

# Financial Crisis, Temporary Liquidity Guarantee Program, and Impacts on the Fixed Income Markets

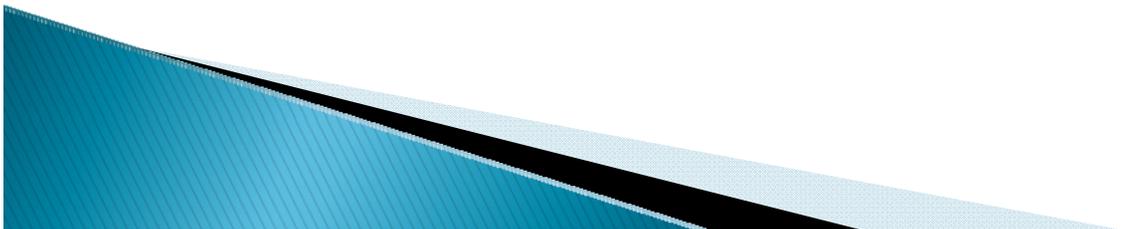
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# Research Background

- ▶ Temporary Liquidity Guarantee Program (TLGP) was initiated on October 14, 2008 by FDIC in an effort to infuse confidence and boost liquidity in the banking system.
  - Guarantee for new senior unsecured debt issued before October 31, 2009 and later extended to include convertible debt.
  - Program is open to all FDIC insured depository institutions, banks, financial holding companies, and savings and loans.
  - Goldman Sachs issued the first debt under this program on November 25, 2008.

# Research Background

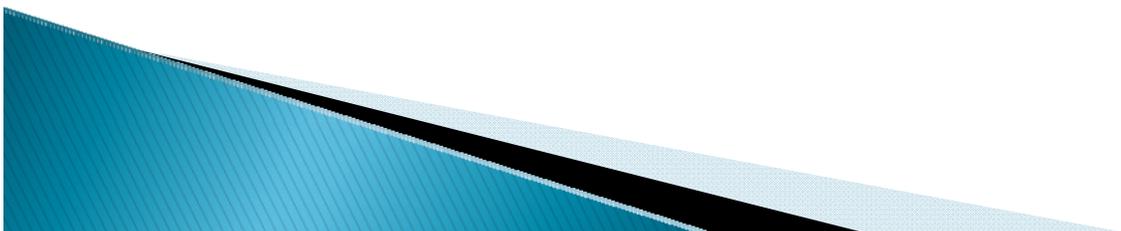
- ▶ Main players in the TLGP:
  - Goldman Sachs
  - Bank of America
  - General Electric Capital Corp
  - JP Morgan Chase
  - Morgan Stanley
  - Citigroup
- ▶ As of Aug 31, 2010, there are 69 issues with \$292.56 billion outstanding.



# Motivation

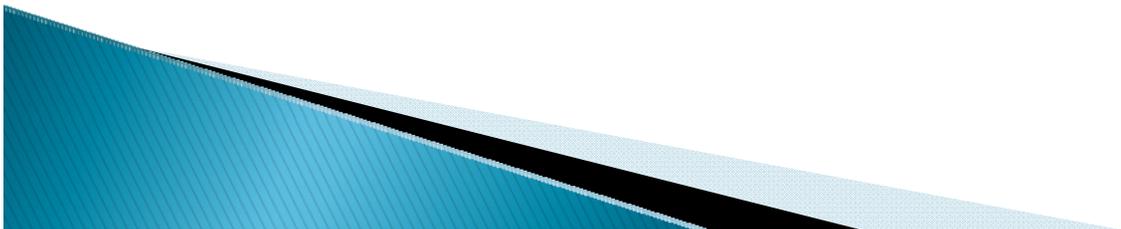
## ▶ Goals of TLGP

- Encourage liquidity in the banking system giving financial institutions the power
  - to raise cash by issuing low-risk debt, and
  - to attract investors back into the bond market.
- Expect a positive impact on
  - the entire fixed income market
  - More lending to corporations by banks, and
  - A resurgence of life outside of the Treasury market



# Research Questions

- ▶ What is the market value of this implicit guarantee?
- ▶ What are the impacts (if any) of this program on the liquidity and credit/confidence in the corporate debt markets?



