

# Investors “Strangled” by LJM Preservation and Growth Fund (LJMIX)

By Craig McCann, Edward O’Neal and Mike Yan

The stock market began the month of February on a roller-coaster. During the 6 trading days from Friday, February 2nd to Friday, February 9th, the Dow Jones Industrials had intraday swings of at least 330 points each day. On four of those six days the Dow incurred 1,000 point swings.

Amidst the dramatic market swings two weeks ago, the LJM Preservation and Growth Fund stands out. The Fund plummeted over 80% (from a price of \$10.34 to \$1.94) in two days. See Figure 1.

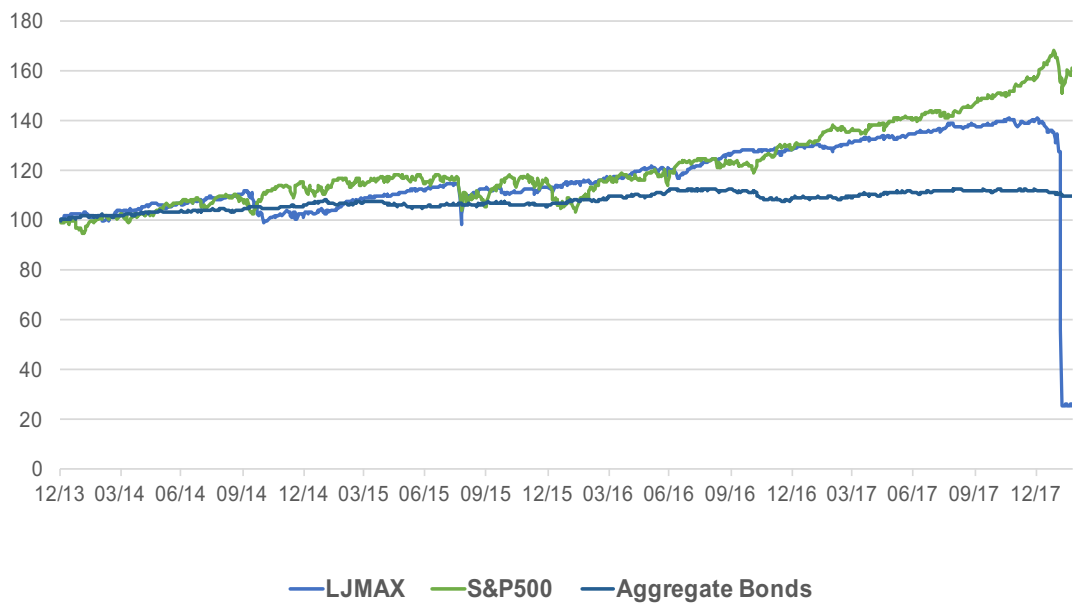
The LJM Capital Preservation and Growth Fund was launched in January 2013 and sold in three different share classes (ticker symbols LJMAX, LJMCX, LJMIX). The Fund had net assets of \$768 million as of the latest Annual Report (available [here](#)) filed on October 31, 2017. If the Fund’s net assets were similar on February 4, 2017 immediately before the losses, investors in the Fund lost approximately \$600 million in two days.

The Fund’s Prospectus (available [here](#)) defines the Fund’s objective as

follows: “The LJM Preservation and Growth Fund (the “Fund”) seeks capital appreciation and capital preservation with low correlation to the broader U.S. equity market.”

Returning to Figure 1, the LJM Fund’s total returns are smoother than the S&P 500’s total returns but the Fund suffered large losses in 2014 and 2015 when the S&P 500 dropped. This pattern marks the Fund’s strategy of picking up nickels and dimes in front of a steamroller.

**Figure 1: LJM Preservation and Growth Fund Class I, Stocks and Bonds, 2014-2018**



More detail is given in the description of the principal investment strategies which reveals that this Fund is actually designed to pursue an uncovered short options-trading strategy:

“The Fund seeks to achieve its investment objectives by capturing gains on options sold on S&P futures contracts that can be purchased (“closed”) at a later date for a lower price than the price realized when originally sold.... In the aggregate, the Fund is typically “net short” in the portfolio of contracts that it holds, which means that the Fund holds more uncovered option contracts than covered.”

