

Core Deposit Study

Any Bank, USA

APRIL 2001

FINANCIAL STRATEGIES GROUP



Introduction

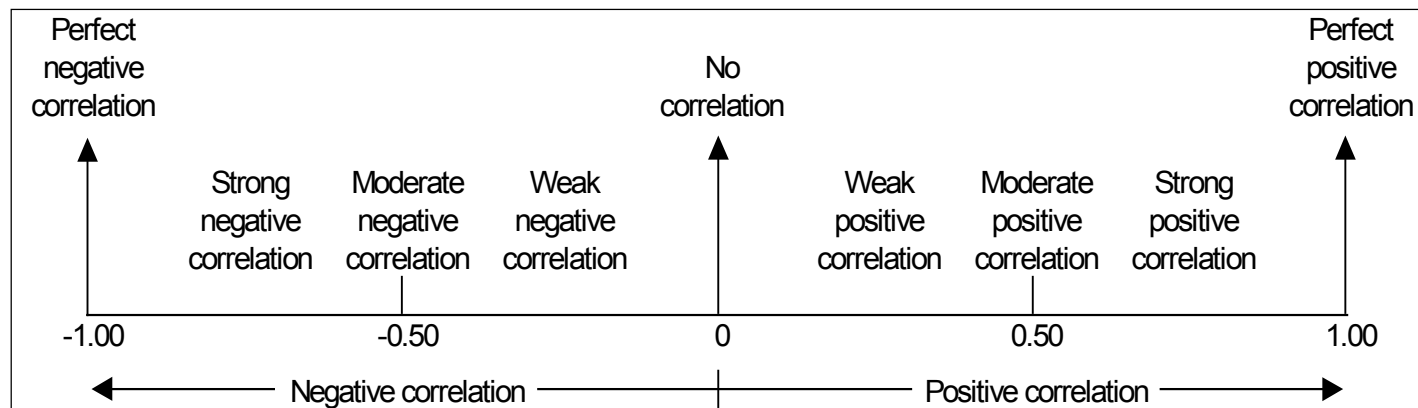
- The purposed of this analysis is to:
 - ① Discover whether Any Bank, USA's non-contractual deposits (NCDs) are sensitive to changes in market interest rates and
 - ② Estimate the implied maturity of the NCDs

Methodology

1 Rate Sensitivity Analysis

To assess the overall rate sensitivity of the NCDs, we first compared the bank's NCDs average balances to 1) the average rates paid on those accounts and 2) the spread between the average rates paid and the average rates for the 3-month US Treasury Bill ("the Spread"). To quantify the above relationships, we calculated the correlation coefficient between the above sets of data. Correlation graphs and matrixes are available as attachments (refer to Attachment A – D).

The following drawing summarizes the strength and direction of the coefficient of correlation.



Methodology

2 Implied Maturity - Variance Analysis

To estimate the implied maturity of NCDs, the variability of both NCDs average balances was first analyzed. Next, the monthly variables and their percentage changes in both real and absolute terms were calculated before computing the mean, standard deviation, minimum, maximum, and median of those figures. Finally, we calculated the implied maturity of each of the accounts by inverting both their mean and median. Attachment E summarizes the variance analysis for each account.

3 Implied Maturity - Decay Analysis

Another accurate way to estimate the implied maturity of NCDs is by analyzing the closed accounts as a percentage of total accounts. First, we calculated the percentage of accounts closed each week for each of the four account types. Then, the mean and median values for closed accounts as a percentage of total accounts for the entire period were calculated. By inverting the mean and median values, we were able to estimate the number of period (month) that it would take for all accounts to leave the bank assuming no new accounts were opened. A summary of this analysis can be found in Attachment F.