# Contributions (1)

- ▶ We provide the first empirical examination of the value of the FDIC guarantee and the impacts of this program on the fixed income markets.
- ▶ We find strong empirical support for the positive impacts of this program on the liquidity and credit aspects in the markets.
- ▶ Policies like these, although temporary, effectively infuse the much needed liquidity and confidence into the banking system.

# Contributions (2)

- ▶ The study also contributes to the literature on bank liquidity risk.
  - Diamond and Rajan (2001), Liu and Mello (2008), and Brunnermeier (2009) provide theoretical work for how rapidly liquidity risk spreads among banks.
  - Acharya and Merrouche (2010) and Adrian and Shin (2010) suggest that a liquidity crisis originating from the reactions to shocks on a small set of large banks that are fundamentally sound can radiate quickly to other banks.
  - TLGP, a mechanism targeting the largest banks in the hopes of stabilizing the liquidity shortage at the origin, showed promising effects.

# Preview of Main Findings (1)

- ▶ FDIC-backed debt carry a spread above comparable Treasuries. The spread has an average of 66.09 basis points, and a range of 4.6 to 242.80 basis points.
- ▶ Yield differentials between comparable FDIC-backed and AAA financial debt issues has an average of 14.55 basis points.
- ▶ Both spreads and yield differentials vary significantly across duration, bank size and type.

# Preview of Main Findings (2)

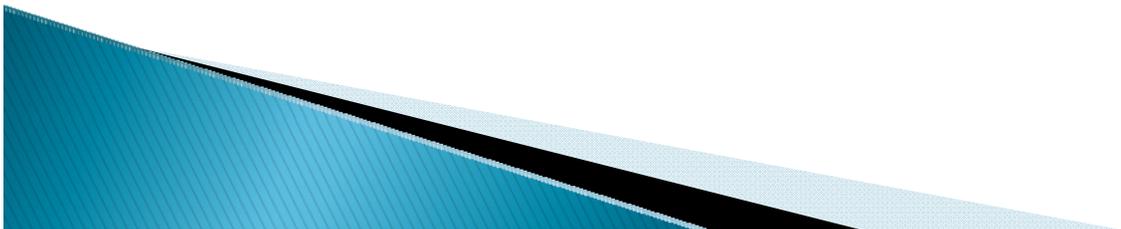
- ▶ Banks that participated in the program experienced negative stock price reaction and positive bond price reaction.
  - Over the two-day event window, the cumulative abnormal return is  $-1.54\%$  for stockholders and  $0.27\%$  for bondholders.
- ▶ We find a significant drop in yield of AAA financial debt around FDIC-backed issue announcements.
  - The average drop in yield is  $-0.04\%$  in the three-day window and  $-0.72\%$  in the 5-month window.

# Preview of Main Findings (3)

- ▶ We find a significant reduction in yield spreads of AAA financial bonds associated with the start of the program.
  - This indicates that the program is effective to encourage liquidity and bolster confidence not only in the participating banks but also in other AAA financial institutions.
- ▶ We measure the value of the FDIC guarantee by estimating the yield differential between FDIC-backed debt and bonds issued by banks not in the FDIC program
  - The estimated value is 132.13 basis points.

# Literature Review (1)

- ▶ Diamond and Rajan (2001) develop a model to show that bank fragility motivates banks to create liquidity and operate effectively.
  - Bank fragility results from the imbalance in liquidity between assets and liabilities.
  - Government policies that stabilize overall liquidity in the banking system are important safe guards for the core tasks performed by banks.