The prospectus goes on to define an uncovered option as one in which the underlying asset is not actually held by the investor or - more precisely - the short option is not offset by a

corresponding long stock, option or futures position.

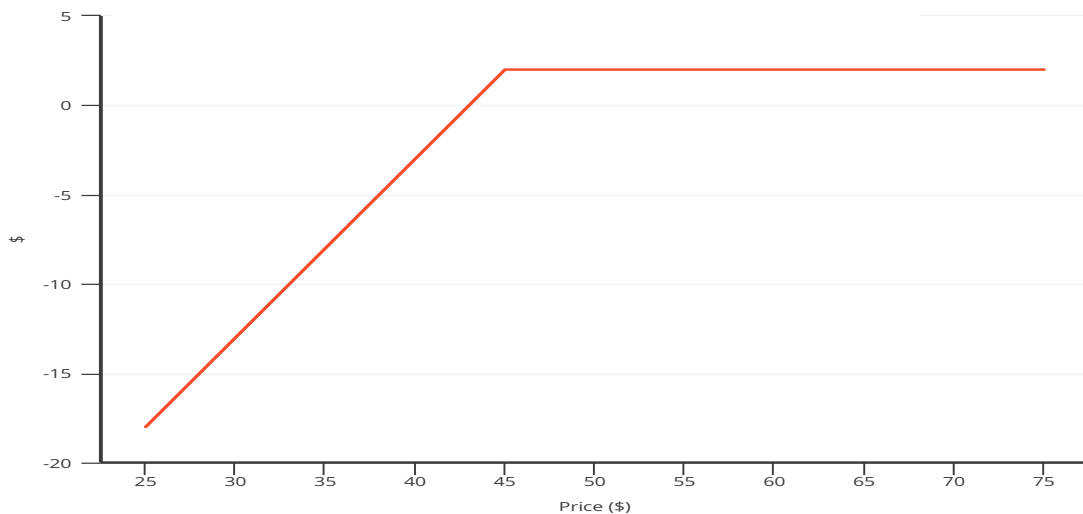
The Fund’s investment strategy can be discerned from the Fund’s October 31, 2017 holdings. The Fund held long and short put and call on S&P 500 futures and held money market funds as collateral for the short options positions. The portfolio therefore has 5 categories of assets: money market Funds, purchased puts and sold puts and purchased calls and sold calls, (in options parlance, selling a put or call option is also called “writing” the option). The 4 categories of put and call option trades can be combined in a portfolio in various ways and can give rise to a myriad of different payoff structures. However, the LJM Preservation and Growth Fund was combining options in a very specific way.

The LJM Preservation and Growth Fund was inaptly named as it pursued the opposite of a capital pres-

ervation and growth strategy. LJM was implementing an options trading strategy called a short strangle which has unlimited downside (so no preservation) and limited upside (so no growth). Unfortunately for investors in this Fund, the option strategy is aptly named.

Figure 2a-2c illustrate short strangle payoffs. The Fund sells an out-of-the-money (strike price below the current index level) put option, receiving an upfront payment called a premium. In our example in Figure 2a, the Fund sells a put option with a strike price of \$45 when the index level is \$50 and receives a \$1 premium. At expiration, the Fund will lose \$1 for every \$1 the index closes below \$45. If the index closes below \$44 (a \$6 drop from the \$50 index level when the Fund sold the put option), the Fund will have a net loss on the put option.

