

Vega-weighted Dispersion Trade: Long ETF Straddles, Short Constituent Straddles

Design, structure, and sell an investment portfolio that does not use traditional fixed income instruments

Team 1

Gwyn B, Chris B, Mateo P, Kathryn S, Luke W

Agenda

1. Goal of the Project
2. Why Do Dispersion Trades Work
3. Our Portfolio Strategy
4. Advantages Compared to a Typical Fixed Income Portfolio
5. Why did we choose XLF /U.S Banks
6. Pricing
7. The Outcome
8. The Downside
 - I. Risk
9. Conclusion

Goal of the Project

- Low to Moderate Risk Income Strategy
- Design, structure, and sell an investible portfolio that does not use traditional fixed income instruments
- Use a unique and creative design

Why Do Dispersion Trades Work?



- 1. Single Stocks = "Fear Pricing"** Options on individual banks (JPM, GS) are expensive because investors pay a premium to protect against specific bad news, like missed earnings or management changes.
- 2. Index = "Safety Pricing"** Options on the Index (XLF) are cheap because diversification smooths out the risk. Bad news for one bank is often cancelled out by good news for another.
- 3. The Opportunity** The market consistently overestimates how much individual stocks will move compared to the index. We capture this "Fear Premium" by selling the expensive individual volatility and buying the cheap index protection

Our Portfolio Strategy

The Trade

Long 800 XLF atm calls & 800 atm puts (straddle)

Use atm straddles

Short expensive component atm straddles (*BRK, JPM, V, GS, etc.*)

Jan 15th, 2027 exp across all legs

The Arb Spread: We capture the difference between the Weighted Implied Volatility of Components and the Index Implied Volatility

Key Point: Pure volatility & correlation exposure – no directional bet

TOP TEN HOLDINGS

As of 31-Dec-2025

Name	% of TNA
BERKSHIRE HATHAWAY INC ORD	11.75
JPMORGAN CHASE & CO ORD	11.18
VISA INC ORD	7.55
MASTERCARD INC ORD	5.97
BANK OF AMERICA CORP ORD	4.71
WELLS FARGO & CO ORD	3.73
GOLDMAN SACHS GROUP INC ORD	3.36
MORGAN STANLEY ORD	2.73
CITIGROUP INC ORD	2.66
AMERICAN EXPRESS CO ORD	2.53

Advantages Compared to a Typical Fixed Income Portfolio

1. Uncapped Upside Potential (The "Bull" Case)

- **Fixed Income:** Returns are strictly capped. If the market rallies, you still only get your 5% coupon.
- **Our Advantage:** We participate in the upside. In our "Bull Case" scenario (Market +3%, Vol -2), our profit expands to **\$3,299,320** as volatility crushes. We capture profits that bondholders miss.

2. Immediate "Time Decay" Income

- **Fixed Income:** Relies on waiting for interest payments.
- **Our Advantage:** We generate immediate income from Time Decay (Theta). In a flat market, we pocket the full **\$1,474,195 Net Premium**, generating significant yield without needing the market to move.

3. Self-Funding Structure (Negative Capital Cost)

- **Fixed Income:** Requires sinking 100% of principal upfront to buy the bond.
- **Our Advantage:** We are **paid to enter** the trade. Because the premium sold on the single stocks exceeds the cost of the ETF hedge, we generate a **Net Upfront Credit** (approx. \$1.5M). We are not sinking cash; we are generating a float immediately

Why did we choose U.S Banks ?

