



Executive Advisory Series

BankLink SolutionsSM
Forecasting & Reporting Systems

*Exploring the
Conundrum
of
Longer-Term Funding*

Hybarger & Associates

Exploring the Conundrum of Longer-Term Funding

There is virtually no question about what the Fed is likely to do at their next Federal Open Market Committee meeting. Likewise, there is little debate as to whether the expected Rate increase will be followed by additional Rate increases in the future. The real question for debate is only how high, and how quickly, we might expect these increases to proceed?

This has led many to ponder ~ when and how should I begin lengthening my Longer Term Funding, to the extent that this is possible? However, this is not a simple question. In fact, it is a great *conundrum* for many bankers. The dictionary defines a conundrum as "*a confusing and difficult problem or question.*"

This is especially true when the logical answer to a problem is at odds with an answer derived from careful analysis. Such is the case with making decisions related to the value (benefit) of short-term funding versus longer-term funding. Clearly, logic would have us believe that in a rising rate environment, we would benefit from having as much longer-term funding in place as possible. However, as with most things, the devil is in the details. Below, we will explore this logical premise, utilizing currently available rates and determine to what extent this premise might, or might not, be true.

The table below shows our current Rate Forecast over the next three years, in three month increments for ease of illustration. We are anticipating a 25 bp rate increase at the next FOMC Meeting, plus an additional 200 bp's over the next 36 months. This is a Forecast that should not do violence to just about anyone's expectations over this period.

	<i>Presumed Path & Pace of Fed Funds Rate Increases</i>											
Time in Months	3	6	9	12	15	18	21	24	27	30	33	36
Expected Rates	0.75	1.00	1.00	1.25	1.50	1.50	1.75	1.75	2.00	2.25	2.50	2.50

Therefore, all of the analyses on the following pages will be based upon this general description of the short-term interest rate environment over the next three years. Likewise, CD's will be presumed to change as the Fed Funds Rate Changes, to allow for a valid comparison of maturity to maturity and period to period.

In the table below, we have indicated the most recent rates that we have seen for General Market Deposit Funding. As logic floods into our mind, it seems quite obvious that we should begin to lengthen our Funding to take advantage of Longer-Term Rates, which our logic tells us will only increase as Rates continue to rise. The message from our logical mind is, in fact, correct. However, the presumed remedy may not be. Let us examine the underlying premises.

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Average Over Term	Term in Months	Time Value of Funding Analysis											
		"Marginal" Funding Costs											
		3	6	9	12	15	18	21	24	27	30	33	36
1.62	3	0.72	0.97	0.97	1.22	1.47	1.47	1.72	1.72	1.97	2.22	2.47	2.47
1.65	6	0.82	0.82	1.07	1.07	1.57	1.57	1.82	1.82	2.07	2.07	2.57	2.57
1.67	9	0.92	0.92	0.92	1.42	1.42	1.42	1.92	1.92	1.92	2.42	2.42	2.42
1.67	12	1.00	1.00	1.00	1.00	1.75	1.75	1.75	1.75	2.25	2.25	2.25	2.25
1.82	18	1.32	1.32	1.32	1.32	1.32	1.32	2.32	2.32	2.32	2.32	2.32	2.32
1.85	24	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	2.68	2.68	2.68	2.68
1.89	30	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	3.35	3.35
1.65	36	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
1.90	48	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
2.09	60	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09

It is undoubtedly true when we examine the problem from a "Marginal" Cost perspective, as we were taught to do in Economics 101. However, the following table explores this problem from an "**Average Cumulative Cost**" perspective, which seems to be a more appropriate methodology in this case, since our real task is to measure "**Volume X Rate X Time = Total Interest Expense.**" We will explore this from at least a couple of different perspectives on the following pages, but in the final analysis, our true objective is to *minimize* your "Cost-of-Funds" in dollars, not to *minimize* your "Marginal" CD Rate, which is only a presumed Management Tool.

To the right we have indicated the Marginal Rates that we could expect if we extended this Analysis by an additional three months and we experienced an additional 0.25% increase in the Fed Funds Rate.

Above, we have shown the apparent benefits of "locking in" longer-term rates, as we have illustrated in "green," as a presumed benefit. However, as indicated by the 30 Month CD, the replacement of these instruments into similar maturities can be quite shocking as rates continue to rise.