**Figure 2a: Short Put Option Payoffs**



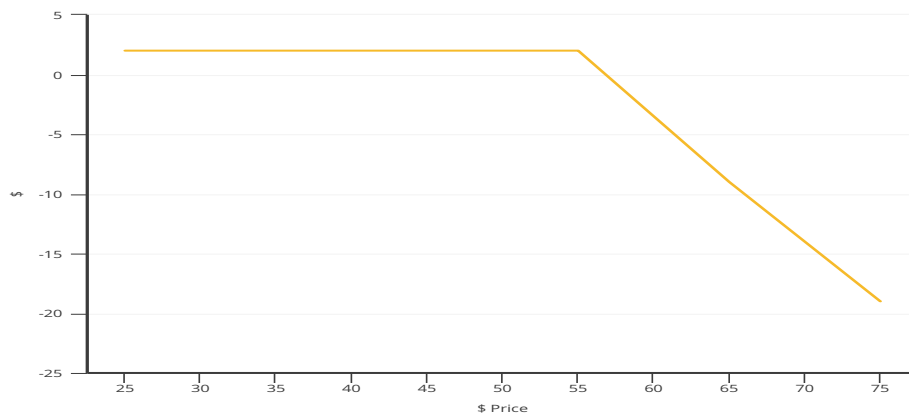
The Fund also sells an out-of-the-money (strike price above the current index level) call option. In our example in Figure 2b, the Fund sells a call option with a strike price of \$55 and receives a \$1 premium. At expiration, the Fund will lose \$1 for every \$1 the index closes above \$55. If the index closes above \$56 (a \$6 increase from the \$50 index level

when the Fund sold the call option), the Fund will have a net loss on the call option.

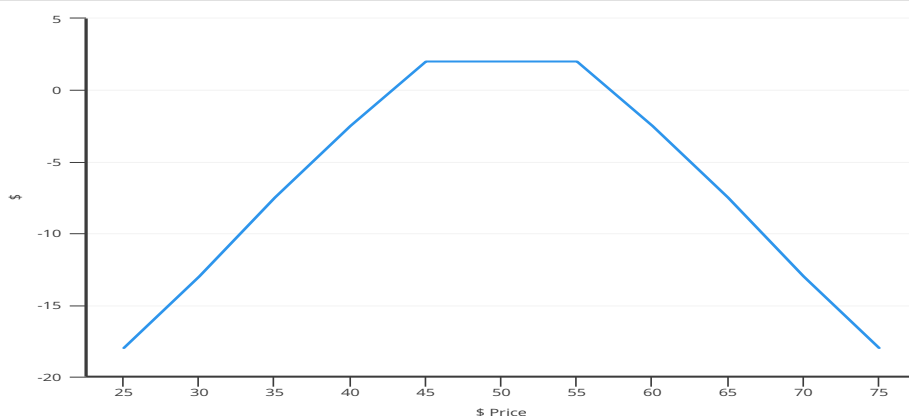
Combining the short put option in Figure 2a with the short call option in Figure 2b creates the short strangle in Figure 2c. If the index closes above the \$45 strike price of the put option sold short and below the \$55

strike price of the call option sold short, the Fund keeps the \$2 sum of the put and call option premiums as profit. If the index closes either below the put option’s \$45 strike price or above the call option \$55 strike price by more than the \$2 premium received, the Fund suffers losses on the strangle.

**Figure 2b: Short Call Option Payoffs**



**Figure 2c: Short Strangle Payoffs**



The Fund's holdings are a little more complicated than our short strangle example. The Fund sold put options with lower strike prices and bought put options with higher strike prices. In isolation this portion of the portfolio creates a bear put spread to the extent the put options bought and sold are in the same quantity and have the same expiration. Setting aside changes in volatility for now, a bear put spread profits if the underlying index declines.

Matching up some of the sold put options with the higher strike price put options bought leaves the remaining options naked put options which lose money if the index declines.

The Fund sold far more put options than it bought in order to generate a positive net premium on its put transactions because the lower strike price options the Fund sold were worth less per share covered than the higher strike price put options it was buying.

Once the long and short put positions were placed, if none of the puts finished in the money, the payoff to the Fund is the net premium (difference between the higher premiums garnered from selling puts than it paid to buy puts).

The Fund also sold more call options than it bought. This call-option half of the strangle strategy worked in a similar manner to the put-option half of the strategy. If the calls finished out of the money, the Fund kept the net premium which was positive since it sold enough more of the lower value, high strike call options than it bought of the higher-value, lower strike price call options.

The Fund's strategy was a bet that market volatility would not increase significantly and that the market index level would not change significantly. An unchanged index level would cause the options to expire

worthless and the Fund would make money from the premiums it took in selling put and call options. However, the insidious by-product of this strategy is that if the stock market increases or decreases by a significant amount, the Fund suffers extreme losses. Further, the Fund was short volatility through the net short put and call options and would suffer losses if expected future volatility increased significantly even if the stock market index level was unchanged.