Findings

① Rate Sensitivity

- ❑ NOW Account Balances have a **weak positive correlation** with the Average Rate Paid. (1Q98-3Q00 Indicator: 0.05 | 1Q98-4Q00 Indicator: 0.19)
- ❑ NOW Account Balances have a **moderate negative correlation** with the Spread. (1Q98-3Q00 Indicator: -0.50 | 1Q98-4Q00 Indicator: -0.55)
- ❑ Savings Account Balances have a **weak positive correlation** with the Average Rate Paid. (1Q98-3Q00 Indicator: -0.16 | 1Q98-4Q00 Indicator: 0.23)
- ❑ Savings Account balances have a **strong negative correlation** with the Spread. (1Q98-3Q00 Indicator: -0.69 | 1Q98-4Q00 Indicator: -0.66)
- ❑ Money Market Account Balances have a **weak positive correlation** with the Average Rate Paid. (1Q98-3Q00 Indicator: 0.25 | 1Q98-4Q00 Indicator: 0.27)
- ❑ Money Market Account Balances have a **weak negative correlation** with the Spread. (1Q98-3Q00 Indicator: -0.24 | 1Q98-4Q00 Indicator: -0.29)

Findings

② Implied Maturity

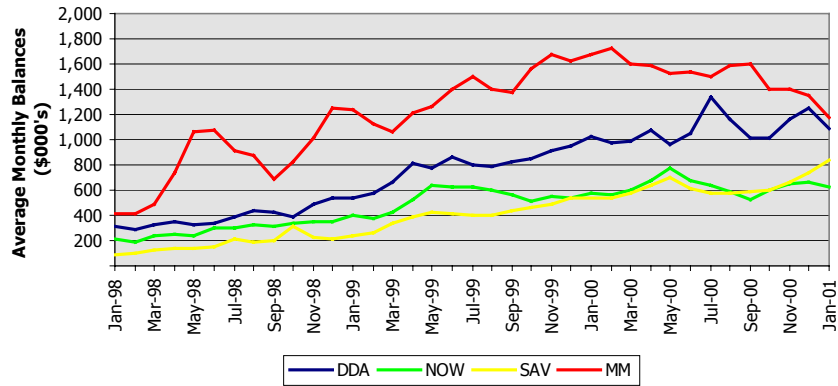
- ❑ Demand Deposits implied maturity has slightly declined from the previous period.
- ❑ NOW Accounts implied maturity has increased from the previous period.
- ❑ Savings implied maturity has not changed from the previous period.
- ❑ Money Market implied maturity has declined (using Decay Analysis) from the previous period.

1Q98-4Q00 (in Year)	Demand Deposits	NOW Accounts	Savings	Money Market
Variance Analysis	1.09	1.22	0.83	1.34
Decay Analysis (36 months)	5.06	24.61	4.29	4.64
Decay Analysis (24 months)	4.83	21.00	4.32	3.76
Decay Analysis (12 months)	4.58	10.92	4.35	2.99

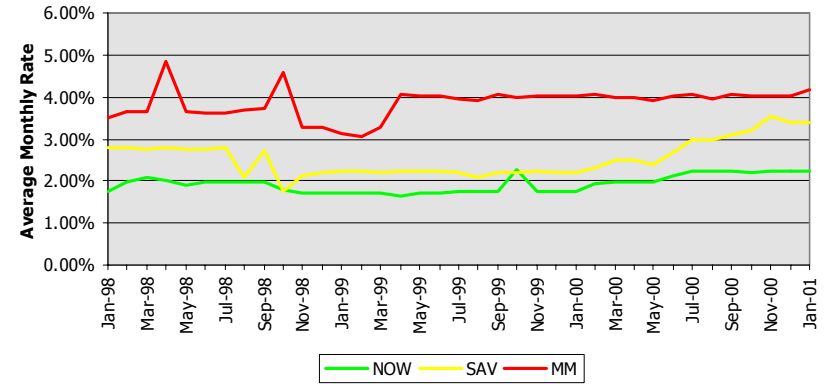
1Q98-3Q00 (in Year)	Demand Deposits	NOW Accounts	Savings	Money Market
Variance Analysis	1.09	1.20	0.84	1.29
Decay Analysis (32 months)	5.27	39.86	4.28	5.54
Decay Analysis (20 months)	5.08	39.60	4.31	4.47
Decay Analysis (8 months)	5.01	15.84	4.34	3.66