*However, the advantages of continually paying a lessor Rate, at the Margin, based upon the term of the CD, may actually bestow a **Marginal Benefit** rather than a **Marginal Obstruction**, as will be illustrated on the next page.*

CD Term	Marginal Rate
3	2.72
6	2.82
9	2.92
12	3.00
18	3.32
24	3.43
30	3.60
36	3.65
48	3.90
60	4.09

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In the table below we have converted these expected Margin Rates in each of the quarterly time-frames into a Cumulative, Average Funding Cost over an entire 36 month, elapsed period. When viewed from this angle, we get an entirely different perspective. We see that the Average Rates rise, and rise at a faster pace, the shorter the maturity. However, we also find that because we begin the process at substantially lower Rates, our Cumulative Average Funding Costs over the Elapsed Period is lower than we might have expected.

Average Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		Cumulative "Average" Funding Costs Over Elapsed Period											
		3	6	9	12	15	18	21	24	27	30	33	36
1.17	3	0.72	0.85	0.89	0.97	1.07	1.14	1.22	1.28	1.36	1.45	1.54	1.62
1.20	6	0.82	0.82	0.90	0.95	1.07	1.15	1.25	1.32	1.40	1.47	1.57	1.65
1.25	9	0.92	0.92	0.92	1.05	1.12	1.17	1.28	1.36	1.42	1.52	1.60	1.67
1.28	12	1.00	1.00	1.00	1.00	1.15	1.25	1.32	1.38	1.47	1.55	1.61	1.67
1.49	18	1.32	1.32	1.32	1.32	1.32	1.32	1.46	1.57	1.65	1.72	1.77	1.82
1.53	24	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.57	1.68	1.77	1.85
1.64	30	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.76	1.89
1.65	36	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
1.90	48	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
2.09	60	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09

In fact, the Cumulative Average Funding Costs Over the Elapsed Period are all surprisingly close until we reach the 36 Month CD, but it is important to look above and see that this would be expected to be replaced at 3.65% during the next period, if the Analysis were to be extended.

We want to be careful to recognize that the focus of attention may shift if we were to extend the time-frame of the Analysis, or to modify the expected changes in Federal Reserve Monetary Policy. However, it is also important to recognize that the 1.62% on the 3 Month CD represents only one period and that it is no more, nor no less, important than the 0.72% in the 1st period. Therefore, for Financial purposes, it is really the 1.17% Average Over the Term, which should not be ignored in reviewing this process.

In the above Analysis, we see that the Cumulative Average Funding Cost of the 3 Mo CD is remarkably close to the 6, 9, 12, & 36 Mo CD's (with the 36 Mo staged for a substantial increase). However, the 36 Mo was, and averaged, 1.65% for the entire period, while the 3 Mo CD averaged just 1.17%. Therefore, the 3 Mo CD costs no more than any of the comparative alternatives (and less than many) but retained the greatest level of flexibility of any of the illustrated alternatives. We do not highlight these factors to suggest that there are great saving by choosing the shorter alternatives. Rather, we are saying that there are really no disadvantages, except for the "optics," of having chosen the longer-term instrument. Therefore, "locking in" a Rate, which in fact is much higher may not offer the anticipated advantage.

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Average Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		Cumulative "Average" Funding Costs ~ Compared to ~ "Marginal" Funding Rates											
		3	6	9	12	15	18	21	24	27	30	33	36
(0.44)	3	0.00	(0.13)	(0.08)	(0.25)	(0.40)	(0.33)	(0.50)	(0.44)	(0.61)	(0.78)	(0.93)	(0.85)
(0.46)	6	0.00	0.00	(0.17)	(0.13)	(0.50)	(0.42)	(0.57)	(0.50)	(0.67)	(0.60)	(1.00)	(0.92)
(0.42)	9	0.00	0.00	0.00	(0.38)	(0.30)	(0.25)	(0.64)	(0.56)	(0.50)	(0.90)	(0.82)	(0.75)
(0.38)	12	0.00	0.00	0.00	0.00	(0.60)	(0.50)	(0.43)	(0.38)	(0.78)	(0.70)	(0.64)	(0.58)
(0.33)	18	0.00	0.00	0.00	0.00	0.00	0.00	(0.86)	(0.75)	(0.67)	(0.60)	(0.55)	(0.50)
(0.32)	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.11)	(1.00)	(0.91)	(0.83)
(0.25)	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.59)	(1.46)
0.00	36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