The payoffs at maturity plotted in Figure 2 do not capture significant gains or losses which may occur prior to expiration resulting from increases in volatility even if the index level is unchanged.

To further illustrate the Fund's strategy, we looked at the October 31, 2017 holdings of the Fund listed in Table 1.

**Table 1: LJM's October 31, 2017 Option Portfolio Market Value**

Contracts	Expiration Date	Exercise Price	Maturity Date	Notional Value	Fair Value	Contracts	Expiration Date	Exercise Price	Maturity Date	Notional Value	Fair Value
<b>CALL OPTIONS PURCHASED</b>						<b>PUT OPTIONS SOLD</b>					
249	11/30/17	2,595	12/15/17	\$161,538,750	\$616,275	239	11/20/17	2,060	12/15/17	\$123,085,000	\$5,975
260	12/15/17	2,575	12/15/17	\$167,375,000	\$1,826,500	250	11/20/17	2,020	12/15/17	\$126,250,000	\$6,250
254	12/15/17	2,605	12/15/17	\$165,417,500	\$812,800	230	11/20/17	2,100	12/15/17	\$120,750,000	\$8,625
254	12/15/17	2,615	12/15/17	\$166,052,500	\$596,900	589	11/20/17	2,140	12/15/17	\$315,115,000	\$29,450
255	12/29/17	2,625	3/16/18	\$167,343,750	\$650,250	525	11/20/17	2,160	12/15/17	\$283,500,000	\$32,813
255	12/29/17	2,635	3/16/18	\$167,981,250	\$490,875	730	11/20/17	2,120	12/15/17	\$386,900,000	\$36,500
255	12/29/17	2,645	3/16/18	\$168,618,750	\$369,750	479	11/20/17	2,200	12/15/17	\$263,450,000	\$41,913
<b>1,782</b>				<b>\$1,164,327,500</b>	<b>\$5,363,350</b>	737	11/20/17	2,180	12/15/17	\$401,665,000	\$55,275
						363	11/20/17	2,300	12/15/17	\$208,725,000	\$63,525
<b>PUT OPTIONS PURCHASED</b>											
245	11/20/17	2,545	12/15/17	\$155,881,250	\$588,000	718	11/20/17	2,240	12/15/17	\$402,080,000	\$80,775
250	11/20/17	2,535	12/15/17	\$158,437,500	\$506,250	994	11/20/17	2,220	12/15/17	\$551,670,000	\$99,400
250	11/20/17	2,525	12/15/17	\$157,812,500	\$431,250	939	11/20/17	2,260	12/15/17	\$530,535,000	\$117,375
249	11/30/17	2,555	12/15/17	\$159,048,750	\$1,033,350	896	11/20/17	2,280	12/15/17	\$510,720,000	\$134,400
251	12/15/17	2,535	12/15/17	\$159,071,250	\$1,204,800	250	11/20/17	2,460	12/15/17	\$153,750,000	\$184,375
257	12/15/17	2,525	12/15/17	\$162,231,250	\$1,117,950	798	11/20/17	2,340	12/15/17	\$466,830,000	\$189,525
252	12/15/17	2,515	12/15/17	\$158,445,000	\$995,400	667	11/20/17	2,380	12/15/17	\$396,865,000	\$216,775
253	12/15/17	2,505	12/15/17	\$158,441,250	\$904,475	1,078	11/20/17	2,320	12/15/17	\$625,240,000	\$229,075
400	12/15/17	2,435	12/15/17	\$243,500,000	\$790,000	490	11/20/17	2,440	12/15/17	\$298,900,000	\$287,875
250	12/15/17	2,485	12/15/17	\$155,312,500	\$750,000	844	11/20/17	2,400	12/15/17	\$506,400,000	\$327,050
244	12/15/17	2,475	12/15/17	\$150,975,000	\$677,100	695	11/20/17	2,420	12/15/17	\$420,475,000	\$330,125
200	12/15/17	2,495	12/15/17	\$124,750,000	\$650,000	1,345	11/20/17	2,360	12/15/17	\$793,550,000	\$369,875
510	12/29/17	2,425	3/16/18	\$309,187,500	\$1,287,750	548	11/30/17	2,120	12/15/17	\$290,440,000	\$61,650
<b>3,611</b>				<b>\$2,253,093,750</b>	<b>\$10,936,325</b>	373	11/30/17	2,200	12/15/17	\$205,150,000	\$65,275