Attachment A

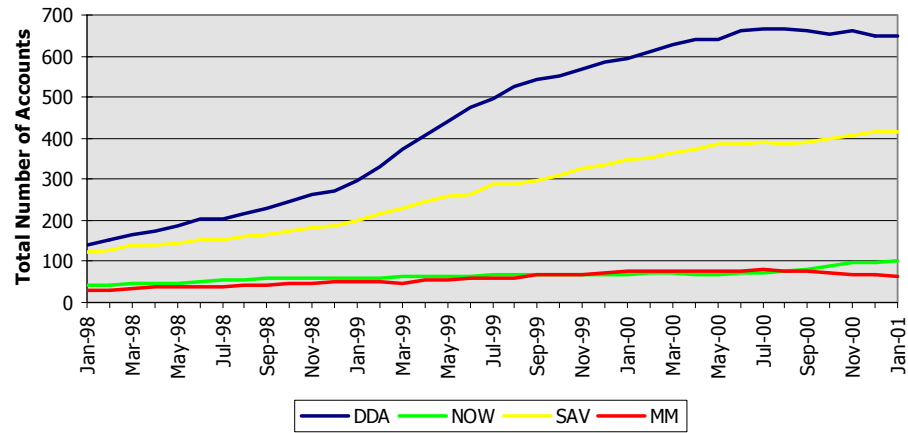
Non-Contractual Deposit Balances



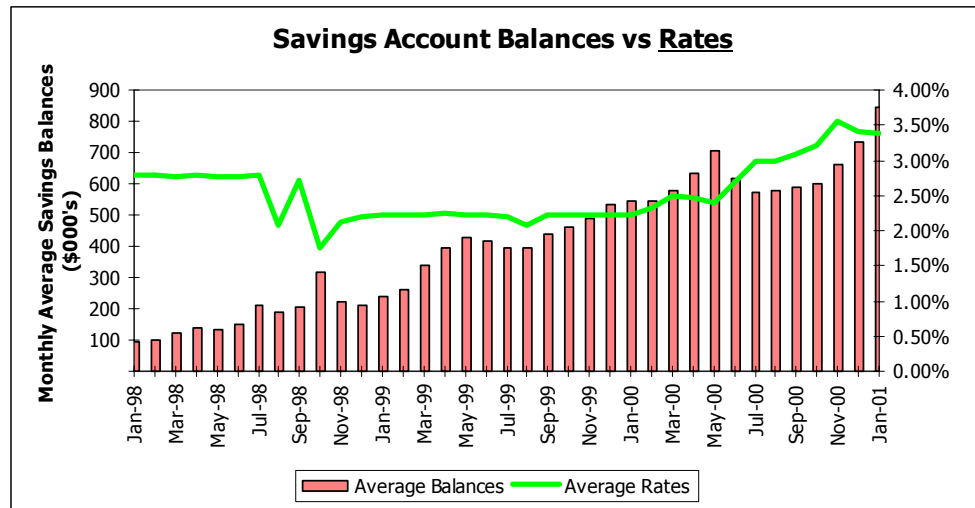
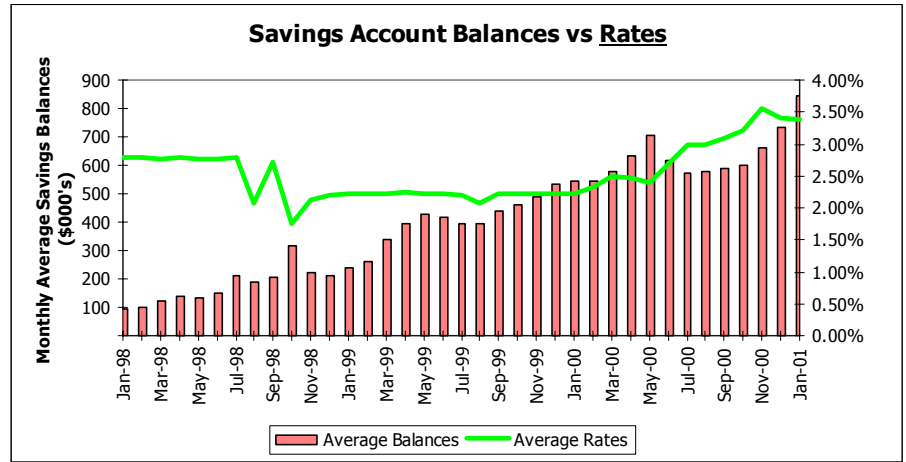
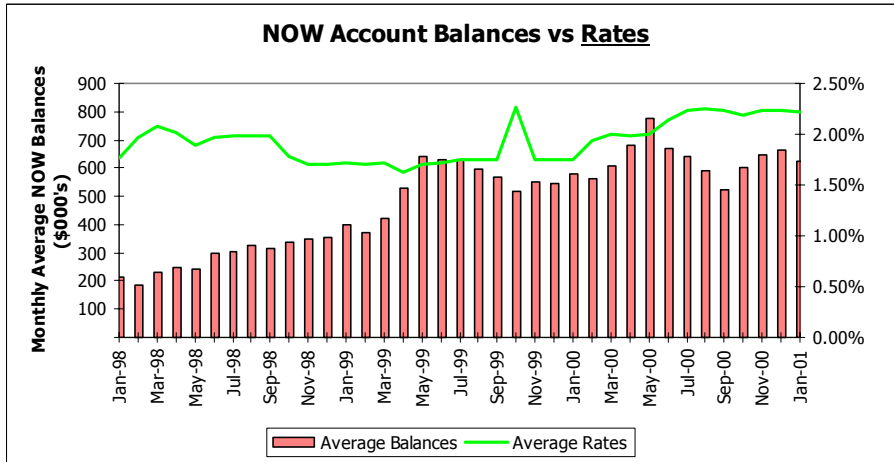
Non-Contractual Deposit Rates