# Literature Review (2)

- ▶ Liu and Mello's (2008) model suggests that increasing reliance on leverage and wholesale institutional investors are key amplification mechanisms in a liquidity crisis.
  - Market-based leveraged financial institutions are motivated to hoard liquidity when markets suffer a negative shock. Market liquidity dries up and asset markets become volatile.
  - Lenders may delever and withdraw loans from borrowers. Borrowers are forced to face a sharp liquidity shortage and to sell assets at a loss.
- ▶ Similarly, Brunnermeier (2009) suggests fire-sale externalities and extensive networks lead to banks having excessive leverage and mismatch in asset-liabilities, and a high-degree of interdependency.

# Literature Review (3)

- ▶ Acharya and Merrouche (2010) examine bank demand for liquidity of large U.K. settlement banks during the 07–08 subprime crisis.
  - Banks that hoarded liquidity had greater losses during the crisis.
  - The stress in money markets was partially due to weaker banks engaging in liquidity hoarding due to their greater funding risk.
  - The demand for liquidity caused inter–bank rates to rise, affecting all banks.
- ▶ Adrian and Shin (2010) find a strong positive relation between balance sheet size and leverage for security broker dealers.
  - Excess capacity (or liquidity) resulting from asset price booms may lead to subpar credit granting activities, resulting in a downturn in the credit market.

# Sample

- ▶ From Bloomberg, we collect all FDIC-backed medium term notes and bonds with an original maturity of one year or longer from November 2008 to July 2009.
  - Initial search results in 164 issues and 30 banks.
  - Exclude floaters.
  - Collect complete issue information and daily prices, yields, and trading volumes.
  - Final sample contains 70 FDIC-backed fixed rate notes issued by 25 banks.
  - GE Capital and Citigroup tie with the most issues: 10 issues.

# Table 1: Sample Descriptives

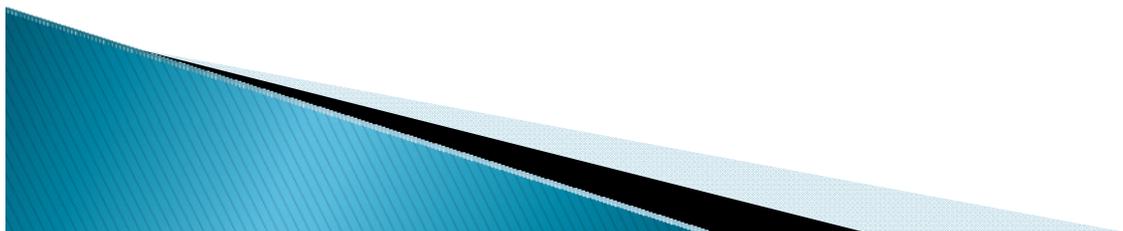
Issue Characteristic	Mean	Median
<i>Panel A. Full Sample</i>		
Coupon (%)	2.40	2.25
Issue Size (\$Mil)	2,144.33	1,975.00
Maturity (years)	2.89	3.00
<i>Panel E. Investment Banks</i>		
Coupon (%)	2.40	2.38
Issue Size (\$Mil)	1,932.51***	1,300.00**
Maturity (years)	2.92	3.00
<i>Panel F. Commercial Banks</i>		
Coupon (%)	2.41	2.20
Issue Size (\$Mil)	2,312.69	2,100.00
Maturity (years)	2.87	3.00