						498	11/30/17	2,160	12/15/17	\$268,920,000	\$68,475
						489	11/30/17	2,180	12/15/17	\$266,505,000	\$73,350
						509	11/30/17	2,220	12/15/17	\$282,495,000	\$101,800
<b>CALL OPTIONS SOLD</b>											
						498	11/30/17	2,260	12/15/17	\$281,370,000	\$136,950
217	11/20/17	2,620	12/15/17	\$142,135,000	\$73,238	693	11/30/17	2,280	12/15/17	\$395,010,000	\$216,563
1,179	11/20/17	2,610	12/15/17	\$141,592,500	\$707,400	538	11/30/17	2,360	12/15/17	\$317,420,000	\$302,625
351	11/30/17	2,610	12/15/17	\$141,592,500	\$438,750	455	11/30/17	2,380	12/15/17	\$270,725,000	\$307,125
783	11/30/17	2,620	12/15/17	\$142,135,000	\$606,825	938	11/30/17	2,300	12/15/17	\$539,350,000	\$328,300
1,188	11/30/17	2,630	12/15/17	\$142,677,500	\$579,150	750	11/30/17	2,340	12/15/17	\$438,750,000	\$356,250
735	12/15/17	2,650	12/15/17	\$143,762,500	\$551,250	1,003	11/30/17	2,320	12/15/17	\$581,740,000	\$413,738
1,051	12/15/17	2,660	12/15/17	\$144,305,000	\$578,050	943	11/30/17	2,400	12/15/17	\$565,800,000	\$742,613
540	12/15/17	2,630	12/15/17	\$142,677,500	\$783,000	1,088	11/30/17	2,420	12/15/17	\$658,240,000	\$1,020,000
1,009	12/15/17	2,640	12/15/17	\$143,220,000	\$1,034,225	250	12/15/17	2,100	12/15/17	\$131,250,000	\$62,500
762	12/29/17	2,670	3/16/18	\$144,847,500	\$552,450	489	12/15/17	2,080	12/15/17	\$254,280,000	\$110,025
636	12/29/17	2,650	3/16/18	\$143,762,500	\$795,000	505	12/15/17	2,140	12/15/17	\$270,175,000	\$151,500
1,134	12/29/17	2,660	3/16/18	\$144,305,000	\$1,077,300	490	12/15/17	2,160	12/15/17	\$264,600,000	\$165,375
255	12/29/17	2,680	3/16/18	\$145,390,000	\$143,438	726	12/15/17	2,120	12/15/17	\$384,780,000	\$199,650
<b>9,840</b>				<b>\$1,862,402,500</b>	<b>\$7,920,076</b>	552	12/15/17	2,180	12/15/17	\$300,840,000	\$213,900
						741	12/15/17	2,220	12/15/17	\$411,255,000	\$361,238
						200	12/15/17	2,435	12/15/17	\$121,750,000	\$395,000
						744	12/15/17	2,240	12/15/17	\$416,640,000	\$409,200
						770	12/15/17	2,260	12/15/17	\$435,050,000	\$481,250
						1,245	12/15/17	2,200	12/15/17	\$684,750,000	\$544,687
						746	12/15/17	2,300	12/15/17	\$428,950,000	\$587,475
						763	12/15/17	2,320	12/15/17	\$442,540,000	\$677,162
						1,156	12/15/17	2,280	12/15/17	\$658,920,000	\$809,200
						795	12/15/17	2,340	12/15/17	\$465,075,000	\$814,875
						252	12/29/17	2,180	3/16/18	\$137,340,000	\$151,200
						376	12/29/17	2,140	3/16/18	\$201,160,000	\$183,300
						252	12/29/17	2,220	3/16/18	\$139,860,000	\$185,850
						254	12/29/17	2,240	3/16/18	\$142,240,000	\$209,550
						255	12/29/17	2,260	3/16/18	\$144,075,000	\$232,688
						255	12/29/17	2,280	3/16/18	\$145,350,000	\$261,375
						504	12/29/17	2,160	3/16/18	\$272,160,000	\$270,900
						636	12/29/17	2,200	3/16/18	\$349,800,000	\$421,350
						510	12/29/17	2,300	3/16/18	\$293,250,000	\$592,875
						<b>36,645</b>				<b>\$20,744,460,000</b>	<b>\$15,533,790</b>
										<b>Net Options Portfolio</b>	<b>\$(7,154,191)</b>

