

# Renewed Challenges in Core Deposits

Valuation and Dynamics in light of the growth in Money Market deposits

*Presented to:  
OCC, ALM Hot Topics*

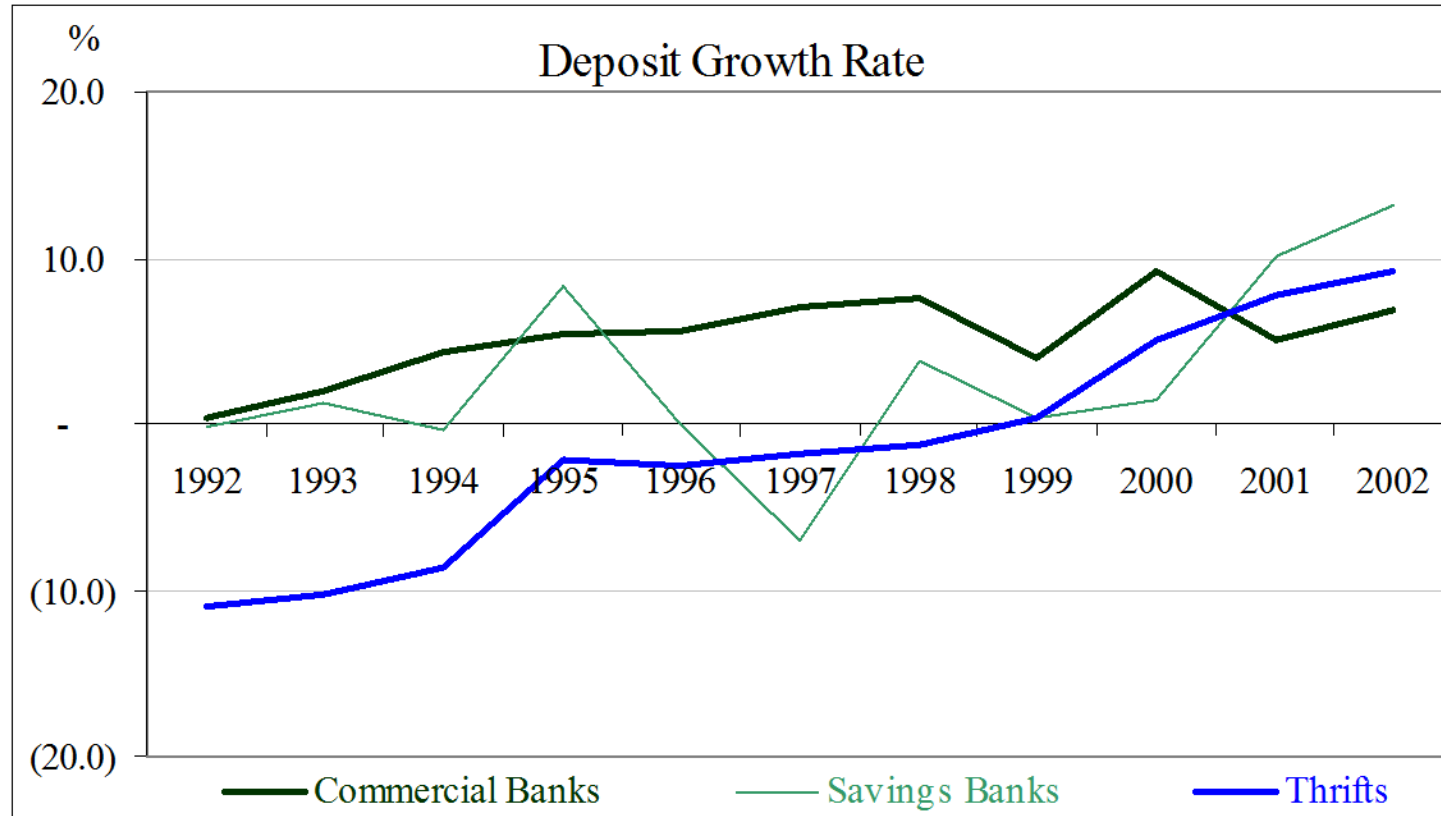
Alexandria, VA  
September 9, 2003

Fred Poorman Jr., CFA

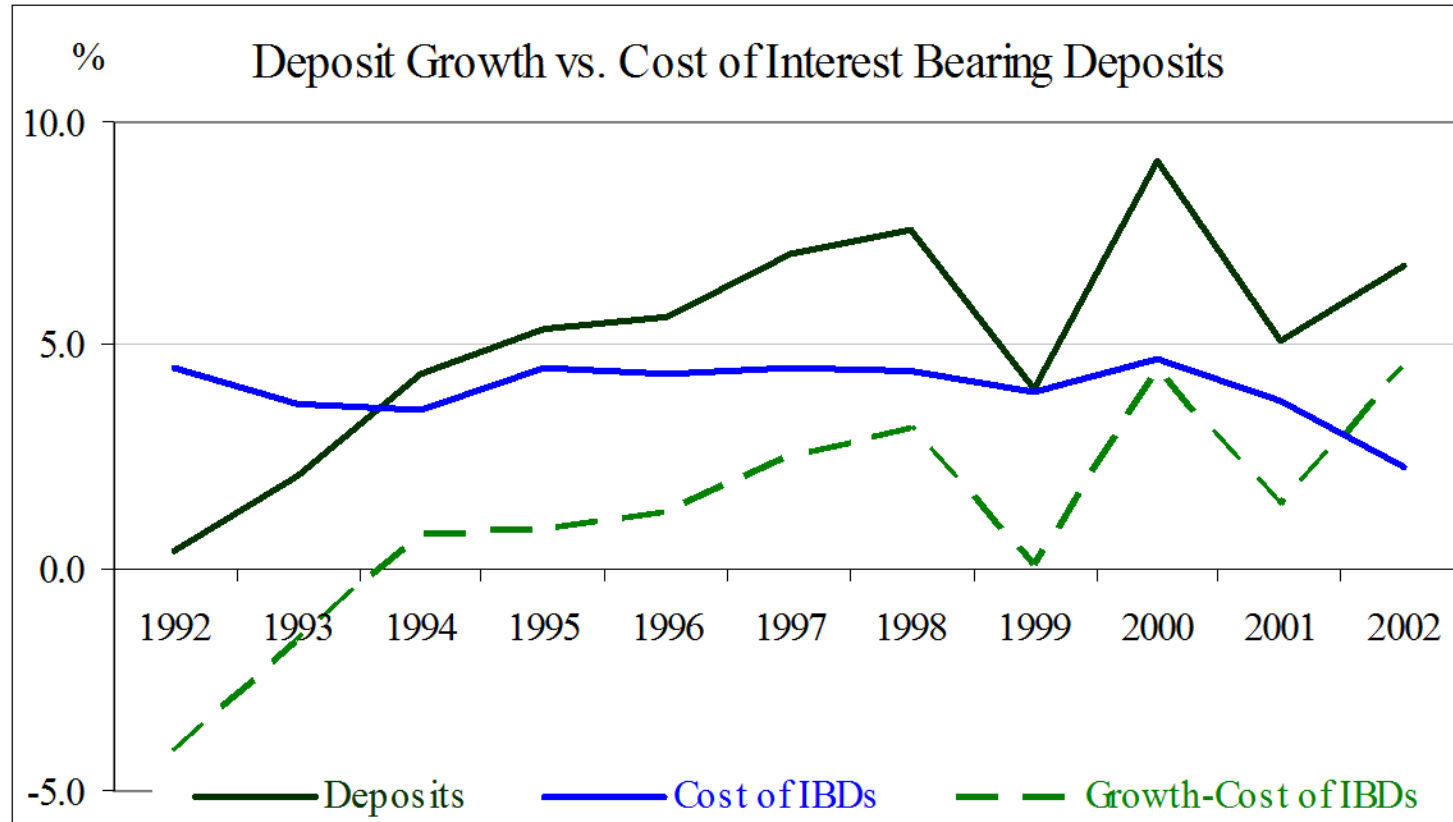
# Outline

- Review of recent macro- and micro-market deposit trends
- Do deposit rates matter in a low rate environment?
- Modeling core deposits – should you use historical patterns? – what can regression models actually tell us about the future?
- Pricing and valuation issues in an illiquid market