Retail Transaction Accounts

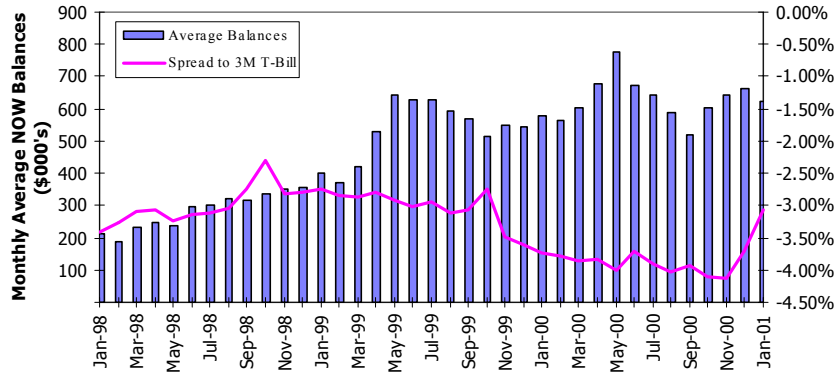


Attachment B

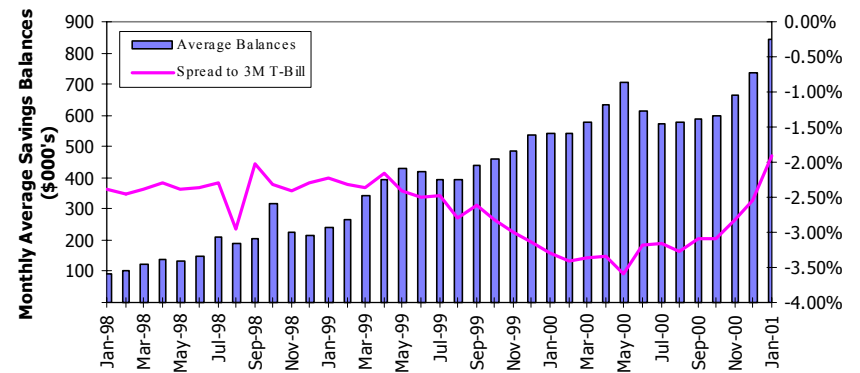


Attachment C

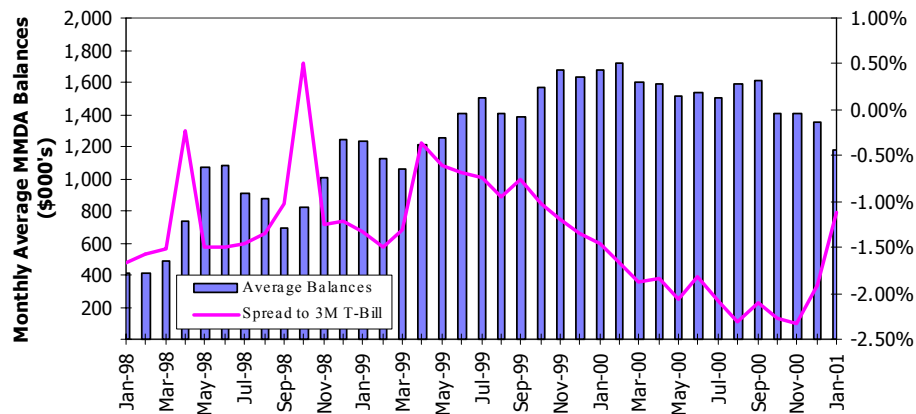
NOW Account Balances vs Spread to Treasury