## Table 2: Yield Spreads of FDIC-Backed Debt

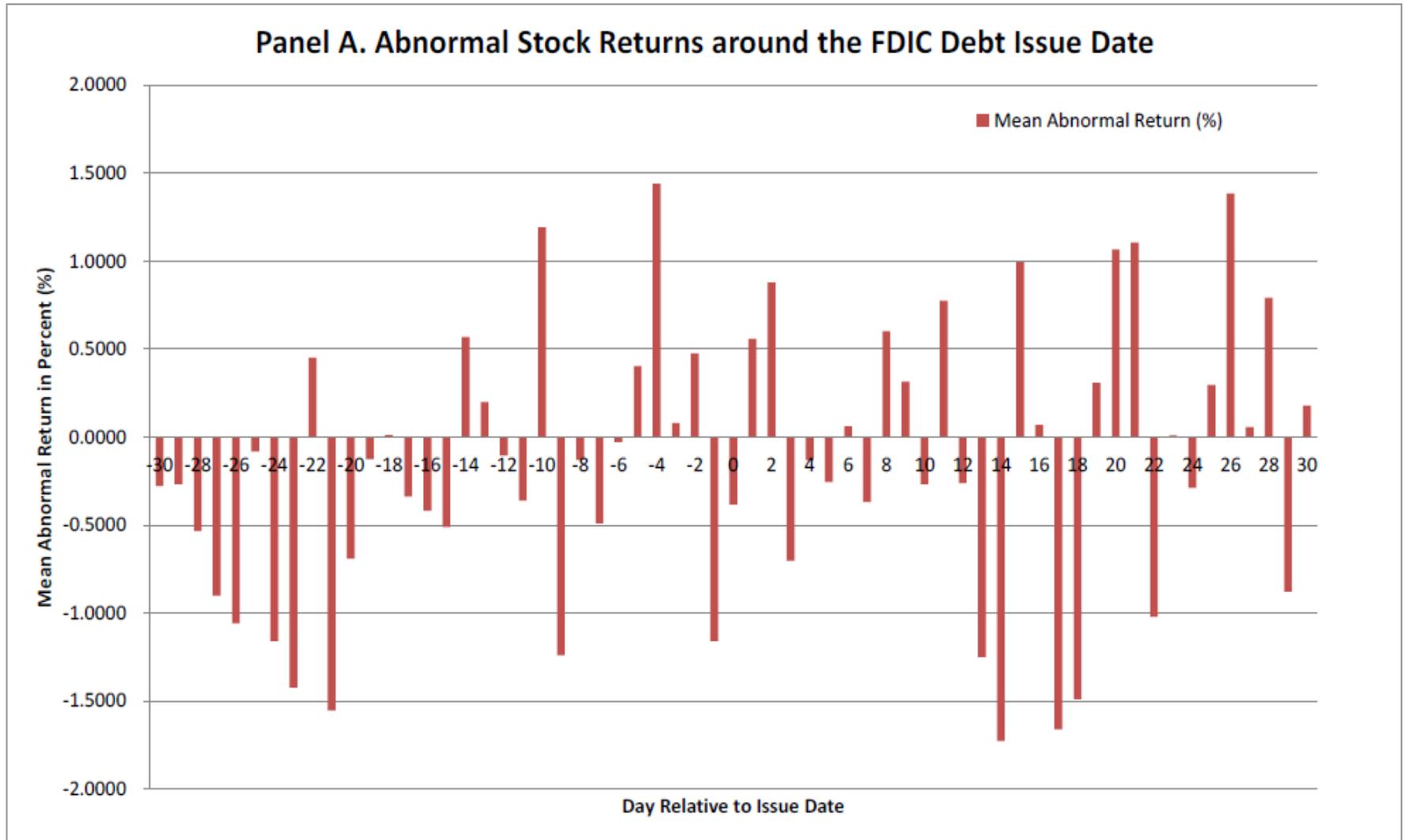
	Mean	Median
<i>Panel A. Yield Spreads by Duration (basis points)</i>		
15 to 19 months	22.48***	21.27***
20 to 24 months	46.74	45.23
25 to 29 months	61.25	51.88
30 to 34 months	79.06	68.40
35 to 39 months	70.38	67.80
40 to 44 months	59.37	44.20
Full Sample	66.09	57.80

