Maximizing Yield and Maintaining Liquidity

Presented By: Dennis Yacobozzi, President & CEO
United American Capital Corporation
dyacobozzi@uacc.com

Managing Liquidity

- What is liquidity?
  - Cash balances or short-term investments that can be "easily" converted to cash.
  - Aren't all securities liquid?
  - Actively traded short maturity issues
    - U.S. Treasury Bills and Notes
    - Federal agency issues (DNs and bullets/callables)
    - Direct issue commercial paper
    - Dealer offered CP and negotiable CDs

Managing Liquidity

How much liquidity?

- Identifying the amount of funds (either cash or short-maturity investments) needed to meet near-term operating expenses is one of the most important factors in the management of public funds.
- Cash flow "forecasting"
  - Model recurring receipts/expenses
- Expected (or potential) changes to this schedule
  - Employee buyouts/conversion of leave
  - Insurance premiums
  - Operating levy passage/failure

Managing Liquidity

Why outline and monitor expected liquidity requirements?

- Proactive approach to preparing annual and longer-term budgets
  - Including, but not limited to, investment income projections
- Identify the total amount of funds available for investment
  - Investing to meet short-term obligations?
  - Investing for the "long-term"?
    - Higher investment income
    - Growth of principal over time

Managing Liquidity

Developing an accurate cash flow model can prevent:

- Higher than necessary cash balances vs. investment balances, which is expensive, given today's market yields.
- An over-investment in short-maturity securities (< 1-year) which can also negatively affect investment income over the long-term.
- An over-investment in longer-maturity securities which could lead to higher investment income, but could also result in realized portfolio losses, if these securities need to be sold prior to maturity. (Selling investment assets before maturity is subject to current market prices)

Investment Objectives Order of Priority

Investment policies clearly state the following order of priority:

- *Preservation of principal*
  - Protecting the principal from loss
  - Mitigating unrealized losses in a rising rate market
- *Maintenance of Liquidity*
  - Meeting operating needs and other obligations without interruption
- *Yield (return)*
  - Investing public entity funds to generate a market yield over time

Establishing the Cash Position

- Cash position: The average daily cash balance, net of revenues and disbursements, that may be used to meet current obligations (operating needs) without any liquidations of the investment portfolio (core investments).
- Investment of cash balances (options): STAROHIO, bank money market accounts/sweep balances, other bank deposit accounts that may be liquidated without penalty. All invested cash balances should be invested in short-term investment alternatives that provide a minimum of liquidity within 7 - 10 days.

Track Revenues vs. Expenses

- Identify the net cash balance each day or week; identify high points and low points throughout the fiscal year - establish reliable monthly averages in order to meet any scheduled or unscheduled liquidity needs.
- Communicate with your bank to determine ending daily balances. Refer to the bank account analysis reports as a resource.

Methods of Establishing Liquidity Balances

Liquidity Percentage Method:

(a) Maintain a minimum balance in STAR (or other short-term investments) as a percentage of average invested funds so that any cash demands can be met at all times. By using a percentage of the total invested funds as a cushion, the core portfolio can be managed without having to sell securities to meet any unexpected cash needs.

Methods of Establishing Liquidity Balances

(b) Examples of short-term maturity investments include STAROHIO, STAR PLUS and other short-maturity securities such as federal agency discount notes, various bank deposit accounts, repurchase agreements, commercial paper.

(c) This method can be utilized once you know your minimum cash position (liquidity percentage) in order to buy securities with longer maturities.

Methods of Establishing Liquidity Balances

Asset-liability method:

On the basis of a cash flow analysis, match the maturities of short-term investments with projected monthly cash outflows.

(1) The choice of investment is based upon market yields at the time of purchase.

(2) Purchase securities to mature prior to an expected disbursement; increase the amount of maturities prior to those dates in which periodic disbursements may be required (i.e., payroll dates, insurance or debt service payment dates, capital expenditures (if not managed via a separate bond proceeds portfolio).