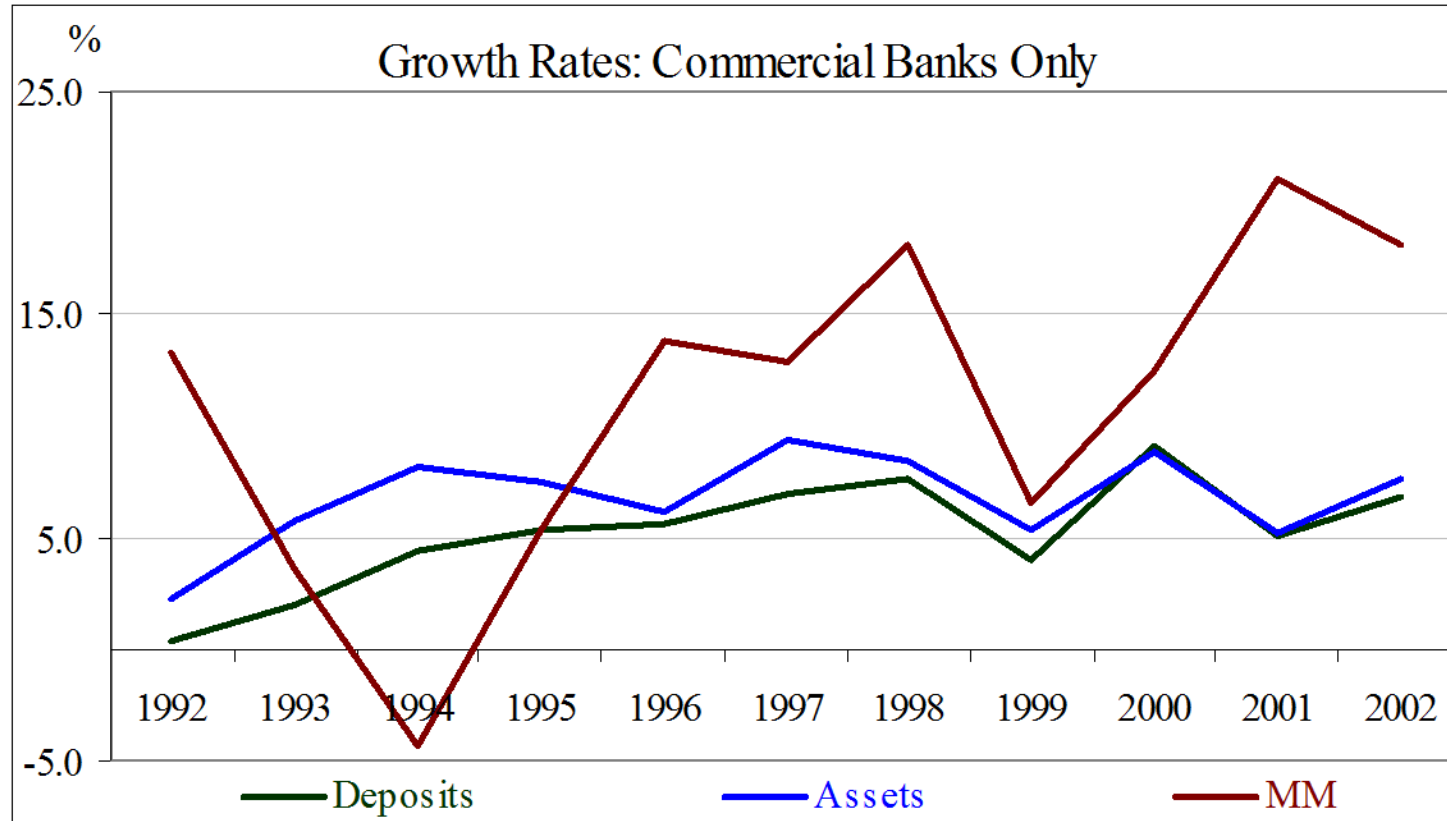
# Deposit Market trends



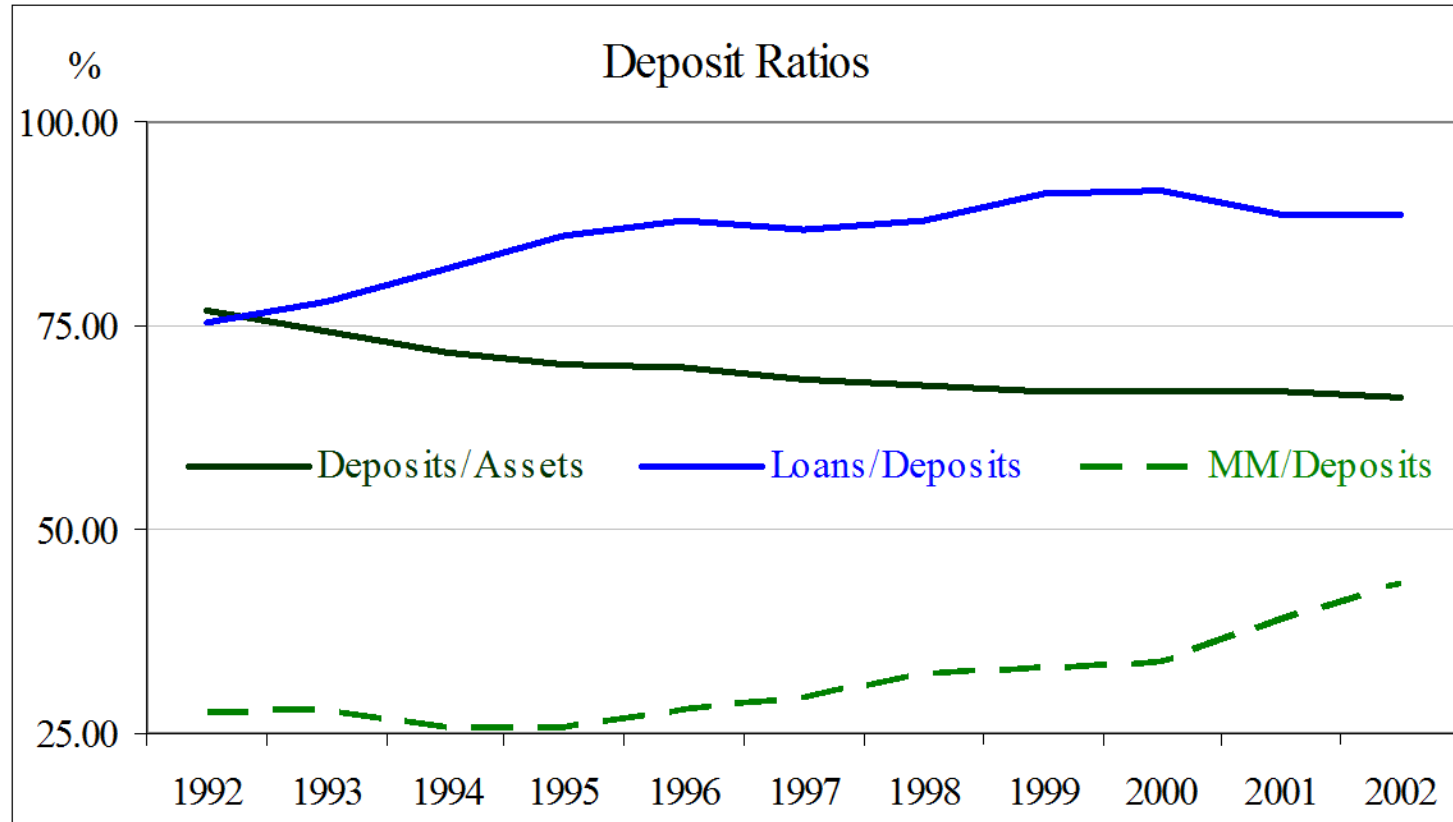
# Deposit Market trends



# Deposit Market trends

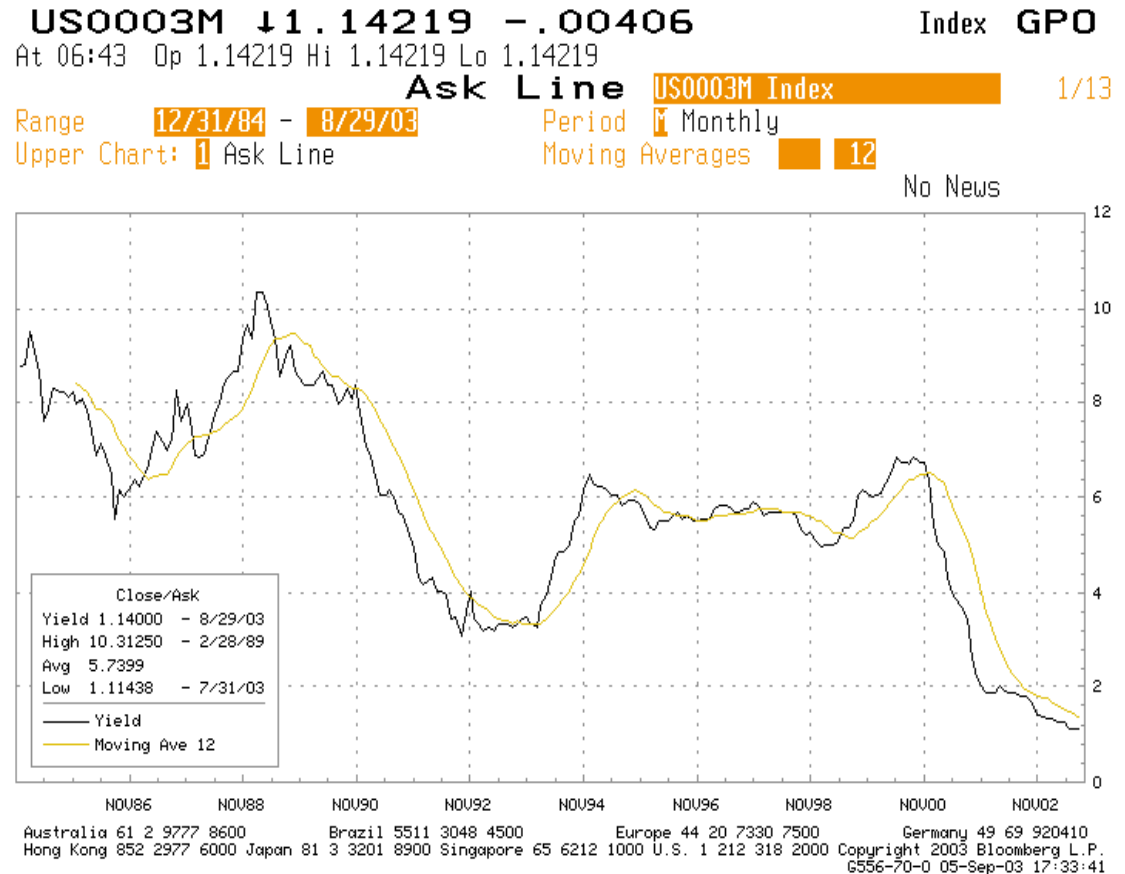


