

Research report

2015- edition

[redacted]

1

Shleifer and Vishny (1992)

Duffie(2010)

OTC)

Coval and Stafford (2007) Ellul, Jotikasthira, and Lundblad (2011)

Ellul, Jotikasthira, and Lundblad (2011)

26.4%

OTC

OTC

5 8.7% 30

2002
2012 $800
$2890 $1.1

OTC

2,115 2001 1 2012 12
Ellul, Jotikasthira, and Lundblad (2011) 969
(FSBs) FSBs
1,146 (non-FSBs)

Ellul, Jotikasthira, and Lundblad (2011) FSBs
5%
FSBs FSBs 1.2%
26.4%
non-FSBs
FSBs FSBs

FSBs

OTC

Duffie, Garleanu, and Pedersen (2007)

CAR 50%

,

CAR

CAR

FSBs

FSBs

FSBs FSBs

FSBs

FSBs FSBs

FSBs

FSB

12 FSBs

TFSB 5 FSB

TFSB 3.9% FSBs, TFSB

0.24% TFSB TFSB

NAV 1.2% TFSB

alpha 2%

TFSB

FSB non-FSB TFSB

alpha 3.8% 2.6%

2

Gaspar, Massa, and Matos (2006)

Zhang (2009)

Bhattacharya, Lee, and Pool (2013)

Gutierrez, Maxwell, and Xu (2009)

Cici and Gibson (2012)

FSBs,

FSBs

3

3.1

1

NAIC),(2) 3 CRSP 4 Mergent FISD),(5) TRACE)

NAIC NAIC

AAA BBB TNA)

CRSP

TNA CRSP

TNA TNA TNA

Morningstar CRSP

MERGENT FISD

, TRACE

CUSIP Mergent FSID TRACE

2001-2012 2002

1 2012 12 2002 1

2012

Mergent FISD, 2,115

Ellul,

Jotikasthira, and Lundblad 2011)

NAIC

NAIC

Ellul, Jotikasthira, and Lundblad (2011)

5

RBC

FSBs, non-FSBs.

3.2

2,115 1 969 FSBs and 1,196 non-FSBs $444.86 4.89 9.24 FSBs non-FSBs, FSBs $564.91 $343.35) 3.39 6.15 7.97 10.32

1-1

	All Downgrade Bonds			Fire Sale Bonds (FSB)			Non-Fire Sale Bonds (Non-FSB)		
	Mean	Median	STD	Mean	Median	STD	Mean	Median	STD
Offering Amount ($MM)	444.855	300.000	475.043	564.905	400.000	509.800	343.346	250.000	417.596
Maturity (Years)	9.244	5.593	10.883	7.970	5.114	9.308	10.322	6.031	11.953
Age (Years)	4.885	3.937	4.013	3.391	2.694	2.687	6.148	5.242	4.488
Rating	10.522	11.000	0.953	10.430	11.000	1.072	10.599	11.000	0.832
Duration	5.549	4.692	4.105	5.303	4.570	4.143	5.833	4.883	4.046

1-2

	All Downgrade		FSB		Non-FSB	
	Before	After	Before	After	Before	After
Median Insurance Company Holding (%)	30.707	22.161	27.945	18.305	33.463	28.869
Median Mutual Fund Holding (%)	2.891	4.005	3.334	4.856	2.747	3.153
Median Rating	11.000	12.000	11.000	13.000	11.000	12.000
Average Yield	10.799	14.871	10.840	20.099	10.751	9.262

30.71%

22.16%

3.3

survivorship-bias

2,841 1990 1 2012 12 2002 CUSIP 2001 1,837

TNA, 50%

765

50%

2 500 5,495

fund/year TNA $13.1 0.91% 123.4%.