Market Yields and the Yield Curve

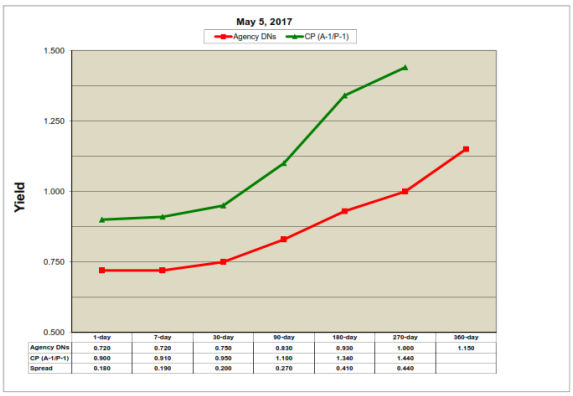
- What is the market "giving" you?
  - STAR Ohio: 1.02% (as of 05-04-17)
    - Compare to 9-month agency discount note yields
    - Compare to 60-day commercial paper yields
    - Daily liquidity (without daily transactions)
- What is the market outlook?
  - Last rate hike in March (to 0.75% to 1.00%)
  - Next Fed funds rate increase seen in June (to 1.00% - 1.25%)
  - Third 2017 rate hike in December?
  - 2018?
- Analysis of forward rates
  - 6-months @ 1.00% vs. 1-year @ 1.10%
  - Give up 10 bps for 6-months = Need +10 bps for next 6-months
  - Will 6-month rates be 20 bps higher by October 2017?

Market Yields and the Yield Curve

- Be familiar with current market yields and spreads between asset classes when attempting to match maturities with disbursements.
- The focus is to generate higher market yields vs. cash yields within the context of meeting liquidity needs.
- Understanding the yield curve will help you develop an investment strategy that (1) meets short-term obligations with maturing securities and (2) generates additional investment income.

Market Yields and the Yield Curve

Current CP vs. DN Yields



	1-day	7-day	30-day	90-day	180-day	270-day	360-day
Agency DNs	0.720	0.720	0.750	0.830	0.930	1.000	1.150
CP (A-1/P-1)	0.900	0.910	0.950	1.100	1.340	1.440	
Spread	0.180	0.190	0.200	0.270	0.410	0.440	

Direct Issue CP Postings

GRAB

1) Issuer Lists 2) Edit Columns 3) Export to Excel Direct Issuer Commercial Paper

Issuer List All Issuers

Issuer	Maturity (in days) 1	7	14	30	45	60	90	120	150	180	270	Ratings S&P	MD	FI
11) Abbey Natl Treasury		0.920	0.920	0.920	0.920	0.990	1.090	1.160	1.160*	1.280*	1.370	A-1	P-1	--
12) Credit Agric CIB NY	0.900	0.920	0.920	0.930	0.930	0.980	1.150	1.230	1.260	1.340	1.410	A-1	P-1	F1
13) GE Capital Treasury	NQ	NQ	NQ	NQ	NQ	NQ	NQ*	1.000*	NQ*			A-1	P-1	--
14) General Electric Co	NQ	0.800	0.810	0.830	0.840*							A-1	P-1	--
15) Institutional Secured	0.500	0.560	0.560	0.650	0.650	0.700	0.850	0.850				A-1	P-1	--
16) Intesa Funding LLC	0.950	1.050	1.070	1.130*	1.220*	1.390*	1.450*	1.530*	1.580*	1.650*		A-3	P-2	F2
17) Natixis NY	0.910	0.910	0.910	0.910	0.910	0.930	1.140	1.140*	1.270	1.370*	1.450	A-1	P-1	F1
18) Prudential Financial	0.950	0.980	0.980	1.030								A-1	P-2	F1
19) Prudential Funding	0.800	0.830	0.830	0.840	0.840							A-1	P-1	F1
20) Sears Roebuck Acce	NQ	8.000	8.000	8.150	8.200	8.300	8.300	8.300	8.300	8.300	8.300	C	NP	C
21) Toyota Cred Puerto					1.010	1.020*	1.060*	1.130*	1.190*	1.260*	1.400	A-1	P-1	--
22) AIG Funding Inc	c	c	c	c	c	c	c	c	c	c	c	NR	P-2	NR
23) American Express Cr	c	c	c	c	c	c	c	c	c	c	c	A-2	P-1	F1
24) Dexia Credit Local S	c	c	c	c	c	c	c	c	c	c	c	A-1	P-1	F1
25) Dexia Delaware LLC	c	c	c	c	c	c	c	c	c	c	c	A-2	P-3	F2
26) Exxon Mobil Corp	c	c	c	c	c	c	c	c	c	c	c	A-1	P-1	--
27) Toyota Motor Credit	c	c	c	c	c	c	c	c	c	c	c	A-1	P-1	--
28) UBS Finance (DE) In	c	c	c	c	c	c	c	c	c	c	c	A-1	P-1	--

(Dealer: Enabled for trading, Executable, Non-executable) *There are multiple rates in this maturity range.