# Deposit Market trends

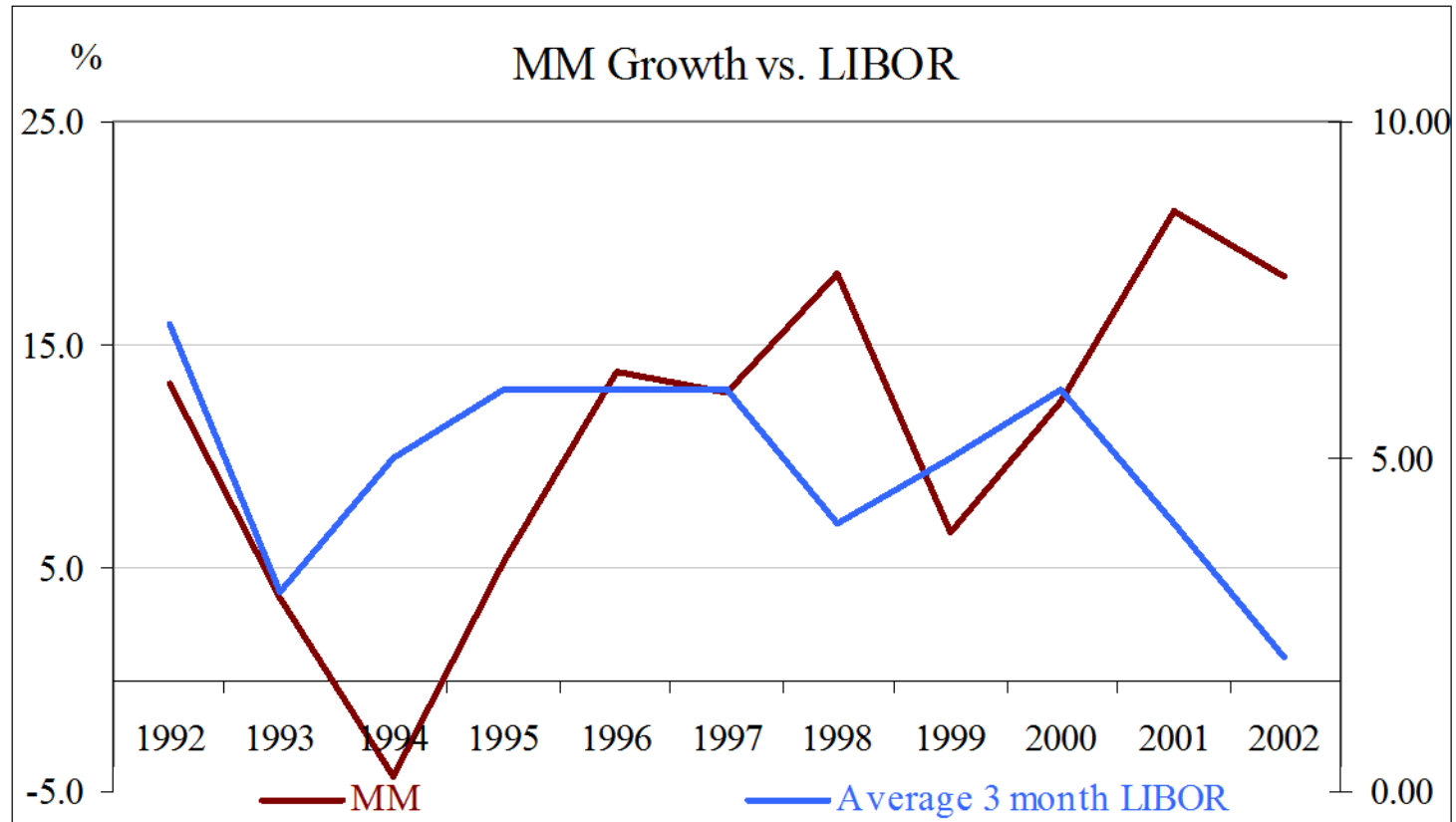


# Recognize that interest rates change

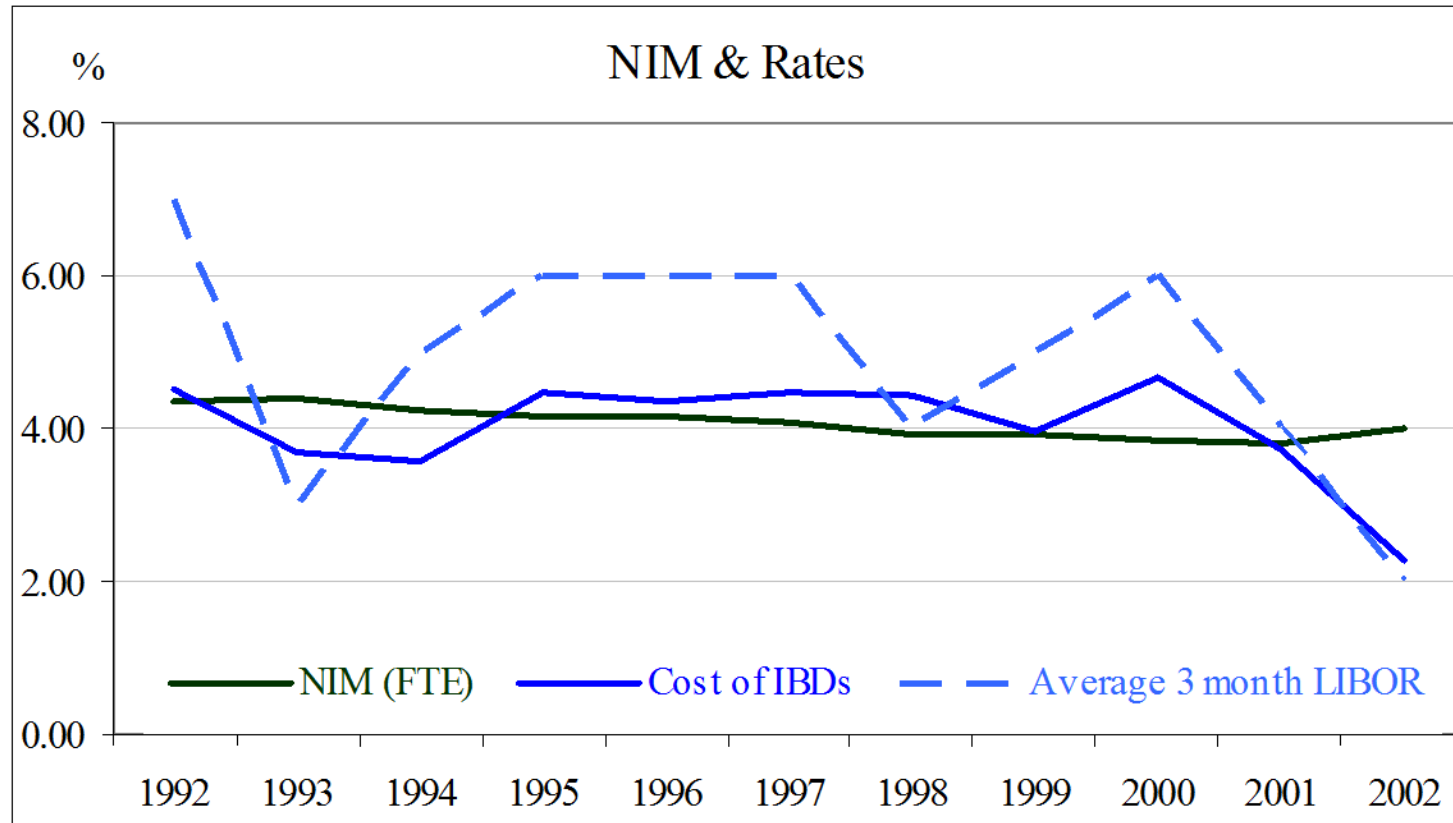
- Short-term rates and long-term rates may move in different directions
- Parallel shocks are unlikely



