

CBOT® Binary Options on the Target Federal Funds Rate

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Looking for Charts? Navigate to each product and click the chart icon under the contract month.

Agricultural	Interest Rates	Dow	Metals
Corn	Fed Binary	mini-sized Dow (\$5)	100 oz Gold
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Soybean Oil	10 Year U.S. Treasury Notes	BIG Dow DJIA \$25	CBOT mini-sized Gold
South American Soybeans	5 Year U.S. Treasury Notes	Dow Jones US Real Estate Index	CBOT mini-sized Silver
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Oats	5 Year Interest Rate Swap		
Rough Rice	mini-sized Eurodollar		
mini-sized Corn	30 Day Federal Funds		
mini-sized Soybeans			
Soybean Crush			
mini-sized Wheat			



CBOT[®] Binary Options on the Target Federal Funds Rate

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CBOT Binaries

- CBOT Binary Options on the Target Federal Funds Rate (CBOT Binaries, for short) differ significantly from conventional options.
- Binary options are event risk options—tied to the probability a major storm or political or economic event will occur.
- For CBOT Binaries, the event is a change in the target fed funds rate.

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CBOT Binaries

- CBOT Binaries are the ideal trading tool any time you want to express a market opinion concerning what the FOMC might do at a future meeting.
- They trade exactly in terms of the target rate, so they avoid slippage from interest rate risk.
- Their expiration is tied to the relevant FOMC meeting day, not to some other day, so they avoid slippage from date mismatches.

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CBOT Binaries

CBOT Binaries are so-called because they offer only two outcomes:

- If the anticipated Fed target rate change occurs, a CBOT Binary makes a payment to option buyers
- If the anticipated Fed target rate change does not occur, a CBOT Binary makes no payment

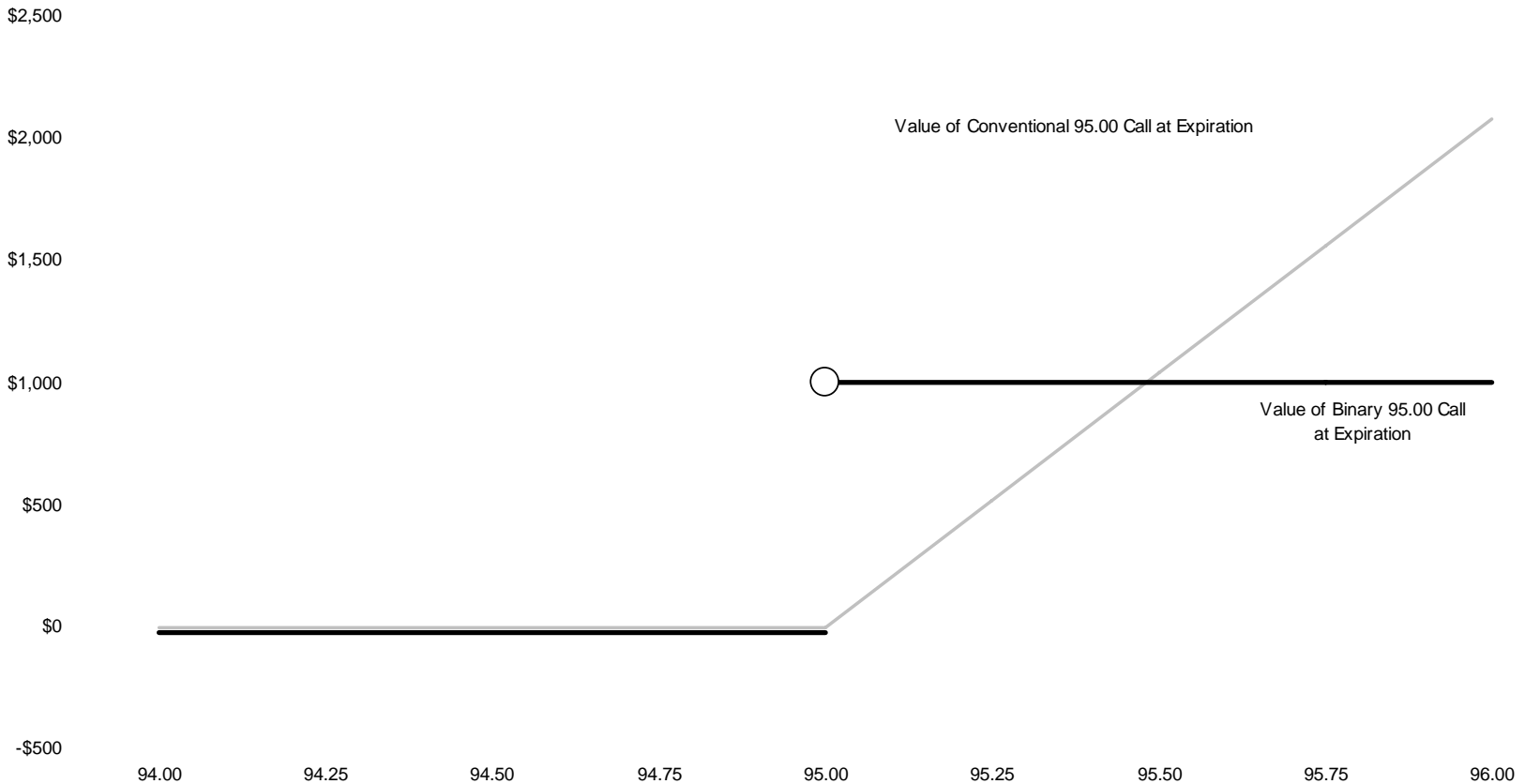
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CBOT Binaries