We reinforce the above results when we compare the two scales. We clearly see the better results at the shorter-end of the Maturity scale, rather than the longer-end. It is important to keep in mind that what we are actually seeing is the *reality* versus merely the *perception*. The Marginal Funding Rates table on page 2 is correct. At the end of three years your Marginal Rate would be expected to be 2.47% on the 3 Mo CD, compared to just 1.65% had you had the *presumed* foresight to take-down the 36 Month CD's three years earlier. However, upon closer examination, what you see is also true, that "on average" you would have had an Average Funding Cost of just 1.17% for those three years had you "rolled" the Three Month CD's continuously for this same period, compared to the 1.65% Average for the 36 Month CD.

Reasonable people can surely disagree as to what the above tables tell us. Would it always be better to be in the 3, 6, or 9 month maturities to maximize performance? Or would it be more appropriate to be in the 36, 48, and 60 Month maturities if rates were to rise by the expected 200 bp's. Clearly, this would depend upon timing and upon the actual pace of Fed actions. None of us can know these in advance. If we have increases that are faster than we are expecting, or if the increases are of a greater magnitude, then this analysis could be giving us signals that lead to a less than desirable conclusion.

However, this analysis is consistent with Time Value of Money Theory, when properly applied. There are many who are not so happy about having jumped upon Long-Term Federal Home Loan Bank Advances a number of years ago. In fact, this is just fundamental Portfolio Theory in *reverse*. Combining proper *Yield Curve Management* with *Time Value Principles* usually leads to the most productive outcomes, if we are just able to properly orient ourselves to take advantage of these two fundamentals.

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Average Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		"Average" Cumulative Funding Costs ~ Over the Three Month CD Rate											
		3	6	9	12	15	18	21	24	27	30	33	36
0.00	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	6	0.10	(0.03)	0.02	(0.03)	0.00	0.02	0.03	0.04	0.04	0.03	0.03	0.04
0.07	9	0.20	0.08	0.03	0.08	0.05	0.03	0.06	0.08	0.06	0.08	0.06	0.05
0.11	12	0.28	0.16	0.11	0.03	0.08	0.11	0.10	0.09	0.11	0.11	0.08	0.05
0.32	18	0.60	0.48	0.43	0.35	0.25	0.18	0.24	0.29	0.29	0.28	0.24	0.20
0.35	24	0.71	0.59	0.54	0.46	0.36	0.29	0.21	0.15	0.21	0.24	0.23	0.23
0.46	30	0.88	0.76	0.71	0.63	0.53	0.46	0.38	0.32	0.24	0.16	0.22	0.28
0.48	36	0.93	0.81	0.76	0.68	0.58	0.51	0.43	0.37	0.29	0.21	0.11	0.03
0.73	48	1.18	1.06	1.01	0.93	0.83	0.76	0.68	0.62	0.54	0.46	0.36	0.28
0.92	60	1.37	1.25	1.20	1.12	1.02	0.95	0.87	0.81	0.73	0.65	0.55	0.47

Once we have the "data," we are able to perform a number of analyses. For example, the table above compares the Average Cumulative Funding Costs over the entire spectrum of potential CD Offerings. The table above compares all of the various sectors to the 3 Month CD. While the one below compares everything to the 60 Month CD. I think that the results may be surprising to many. Unfortunately, some tend to focus upon the "optics" rather than the bottom line financial results.

We have highlighted key cells, at the beginning, near the middle, and at the end. These are of no particular importance except to focus attention. We hope that they also illustrate how any two points can be analyzed, for comparative purposes, by simply comparing two sectors to each other.