# Do rates matter?



# Do rates matter?



# Do rates matter?

## Recent rate survey

### Deposits

Retail deposit rates by product line across industry segments, as of May 30

	Internet			Broker			Bank			Credit Union		
	Low	High	Average	Low	High	Average	Low	High	Average	Low	High	Average
<b>Money market \$10,000</b>	0.50%	2.30%	1.64%	0.10%	0.98%	0.74%	0.05%	2.32%	0.77%	0.50%	2.52%	1.38%
<b>High liquid \$25,000</b>	0.50	2.30	1.69	0.10	0.98	0.75	0.05	2.80	1.05	0.70	2.55	1.50
<b>High liquid \$50,000</b>	0.50	2.30	1.73	0.10	0.98	0.75	0.05	2.80	1.15	0.70	3.15	1.57
<b>Premium interest checking \$10,000</b>	0.15	3.01	1.30	0.00	0.00	0.00	0.02	2.25	0.49	0.10	2.27	0.61
<b>3-month CD \$25,000</b>	0.77	1.75	1.34	1.01	1.25	1.10	0.25	1.87	0.98	0.65	1.90	1.28

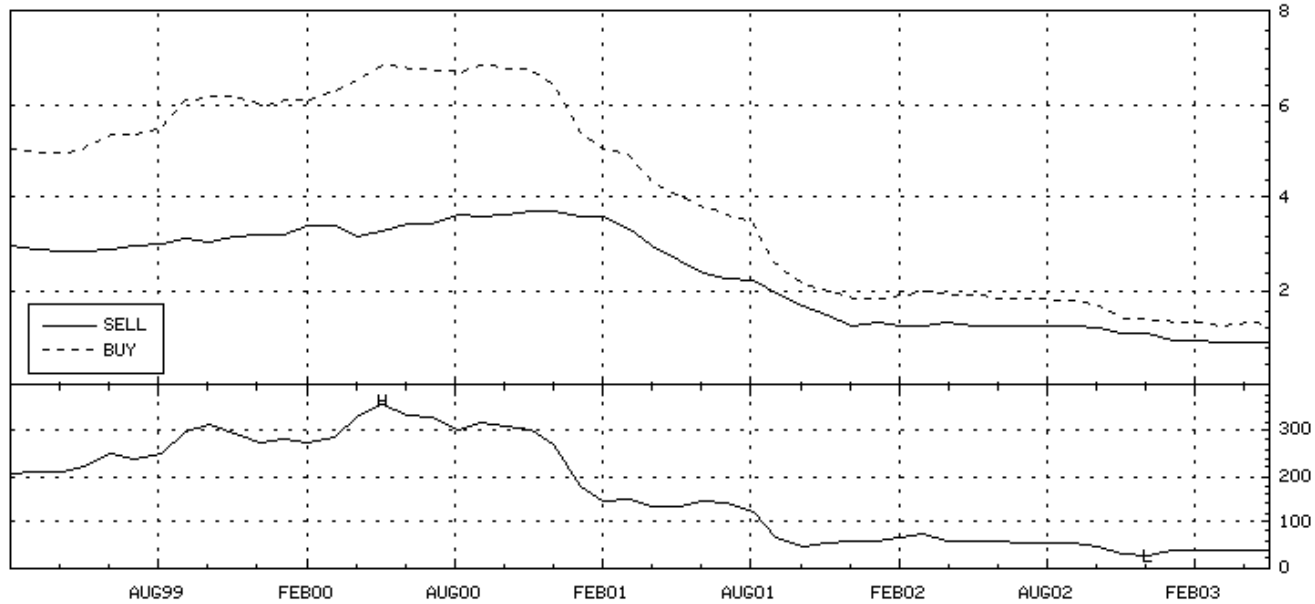
# Do rates matter?

## MM vs. LIBOR

<HELP> for explanation.

P059 Corp HS

**HISTORICAL YIELD SPREAD** PAGE 2 OF 5  
 SELL BanxQuote MB Sav MM Mid (.900 )  
 BUY LIBOR-USD FIX 3 MONTH Ask (1.240 )  
 RANGE 2/26/99 TO 5/30/03 PERIOD M CLOSE/Mid vs CLOSE/Ask  
 HI 359.25 - 5/31/00 CURR 38 AVE 166.85 LOW 27 -12/31/02



Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
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# Do rates matter?

## MM vs. LIBOR

<HELP> for explanation.

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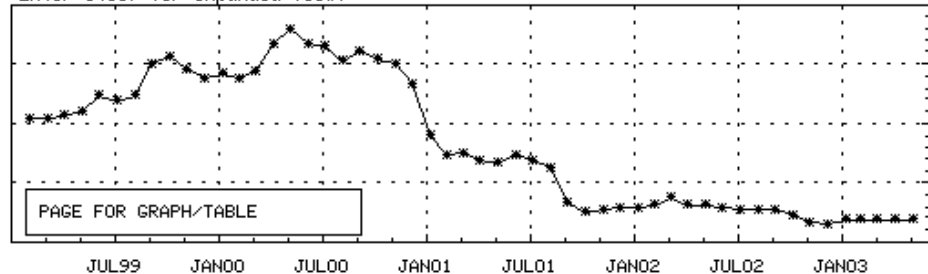
### HISTORICAL YIELD SPREAD PAGE 1 OF 5

SELL BanxQuote MB Sav MM  
BUY LIBOR-USD FIX 3 MONTH

Mid (.900 )  
Ask (1.240 )

RANGE	2/26/99 TO 5/30/03	SELL BUY
PERIOD	M (D-W-M-Q-Y)	TIME FRAME (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)
SPREAD Y P=PRICE OR E=P/E	VALUE C C (O=OPEN, H=HIGH, L=LOW, C=CLOSE)	
YIELD C CONV/SEMI-ANN/ANN	MARKET M A (B=BID, A=ASK, M=MID)	

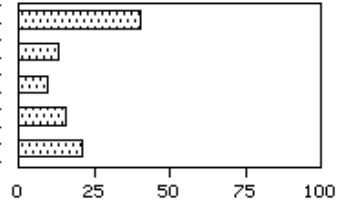
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STATISTICS	
MEAN (AVE)	166.85
MEDIAN	145.44
SDev	110.4
OFF AVE BPS	-128.85
OFF AVE Sdev	-1.167
PERCENTILE	5.77

SUMMARY		OCCURRENCES	
LAST	38	27.00 TO	93.45 21=40.4%
AVERAGE	166.85	93.45 TO	159.90 7=13.5%
OFF AVE	-128.85	159.90 TO	226.35 5= 9.6%
HIGHEST	359.25 ON 5/31/00	226.35 TO	292.80 8=15.4%
LOWEST	27 ON 12/31/02	292.80 TO	359.25 11=21.2%



NORM NU-CALC: VALUATION (BUY  1) - (SELL  1)

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2003 Bloomberg L.P.  
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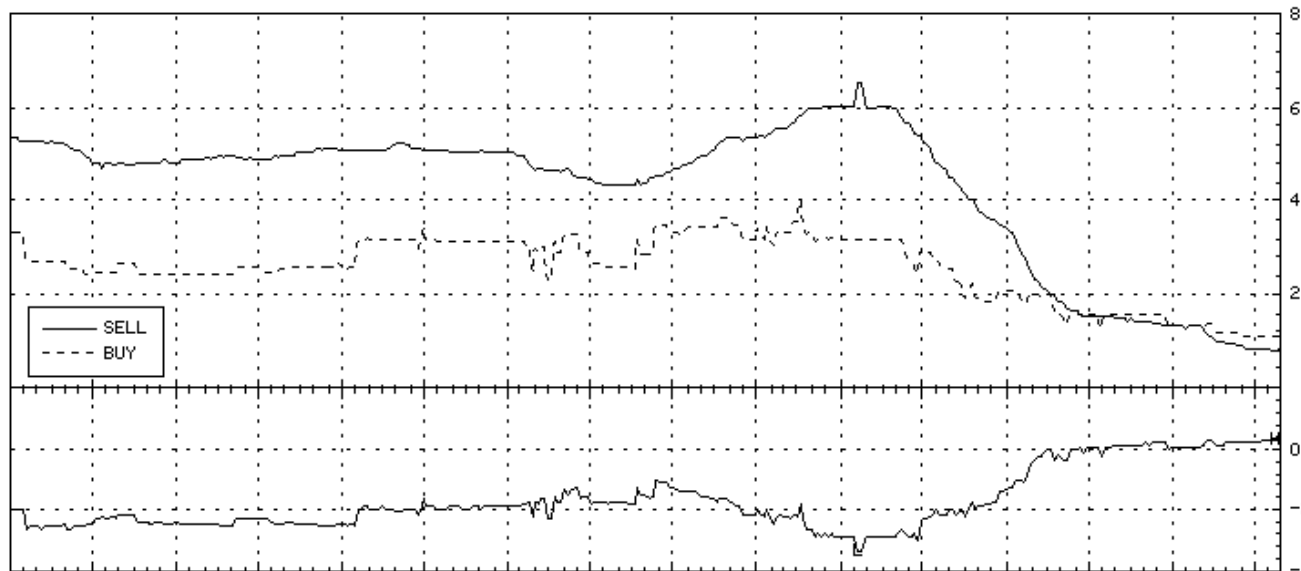
# Do rates matter?

## Bank MM vs. Merrill Lynch MM

<HELP> for explanation.