# Table 2: Yield Spreads of FDIC-Backed Debt

	Mean	Median
<i>Panel B. Yield Spreads by Bank Size (basis points)</i>		
Large Banks	67.30***	56.05***
Intermediate Banks	62.13	56.30
Small Banks	74.87	76.55
<i>Panel C. Yield Spreads by Bank Type (basis points)</i>		
Commercial Banks	59.76***	56.48***
Investment Banks	70.69	59.47



# Table 4: Stock and Bond Price Reaction



# Table 4: Stock and Bond Price Reaction

*Panel B. Cumulative Abnormal Stock Returns around the FDIC Debt Issue Date*

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Event Window	N	Cumulative Abnormal Returns (%)	t statistic	p value
(-1, 0)	67	-1.5417	-2.2720	0.0264
(-1, +1)	67	-0.9833	-1.0698	0.2886

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# Table 4: Stock and Bond Price Reaction

*Panel C. Cumulative Abnormal Bond Returns around the FDIC Debt Issue Date*

At the Individual Bond-Event Level (n=1,348)

Event Window	N	Cumulative Abnormal Returns (%)	t statistic	p value
(-1, 0)	1,348	0.3807	5.4159	0.0001
(-1, +1)	1,348	0.5423	7.1110	0.0001

At the Issuance Event Level (n=60)

Event Window	N	Cumulative Abnormal Returns (%)	t statistic	p value
(-1, 0)	60	0.2702	2.1141	0.0387
(-1, +1)	60	0.3614	1.9393	0.0573

**Table 5:**  
**Changes in Yields of AAA Financial Debt**  
**around FDIC-backed Debt Issuances**

Panel A. Full Sample	Mean (%)		Median (%)		Std. Dev. (%)	N
Three-Day (-1, +1) Window	-0.0351	***	-0.0170	***	0.1370	704
One-Month Window	-0.0790	***	-0.0750	***	0.3380	621
Two-Month Window	-0.2603	***	-0.2310	***	0.4366	617
Three-Month Window	-0.4538	***	-0.3970	***	0.5561	613
Five-Month Window	-0.7211	***	-0.7880	***	0.9209	493

**Table 5:**  
**Changes in Yields of AAA Financial Debt**  
**around FDIC-backed Debt Issuances**

Panel B. FDIC Issuers' AAA Financial Debt	Mean (%)		Median (%)		Std. Dev. (%)	N
Three-Day (-1, +1) Window	-0.0211	***	-0.0140	***	0.0969	238
One-Month Window	-0.1228	***	-0.1130	***	0.1985	199
Two-Month Window	-0.3018	***	-0.2455	***	0.2546	246
Three-Month Window	-0.4733	***	-0.4390	***	0.2449	249
Five-Month Window	-0.7867	***	-0.8390	***	0.2379	169

**Table 5:**  
**Changes in Yields of AAA Financial Debt**  
**around FDIC-backed Debt Issuances**

Panel C. All Other AAA Financial Debt	Mean (%)		Median (%)		Std. Dev. (%)	N
Three-Day (-1, +1) Window	-0.0349 ***		-0.0225 ***		0.1663	466
One-Month Window	-0.0597 ***		-0.0445 **		0.3948	422
Two-Month Window	-0.2417 ***		-0.2240 ***		0.5432	371
Three-Month Window	-0.4245 ***		-0.3125 ***		0.7137	364
Five-Month Window	-0.6592 ***		-0.6650 ***		1.1487	324

**Table 6. Multivariate Regressions of Change in Yield of AAA financial debt Around FDIC Debt Issues on Explanatory Variables**

<i>Panel A: All AAA Financial Debt</i>			
	Parameter		
Variable	Estimate	t value	
Intercept	-39.2110	-8.52	***
COUPON	6.8755	16.53	***
RMAT	-0.1656	-2.01	**
BONDSIZE	-0.1147	-0.30	
CHG_CMRI	0.3093	10.11	***
CHG_TERM	0.1059	2.09	**
CHG_INTVOL	0.1589	10.04	***
N	613		
R Square	0.5765		