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Dealer CP Offerings

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95<GO> to Hide Dealer List, <Menu> to Display Searches

CP 97) Trading Access 91) Searches 92) Settings Money Market Offerings

93) Refine Search DEFAULT Prim & Sec Group by None 88) Sellback 89) Chart

Table RateRun

Dealer	Count
1) All	638
2) BofA Merrill Lynch	196
3) JP Morgan	191
4) Citigroup Global	161
5) Williams Capital	46
6) Credit Suisse	36
7) Morgan Stanley	0
8) PNC	0

AskSz (M)	Issuer	Maturity	SD	Dsc/Cpn	AskYld	S&P	M	F
457,000	BK TOK-MIT UFJ N	08/04/17		1.120	1.123	A-1	P-1	--
500,000	BK TOK-MIT UFJ N	08/04/17 - 08/29/17		1.120	1.123	A-1	P-1	--
500,000	NATIXIS NY	08/04/17 - 08/31/17		1.150	1.153	A-1	P-1	F1
145,000	SINOPEC CENTURY	08/04/17 - 08/08/17		1.300	1.304	A-1+	P-1	--
215,650	QUEBEC PROVINCE	08/04/17 - 08/11/17		0.910	0.912	A-1+	P-1	F1+
500,000	CAISSE DES DEPOT	08/04/17 - 08/08/17	1	1.100	1.103	A-1+	P-1	F1+
500,000	NORDEA BANK AB	08/04/17 - 08/28/17		1.035	1.038	A-1+	P-1	F1+
500,000	NORDEA BANK AB	08/04/17 - 08/11/17		1.035	1.038	A-1+	P-1	F1+
500,000	NORDEA BANK AB	08/04/17 - 08/07/17		1.030	1.033	A-1+	P-1	F1+
4,300	ABN AMRO FUND	08/07/17		1.110	1.113	A-1	P-1	F1
25,100	PACCAR FINL CORP	08/07/17		0.950	0.952	A-1	P-1	--
50,000	AGRI BANK CN NY	08/07/17 - 08/11/17		1.420	1.425	A-1	P-1	--
50,000	SUMI TRUST NY	08/07/17 - 08/10/17		1.140	1.143	A-1	P-1	--
100,000	BANK OF CHINA HK	08/07/17 - 08/10/17	1	1.410	1.415	A-1	P-1	--
100,000	EBURY FINANCE	08/07/17		1.190	1.194	A-1	P-1	--
150,000	CHESHAM FINANCE	08/07/17		1.190	1.194	A-1	P-1	--
150,000	HALKIN FIN LLC	08/07/17		1.190	1.194	A-1	P-1	--
250,000	SOC GENERALE	08/07/17		1.030	1.033	A-1	P-1	F1
294,000	BK TOK-MIT UFJ N	08/07/17 - 08/17/17		1.120	1.123	A-1	P-1	--
460,000	BNP PARIBAS NY	08/07/17 - 08/11/17		1.100	1.103	A-1	P-1	F1
500,000	BNP PARIBAS FORT	08/07/17 - 08/11/17		1.100	1.103	A-1	P-1	F1
500,000	CHINA CONS BK NY	08/07/17		1.440	1.445	A-1	P-1	--

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FHLB DN Postings

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97) Settings Page 1/2 Agency Discount Notes
Federal Home Loan Bank | Fannie Mae | Freddie Mac | Federal Farm Credit Bank
US Govt-Discount Notes-Window Rates
Federal Home Loan Bank Zoom 100%