- The CBOT Binary payment system contrasts sharply with the continuum of payments traders expect from conventional options.
- The next slide illustrates the contrast with expiration payout diagrams of a conventional call option and a binary call.

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Option Payouts: Conventional vs. Binary



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CBOT Binaries

The CBOT Binary payment system contrasts with that of conventional options in another important way.

- When a CBOT Binary expires in the money, the option seller must pay \$1,000.
- This amount is the *most* a seller will have to pay.

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CBOT Binaries

That said, during the rest of this webinar, we will:

- review key CBOT Binary contract details
- emphasize further crucial differences between conventional and binary options
- show how to set up simple and more complex CBOT Binary trades

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CBOT Binary Contract Details

Price Basis

Par is on the basis of 100 points, with one point equal to \$10. The price is never less than zero points or greater than 100 points.

Minimum Price Fluctuation

One point, equal to \$10.

Trading Platform

e-cbot[®]

Matching Algorithm

Pro-rata with preferencing and priority orders (minimum of 25 contracts, maximum of 250 contracts)

Ticker Symbol

Calls: BUSC, Puts: BUSP

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CBOT Binary Contract Details

Trading Hours

6:00 p.m. to 4:00 p.m., Chicago time, Sunday through Friday. Trading in an expiring option shall cease at 3:00 p.m. Eastern time (2:00 p.m. Chicago time) on the last trading day.

Strike Levels

Option strikes shall bracket the prevailing target fed funds rate (expressed in 100-minus-rate terms). For newly-listed delivery months, strikes shall be listed in increments of 12.5 basis points, at the prevailing target plus twenty (20) consecutively higher and (20) consecutively lower strikes, subject to the constraint that strikes can never be less than 0.00 nor greater than 100.00.