Savings Account Balances vs Spread to Treasury



Money Market Account Balances vs Spread to Treasury



Attachment D1-Correlation Matrix

NOW

Correlation Matrix

NOW Account Balances
vs **Average Rate Paid**

	1998	1999	2000
1998	(0.43)	(0.45)	0.19
1999		(0.01)	0.37
2000			(0.04)

The Left-Hand Column of the Correlation Matrix indicates the starting year. The Top Row indicates the ending year.

i.e.: The correlation from 1998 to 2000 = 0.19
 The correlation from 1998 to 1999 = (0.45)
 The correlation for 1998 only = (0.43)

Matrix 1

NOW

Correlation Matrix

NOW Account Balances
vs **Spread to 3 Month T-Bill**

	1998	1999	2000
1998	0.74	0.03	(0.55)
1999		(0.32)	(0.56)
2000			(0.02)

The Left-Hand Column of the Correlation Matrix indicates the starting year. The Top Row indicates the ending year.

i.e.: The correlation from 1998 to 2000 = (0.55)
 The correlation from 1998 to 1999 = 0.03
 The correlation for 1998 only = 0.74

Matrix 2

Attachment D2- Correlation Matrix

SAVINGS

Correlation Matrix

SAVINGS Account Balances
vs **Average Rate Paid**

	1998	1999	2000
1998	(0.80)	(0.66)	0.23
1999		(0.08)	0.68
2000			0.41

The Left-Hand Column of the Correlation Matrix indicates the starting year. The Top Row indicates the ending year.

i.e.: The correlation from 1998 to 2000 = 0.23
 The correlation from 1998 to 1999 = (0.66)
 The correlation for 1998 only = (0.80)

Matrix 3

SAVINGS

Correlation Matrix

SAVINGS Account Balances
vs **Spread to 3 Month T-Bill**

	1998	1999	2000
1998	0.01	(0.41)	(0.66)
1999		(0.33)	(0.53)
2000			(0.12)

The Left-Hand Column of the Correlation Matrix indicates the starting year. The Top Row indicates the ending year.

i.e.: The correlation from 1998 to 2000 = (0.66)
 The correlation from 1998 to 1999 = (0.41)
 The correlation for 1998 only = 0.01

Matrix 4

Attachment D3-Correlation Matrix

MM

Correlation Matrix

MONEY MARKET Account Balances
vs **Average Rate Paid**

	1998	1999	2000
1998	(0.20)	0.12	0.27
1999		0.68	0.66
2000			0.12

The Left-Hand Column of the Correlation Matrix indicates the starting year. The Top Row indicates the ending year.

i.e.: The correlation from 1998 to 2000 = 0.27
 The correlation from 1998 to 1999 = 0.12
 The correlation for 1998 only = (0.20)

Matrix 5

MM

Correlation Matrix

MONEY MARKET Account Balances
vs **Spread to 3 Month T-Bill**

	1998	1999	2000
1998	0.08	0.16	(0.29)
1999		0.02	(0.33)
2000			0.59

The Left-Hand Column of the Correlation Matrix indicates the starting year. The Top Row indicates the ending year.

i.e.: The correlation from 1998 to 2000 = (0.29)
 The correlation from 1998 to 1999 = 0.16
 The correlation for 1998 only = 0.08

Matrix 6

Attachment E1-Variance Analysis

Demand Deposits Variance Analysis

Frequency Distribution Table			
Absolute Value % Change			
% Chg (Abs)	Midpoint	Frequency	Relative Frequency
0-5%	2.5%	10	27.8%
5-10%	7.5%	12	33.3%
10-15%	12.5%	9	25.0%
15-20%	17.5%	2	5.6%
20-25%	22.5%	2	5.6%
25-30%	27.5%	1	2.8%
Total		36	100.0%