**Table 7: Changes in Yield Spread of AAA Financial Debt on the Start of TLGP**

<i>Panel A: All AAA Financial Debt Issuers</i>			
Variable	Parameter		
	Estimate	Std. Error	
Intercept	-5.121	19.894	
FDIC_ISSUER	4.170	1.224	***
FDIC_START_ISSUER	-8.740	2.489	***
COUPON	0.889	1.146	
RMAT	0.031	0.061	
BONDSIZE	0.219	0.986	
CHG_CMRI	0.012	0.090	
CHG_CMRI10	-0.975	0.252	***
CHG_TERM	0.216	0.174	
CHG_CREDIT	0.281	0.162	

Table 7: Changes in Yield Spread of AAA Financial Debt on the Start of TLGP

<i>Panel B: FDIC-Backed Debt Issuers</i>			
Variable	Parameter		
	Estimate	Std. Error	
Intercept	23.5020	41.058	
FDIC_START	-8.2850	2.870	***
COUPON	-1.4570	5.125	
RMAT	-0.0670	0.158	
BONDSIZE	-0.6020	1.958	
CHG_CMR1	0.1660	0.197	
CHG_CMR10	-2.4560	0.847	***
CHG_TERM	1.4500	0.671	**
CHG_CREDIT	0.8500	0.308	***

Table 7: Changes in Yield Spread of AAA Financial Debt on the Start of TLGP

<i>Panel C: Other Issuers</i>			
Variable	Parameter		
	Estimate	Std. Error	
Intercept	-12.2620	22.922	
FDIC_START	-3.7060	1.389	***
COUPON	1.8160	1.209	
RMAT	-0.1440	0.101	
BONDSIZE	0.5970	1.132	
CHG_CM1	0.0500	0.109	
CHG_CM10	-0.9250	0.278	***
CHG_TERM	0.1780	0.180	
CHG_CREDIT	-0.0710	0.190	

Table 8: Value of the FDIC Guarantee: An Estimation

<i>Panel B: Non-FDIC Issuers' Debt and FDIC Debt</i>		
Variable	Parameter	
	Estimate	Std. Error
Intercept	33.7480	73.783
FDIC_DEBT	-132.1250	37.510 ***
COUPON	31.5820	2.816 ***
RMAT	-2.3470	0.307 ***
BONDSIZE	-0.1660	3.559
CMR1	0.1830	0.072 ***
TERM	-0.2620	0.032 ***
CREDIT	0.3930	0.027 ***
N	4886	
R Square	0.335	

Table 8: Value of the FDIC Guarantee: An Estimation

<i>Panel C: FDIC Issuers' Other Debt and FDIC Debt</i>		
Variable	Parameter	
	Estimate	Std. Error
Intercept	476.0400	61.749 ***
FDIC_DEBT	-20.8370	9.614 ***
COUPON	63.9030	4.110 ***
RMAT	-1.1890	0.292 ***
BONDSIZE	-28.7220	2.987 ***
CMR1	0.3250	0.076 ***
TERM	-0.2250	0.034 ***
CREDIT	0.4690	0.028 ***
N	4253	
R Square	0.473	

# Conclusions

- ▶ We examine the effectiveness of the TLGP as a possible solution to the crisis.
- ▶ Yield spreads on FDIC-backed debt have an average of 66.09 bps, and yield differential between comparable AAA financial and FDIC-backed debt is 14.66 bps.
- ▶ Stockholders reacted negatively while bondholders reacted positively to FDIC-backed debt issuances.
- ▶ There is a significant drop in yield of AAA financial debt around the announcements of FDIC-backed debt issuances.

# Conclusions

- ▶ We find a significant reduction in yield spreads of AAA debt associated with the start of the program.
- ▶ The FDIC guarantee is valuable at 132.13 bps in yield differential, relative to the average cost of 75 bps paid by the participating banks.