Table 2 reports the sensitivity of the market value of the Fund's portfolio of options to changes in the underlying index and to changes in the

volatility implied by its options. On October 31, 2017, LJM's portfolio of options had a market value of -\$7,154,191.

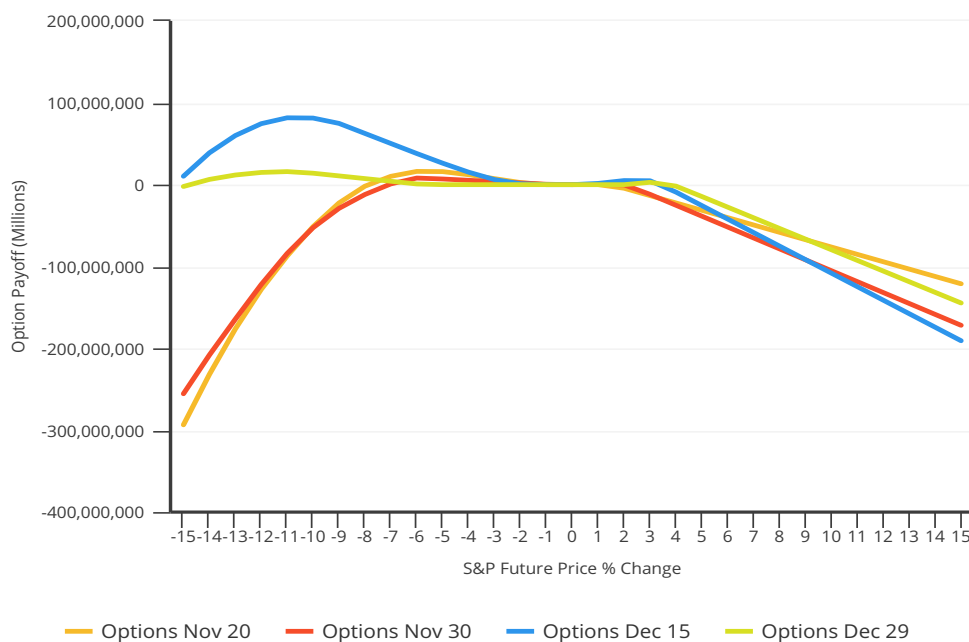
	Total Shares	Average Strike	Term of Options (Month)	Market Value of 10/31/2017	5% Loss in Underlying	Increase 20% in IV	Both
<b>Call Option</b>	1,782	102%	1.63	\$5,363,350	\$60,289	\$37,451,204	\$16,574,477
	-9,840	103%	1.40	\$(7,920,076)	\$(12,187)	\$(155,159,819)	\$(59,764,067)
<b>Put Option</b>	3,611	97%	1.36	\$10,936,325	\$65,352,161	\$64,217,196	\$118,303,807
	-36,645	88%	1.10	\$(15,533,790)	\$(102,997,507)	\$(227,979,279)	\$(460,345,644)
<b>Mark-to-market Values</b>				<b>\$(7,154,191)</b>	<b>\$(37,597,244)</b>	<b>\$(281,470,698)</b>	<b>\$(385,231,428)</b>

If the underlying index fell 5% instantaneously, the option portfolio's market value would fall over \$30 million to -\$37,597,244 because the market value of its large short put option position would increase far more than the market value of its smaller long put position. Surprising to some perhaps, holding the index level constant and increasing the implied volatility 20% (doubling it from 20% to 40%) would cause this option portfolio's market value to fall \$274