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Strikes

Strike Position vs ATM	Strike Price	Implied Target FFR
20	97.250	2.750
19	97.125	2.875
18	97.000	3.000
17	97.875	3.125
16	97.750	3.250
15	97.625	3.375
14	97.500	3.500
13	97.375	3.625
12	97.250	3.750
11	97.125	3.875
10	96.000	4.000
9	95.875	4.125
8	95.750	4.250
7	95.625	4.375
6	95.500	4.500
5	95.375	4.625
4	95.250	4.750
3	95.125	4.875
2	95.000	5.000
1	94.875	5.125
0	94.75	5.25
-1	94.625	5.375
-2	94.500	5.500
-3	94.375	5.625
-4	94.250	5.750
-5	94.125	5.875
-6	94.000	6.000
-7	93.875	6.125
-8	93.750	6.250
-9	93.625	6.375
-10	93.500	6.500
-11	93.375	6.625
-12	93.250	6.750
-13	93.125	6.875
-14	93.000	7.000
-15	92.875	7.125
-16	92.750	7.250
-17	92.625	7.375
-18	92.500	7.500
-19	92.375	7.625
-20	92.250	7.750

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CBOT Binary Contract Details

Delivery Months

Customarily, options shall be listed for expiration in each of the next four delivery months. An option's delivery month shall be determined by the concluding day of the regularly scheduled FOMC meeting that the option references, as shown in the FOMC meeting calendar at the time the option is listed for trading.

The FOMC meeting calendar is maintained and published by the Board of Governors of the Federal Reserve at

<http://www.federalreserve.gov/fomc/#calendars>

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CBOT Binary Contract Details

2007					
January 30/31	February	March 20/21	April	May 9	June 27/28
July	August 7	September 18	October 30/31	November	December 11

<http://www.federalreserve.gov/fomc/#calendars>

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CBOT Binary Contract Details

Last Trading Day

An option's last trading day will be the business day after the FOMC meeting adjourns. Furthermore, the last trading day shall be **fixed** when the option is listed for trading and shall be based upon the FOMC meeting calendar at that time.

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Last Trading Day & Expiration

FOMC Scheduled Meeting

June 27-28, 2007
August 7, 2007
September 18, 2007
October 30-31, 2007

Last Trading Day & Expiration

June 29, 2007
August 8, 2007
September 19, 2007
November 1, 2007

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CBOT Binary Contract Details

Settlement

An expiring option shall be cash settled with reference to the target fed funds rate (expressed in 100-minus-rate terms) that is in effect as of 5:00 p.m. Eastern time on the option's last trading day. Customarily (though not always) this will be the outcome of the regularly scheduled FOMC meeting that the option references. The target fed funds rate shall be as found in the most recently published Statement of the FOMC, typically published immediately following adjournment of any FOMC meeting. (See <http://www.federalreserve.gov/fomc/#calendars>.)

For details, consult Regulation 2036.01 in Chapter 20 of the Rules and Regulations of the Chicago Board of Trade. (See http://www.cbot.com/cbot/pub/cont_detail/0,3206,931+39821,00.html).

For any binary put option with a strike greater than the target fed funds rate (expressed in 100-minus-rate terms) on the option's last trading day, long position holders shall receive, and short position holders shall pay, \$1,000. For any binary put option with a strike equal to or less than the target fed funds rate on the option's last trading day, longs shall receive, and shorts shall pay, \$0.

For any binary call option with a strike less than the target fed funds rate (expressed in 100-minus-rate terms) on the option's last trading day, long position holders shall receive, and short position holders shall pay, \$1,000. For any binary call option with a strike equal to or greater than the target fed funds rate on the option's last trading day, longs shall receive, and shorts shall pay, \$0.

All final pays and collects shall be made on the business day following the determination of the final settlement prices of the expiring binary options.

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CBOT Binaries are different!

First, get used to thinking in 100 minus rate terms.

If the target rate is 5.25%, this is 94.75 in 100 minus rate terms.

If the Fed lowers the target rate to 5.00%, this is 95.00 in 100 minus rate terms.

If the Fed raises the target rate to 5.50%, this is 94.50 in 100 minus rate terms.

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CBOT Binaries are different!

Second, CBOT Binaries price terms of the probability a given strike price will expire in the money.