Days	Rate	Target Amount	Days	Rate	Target Amount	10:09
0/N 5/08	0.750	413.382 5/05	7/14-19	0.810	371.209 CRS	5-May-17
5/09-19	0.700	22.595 CASH	7/20	0.800	75.000 CRS	
5/22-24	0.730 CL	5.822 CR	7/24-25	0.800	147.000 CASH	
5/25-31	0.700	49.300 CASH	7/27	0.800	75.000 CRS	
6/08	0.750 CL	96.000 CRS	8/01-02	0.865	28.735 CR	
6/19-20	0.770	109.000 CR	8/15-22	0.910 CL	155.000 CRS+	
6/21-22	0.780	161.548 CRS	8/23-31	0.910	500.000 CRS	
6/23	0.785	75.000 CRS	9/05-29	0.860	142.035 CRS	
6/26-27	0.790	100.000 CRS	0/02-31	0.870	122.312 CRS	
6/28	0.795	95.270 CRS	N/01-4/04	0.920	104.049 CRS	
7/06	0.800 CL	25.000 CRS	4/05-26	1.000	132.543 CRS	
7/10-11	0.800	75.000 CRS	4/27-5/02	1.115	2.172 CRS	
7/13	0.800	75.000 CRS	5/03-04	1.150	187.050 CR	

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FNMA DN Postings

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97) Settings Page 1/10 Agency Discount Notes
Federal Home Loan Bank | Fannie Mae | Freddie Mac | Federal Farm Credit Bank
US Govts-Fannie Discount Notes
Fannie Mae Zoom 100%

Fannie Mae 05/05/17 10:05AM see legal disclaimer on last page

Date	Rate	St Vol	Set	Date	Rate	St Vol	Set
05/09/17	0.70	1200	R				
06/12-14/17	0.71	47	CRS				
07/13-14/17	0.80	0	CRS				
07/17-19/17	0.81	0	CRS				
08/16-18/17	0.85	0	CRS				
08/21-25/17	0.86	0	CRS				
08/28-31/17	0.86	0	CRS				
09/01-07/17	0.87	0	CRS				

AUCTION SCHEDULE Reverse 0

Amount	Maturity	Settlement	Stop Out	Stop Out%
0.500 bln	06/28/17	CR	0.750	87.500%
0.500 bln	08/02/17	CR	0.850	30.769%

Page 1 of 2

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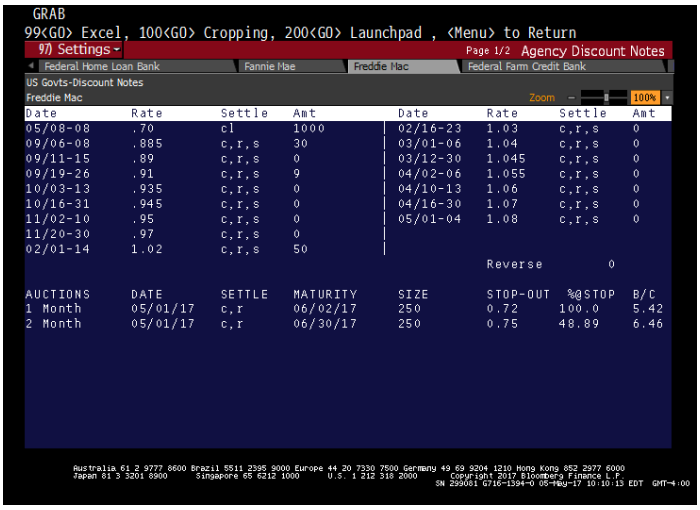
FHLMC DN Postings



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97) Settings
Page 1/2 Agency Discount Notes
Federal Home Loan Bank | Fannie Mae | Freddie Mac | Federal Farm Credit Bank
US Govts-Discount Notes
Freddie Mac
Zoom 100%

Date	Rate	Settle	Amt	Date	Rate	Settle	Amt
05/08-08	.70	cl	1000	02/16-23	1.03	c,r,s	0
09/06-08	.885	c,r,s	30	03/01-06	1.04	c,r,s	0
09/11-15	.89	c,r,s	0	03/12-30	1.045	c,r,s	0
09/19-26	.91	c,r,s	9	04/02-06	1.055	c,r,s	0
10/03-13	.935	c,r,s	0	04/10-13	1.06	c,r,s	0
10/16-31	.945	c,r,s	0	04/16-30	1.07	c,r,s	0
11/02-10	.95	c,r,s	0	05/01-04	1.08	c,r,s	0
11/20-30	.97	c,r,s	0				
02/01-14	1.02	c,r,s	50				
					Reverse		0