Mean	757,647	21,622	4.08%	9.10%
Std Dev	309,755	89,207	10.47%	6.44%
Min	289,052	(175,257)	-13.12%	0.38%
Max	1,335,490	285,256	27.16%	27.16%
Median	808,205	30,485	4.02%	7.65%

Implied Maturity (Mean)	10.98 m
Implied Maturity (Median)	13.07 m

NOW Account Variance Analysis

Frequency Distribution Table			
Absolute Value % Change			
% Chg (Abs)	Midpoint	Frequency	Relative Frequency
0-5%	2.5%	12	33.3%
5-10%	7.5%	12	33.3%
10-15%	12.5%	7	19.4%
15-20%	17.5%	1	2.8%
20-25%	22.5%	3	8.3%
25-30%	27.5%	1	2.8%
Total		36	100.0%

Mean	485,211	11,347	3.53%	8.74%
Std Dev	163,089	50,168	10.62%	6.85%
Min	188,196	(106,045)	-13.63%	0.14%
Max	778,048	114,793	25.93%	25.93%
Median	543,206	9,241	2.31%	6.81%

Implied Maturity (Mean)	11.44 m
Implied Maturity (Median)	14.69 m

Attachment E2-Variance Analysis

Savings Account Variance Analysis

Frequency Distribution Table Absolute Value % Change			
% Chg (Abs)	Midpoint	Frequency	Relative Frequency
0-10%	5.0%	18	50.0%
10-20%	15.0%	13	36.1%
20-30%	25.0%	3	8.3%
30-40%	35.0%	0	0.0%
40-50%	45.0%	1	2.8%
50-60%	55.0%	1	2.8%
Total		36	100.0%

Mean	407,839	20,808	7.25%	11.58%
Std Dev	204,918	44,691	14.79%	11.62%
Min	93,436	(93,092)	-29.35%	0.01%
Max	842,542	112,415	54.89%	54.89%
Median	417,788	18,305	8.84%	10.08%

Implied Maturity (Mean)	8.63 m
Implied Maturity (Median)	9.92 m

Money Market Variance Analysis

Frequency Distribution Table Absolute Value % Change			
% Chg (Abs)	Midpoint	Frequency	Relative Frequency
0-10%	5.0%	23	63.9%
10-20%	15.0%	8	22.2%
20-30%	25.0%	3	8.3%
30-40%	35.0%	0	0.0%
40-50%	45.0%	1	2.8%
50-60%	55.0%	1	2.8%
Total		36	100.0%

Mean	1,239,277	21,149	3.90%	10.09%
Std Dev	368,514	128,390	15.01%	11.67%
Min	413,536	(202,719)	-21.84%	0.11%
Max	1,722,767	334,914	50.88%	50.88%
Median	1,348,617	6,020	0.55%	6.22%

Implied Maturity (Mean)	9.91 m
Implied Maturity (Median)	16.09 m

Attachment F-Decay Analysis

Jan-98 to Jan-01	Demand Deposits	NOW Accounts	Savings	Money Market
Average	1.65%	0.34%	1.94%	1.80%
Annualized	19.77%	4.06%	23.31%	21.57%
Implied Maturity (in year)	5.06	24.61	4.29	4.64
Median	1.59%	0.00%	1.76%	1.57%
Annualized	19.05%	0.00%	21.09%	18.79%
Implied Maturity (in year)	5.25	NA	4.74	5.32

Jan-99 to Jan-01	Demand Deposits	NOW Accounts	Savings	Money Market
Average	1.72%	0.40%	1.93%	2.21%
Annualized	20.69%	4.76%	23.16%	26.57%
Implied Maturity (in year)	4.83	21.00	4.32	3.76
Median	1.69%	0.00%	1.80%	1.67%
Annualized	20.28%	0.00%	21.56%	20.00%
Implied Maturity (in year)	4.93	NA	4.64	5.00

Jan-00 to Jan-01	Demand Deposits	NOW Accounts	Savings	Money Market
Average	1.82%	0.76%	1.92%	2.79%
Annualized	21.81%	9.16%	23.01%	33.48%
Implied Maturity (in year)	4.58	10.92	4.35	2.99
Median	1.69%	0.00%	1.72%	2.63%
Annualized	20.28%	0.00%	20.63%	31.58%
Implied Maturity (in year)	4.93	NA	4.85	3.17