The pricing of conventional options requires five bits of data:

- 1 the underlying price
- 2 the strike price
- 3 the number of days to option expiration
- 4 the implied volatility
- 5 the interest rate

The pricing of CBOT Binaries require only two bits of data:

- 1 the strike price
- 2 the probability this strike price will expire in the money

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CBOT Binaries are different!

Time Is Not a Factor

Conventional options suffer time decay. Even if the underlying price and the implied volatility stay the same, conventional option prices diminish with the passage of time.

Not so CBOT Binaries. If, on May 1, the August 94.875 call has a 30% probability of expiring ITM, the price of this call will be \$300. If the probability is still 30% on July 1, the price will still be \$300. No time decay.

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CBOT Binaries are different!

Locating the Probability

Given the relevant CBOT 30-Day Fed Funds futures price, you can calculate the probability of a given Fed move. (See the Appendix of the *Reference Guide* for the relevant formula.)

Suppose you determine a 30% probability of a 25 basis point decrease in the target rate—from 5.25% to 5.00%. This is a move from 94.75 to 95.00 in 100 minus rate terms.

If this Fed move happens, the 95.00 strike price will be at the money (ATM) at option expiration.

Both the 94.875 and 94.75 strike prices will be in the money (ITM) at option expiration.

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CBOT Binaries are different!

If the Fed holds the target at 5.25%, the 94.75 strike price will be ATM at option expiration.

Both the 94.875 and 95.00 strike prices will be out of the money (OTM) at option expiration.

So, a 30% probability of a target rate decrease to 5.00% translates into:

- a 30% probability the 94.875 call will expire ITM
- a 70% probability the 94.875 call will expire OTM

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Tracking Probabilities

You can chart the probabilities of a target rate change at any of the next three or four Fed meetings.

Between February and May 2007, you would have seen the probabilities seen on the next slide.

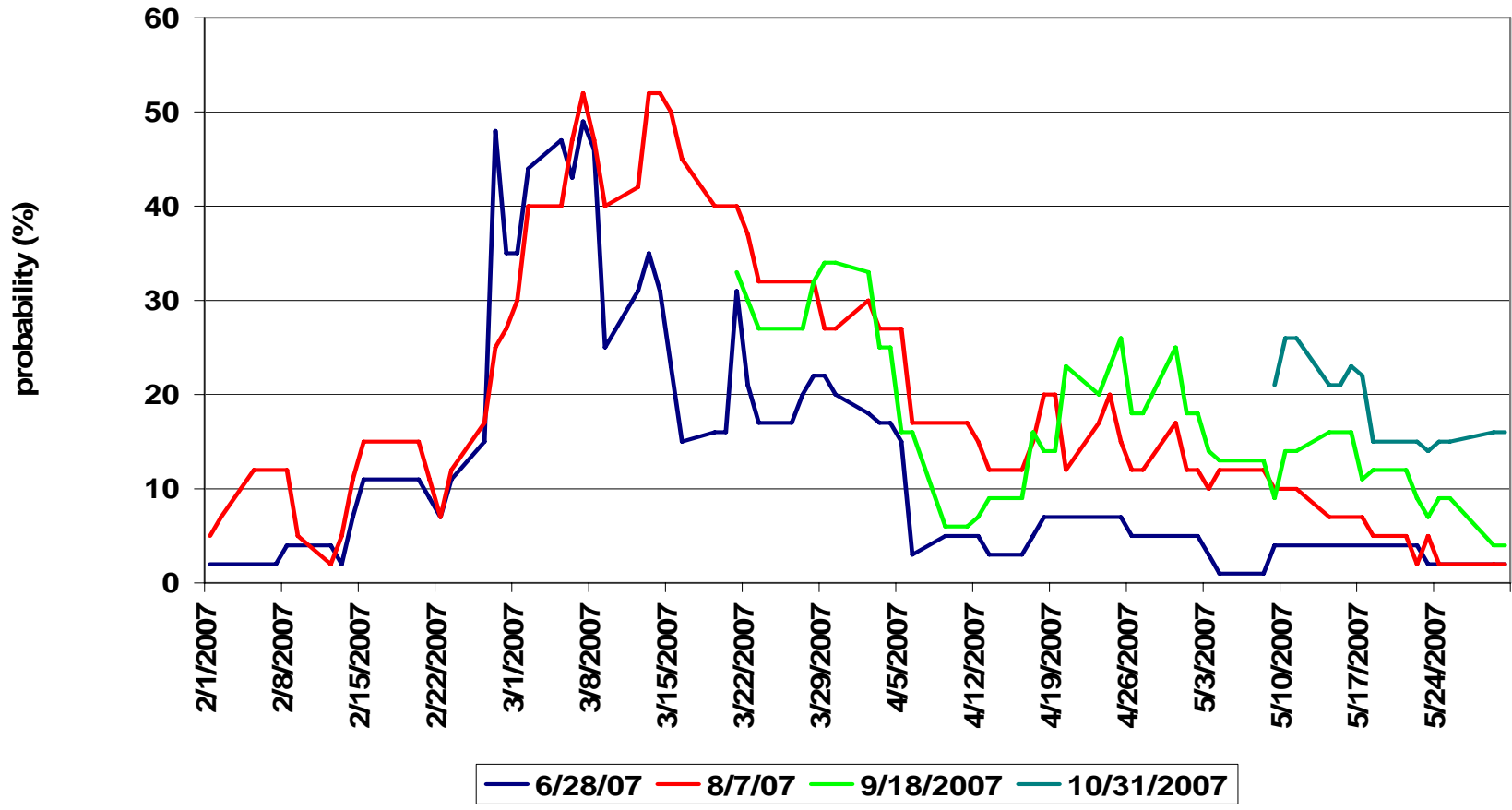
These look forward to the June 28, August 7, September 18, and October 31, 2007, FOMC meetings.