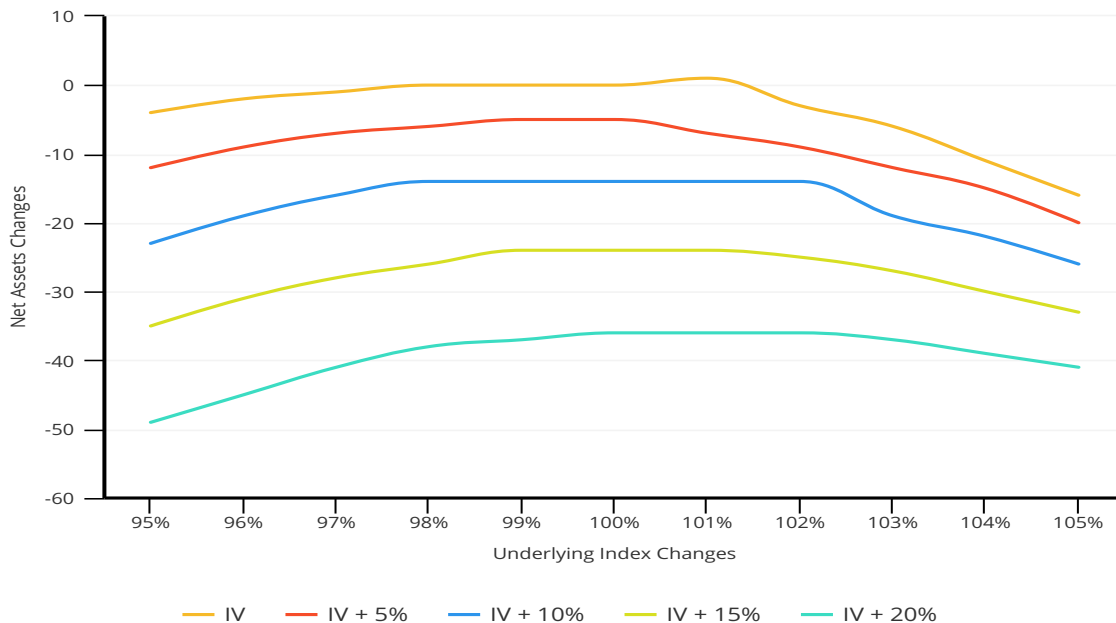
million to -\$281,470,698. Combining both a 5% decline in the index and a 20% increase in the implied volatility would cause the market value of LJM's October 31, 2017 option portfolio to fall \$378 million to -\$385,231,428. That is approximately what happened to the Fund in early February. The losses were larger than what we predict back on the October 31, 2017 holdings suggesting that the Fund increased the riskiness of its holdings between October 31, 2017 and February 4, 2018.

The Fund held short and long put and call options on the S&P 500 futures at four different exercise dates. It is typical in options research to construct a payoff diagram that shows how the option strategy pays off given different levels of the underlying security at expiration. Figure 3 below shows such a payoff diagram. There are four lines – each corresponding to the payoff associated with one of the four expiration dates.

**Figure 3: Payoff at Options Expiration for LJM**



**Figure 4: LJM Fund Sensitivity to Index Levels and Changes in Implied Volatility**



As mentioned earlier, the S&P 500 fell approximately 240 points in the first few days of February. This by itself would have caused losses to the Fund. However, of greater import was the increase in the volatility of the S&P 500. The dramatic swings in the index increased the likelihood that the put options the Fund had shorted would move deeply into the money and dramatically increased put prices.

Figures 3 and 4 show exactly what Fund managers knew about the risk of their strategy. It is also what brokers, who recommended the fund, could have easily known simply by looking at the annual report. These figures can be drawn at any time based on the structure of the portfo-

lio and the then-current market environment. It is clear that the gigantic risks that this Fund posed were known and were understood, even as the Fund touted capital preservation and growth, two objectives that could not be met with this strategy. At this writing, it is not clear what actions the Fund managers took in reaction to the market gyrations. However, it seems likely that the Fund sold or was forced to sell out of their options positions. The Fund has not recovered, trading as of this writing at \$1.98. This, even as the market has recovered over half of its early February losses and volatility has declined significantly.

Someone should look into this.

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