1. Strong regulatory Framework

- Under the most comprehensive regulatory systems
- Satisfy capital requirements, liquidity rules, and regular stress tests

2. Systemic Importance

U.S. banks are deeply embedded in the financial system

- Payment system
- Credit Creation
- Financial intermediation

3. Common Macro Exposure

- Interest rate
- Monetary policy expectation
- Financial conditions

Why ETF/XLF

- ETF/XLF aggregates the largest U.S. banks and financial institutions
- ETF implied volatility is structurally lower than single-name implied volatility
- Component options are highly liquid

“Diversification is the only free lunch in finance.”
——Harry Markowitz

Pricing

- **The Trade Structure (Arbitrage Mechanics):**
 - **Income Leg (Selling "Expensive" Vol):** We sell Straddles on the Top 10 Holdings (JPM, BRK.B, etc.).
 - **Gross Premium Collected: \$88,221**
 - **Risk Created (Short Vega):** (48,675) units
 - **Hedge Leg (Buying "Cheap" Vol):** We buy 700 Straddles on XLF (Sector ETF).
 - **Hedge Cost: \$(58,100)**
 - **Protection Added (Long Vega):** +30,072 units
- **The Result (Net Income):**
 - **Net Cash Credit: \$30,121** (immediate upfront cash).
 - **Target Yields:**
 - **Option Income:** ~2.43% annualized.
 - **Total Portfolio Yield: ~6.63%** (Low Risk, High Predictability).