AUCTIONS	DATE	SETTLE	MATURITY	SIZE	STOP-OUT	%@STOP	B/C
1 Month	05/01/17	c,r	06/02/17	250	0.72	100.0	5.42
2 Month	05/01/17	c,r	06/30/17	250	0.75	48.89	6.46

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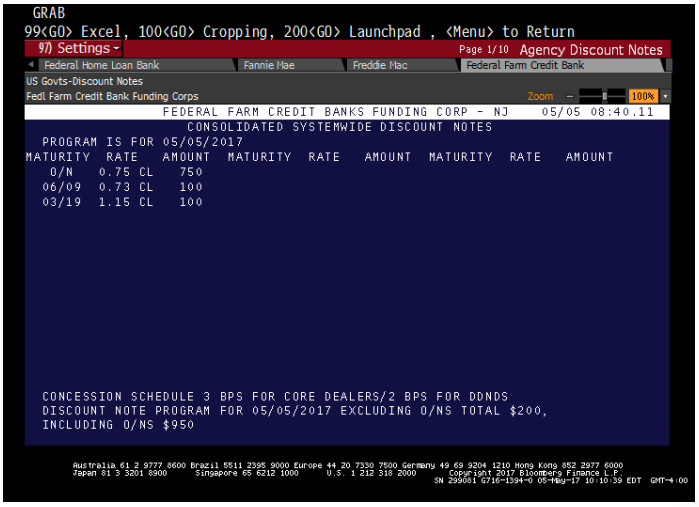
FFCB DN Postings



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97) Settings
Page 1/10 Agency Discount Notes
Federal Home Loan Bank | Fannie Mae | Freddie Mac | Federal Farm Credit Bank
US Govts-Discount Notes
Fed\ Farm Credit Bank Funding Corps
Zoom 100%

FEDERAL FARM CREDIT BANKS FUNDING CORP - NJ 05/05 08:40.11
CONSOLIDATED SYSTEMWIDE DISCOUNT NOTES
PROGRAM IS FOR 05/05/2017

MATURITY	RATE	AMOUNT	MATURITY	RATE	AMOUNT	MATURITY	RATE	AMOUNT
O/N	0.75 CL	750						
06/09	0.73 CL	100						
03/19	1.15 CL	100						

CONCESSION SCHEDULE 3 BPS FOR CORE DEALERS/2 BPS FOR DDNDS
DISCOUNT NOTE PROGRAM FOR 05/05/2017 EXCLUDING O/NS TOTAL $200,
INCLUDING O/NS $950

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What about Bills?

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Matching Monthly Obligations

- Laddering Maturities (a basic method)
  - Purchase 2-year maturities each month so that 23 months later the maturities will be used each month to meet some or all liquidity needs (determine par value you are able to add without straining your current cash position).
  - Ignores incremental yield spreads along the curve
  - Ignores market expectations for changes in the level of interest rates and/or yield spreads

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Matching Monthly Obligations

If it is difficult to start with 2-yr. maturities, purchase shorter maturities that will "fill" the earlier months inside of the two year period.

Less aggressive portfolio structures can include:

- Federal agency discount notes or U.S. Treasury Bills of various maturities.
- Commercial paper maturing in 3 month, 6 month, and 9 month increments.
- The shape of the yield curve and spreads between asset classes should be considered when selecting a particular investment option.

Matching Monthly Obligations

Before considering investment options:

1. Know your expected liabilities.
2. Know the shape of the yield curve and yield spreads in order to understand current market prices.
3. Compare investment options (agency discount notes, CP, bank deposits, STAR, etc.)
4. Compare the "offerings" of more than one broker/dealer before executing the purchase.

Investment of the Core Portfolio

Once you have established a minimum liquidity percentage, and you are confident that liquidity needs will be met at all times, then investing core funds based upon more technical factors may be implemented.