TNA 57.23%

55.45% 44.55%

2

		Mean	STD	25 Percentile	Median	75 Percentile
757.550	TNA (Million Dollars)	1309.450	7688.481	74.688	246.979	
1.145	Expense Ratio (in % per year)	0.906	0.369	0.650	0.860	
11.000	17.000	Age (Years)	12.615	10.435	5.000	
52.612	85.116	Corporate Bond Holdings (% of TNA)	57.226	27.863	34.324	
74.046	96.318	Investable Bond Holdings (%)	55.450	41.791	4.486	
25.954	95.514	Junk Bond Holdings (%)	44.550	41.791	3.682	
0.462	1.557	Trading of FSB (% of Offering Amt)	1.097	1.657	0.000	
0.540	1.270	NAV Return (in % per month)	0.491	1.890	−0.101	
0.631	1.366	NAV Gross Return (in % per month)	0.584	1.911	−0.023	
0.811	1.617	Holding Return (in % per month)	0.716	2.287	−0.117	

4

FSBs,

OTC

FSBs

4.1

ANT) *j*

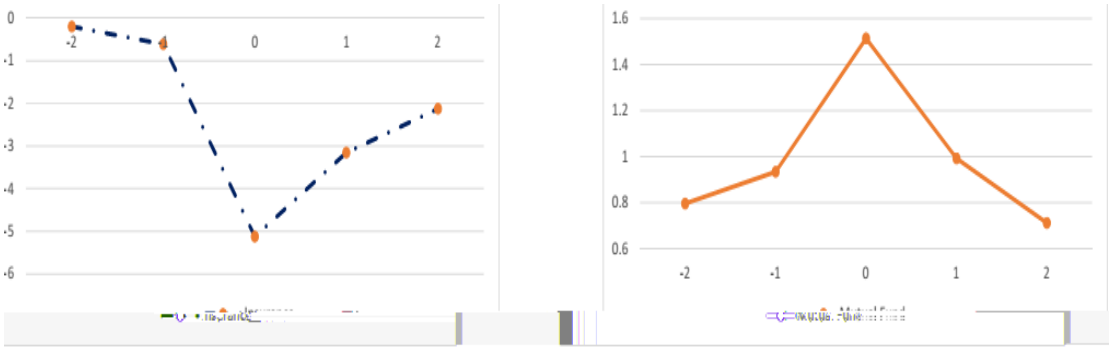
i *t*

$$ANT_{i,j,t} = \frac{\{ParValueChange\}_{i,j,t}}{AMT_i},$$

AMT

ANT

1 FSBs



1 FSBs

ANT FSB

1%

4.92%

2% V lul, Jotikasthira, and Lundblad(2011)

ANT V

1.3% 26.4%

4.2

DID

FSBs ANTs

FSBs non-FSBs

non-FSBs

FSBs, non-FSBs

FSB

Cici and Gibson (2012)

7 AAA; AA;A;BBB;BB;B; B (CCC CC,C D)

1-5 Macaulay duration

1+ 7 5

35 FSBs 625

FSB non-FSBs

non-FSBs ANT

non-FSB FSB ANT 3

A non-FSBs

3

			(1)	(2)	(2)-(1)
30***		INS	−4.919***	−3.439***	−1.48
76)			(−14.429)	(−12.961)	(−3.47
	FSB vs Non-FSB				
		DIFF			
4.654)	(4.993)			(17.426)	
0.026	−5.149***		INS	−5.123***	
	FSB vs Matched				
			DIFF	6.637***	
1.777)	(12.375)			(15.278)	

ANT ANT

ANT 6.22% 3 non-FSBs

FSBs ANT Non-FSBs non-FSBs

FSBs non-FSBs 1.48% FSBs

non-FSBs 0.73%, ANT non-FSBs

2.21% FSBs. 1%

B

FSBs 5.15% FSBs 0.36% ANT 5.51% 1%

4.3

/

$$ANT_{i,j} = \alpha + \beta_1 FSB_i + \beta_2 MF_j + \beta_3 MF_j \times FSB_i + \beta_4 Ln(AMT_i) + \beta_5 Year_i + \varepsilon_{i,j}.$$