Even at the early March peak, a target rate decrease was never more than a 50% probability. By the end of May, the consensus was for no move at all.

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CBOT Binaries are different!

Assessing the Probability of a 25 bp Decrease in the Target Fed Funds Rate



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What a Difference a Year Can Make

When the market expects a target rate change, the chart will look different.

The next slide shows the probabilities for a 25 basis point target rate increase at the June 29, August 8, and September 20, 2006, FOMC meetings.

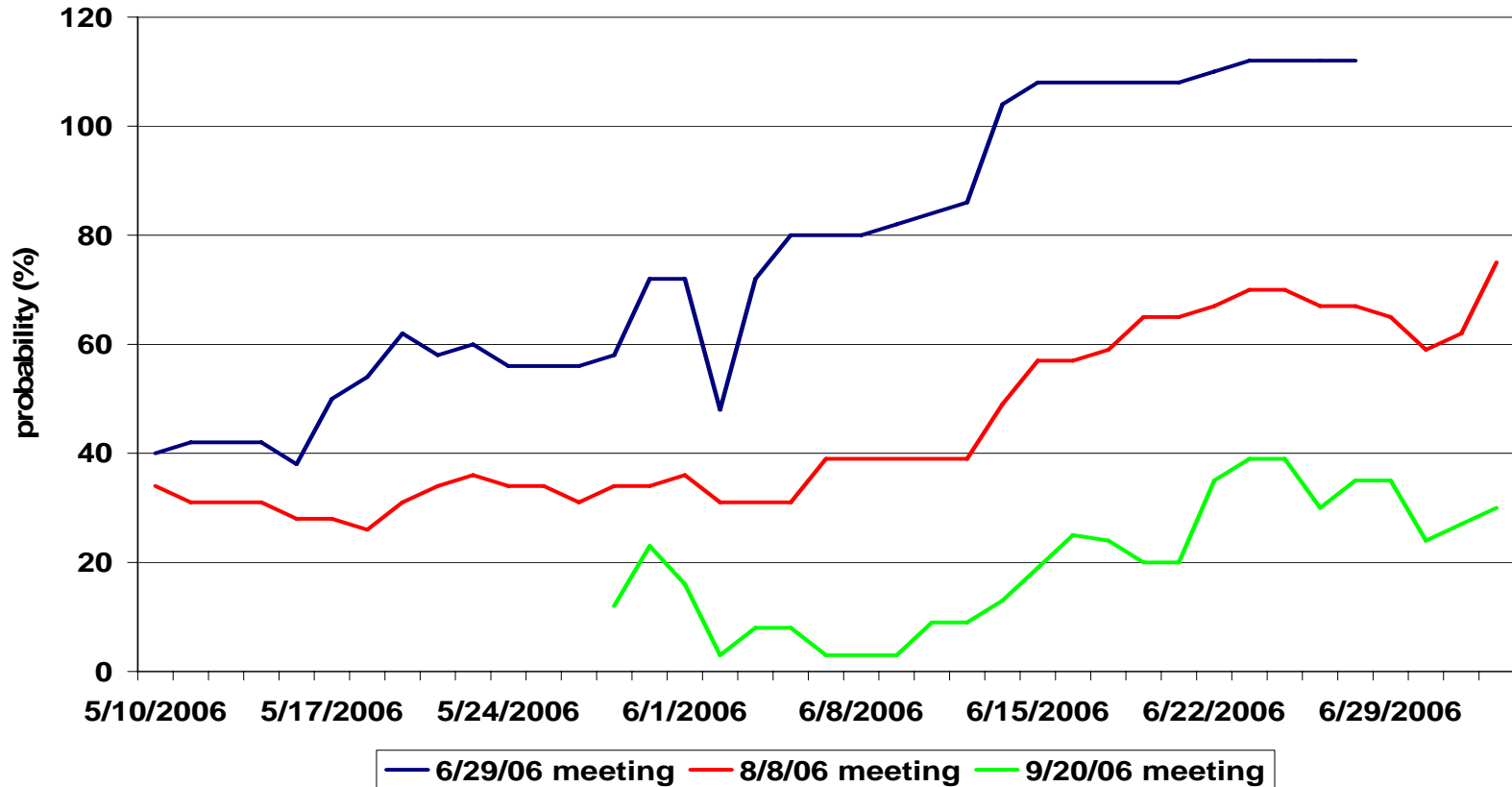
Notice how, in mid-May, the probability of a June target rate change began to increase. By June 6, the probability was 80%, and it continued to climb.

That was the last target rate increase of the recent series, of course.

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CBOT Binaries are different!

Assessing the Probability of a 25 bp Increase in the Target Fed Funds Rate



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Structuring a Trade

Assume the current September fed funds futures price implies a 30% probability the FOMC will lower the target rate from 5.25% to 5.00% at its September 18, 2007, meeting. This is not a strong vote for the move, but you have reason to believe this move will be made.

Given what such a move means in 100 minus rate terms—the ATM strike price, which is now 94.75 ($100 - 5.25\%$), will be 95.00 ($100 - 5.00\%$) at September CBOT Binary expiration—the obvious ways to trade this expectation is to buy a call or sell a put.

For now, let's stay with buying a September CBOT Binary call. But which call?

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Structuring a Trade

This 30% probability of a target rate change to 5.00%, means both the 94.75 and 94.875 calls have a 30% probability of expiring ITM.

Target Rate (%)	Strike Price (100 -rate)	Moniness	Binary Call Probability	Binary Call Price
5.25%	94.75	ATM	30%	\$300
	94.875	OTM	30%	\$300
5.00%	95.00	OTM	0%	

This distribution suggests you can trade your expectation by buying either the September 94.75 or 94.875 CBOT Binary call.