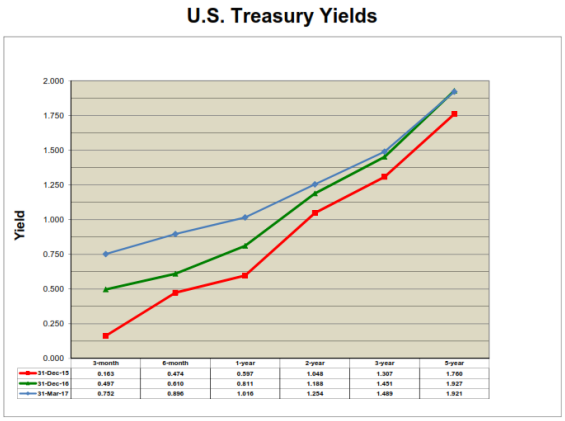
- The shape of the yield curve (flat, positively sloped, inverted).
- Spreads between asset classes.
- Investing in declining and rising rate markets.
- Average duration (average maturity) and its affect upon:
  - (1) market value
  - (2) return
  - (3) cash flow

Investment of the Core Portfolio

Why not just add a "liquidity component" to the core portfolio?

- This can have a significant impact on:
  - Average portfolio maturity/duration
  - Average portfolio yield
  - Future portfolio performance
- Separate portfolios can be managed with specific investment objectives:
  - Immediate cash needs
  - Near-term expected cash flow requirements
  - Longer-term portfolio return objectives and growth of principal
- Is the portfolio being compared to the proper benchmark?
  - Liquidity portfolio vs. short maturity market rates
  - Core portfolio vs. market index (without a "cash" component)

Market Yields and the Yield Curve



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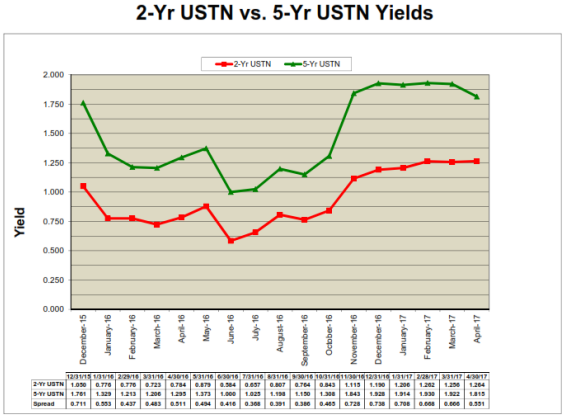
Market Yields and Yield Spreads



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U.S. Treasury Active Issues

GRAB

United States | 1) Actions | 3) Settings | Fixed Income Trading

10:06

4) Actives | 5) Bills | 6) Notes | 7) TIPS | 8) Strips | 9) Sprds | 10) Curves | 11) FRN | 12) Bfly | 13) WI

Bills					**Bonds**				
31) 06/01/17		0.685/0.675	0.685	-0.005	49) 2⅞ N46		97-10+/11	3.011	- 03
32) 08/03/17		0.870/0.865	0.879	+0.005	50) 3 247 30YR		99-29+/30	3.003	- 03
33) 11/02/17		0.995/0.990	1.009	+0.015	51) WI 30YR		3.005/0.000		--
34) 04/26/18		1.080/1.075	1.099	+0.005	**TIPS**				
Notes					52) 0⅛ 422		99-27¾/99-30¾	0.133	+ 00¼
35) 1⅛ 219		99-22 /22⅜	1.293	- 00¾	53) 0⅜ 127		98-26 /98-29¾	0.488	- 01¼
36) 1¼ 319		99-27⅞/28¼	1.313	- 00⅞	54) 0⅞ 247		96-11+ /96-15¼	1.012	- 03¾
37) 1¼ 419	2YR	99-27¼/27+	1.322	- 01	**Curve Trades**				
38) 1⅝ 320		100-11 /11+	1.496	- 01	55) 2yr vs 5yr		57.021/-57.588		-0.638
39) 1½ 420	3YR	99-30¼/30+	1.516	- 01¼	56) 2yr vs 10yr		103.878/-104.461		-0.537
40) WI 3YR		1.539/0.535		+0.012	57) 5yr vs 10yr		46.692/-47.038		+0.101
41) 1⅞ 222		99-30+ /31	1.882	- 01+	**Other Markets**				
42) 1⅞ 322		99-28 /28+	1.898	- 01+	58) US Long(CBT)	09:56 d	151-28		+0-05
43) 1⅞ 422	5YR	99-28+ /28¾	1.896	- 01+	59) 10yr Fut (CBT)	09:56 d	125-05+		--
44) 2⅛ 324		99-22 /22+	2.171	- 02	60) 5Yr Fut(CBT)	09:56 d	118-02		-0-00¾
45) 2 424	7YR	98-26+ /27	2.179	- 02	61) Dow Jones Ind	10:06	20934.941		-16.529
46) 2 N26		96-29 /29+	2.363	- 03+	62) S&P 500 Ind	09:52 d	2392.590		+3.070
47) 2¼ 227	10YR	98-31+ /00	2.365	- 03	63) NYM WTI Crd	09:56 d	45.750		+0.230
48) WI 10YR		2.365/2.355		+0.010	64) Gold	10:06	1227.430		-0.670