P059 Equity HS

**HISTORICAL VALUE SPREAD** PAGE 2 OF 12  
 SELL MRAXX US \$ Yld .75  
 BUY BanxQuote State Savings MM Mid (1.100 )  
 RANGE 9/ 1/95 TO 4/25/03 PERIOD W CLOSE/Yld vs CLOSE/Mid  
 HI .3 - 4/11/03 CURR .27 AVE -1.6801 LOW -3.36 -10/ 6/00



1MAR96 30AUG 28FEB97 29AUG 27FEB98 28AUG 26FEB99 27AUG 25FEB00 1SEP 23FEB01 31AUG 1MAR02 30AUG 28FEB03  
 Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
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# Do rates matter?

## Bank MM vs. Merrill Lynch MM

<HELP> for explanation.

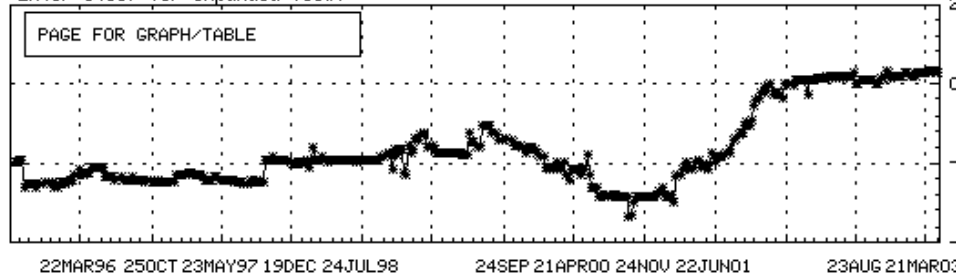
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**HISTORICAL VALUE SPREAD** PAGE 1 OF 12

SELL MRAXX US \$ Yld .75  
 BUY BanxQuote State Savings MM Mid (1.100 )

RANGE <b>9/ 1/95 TO 4/25/03</b>	SELL BUY
PERIOD <b>W</b> (D-W-M-Q-Y)	TIME FRAME (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)
SPREAD V P=PRICE OR E=P/E	VALUE <b>C</b> <b>C</b> (O=OPEN, H=HIGH, L=LOW, C=CLOSE)
YIELD <b>C</b> CONV/SEMI-ANN/ANN	MARKET <b>2</b> <b>M</b> (T=TRADE, B=BID, A=ASK, M=MID)

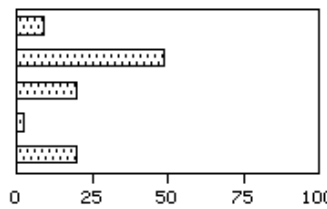
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STATISTICS	
MEAN (AVE)	-1.6801
MEDIAN	-1.94
SDev	.9761
OFF AVE	1.9501
OFF AVE Sdev	1.9978
PERCENTILE	98.21

SUMMARY		OCCURRENCES	
LAST	.27	-3.36 TO	-2.63 35= 8.9%
AVERAGE	-1.6801	-2.63 TO	-1.90 191=48.7%
OFF AVE	1.9501	-1.90 TO	-1.16 78=19.9%
HIGHEST	.3 ON 4/11/03	-1.16 TO	-.43 9= 2.3%
LOWEST	-3.36 ON 10/ 6/00	-.43 TO	.30 79=20.2%



**NORM NU-CALC: VALUATION** (BUY **X** **1**) - (SELL **X** **1**)

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000  
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# Do rates matter?

## CA MM vs. Merrill Lynch MM

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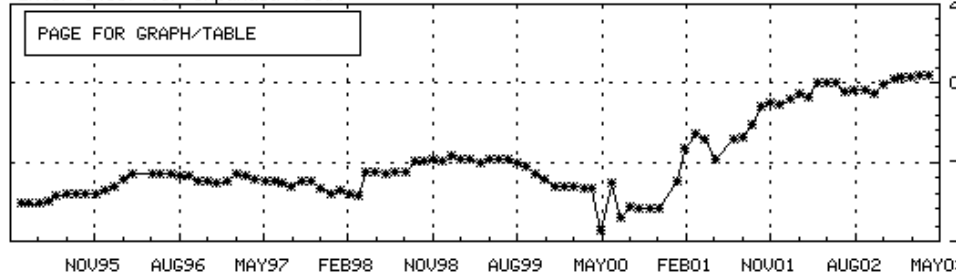
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**HISTORICAL VALUE SPREAD** PAGE 1 OF 7

SELL MRAXX US \$ Yld .75  
 BUY BanxQuote State Savings MM Mid (1.000 )

RANGE <b>3/31/95</b> TO <b>4/30/03</b>	SELL BUY
PERIOD <b>M</b> (D-W-M-Q-Y)	TIME FRAME (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)
SPREAD V P=PRICE OR E=P/E	VALUE <b>C</b> <b>C</b> (O=OPEN, H=HIGH, L=LOW, C=CLOSE)
YIELD <b>C</b> CONV/SEMI-ANN/ANN	MARKET <b>2</b> <b>M</b> (T=TRADE, B=BID, A=ASK, M=MID)

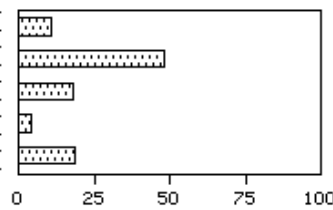
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STATISTICS	
MEAN (AVE)	-1.9754
MEDIAN	-2.33
SDev	1.0155
OFF AVE	2.1554
OFF AVE Sdev	2.1224
PERCENTILE	97.89

SUMMARY		OCCURRENCES	
LAST	<b>.18</b>	-3.78 TO	-2.99 10=10.5%
AVERAGE	<b>-1.9754</b>	-2.99 TO	-2.19 46=48.4%
OFF AVE	<b>2.1554</b>	-2.19 TO	-1.40 17=17.9%
HIGHEST	.19 ON 3/31/03	-1.40 TO	-.60 4= 4.2%
LOWEST	-3.78 ON 5/31/00	-.60 TO	.19 18=18.9%



**NORM NU-CALC: VALUATION** (BUY **X 1**) - (SELL **X 1**)

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
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# Do rates matter?

## NY MM vs. Merrill Lynch MM

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SELL MRAXX US \$

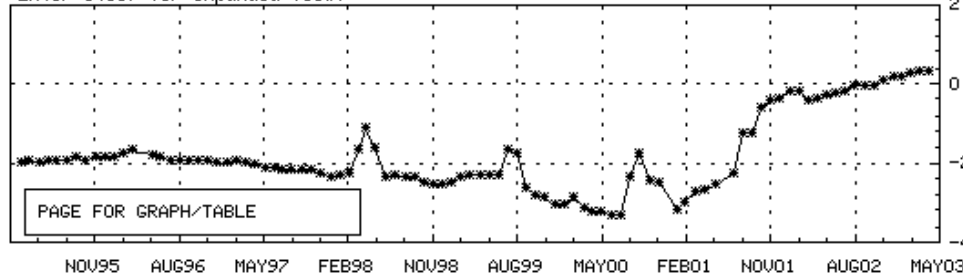
Yld .75

BUY BanxQuote State Savings MM

Mid (1.100 )

RANGE	3/31/95 TO 4/30/03	SELL BUY
PERIOD	M (D-W-M-Q-Y)	TIME FRAME (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)
SPREAD V	P=PRICE OR E=P/E	VALUE C C (O=OPEN, H=HIGH, L=LOW, C=CLOSE)
YIELD C	CONV/SEMI-ANN/ANN	MARKET 2 M (T=TRADE, B=BID, A=ASK, M=MID)

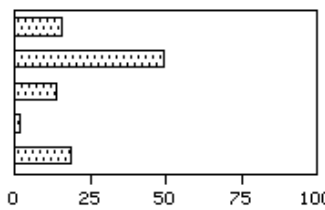
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STATISTICS	
MEAN (AVE)	-1.8231
MEDIAN	-1.99
SDev	.9608
OFF AVE	2.1031
OFF AVE Sdev	2.1888
PERCENTILE	97.89

SUMMARY		OCCURRENCES	
LAST	.28	-3.33 TO	-2.61 15=15.8%
AVERAGE	-1.8231	-2.61 TO	-1.88 47=49.5%
OFF AVE	2.1031	-1.88 TO	-1.16 13=13.7%
HIGHEST	.29 ON 3/31/03	-1.16 TO	-.43 2= 2.1%
LOWEST	-3.33 ON 7/31/00	-.43 TO	.29 18=18.9%



NORM NU-CALC: VALUATION (BUY x 1) - (SELL x 1)

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 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2003 Bloomberg L.P.  
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# Do rates matter?

## FL MM vs. Merrill Lynch MM

<HELP> for explanation.