Average Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		"Average" Cumulative Funding Costs ~ Below the Sixty Month CD Rate											
		3	6	9	12	15	18	21	24	27	30	33	36
(0.92)	3	(1.37)	(1.25)	(1.20)	(1.12)	(1.02)	(0.95)	(0.87)	(0.81)	(0.73)	(0.65)	(0.55)	(0.47)
(0.89)	6	(1.27)	(1.27)	(1.19)	(1.15)	(1.02)	(0.94)	(0.84)	(0.77)	(0.69)	(0.62)	(0.52)	(0.44)
(0.84)	9	(1.17)	(1.17)	(1.17)	(1.05)	(0.97)	(0.92)	(0.81)	(0.73)	(0.67)	(0.57)	(0.49)	(0.42)
(0.81)	12	(1.09)	(1.09)	(1.09)	(1.09)	(0.94)	(0.84)	(0.77)	(0.72)	(0.62)	(0.54)	(0.48)	(0.42)
(0.60)	18	(0.77)	(0.77)	(0.77)	(0.77)	(0.77)	(0.77)	(0.63)	(0.52)	(0.44)	(0.37)	(0.32)	(0.27)
(0.56)	24	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.52)	(0.41)	(0.32)	(0.24)
(0.45)	30	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.33)	(0.20)
(0.44)	36	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)	(0.44)
(0.19)	48	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)
0.00	60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Total Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		"Marginal" Funding Costs ~ Outcomes in Dollars ~ Based upon a \$1,000,000 CD											
		3	6	9	12	15	18	21	24	27	30	33	36
48,475	3	1,800	2,425	2,425	3,050	3,675	3,675	4,300	4,300	4,925	5,550	6,175	6,175
49,600	6	2,050	2,050	2,675	2,675	3,925	3,925	4,550	4,550	5,175	5,175	6,425	6,425
50,100	9	2,300	2,300	2,300	3,550	3,550	3,550	4,800	4,800	4,800	6,050	6,050	6,050
50,000	12	2,500	2,500	2,500	2,500	4,375	4,375	4,375	4,375	5,625	5,625	5,625	5,625
54,600	18	3,300	3,300	3,300	3,300	3,300	3,300	5,800	5,800	5,800	5,800	5,800	5,800
55,400	24	3,575	3,575	3,575	3,575	3,575	3,575	3,575	3,575	6,700	6,700	6,700	6,700
56,750	30	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	8,375	8,375
49,500	36	4,125	4,125	4,125	4,125	4,125	4,125	4,125	4,125	4,125	4,125	4,125	4,125
57,000	48	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750
62,700	60	5,225	5,225	5,225	5,225	5,225	5,225	5,225	5,225	5,225	5,225	5,225	5,225

In the table above, we have computed what our mind wants to tell us are the Marginal Costs of each of these various choices, which is true when evaluated on a "per period" basis. In contrast, the table below illustrates the *actual* costs (in dollars) based upon these same trade-offs. Please don't allow this illustration to mislead you. While the table above is true and accurate in measuring the Funding Costs on a per period basis, it is the table below that actually shows the true costs on a "to date" basis to show the actual costs over this specific time-frame.

It is extremely important that when making any sort of financial analysis, that we continue to examine the situation from various perspectives to assure that we are able to draw accurate conclusion. Too often emphasis is placed on "**Rate**" and too little is placed upon "**Volume**" and "**Time**."

Average Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		"Total" Funding Costs ~ To Date ~ Outcomes in Dollars ~ Based Upon a \$1,000,000 CD											
		3	6	9	12	15	18	21	24	27	30	33	36
21,440	3	1,800	4,225	6,650	9,700	13,375	17,050	21,350	25,650	30,575	36,125	42,300	48,475
21,867	6	2,050	4,100	6,775	9,450	13,375	17,300	21,850	26,400	31,575	36,750	43,175	49,600
22,450	9	2,300	4,600	6,900	10,450	14,000	17,550	22,350	27,150	31,950	38,000	44,050	50,100
22,917	12	2,500	5,000	7,500	10,000	14,375	18,750	23,125	27,500	33,125	38,750	44,375	50,000
25,825	18	3,300	6,600	9,900	13,200	16,500	19,800	25,600	31,400	37,200	43,000	48,800	54,600
25,842	24	3,575	7,150	10,725	14,300	17,875	21,450	25,025	28,600	35,300	42,000	48,700	55,400
27,094	30	4,000	8,000	12,000	16,000	20,000	24,000	28,000	32,000	36,000	40,000	48,375	56,750
26,813	36	4,125	8,250	12,375	16,500	20,625	24,750	28,875	33,000	37,125	41,250	45,375	49,500
30,875	48	4,750	9,500	14,250	19,000	23,750	28,500	33,250	38,000	42,750	47,500	52,250	57,000
33,963	60	5,225	10,450	15,675	20,900	26,125	31,350	36,575	41,800	47,025	52,250	57,475	62,700