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Structuring a Trade

Say the FOMC lowers its target rate to 5.00%.
 The situation at September CBOT Binary expiration will be this:

Target Rate (%)	Strike Price (100 -rate)	Moniness	A long position in this call
5.25%	94.75	ITM	pays the holder \$1000
5.25%	94.875	ITM	pays the holder \$1000
5.00%	95.00	ATM	expires valueless

Obviously, if you paid \$300 for the September 94.975 CBOT Binary call and collected \$1,000 at expiration, your net is \$700.

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Structuring a Trade

What if the FOMC makes no move and keeps the target at 5.25%?
 The situation at September CBOT Binary expiration will be this:

Target Rate (%)	Strike Price (100-rate)	Moniness	A long position in this call
5.25%	94.75	ATM	expires valueless
5.25%	94.875	OTM	expires valueless
5.00%	95.00	OTM	expires valueless

In this case, having paid \$300 for the September 94.875 CBOT Binary call, you will lose \$300.

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Structuring a Trade

Having seen the basic idea of how CBOT Binary trades can work, consider a situation closer to the present reality.

Right now, in June 2007, market opinion favors no move at any of the remaining 2007 FOMC meetings. Further, in the minds of many, the FOMC is almost equally likely to raise the target rate to 5.50% as to lower it to 5.00%.

Clearly, the FOMC is approaching a policy turning point.

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Structuring a Trade

Suppose, looking ahead to the December FOMC meeting, your market analysis suggests:

- a 40% probability the target rate will remain at 5.25% (94.75 in 100 minus rate terms)
- a 30% probability the target rate will rise to 5.50% (94.50 in 100 minus rate terms)
- a 30% probability the target rate will drop to 5.00% (95.00 in 100 minus rate terms)

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Structuring a Trade

One way to trade these expectations would be to sell both the December 94.75 CBOT Binary call and the December 94.75 CBOT Binary put.

Remember, what matters is the probability a given strike price will expire ITM.

Both of these options have a 30% probability of expiring ITM. This means you would collect a total of \$600 for selling these two options.

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Structuring a Trade

Alternatively, you could buy the 95.00 put and the 94.50 call. The distribution of policy outcomes indicates a 70% probability each of these options will expire ITM.

You would pay \$700 for each option for a total cost of \$1,400.

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Structuring a Trade

Assume the possible outcomes of the December FOMC meeting are these:

- A the target rate remains at 5.25% (94.75 in 100 minus rate terms)
- B the target rate rises to 5.50% (94.50)
- C the target rate drops to 5.00% (95.00)

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Structuring a Trade

First trade: sell both 94.75 binary call and 94.75 binary put

Possible Outcomes

- A the expiration target rate is the same as the strike prices sold, so you retain the entire \$600 collected initially
- B you must pay \$1,000 on the binary put you sold; weighed against the \$600 collected initially, this results in a \$400 net loss
- C you must pay \$1,000 on the binary call you sold; this also results in a \$400 net loss

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Structuring a Trade

Second trade: buy the 95.00 put and the 94.50 call

Possible Outcomes

- A the expiration target rate is less than the binary put strike price and greater than the binary call strike price; therefore both options will pay \$1,000; this \$2,000 total payout less the initial \$1,400 paid for the two options results in a \$600 net gain
- B you collect \$1,000 on the 95.00 put, but you earn nothing on the 94.50 call; weighed against the \$1,400 paid initially, this results in a \$400 net loss
- C you earn nothing on the 95.00 put, but you collect \$1,000 on the 94.50 call; weighted against the \$1,400 paid initially, this results in a \$400 net loss

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Structuring a Trade

**The risks and rewards
of these two trading
approaches are
identical!**

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CBOT Binaries

Trading CBOT Binaries does require a few adjustments in your thinking about options.

Still, these brief remarks should be enough to help you get started with your exploration of the possibilities these options will open up for you. The example trades cited should suggest these are possibilities well worth exploring.

Further help is available in the form of CBOT literature or in a forthcoming *Futures and Options Trader* magazine article tentatively titled “A Different Kind of Option.”

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