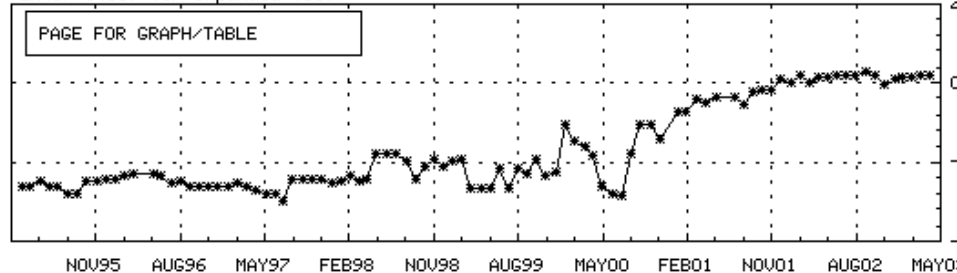
P059 Equity HS

**HISTORICAL VALUE SPREAD** PAGE 1 OF 7

SELL MRAXX US \$ Yld .75  
 BUY BanxQuote State Savings MM Mid (1.000 )

RANGE <b>3/31/95</b> TO <b>4/30/03</b>	SELL BUY
PERIOD <b>M</b> (D-W-M-Q-Y)	TIME FRAME (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)
SPREAD V P=PRICE OR E=P/E	VALUE <b>C</b> <b>C</b> (O=OPEN, H=HIGH, L=LOW, C=CLOSE)
YIELD <b>C</b> CONV/SEMI-ANN/ANN	MARKET <b>2</b> <b>M</b> (T=TRADE, B=BID, A=ASK, M=MID)

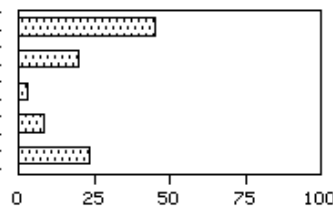
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STATISTICS	
MEAN (AVE)	-1.6913
MEDIAN	-2.25
SDev	1.0885
OFF AVE	1.8713
OFF AVE Sdev	1.7191
PERCENTILE	93.68

SUMMARY		OCCURRENCES	
LAST	.18	-3.00 TO	-2.35 43=45.3%
AVERAGE	-1.6913	-2.35 TO	-1.71 19=20.0%
OFF AVE	1.8713	-1.71 TO	-1.06 3= 3.2%
HIGHEST	.23 ON 9/30/02	-1.06 TO	-.42 8= 8.4%
LOWEST	-3 ON 7/31/97	-.42 TO	.23 22=23.2%



**NORM NU-CALC: VALUATION** (BUY **X 1**) - (SELL **X 1**)

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
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# Do rates matter?

## IL MM vs. Merrill Lynch MM

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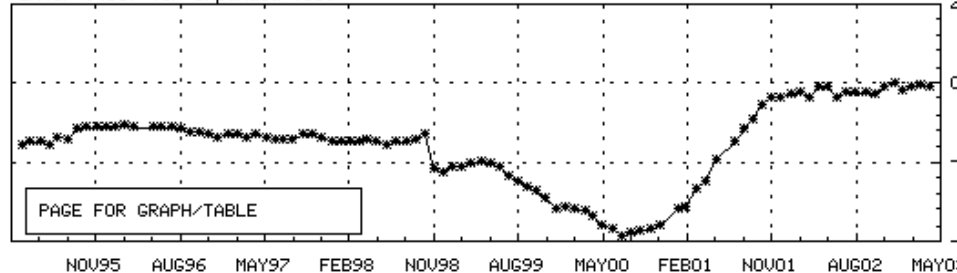
P059 Equity HS

**HISTORICAL VALUE SPREAD** PAGE 1 OF 7

SELL MRAXX US \$ Yld .75  
 BUY BanxQuote State Savings MM Mid (.700 )

RANGE <b>3/31/95</b> TO <b>4/30/03</b>	SELL BUY
PERIOD <b>M</b> (D-W-M-Q-Y)	TIME FRAME (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)
SPREAD V P=PRICE OR E=P/E	VALUE <b>C</b> <b>C</b> (O=OPEN, H=HIGH, L=LOW, C=CLOSE)
YIELD <b>C</b> CONV/SEMI-ANN/ANN	MARKET <b>2</b> <b>M</b> (T=TRADE, B=BID, A=ASK, M=MID)

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STATISTICS	
MEAN (AVE)	-1.5972
MEDIAN	-1.42
SDev	1.0244
OFF AVE	1.4772
OFF AVE Sdev	1.4419
PERCENTILE	92.63

SUMMARY		OCCURRENCES		
LAST	- .12	-3.86 TO	-3.09	14=14.7%
AVERAGE	-1.5972	-3.09 TO	-2.31	7= 7.4%
OFF AVE	1.4772	-2.31 TO	-1.54	11=11.6%
HIGHEST	.01 ON 12/31/02	-1.54 TO	-.76	44=46.3%
LOWEST	-3.86 ON 7/31/00	-.76 TO	.01	19=20.0%

**NORM** NU-CALC: VALUATION (BUY **x 1**) - (SELL **x 1**)

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
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# Modeling core deposits – should you use historical patterns?

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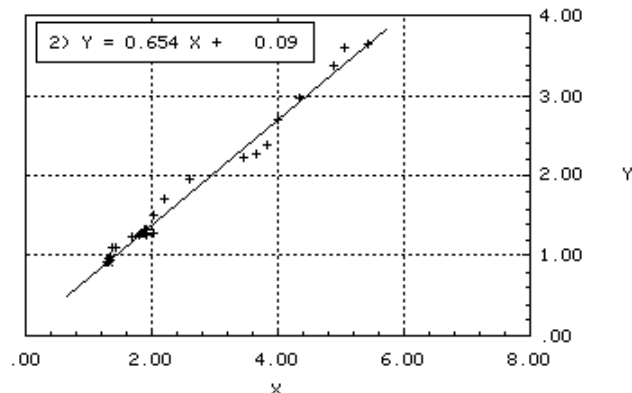
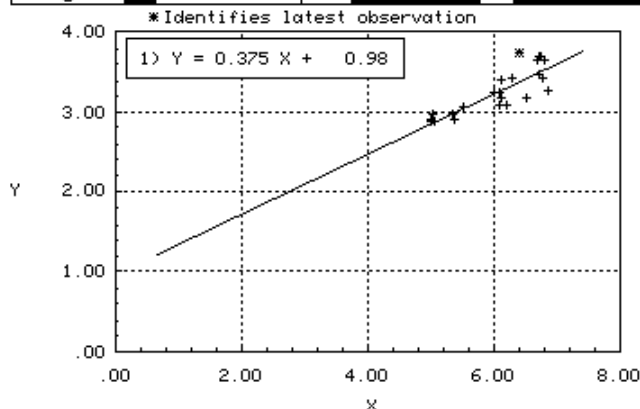
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## REGRESSION HEDGE

Y=Dependent BanxQuote MB Sav MM  
 X=Independent LIBOR-USD FIX 3 MONTH

Mid (.900 )  
 Ask (1.240 )  
 Y X

Period <b>M</b> (D-W-M-Q-Y)	TIME FRAME <b>N</b>	N (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)		
Hedge <b>Y</b> P=Price or Y=Yield	Value <b>C</b>	C Open, High, Low or Close		
Yield <b>C</b> Conv/Semi-Ann/Ann	Market <b>T</b>	A (T=Trade, B=Bid, A=Ask, M=Mid, V=Val)		
Y Position <b>1000</b>	Slope	Intercept	X Hedge	
Val/Dif/Per <b>V</b>	(Beta)	(Alpha)	(R2)	Amount
Filter <b>1</b>	1) <b>2/26/99</b>	<b>12/29/00</b>	<b>.736</b>	<b>374</b>
Lag X <b>0</b> Periods	2) <b>1/31/01</b>	<b>4/30/03</b>	<b>.985</b>	<b>654</b>



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# Modeling core deposits – should you use historical patterns?

<HELP> for explanation.

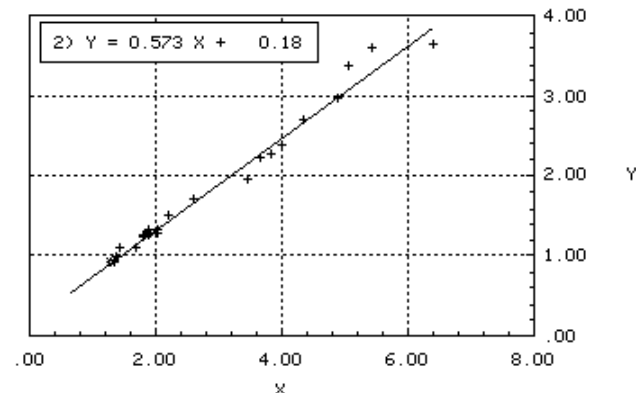
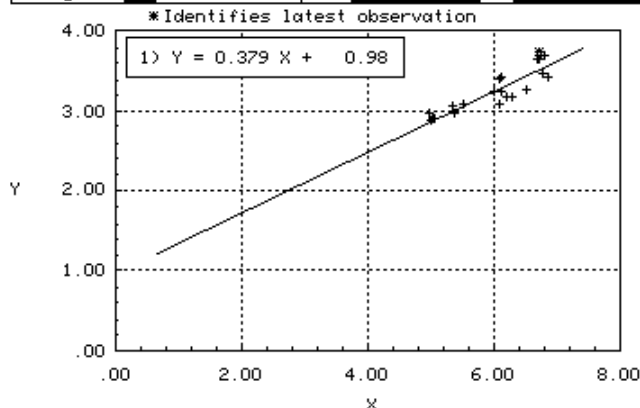
P059 Corp YRH