$ANT_{i,j}$ j i

FSB FSB 1 0 FSB MF AMT

MF

4 1 2 FSBs non-FSBs 3 4 FSBs 1 2 FSB 0.01 FSBs MF 3 4 non-FSB DiD 4

	FSB and Non-FSB		FSB and Matched Bond	
	Model 1	Model 2	Model 3	Model 4
FSB	−1.526***	−2.043***	−5.149***	−5.408***
	(−3.552)	(−4.570)	(−12.207)	(−11.873)
MF	4.007***	4.007***	1.131***	1.132***
	(14.546)	(14.544)	(12.949)	(12.951)
5.504***	MF×FSB	2.210***	2.210***	5.506***
2.844)		(5.004)	(5.004)	(12.846) (1
1.487***	Ln(Offering AMT)		0.744***	
.247)		(3.981)		(5
.220***	0.779**	−14.795***	Constant	−1.777*** −11
.029)	(2.461)	(−3.823)		(−5.978) (−6
Year	Year	Year	Year	Year
0.126	0.151	0.218	0.227	Adjusted R^2
3,950	3,950	2,499	2,499	N

FSBs,

FSBs,

5%

5

ANT 1-4

5-8

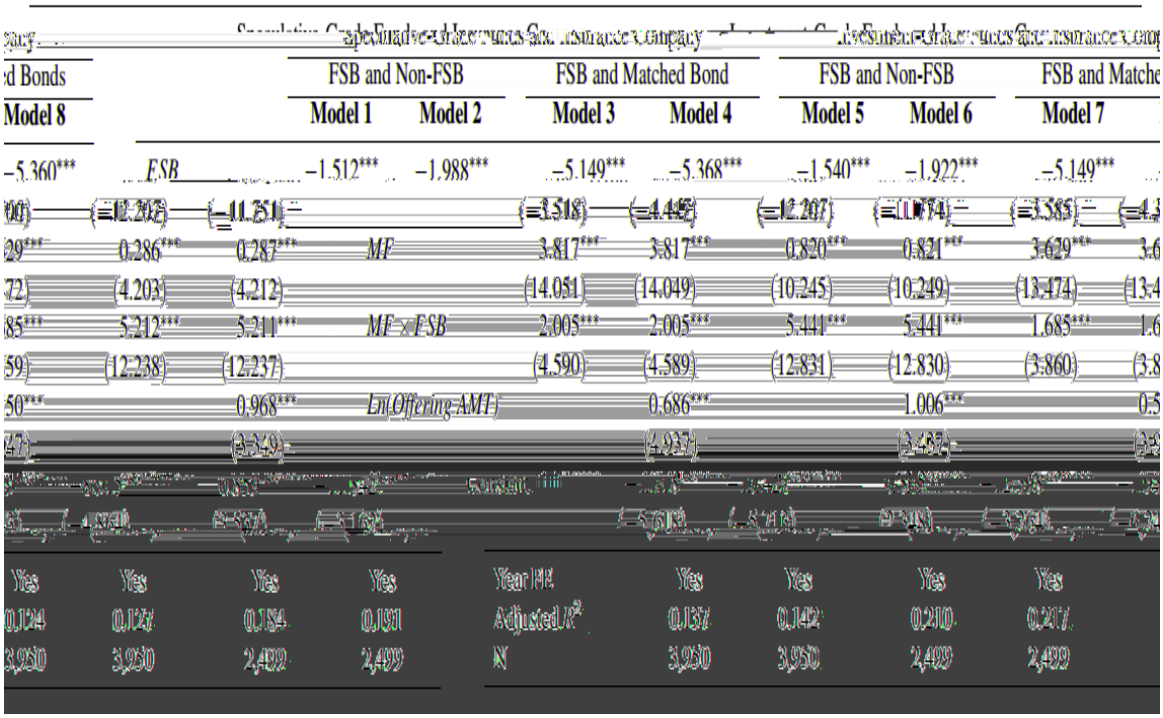
1-4 MF 1 5-8 MF

1 MF

4

FSBs,

5 FSB



d Bonds	FSB and Non-FSB		FSB and Matched Bond		FSB and Non-FSB		FSB and Matche
Model 8	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
−5.360***	−1.512***	−1.988***	−5.149***	−5.368***	−1.540***	−1.922***	−5.149***
29***	0.286***	0.287***	3.817***	3.817***	0.820***	0.821***	3.629***
85***	5.212***	5.211***	2.005***	2.005***	5.441***	5.441***	1.685***
50***		0.968***		0.686***		1.006***	
Yes	Yes	Yes	Yes	Year FE	Yes	Yes	Yes
				Adjusted R^2			
				N			