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10 Year Basket Chart

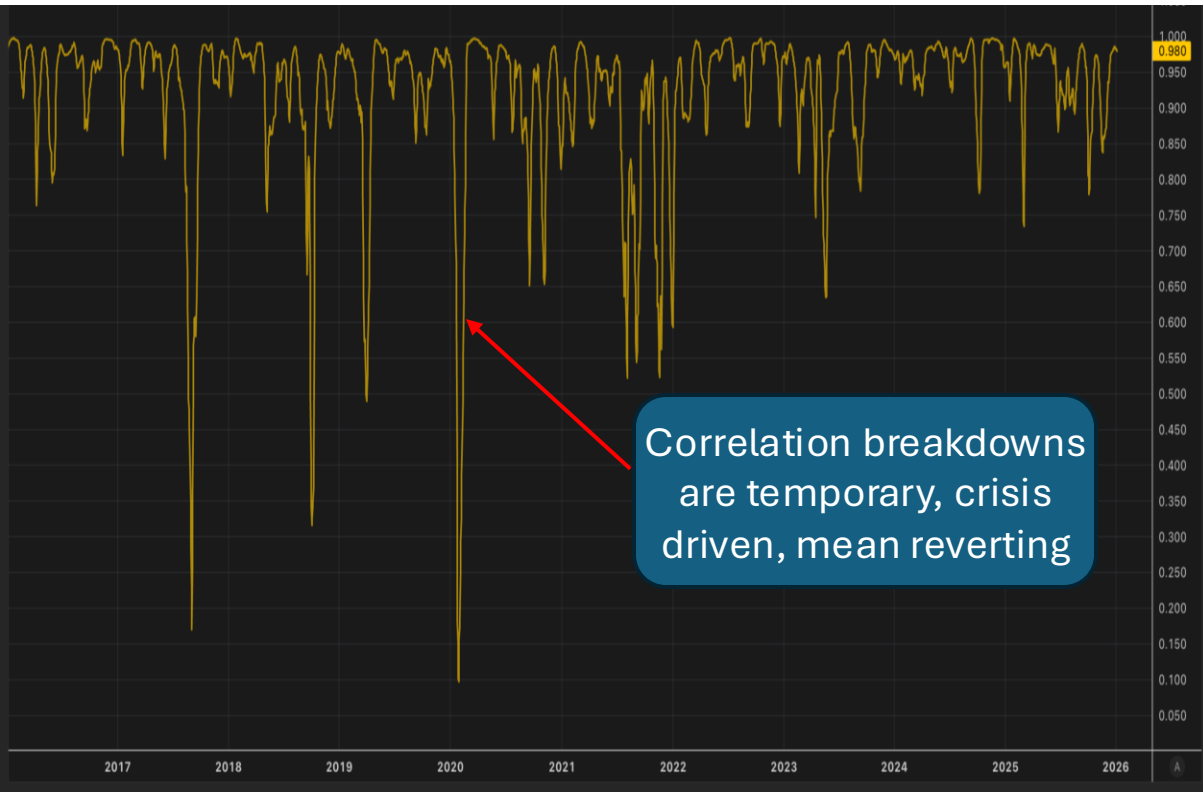


White = Custom Basket
Blue = XLF

- Performance nearly identical in standard market conditions

Implied Volatility Dispersion – Core Thesis

Actual (30d rolling) correlation between selected components & XLF, *since 2016*



Takeaways

XLF options priced significantly lower than component options

Options market is pricing ~63% correlation – actual correlation is 98%

Weighted Averaged Portfolio IV	0.25726
ETF Straddle IV	0.20652
Implied Correlation	0.63374
Actual (30d rolling) Correlation	0.980

XLF Volatility trading at a ~5% discount

Options implied correlation

Actual Correlation

Implied Volatility Dispersion – Trade Breakdown

We are long a certain amount of etf volatility

How do we distribute this vega across our basket?

Allocate vega to components

Vega: how sensitive is an option to volatility

Vega-weighted sizing helper

Total ETF Vega	42940						
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Ticker	Weight	Weight Normalized	Vega/Contract	Target Share	Target Vega	Contracts suggested	Contracts (rounded)
XLF	1.000		21.47	1.00			
BRK/B	0.118	0.209	193.92	0.21	8977.67	-23.15	-23
JPM	0.112	0.199	128.87	0.20	8542.16	-33.14	-33
V	0.076	0.134	136.58	0.13	5768.63	-21.12	-21
MA	0.060	0.106	217.85	0.11	4561.42	-10.47	-10
BAC	0.047	0.084	21.59	0.08	3598.71	-83.34	-83
WFC	0.037	0.066	37.15	0.07	2849.93	-38.36	-38
GS	0.034	0.060	364.48	0.06	2567.23	-3.52	-4
MS	0.027	0.049	72.22	0.05	2085.88	-14.44	-14
C	0.027	0.047	46.84	0.05	2032.39	-21.70	-22
AXP	0.026	0.046	146.98	0.05	1955.99	-6.65	-7

Calculate straddles to enter

Essentially vega neutral – no directional exposure

Weight sum	0.562	1.000					
			Target vega sum	42940.00			
					Vega sum		-21491.56
					Actual Vega sum		-42983.12
					Net Vega Position		-43.12

Normalize weights to equal 1

Pricing Model

Portfolio Pricing Model (Scaled to 500MM)												
Ticker	Contracts	Call Mid	Put Mid	Straddle Price	Cash Flow	Spot	Notional	Straddle Delta	Straddle Vega	Position Delta	Position Vega	
XLF	34,259.71	0.325	0.5	0.83	-2,843,556	55.90	191,511,775.26	0.14	42.96	4697.01	1,471,797.11	
BRK/B	(1,125.68)	0.675	2.35	3.03	341,080	499.77	56,257,917.66	0.18	379.93	-206	(427,678.15)	
JPM	(1,615.10)	2.35	2.25	4.6	742,946	329.79	53,264,402.15	0.15	258.26	-239.68	(417,115.88)	
V	(1,027.79)	2.25	2.4	4.65	477,923	352.23	36,201,892.27	0.19	273.19	-191.99	(280,782.30)	
MA	(489.42)	2.4	1.35	3.75	183,534	580.07	28,390,042.29	0.16	435.35	-79.73	(213,070.92)	
BAC	(4,062.22)	1.35	2.05	3.4	1,381,156	56.18	22,821,567.02	0.20	43.25	-823.82	(175,691.13)	
WFC	(1,859.81)	2.05	2.575	4.63	861,093	95.6	17,779,810.30	0.16	74.37	-303.89	(138,314.28)	
MS	(195.77)	2.575	2.175	4.75	92,991	184.68	3,615,476.07	0.13	144.44	-26.39	(28,276.99)	
GS	(685.19)	2.175	0.2	2.38	163,076	934.83	64,054,008.18	0.16	729.15	-111.34	(499,609.34)	
C	(1,076.73)	0.2	0.275	0.48	51,683	120.6	12,985,408.69	0.17	93.71	-180.25	(100,900.72)	
AXP	(342.60)	0.275	0.375	0.65	22,269	382.89	13,117,700.11	0.19	294.37	-65.98	(100,850.31)	