## REGRESSION HEDGE

Y=Dependent BanxQuote MB Sav MM  
 X=Independent LIBOR-USD FIX 3 MONTH

Mid (.900 )  
 Ask (1.240 )

Period <b>M</b> (D-W-M-Q-Y)	TIME FRAME <b>N</b>	N (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)		
Hedge <b>Y</b> P=Price or Y=Yield	Value <b>C</b>	C Open, High, Low or Close		
Yield <b>C</b> Conv/Semi-Ann/Ann	Market <b>T</b>	A (T=Trade, B=Bid, A=Ask, M=Mid, V=Val)		
Y Position <b>1000</b>	Slope	Intercept	X Hedge	
Val/Dif/Per <b>V</b>	(Beta)	(Alpha)	(R2)	Amount
Filter <b>1</b>	1) <b>2/26/99</b>	<b>12/29/00</b>	.379	.98
Lag X <b>1</b> Periods	2) <b>1/31/01</b>	<b>4/30/03</b>	.573	.18
			.834	379
			.982	573



Australia 61 2 9777 8600      Brazil 5511 3048 4500      Europe 44 20 7330 7500      Germany 49 69 920410  
 Hong Kong 852 2977 6000      Japan 81 3 3201 8900      Singapore 65 6212 1000      U.S. 1 212 318 2000      Copyright 2003 Bloomberg L.P.  
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# Modeling core deposits – should you use historical patterns?

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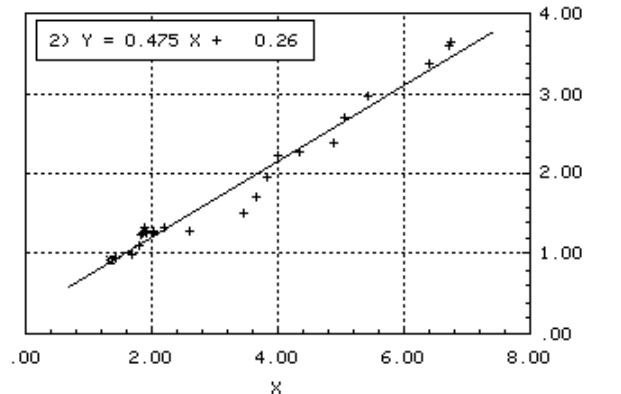
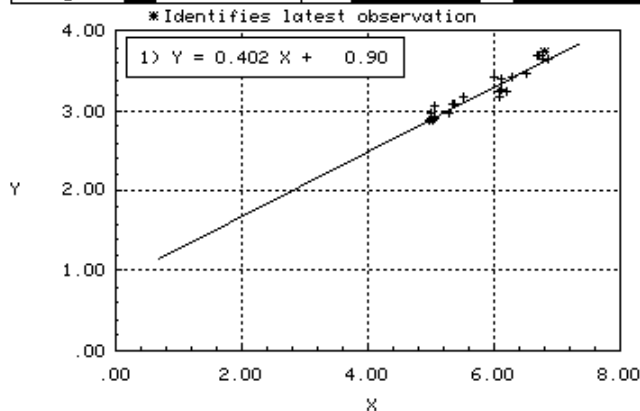
P059 Corp YRH

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Y=Dependent BanxQuote MB Sav MM  
 X=Independent LIBOR-USD FIX 3 MONTH

Mid (.900 )  
 Ask (1.240 )

Period <b>M</b> (D-W-M-Q-Y)	TIME FRAME <b>N</b>	N (N=NY, F=NY 9-3, L=LONDON, T=TOKYO)		
Hedge <b>Y</b> P=Price or Y=Yield	Value <b>C</b>	C Open, High, Low or Close		
Yield <b>C</b> Conv/Semi-Ann/Ann	Market <b>T</b>	A (T=Trade, B=Bid, A=Ask, M=Mid, V=Val)		
Y Position <b>1000</b>	Slope	Intercept	X Hedge	
Val/Dif/Per <b>V</b>	(Beta)	(Alpha)	(R2)	Amount
Filter <b>1</b>	1) <b>2/26/99</b>	<b>12/29/00</b>	.402	.90
Lag X <b>3</b> Periods	2) <b>1/31/01</b>	<b>4/30/03</b>	.475	.26
			.924	401
			.972	474



Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2003 Bloomberg L.P.  
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# Two “core” core observations

- Banks move core deposit rates in response to exogenous market forces
  - Market rate changes
  - Competitive & other factors
- Banks seek, at a minimum, to retain existing core deposit balances
  - Seek to increase balances
  - Settle for maintaining balances
  - Equilibrium approach

# Rate setting postulates

- For every market rate, there is an unique equilibrium rate, and visa versa
- The equilibrium rate is achieved after the passage of sufficient time
- The market-administered rate relationship is linear
- *see Hawkins & Arnold, 2000*

# Rate setting practices

- Market rate driving rate changes is assumed to be rate approximating short term marginal rate
- Suggest that 3 month LIBOR rate is suitable proxy for market rate
- In U.S., 3ML is appropriate for all depositories studied:
  - Money center banks
  - Regional retail banks & thrifts
  - Community retail banks & thrifts

# Rate setting & physical models

- Rate-setting postulates are identical to the assumptions of relaxation processes in condensed-matter physics (Hawkins and Arnold, 2000)
- Similarity (between rate-setting and physics) of time-dependent move to a new equilibrium state following change in a driving force (particle physics or market forces)
- Deposit-pricing is based on physical models rather than ad hoc regression models

# Physical model approaches

- Hawkins and Arnold (2000) use anelastic model, based on Adams-Bashford two-step model
- Generalized framework based on Boltzman superposition principle
  - Market rate changes
  - Deposit related expenses
  - Yield curve slope measures
  - Competitive responses
  - Macro-economic factors

# Applications of model results

- Links rate setting process to rate modeling
- Use of physical model(s) provides underlying theoretical description of transmission mechanism and factor relationships
- Provides a basis for interpreting modeling parameters

# Regression model approaches

- Based on anelastic physical model (2002)
  - Initial response
  - Lagged response
  - Product-specific adjustment, or lag, factor
  - Relationships may be asymmetric

# Regression model approaches

- Uses changes in LIBOR to estimate changes in MM rate (1998-2001, presented last year)

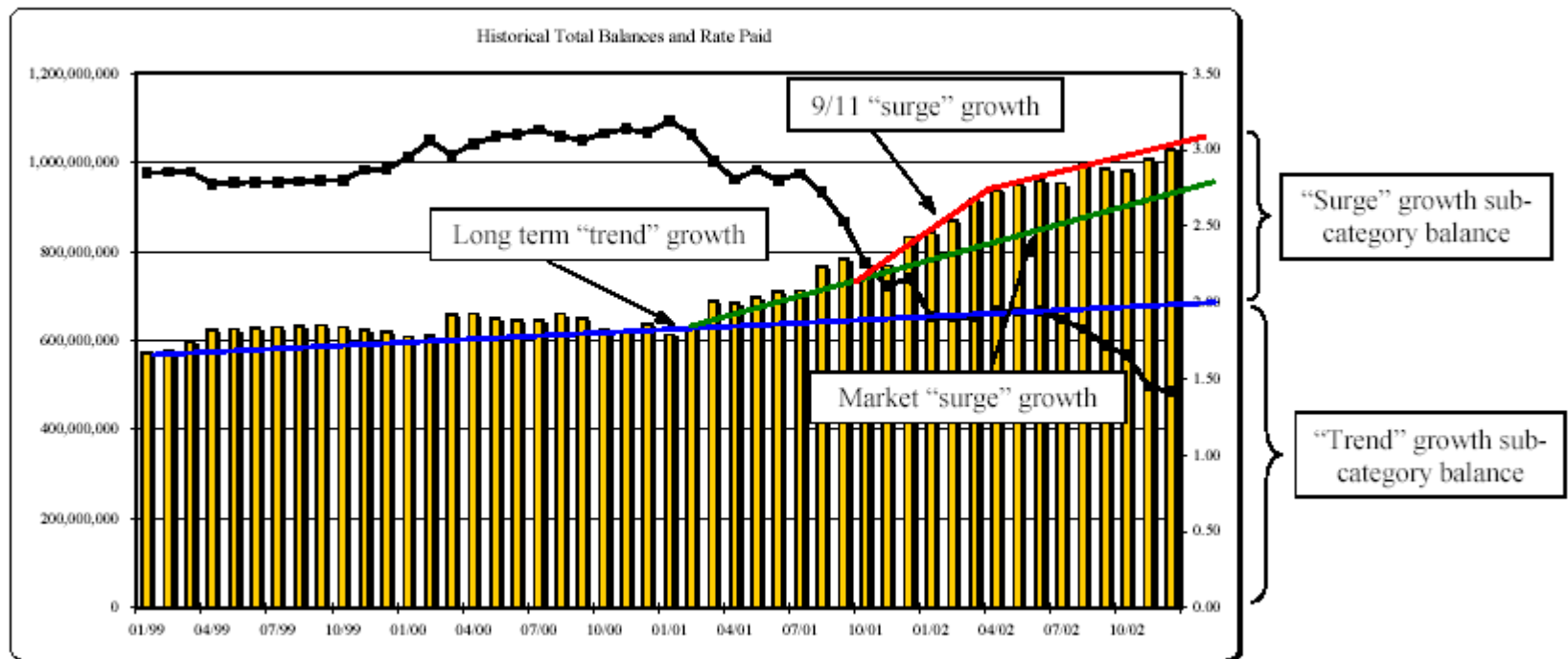
	<u>Money Market</u>	<u>3 month CD</u>
Initial sensitivity	40%	30%
Lagged sensitivity	73%	65%
Lag factor cycles/yr.	6.50	13.00
R <sup>2</sup>	0.80	0.98