FSBs,

5

FSBs

OTC Duffie, Garleanu, and Pedersen (2007) OTC

Duffie and Strulovici (2012)

FSBs

FSBs

MinCAR, Ellul, Jotikasthira, and Lundblad(2011) CAR DaysRecover, 50% 50% FSBs

Ellul, Jotikasthira, and Lundblad (2011)

MinCAR FSBs DaysRecover

$$MinCAR_i = \alpha + \beta_1 ANT_{i,MF} + \beta_2 ANT_{i,INS} + \beta_3 ln(Days2MinCAR_i) + \beta_4 Z_i + \beta_5 I_i + \beta_6 Year_i + \varepsilon_i,$$

$$ln(DaysRecover_i) = \alpha + \beta_1 ANT_{i,MF} + \beta_2 ANT_{i,INS} +$$

$$\beta_3 ln(Days2MinCAR_i) + \beta_4 Z_i + \beta_5 I_i + \beta_6 Year_i + \varepsilon_i$$

MinCAR FSB *i* DaysRecover

ANT(ANTMF), ANT (ANTINS MinCAR

(Days2MinCAR) ANTMF ANTINS

MinCAR

Days2MinCAR

ANTMF ANTINS

Z

1 0

I 10 1

(Moody's Baa Aaa 6

FSB CAR MinCAR ANTMF

FSBs ANTMF

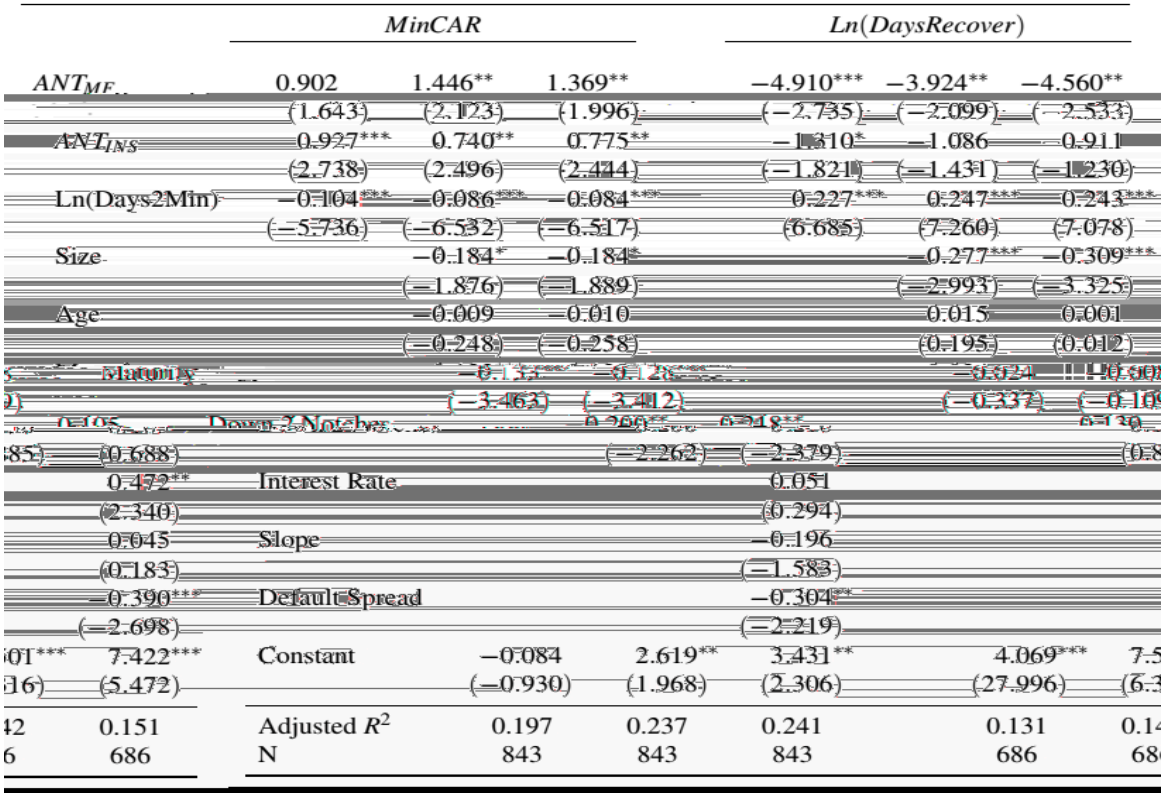
1.3% 1.369 MinCAR 1.78% (=

1.3% × 1.369) $1050 5.885

1.78% × 588.5 = 1050 843 MinCAR

$88.5 (= 843×588.5 = 8851.5)