Before Hedge:	
Net Premium from Shorts	\$4,317,751.17
Total Notional from Shorts	\$308,488,224.74
Monthly Yield from Shorts	1.40%
Target Annual Return from Short	16.80%
Total Delta from Shorts	(2,229.07)
Total Vega from Short	(2,382,290.02)

After Hedge:	
Net Premium	\$1,474,195.29
Total Notional	\$500,000,000.00
Monthly Yield	0.29%
Target Annual Return	3.54%
Portfolio Delta	2,467.94
Portfolio Vega	(910,492.91)

Target Size	\$500,000,000.00
Total Notional	\$10,216,082.00
Scaling Factor	48.94

Outcome Model

In reality, total return will be based on a firms margin requirements - not notional value of contract

Consequently, our real return would be significantly higher than 2%

Portfolio Outcome Model (Scaled)	
Portfolio Delta	2,467.94
Portfolio Vega	(910,492.91)
XLF Price	55.90
Total Notional	500,000,000.00
Net Premium	1,474,195.29

Expected Downside:	(629,619.69)
Expected Outcome:	844,575.61
Expected Return % (Monthly based on notional):	0.17%
Annualized Return (based on notional):	2.03%

Scenario	Stock Move %	Vol Move	Price Change	Price P&L	Vega P&L	Shock P&L	Prob	Total Scenario P&L	Loss % of Portfolio	Vega Share of Loss	Delta Share of Loss	IV Break-Even
Good	3%	-2	1.68	4,138.74	1,820,985.82	\$1,825,124.56	0.35	\$3,299,319.85	0.66%	0.9977	0.0023	1.6146
Base	0%	0	0.00	-	-	\$0.00	0.4	\$1,474,195.29	0.29%	-	-	1.6191
Mild	-5%	3	-2.80	(6,897.89)	(2,731,478.73)	-\$2,738,376.62	0.15	-\$1,264,181.33	-0.25%	0.9975	0.0025	1.6267
Stress	-10%	7	-5.59	(13,795.78)	(6,373,450.37)	-\$6,387,246.15	0.07	-\$4,913,050.86	-0.98%	0.9978	0.0022	1.6343
Crisis	-20%	15	-11.18	(27,591.57)	(13,657,393.65)	-\$13,684,985.22	0.03	-\$12,210,789.93	-2.44%	0.9980	0.0020	1.6494

Outcome Model (Scaled)

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Annualized Return (based on notional):	2.03%												

Results at Scale

Base Case (Flat Market):

- *Condition:* Market moves 0%, Volatility stays flat.
- *Result:* We pocket the time decay (Theta).
- *Profit:* **\$1,474,195** per month.

Best Case (Bull Market):

- *Condition:* Market rallies +3%, Fear (Volatility) drops -2 points.
- *Result:* Our short volatility positions profit rapidly.
- *Profit:* **\$3,299,320** per month.

The Expected:

- Taking all possibilities (Upside, Flat, and Crash) into account, our "Expected Outcome" is a positive **\$844,575** per month.

The Trade Downside

Decoupled Risk: We are Delta Neutral; **99.8%** of the potential loss comes from Volatility expansion (panic), not stock prices falling.