# Regression model approaches

- Uses changes in LIBOR to estimate changes in MM rate

1995-2003	US	PA
Initial sensitivity	43%	43%
Lagged sensitivity	73%	48%
Lag	3 months	3 months
R squared	0.98	0.85

# Modeling core deposits – should you use historical patterns?



# Inefficient market?

- Inefficient markets may lead to excess returns (given level of risk)
  - Low core deposit rates lead to wide spreads
  - Wide spreads, or excessive rents, may be key driver of **retail** bank earnings and value
- Banks with effective pricing models:
  - May have a comparative advantage in deposit gathering and retention
  - May have a competitive advantage in deposit M&A

# Valuing core deposits: core consideration

- Perhaps the most problematic, and therefore contentious, issue regarding core deposits is the concept of ascribing duration and value measures to an asset class with:
  - Indeterminate cash flows
  - An undefined maturity
  - Continuous cost-free customer balance change option

# Valuing core deposits: review of recent literature

- Equilibrium-based approach, using a contingent claims process, with static balances (*Hutchison and Pennacchi, 1996*)
- OAS methodology, to value and hedge deposit premiums, with static balances (*Selvaggio, 1996*)
- Market segmentation argument, equating core deposits with exotic interest rate swaps, with balances that “change randomly based on both the level and average of past market rates” (*Jarrow and van Deventer, 1998*)

# Valuing core deposits: U.S. regulatory approaches

- OTS multi-factor approach is similar to Adams-Bashford two step method (*OTS, 1994 and updates*)
  - Regulatory model valuation calculations are explicitly included in market risk sensitivity measures of U.S. thrifts
- Interest rate contingent claim process, using market asymmetry (*O'Brien, 2000*)
  - Market risk sensitivity measures of U.S. banks utilize a variety of methodologies
  - Bank regulatory “screens” utilize static duration measures also established in mid-90s, simplistic approach vis’ a vis’ O’Brien approach

# Review of estimated durations and premiums (rents)

## Estimated Deposit Durations & Premiums (Rents)

<u>Money Market Accounts</u>	<u>Premium</u>	<u>Duration</u>
O'Brien (2000)	11 to 12%	-0.2 to 0.6
Hutchison (1996)	8%	0.3
OTS	6%+	2+
Proprietary	0-10%	0-3+

Duration measures may vary

# Market-based data: branch sales

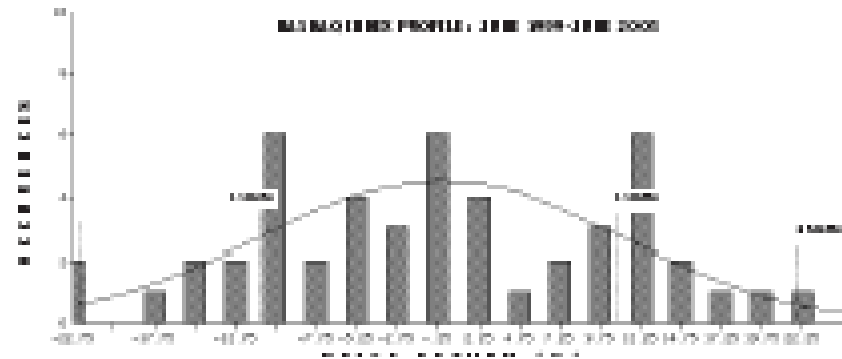
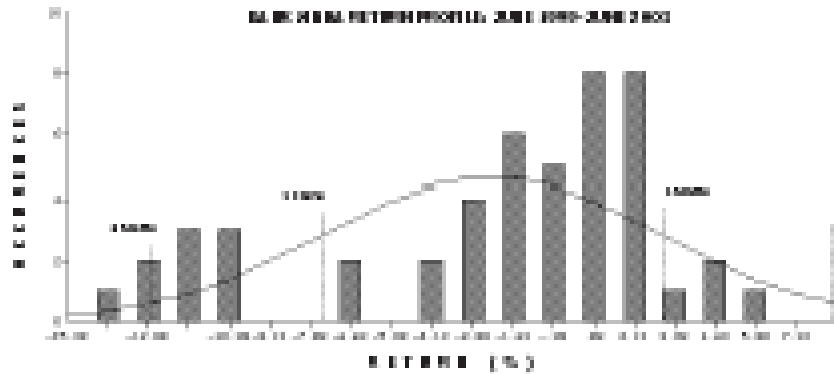
Bank Premium/Deposits data for disclosed branch purchases

<u>Median Premium/Deposits (%)</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
<b>Bank</b>	<b>5.97</b>	<b>6.04</b>	<b>8.00</b>	<b>8.16</b>	<b>7.00</b>	<b>8.34</b>	<b>5.56</b>	<b>5.98</b>
<b>Bank time %</b>	<b>32%</b>	<b>32%</b>	<b>33%</b>	<b>32%</b>	<b>32%</b>	<b>33%</b>	<b>30%</b>	<b>28%</b>
<b>Bank core % (non-time)</b>	<b>68%</b>	<b>68%</b>	<b>67%</b>	<b>68%</b>	<b>68%</b>	<b>67%</b>	<b>70%</b>	<b>72%</b>
<b>Bank / core</b>	<b>8.77</b>	<b>8.94</b>	<b>11.95</b>	<b>11.96</b>	<b>10.29</b>	<b>12.42</b>	<b>7.89</b>	<b>8.25</b>
New England	6.00	7.16	6.52	9.00	12.00	6.02	8.56	8.99
Mid-Atlantic	6.78	5.00	7.96	9.35	8.68	10.64	6.00	5.81
Southeast	6.79	4.96	9.34	7.33	6.32	7.91	6.00	6.83
Midwest	7.06	8.55	8.31	8.24	6.39	7.53	5.50	6.00

# Preview #1

- Series of articles in Bank ALM, published Pratt/Sheshunoff
  - 4-part series
    - Part 1, MM growth related to realized TRAs on NASDAQ & MM
    - Part 2, deposit sensitivity
  - Disclosure, on Editorial Board

# Preview #1



# Preview #2

- Web site demo
  - Single factor model
  - Last 4 rate cycles
  - By state
  - Adding 3 factor model
  - Live in Q4

# Preview #2

Lag	12	State	(All)	Lag	2	State	(All)	
Time	Data	Total	Time	Data	Total	Time	Data	Total
1996-98 stable	Average of Intercept	0.33	1996-98 stable	Average of Intercept	0.31	1996-98 stable	Average of Intercept	0.31
	Average of Slope	0.25		Average of Slope	0.22		Average of Slope	0.22
	Average of R2	0.23		Average of R2	0.16		Average of R2	0.16
1998 shock/flu	Average of Intercept	-0.62	1998 shock/flu	Average of Intercept	-0.32	1998 shock/flu	Average of Intercept	-0.32
	Average of Slope	1.49		Average of Slope	1.11		Average of Slope	1.11
	Average of R2	0.35		Average of R2	0.35		Average of R2	0.35
1999 up	Average of Intercept	0.03	1999 up	Average of Intercept	0.03	1999 up	Average of Intercept	0.03
	Average of Slope	0.59		Average of Slope	0.59		Average of Slope	0.59
	Average of R2	0.26		Average of R2	0.27		Average of R2	0.27
2000-03 down	Average of Intercept	-0.21	2000-03 down	Average of Intercept	-0.18	2000-03 down	Average of Intercept	-0.18
	Average of Slope	0.95		Average of Slope	1.01		Average of Slope	1.01
	Average of R2	0.90		Average of R2	0.91		Average of R2	0.91
Total Average of Intercept		-0.12	Total Average of Intercept		-0.04	Total Average of Intercept		-0.04
Total Average of Slope		0.82	Total Average of Slope		0.73	Total Average of Slope		0.73
Total Average of R2		0.44	Total Average of R2		0.42	Total Average of R2		0.42

# Conclusion & Discussion

- Review of recent macro- and micro-market deposit trends
- Do deposit rates matter in a low rate environment?
- Modeling core deposits – should you use historical patterns? – what can regression models actually tell us about the future?
- Pricing and valuation issues in an illiquid market

# End notes

- Thanks to Bill McGuire for his comments on this topic and the use of the Surge vs. Growth chart
- Thanks to Lauren Anderson for running over 😊 1,000 deposit regressions 😊
- Forthcoming survey on Core Deposit modeling approaches
- Please e-mail your comments on this topic to:  
[fporman@bnkadvisorygroup.com](mailto:fporman@bnkadvisorygroup.com)