6



	MinCAR			*Ln(DaysRecover)*		
ANT_{MF}	0.902	1.446**	1.369**	−4.910***	−3.924**	−4.560**
	(1.643)	(2.123)	(1.996)	(−2.735)	(−2.099)	(−2.533)
ANT_{INS}	0.927***	0.740**	0.775**	−1.310*	−1.086	−0.911
	(2.738)	(2.496)	(2.444)	(−1.821)	(−1.431)	(−1.230)
Ln(Days2Min)	−0.104***	−0.086***	−0.084***	0.227***	0.247***	0.243***
	(−5.736)	(−6.532)	(−6.517)	(6.685)	(7.260)	(7.078)
Size		−0.184*	−0.184*		−0.277***	−0.309***
		(−1.876)	(−1.889)		(−2.993)	(−3.325)
Age		−0.009	−0.010		0.015	0.001
		(−0.248)	(−0.258)		(0.195)	(0.012)
Maturity		−0.135***	−0.128***		−0.024	0.000
		(−3.463)	(−3.412)		(−0.337)	(−0.165)
Down2Notches			0.260**		0.248**	0.130
			(2.262)		(2.379)	(0.8
Interest Rate				0.051		
				(0.294)		
Slope				−0.196		
				(−1.583)		
Default Spread				−0.304**		
				(−2.219)		
Constant	−0.084	2.619**	3.431**	4.069***	7.5	
	(−0.930)	(1.968)	(2.306)	(27.996)	(6.3	
Adjusted R^2	0.197	0.237	0.241	0.131	0.14	
N	843	843	843	686	68	

ANTINS FSBs

Days2MinCAR

FSBs

ANTMF

Days2MinCAR

7

FSBs

0.89% 1.35% 5.15% 1.06%

Transaction	INS-FSB	MF-FSB	DIFF
difference of	-INS Matched	-MF Matched	
Quarter -2	−0.891*** (−2.983)	−0.716*** (−4.757)	0.176 (0.519)
Quarter -1	−1.346*** (−5.213)	−0.453*** (−3.424)	0.892*** (3.039)
Quarter 0	−5.149*** (−12.261)	0.358** (2.438)	5.507*** (12.375)
Quarter +1	−2.302*** (−10.622)	0.680*** (6.414)	2.981*** (12.36)
Quarter +2	−1.064***	0.412***	1.476***

FSBs

0.68% FSBs 0.68%

0.41% FSBs,

QTFSB

FSBs

12 TFSB QTFSBs,

$$TFSB_{j,t} = \frac{\sum_{s=t-11}^{t}(QTFSB_{j,s})}{12}$$

TFSB

6.2 TFSB

TFSB

TFSB

75%

8 TFSB TFSB

8 TFSB

FSB Portfolio	TFSB	Gross NAV Return Alpha	Holding Return Alpha	Characteristic Selectivity Alpha	Characteristic Timing Alpha
Low	0.24%	−0.076**	−0.075*	0.025*	0.010
		(−2.048)	(−1.93)	(1.678)	(0.989)
P2	0.77%	−0.019	−0.021	0.033*	0.022
		(−0.652)	(−0.562)	(1.84)	(1.43)
P3	1.36%	0.005	0.049	0.064***	0.040***
		(0.156)	(1.164)	(3.049)	(2.895)
P4	2.06%	0.066	0.059	0.022	0.033***
		(1.610)	(1.301)	(0.882)	(2.649)
High	3.90%	0.095***	0.124***	0.077***	0.034**
		(2.621)	(2.984)	(2.835)	(2.539)
High-Low	3.67%	0.171***	0.199***	0.052***	0.024***
		(3.436)	(4.257)	(2.621)	(3.185)