Worst-Case Scenario: In a full "Black Swan" crisis (Market **-20%**, Vol **+15**), our drawdown is capped at just **-2.74%**

The Buffer: We collect **\$1,474,195** in upfront premium, which acts as a "shock absorber" against the initial volatility spike

XLF Price	55.90
Total Notional	500,000,000.00
Net Premium	1,474,195.29

The Trade Downside

Portfolio Downside Model (Scaled)

Portfolio Delta	2,467.94
Portfolio Vega	(910,492.91)
XLF Price	55.90
Total Notional	500,000,000.00
Net Premium	1,474,195.29

Scenario	Stock Move %	Vol Move	Price Change	Price P&L	Vega P&L	Total Downside	Loss as % of Portfolio	Loss/ Net Premium	Vega Share of Loss	Delta Share of Loss	Break Even Vol Move	IV Break Even (vol pts)
Mild	-5%	3	-2.80	(6,897.89)	(2,731,478.73)	-\$2,738,376.62	-0.55%	1.86	0.9975	0.0025	1.6267	25%-25.96%
Stress	-10%	7	-5.59	(13,795.78)	(6,373,450.37)	-\$6,387,246.15	-1.28%	4.33	0.9978	0.0022	1.6343	25%-26%
Crisis	-20%	15	-11.18	(27,591.57)	(13,657,393.65)	-\$13,684,985.22	-2.74%	9.28	0.9980	0.0020	1.6494	26.09%

Vol Move Key:	
+3 vol	means IV goes from 25% to 28%
+7 vol	means IV goes from 25% to 32%
+15 vol	means IV goes from 25% to 40%

Risks

1. Volatility Spike Risk – A sharp increase in implied volatility

→ Short straddle will lose value

→ ETF hedge will underperform initially

2. Correlation Breakdown (Dispersion Risk) – Stocks move independently instead of together

→ Losses on short single-stock straddles

→ Limited gains from ETF straddle

3. Idiosyncratic Event Risk – Company-specific events

→ Loss on that specific straddle

Conclusion

ETF options trade at a material volatility discount, our strategy exploits a structural market

- Non-directional Alpha

Complex, driven by the Greeks, requires advanced knowledge

- Strategy can be dialed for individual risk tolerance, capital requirements

This is a “**sexy**,” non-vanilla investment strategy – requiring no upfront capital

- While this makes profit hard to calculate, it provides an exceptional investment opportunity

This strategy delivers differentiated returns by exploiting a structural mispricing in correlation — a risk premium most investors never touch

We are trading what nobody hedges — correlation



Thank You

Appendix below

Appendix

Proof of Implied Correlation from Options

71																		
72	Ticker	Weight	Call IV	Put IV	Straddle IV	w * Straddle IV	Weight Norm											
73	BRK/B	0.1175	0.19268	0.18577	0.18923	0.0222	0.2091											
74	JPM	0.1118	0.28238	0.26714	0.27476	0.0307	0.1989											
75	V	0.0755	0.24809	0.23590	0.24200	0.0183	0.1343											
76	MA	0.0597	0.26022	0.23052	0.24537	0.0146	0.1062											
77	BAC	0.0471	0.28419	0.26594	0.27507	0.0130	0.0838											
78	WFC	0.0373	0.30343	0.28157	0.2925	0.0109	0.0664											
79	MS	0.0336	0.30154	0.28242	0.29198	0.0098	0.0598											
80	GS	0.0273	0.32872	0.32301	0.325865	0.0089	0.0486											
81	C	0.0266	0.32193	0.32997	0.32595	0.0087	0.0473											
82	AXP	0.0256	0.301456	0.281634	0.291545	0.0075	0.0456											
83																		
84																		
85					Weighted Averaged Portfolio IV	0.25726	=SUM(F73:F82)/SUM(B73:B82)	A	0.00817	=SUMPRODUCT(\$G\$73:\$G\$82*\$G\$73:\$G\$82, \$E\$73:\$E\$82*\$E\$73:\$E\$82)								
86					ETF Straddle IV	0.20652	=AVERAGE(L13:L14)	B	0.05441	=SUMPRODUCT(\$G\$73:\$G\$82, \$D\$73:\$D\$82)^2 - I85								
87																		
88								Implied Correlation	0.63374	=((\$F\$86^2) - I85) / I86								
89																		
90																		