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Agency Off-the-Run Issues

GRAB

Agencies | 1) Actions | 3) Settings | Fixed Income Trading

10:07

4 OTR | 5 Shorts | 6 2-30yr | 8 Sub | 9 MTN | 10 Callables | 11 Supras

2yr			
31) T1¼ 419	99-27¼ / 99-27+	1.326 - 1.322	
32) FHLB 0⅝ 818	-2.50 / -11.00	1.301 - 1.212	
33) FHLB 0⅞ 018	3.25 / -2.25	1.359 - 1.300	
34) FHLMC0⅞ 018	2.50 / -5.25	1.351 - 1.270	
35) FHLB 1¼ 119	7.00 / 2.75	1.396 - 1.350	
36) FHLB 1⅜ 319	8.25 / 4.75	1.409 - 1.370	
3yr			
37) T1½ 420	99-30¼ / 99-30+	1.519 - 1.516	
38) FHLMC 1½ 120	7.00 / 3.25	1.589 - 1.549	
39) FNMA 1½ 220	7.50 / 5.25	1.594 - 1.569	
40) FHLMC1⅜ 520	10.25 / 6.25	1.622 - 1.579	
41) FNMA 1½ 620	11.50 / 6.50	1.634 - 1.581	
42) FHLB 1⅜ 221	26.75 / 23.25	1.787 - 1.749	
5yr			
43) T1⅞ 422	99-28+ / 99-28¾	1.898 - 1.896	
44) FHLMC 1¾ 821	0.25 / -3.75	1.902 - 1.861	
45) FNMA 1¾ 821	0.75 / -3.25	1.906 - 1.864	
46) FNMA 1¾ 021	2.00 / -2.00	1.920 - 1.878	
47) FHLB 1⅞ N21	4.00 / -0.25	1.938 - 1.894	
48) FNMA 2 122	8.25 / 6.25	1.982 - 1.961	
49) FHLMC2⅜ 122	8.50 / 4.50	1.983 - 1.941	
10yr			
50) T2¼ 227	98-31+ / 99-00	2.367 - 2.365	
51) FNMA 2⅜ 426	26.75 / 23.00	2.636 - 2.597	
52) FNMA 1⅞ 926	28.75 / 25.50	2.656 - 2.622	
53) FNMA 6¼ 529	50.50 / 45.50	2.874 - 2.822	
30yr			
54) T3 247	99-28 / 99-28+	3.006 - 3.005	
55) FHLMC 6¼ 732	-4.50 / -10.75	2.961 - 2.898	