8 2

TFSB 3 6 TFSB (Elton, Gruber,and Blake (2011), Gutierrez, Maxwell, and Xu (2009), and Cici and Gibson (2012) 3 alphas

$$R_t = \alpha + \beta_1 STK_t + \beta_2 BOND_t + \beta_3 DEF_t + \beta_4 OPTION_t + \varepsilon_t$$

t R STK CRSP BOND Lehman DEF Lehman OPTION GNMA

8 4 6 5 6 Daniel, Grinblatt, Titman, and Wermers (1997) Cici and Gibson (2012). 5 7 AAA, AA, A, BBB, BB, B B 35

CS

$$CS_{f,t}^{BF} = \sum_j w_{f,j,t-1} \left(R_{j,t} - BR_{j,t} \right),$$

$R_{j,t}$ *j* *t* $BR_{j,t}$ *t* *j* $w_{f,j,t}$ 1 *f* *j* *t*

CT

$$CT_{f,t}^{BF} = \sum_j \left(w_{f,j,t-1} BR_{j,t} - w_{j,t-13} BRL_{j,t} \right)$$

$BRL_{j,t}$ *j* t

8 TFSB 0.24% FSBs 3.9% FSBs TFSB TFSB 1.2%

	TFSB	1.44%

9

Portfolio	FSB and Non-FSB Component	FSB Holding Component	Other Speculative-Grade Component	Investment -Grade Component
Low	0.071	−0.146	0.078	0.075
	(−1.027)	(−0.835)	(−1.167)	(−1.35)
4)	(−0.089)	(1.425)	(−0.368)	(1.65
8***	0.017	0.135***	−0.004	P3 0.13
9)	(0.093)	(2.578)	(−0.07)	(2.72
1	0.004	0.077	0.007	P4 0.08
3)	(0.023)	(1.400)	(0.094)	(1.51
(0.996)		(2.838)	(0.717)	(2.834)
0.320**		0.217***	0.122**	**High-Low** 0.208***
(3.251)		(2.117)	(3.126)	(2.44)

4 TFSB non-FSB 2.6%

TFSB TFSB

6.4

TFSB Fama-Macbeth

$$PERF_{f,t-1} = \beta_0 + \beta_1 FSB_{f,t-1} + \beta_2 FIRO_{f,t-1} + \beta_3 Exp_{f,t-1} + \beta_4 Size_{f,t-1} + \beta_5 Age_{f,t-1} + \beta_6 Turn_{f,t-1} + \beta_7 Junk_{f,t-1} + \varepsilon_{f,t}.$$

PERF, f t

36

TFSB

TFSB Exp

TNA Age 1 Turn

TFSB

Junk Fama-Macbeth

FSBs

10 2 TFSB

TFSB 1.9 5%

FSBs 9.5 1.1%

TFSB

Junk TFSB

10 TFSB

	Holding Period Return Alpha	Speculative-Grade Fund Return Alpha	Investment-Grade Fund Return Alpha	Speculative-Grade Fund FSB Return Alpha	Speculative-Grade Fund Other Security Return Alpha
Constant	−0.064	−0.335***	0.009	0.212	−0.295**
		(−2.675)			
TFSB-Ratio		1.936**	3.584***	0.409	9.957**
		(2.348)	(3.781)	(0.278)	(2.549)
Rf		0.015***	0.016***	0.014**	−0.001
		(3.130)	(2.720)	(2.176)	(−0.057)
	Size	0.003	0.002	0.001	−0.023
		(0.796)	(0.215)	(0.073)	(−0.879)
	Age	−0.018	−0.003	−0.017	−0.020
	Exp	1.519**	0.413	1.617**	−0.444
		(2.407)	(1.562)	(2.614)	(−0.803)
	Turn	0.079**	0.000	0.084**	−0.001
	Junk	0.065	0.053	0.089	0.027

alpha 3 4

TFSB TFSB

3.6 TFSB

FSB non-FSB 5 6

TFSB 9.9,3.2

5% FSBs 49.8

non-FSBs 16.2

7

Duffie(2010)

26.4%

70%

“ ”

OTC

“ ”