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Average Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		Cumulative Costs Compared to the Cost of the Three Month CD											
		3	6	9	12	15	18	21	24	27	30	33	36
0	3	0	0	0	0	0	0	0	0	0	0	0	0
427	6	250	(125)	125	(250)	0	250	500	750	1,000	625	875	1,125
1,010	9	500	375	250	750	625	500	1,000	1,500	1,375	1,875	1,750	1,625
1,477	12	700	775	850	300	1,000	1,700	1,775	1,850	2,550	2,625	2,075	1,525
4,385	18	1,500	2,375	3,250	3,500	3,125	2,750	4,250	5,750	6,625	6,875	6,500	6,125
4,402	24	1,775	2,925	4,075	4,600	4,500	4,400	3,675	2,950	4,725	5,875	6,400	6,925
5,654	30	2,200	3,775	5,350	6,300	6,625	6,950	6,650	6,350	5,425	3,875	6,075	8,275
5,373	36	2,325	4,025	5,725	6,800	7,250	7,700	7,525	7,350	6,550	5,125	3,075	1,025
9,435	48	2,950	5,275	7,600	9,300	10,375	11,450	11,900	12,350	12,175	11,375	9,950	8,525
12,523	60	3,425	6,225	9,025	11,200	12,750	14,300	15,225	16,150	16,450	16,125	15,175	14,225

The table above illustrates the comparative, cumulative costs over the 36 month period of choosing a particular CD Maturity and reinvesting that CD, in a like Maturity, at the then prevailing Rate, over the 36 month time-frame, and then comparing those costs of the same behavior in the 3 Month CD. The results may be surprising to some, as they tend to contradict the typically *expected* outcome.

In contrast, the table below indicates the potential *costs* of making a decision that conforms more to our senses. This may take some time for some, but it is merely the mirror image of classic Portfolio Theory in a positively sloped Yield Curve Environment.

Average Over Term	Term in Months	<i>Time Value of Funding Analysis</i>											
		Cumulative Costs Compared to the Cost of the Sixty Month CD											
		3	6	9	12	15	18	21	24	27	30	33	36
(12,523)	3	(3,425)	(6,225)	(9,025)	(11,200)	(12,750)	(14,300)	(15,225)	(16,150)	(16,450)	(16,125)	(15,175)	(14,225)
(12,096)	6	(3,175)	(6,350)	(8,900)	(11,450)	(12,750)	(14,050)	(14,725)	(15,400)	(15,450)	(15,500)	(14,300)	(13,100)
(11,513)	9	(2,925)	(5,850)	(8,775)	(10,450)	(12,125)	(13,800)	(14,225)	(14,650)	(15,075)	(14,250)	(13,425)	(12,600)
(11,046)	12	(2,725)	(5,450)	(8,175)	(10,900)	(11,750)	(12,600)	(13,450)	(14,300)	(13,900)	(13,500)	(13,100)	(12,700)
(8,138)	18	(1,925)	(3,850)	(5,775)	(7,700)	(9,625)	(11,550)	(10,975)	(10,400)	(9,825)	(9,250)	(8,675)	(8,100)
(8,121)	24	(1,650)	(3,300)	(4,950)	(6,600)	(8,250)	(9,900)	(11,550)	(13,200)	(11,725)	(10,250)	(8,775)	(7,300)
(6,869)	30	(1,225)	(2,450)	(3,675)	(4,900)	(6,125)	(7,350)	(8,575)	(9,800)	(11,025)	(12,250)	(9,100)	(5,950)
(7,150)	36	(1,100)	(2,200)	(3,300)	(4,400)	(5,500)	(6,600)	(7,700)	(8,800)	(9,900)	(11,000)	(12,100)	(13,200)
(3,088)	48	(475)	(950)	(1,425)	(1,900)	(2,375)	(2,850)	(3,325)	(3,800)	(4,275)	(4,750)	(5,225)	(5,700)
0	60	0	0	0	0	0	0	0	0	0	0	0	0