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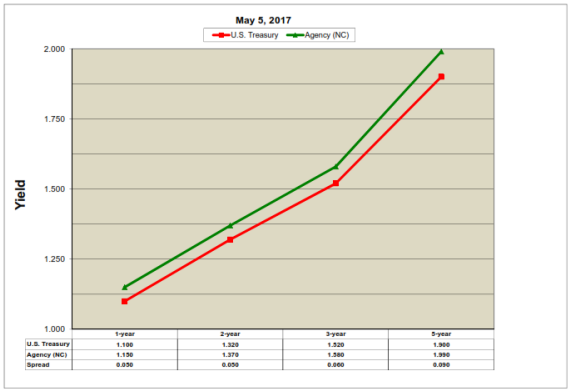
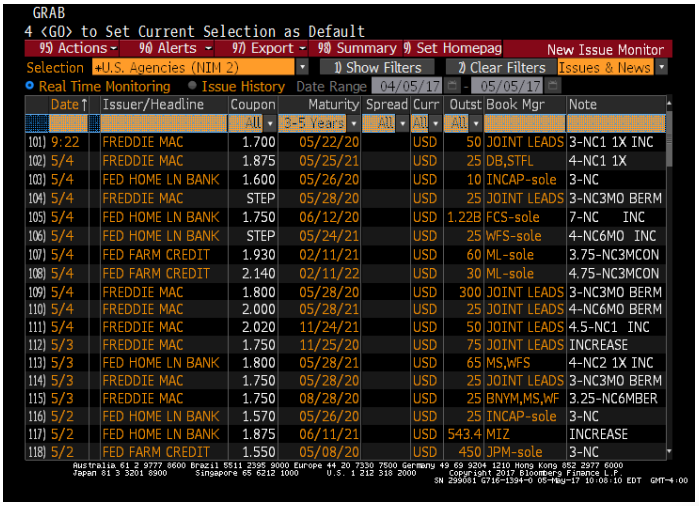
Market Yields and Yield Spreads

Current U.S. Treasury vs. Federal Agency Yields



	1-year	2-year	3-year	5-year
U.S. Treasury	1.100	1.320	1.520	1.900
Agency (NC)	1.150	1.370	1.580	1.990
Spread	0.050	0.050	0.060	0.090

Federal Agency New Issues



	Date ↑	Issuer/Headline	Coupon	Maturity	Spread	Curr	Outst	Book Mgr	Note
			All	3-5 Years	All	All	All		
101)	9:22	FREDDIE MAC	1.700	05/22/20		USD	50	JOINT LEADS	3-NC1 1X INC
102)	5/4	FREDDIE MAC	1.875	05/25/21		USD	25	DB,STFL	4-NC1 1X
103)	5/4	FED HOME LN BANK	1.600	05/26/20		USD	10	INCAP-sole	3-NC
104)	5/4	FREDDIE MAC	STEP	05/28/20		USD	25	JOINT LEADS	3-NC3MO BERM
105)	5/4	FED HOME LN BANK	1.750	06/12/20		USD	1.22B	FCS-sole	7-NC INC
106)	5/4	FED HOME LN BANK	STEP	05/24/21		USD	25	WFS-sole	4-NC6MO INC
107)	5/4	FED FARM CREDIT	1.930	02/11/21		USD	60	ML-sole	3.75-NC3MCON
108)	5/4	FED FARM CREDIT	2.140	02/11/22		USD	30	ML-sole	4.75-NC3MCON
109)	5/4	FREDDIE MAC	1.800	05/28/20		USD	300	JOINT LEADS	3-NC3MO BERM
110)	5/4	FREDDIE MAC	2.000	05/28/21		USD	25	JOINT LEADS	4-NC6MO BERM
111)	5/4	FREDDIE MAC	2.020	11/24/21		USD	50	JOINT LEADS	4.5-NC1 INC
112)	5/3	FREDDIE MAC	1.750	11/25/20		USD	75	JOINT LEADS	INCREASE
113)	5/3	FED HOME LN BANK	1.800	05/28/21		USD	65	MS,WFS	4-NC2 1X INC
114)	5/3	FREDDIE MAC	1.750	05/28/20		USD	25	JOINT LEADS	3-NC3MO BERM
115)	5/3	FREDDIE MAC	1.750	08/28/20		USD	25	BNYM,MS,WF	3.25-NC6MBER
116)	5/2	FED HOME LN BANK	1.570	05/26/20		USD	25	INCAP-sole	3-NC
117)	5/2	FED HOME LN BANK	1.875	06/11/21		USD	543.4	MIZ	INCREASE
118)	5/2	FED FARM CREDIT	1.550	05/08/20		USD	450	JPM-sole	3-NC