

VIX Volatility Strategy - Project Checkpoint & Documentation

Project Overview

Strategy: SHORT 1x 50Δ call + LONG 2x 10Δ calls + VIX futures hedge

Objective: Daily rebalanced delta-neutral volatility strategy with monthly option rollovers

Environment: Windows VM with Bloomberg Terminal API access

Date Completed: July 20, 2025

✅ Phase 1: COMPLETED - Bloomberg API Integration & Ticker Discovery

Critical Discoveries Made

1. Working Bloomberg Ticker Formats

After extensive testing, we discovered the correct formats for your Bloomberg setup:

- **VIX Spot Index:** `VIX Index`
- **VIX Futures:** `UX1 Index` (front month), `UX2 Index` (2nd month), etc.
- **VIX Options:** `VIX MM/DD/YY C{strike} Index`
 - Example: `VIX 08/20/25 C20 Index`
 - **Critical:** The MM/DD/YY format with C{strike} (no space) is essential

2. Available Bloomberg Fields

Option Greeks (Working Fields):

- `DELTA_MID`: 0.481 (for delta targeting)
- `GAMMA_MID`: 0.015208
- `THETA_MID`: -0.030085
- `VEGA_MID`: 0.022709
- `IVOL_MID`: 87.20995

Price Fields:

- `PX_LAST`, `PX_BID`, `PX_ASK`, `PX_VOLUME`

Futures Fields:

- `PX_LAST`, `PX_SETTLE`, `PX_VOLUME`, `OPEN_INT`

Current Strategy Position (Live Data)

Expiry: August 20, 2025

- **SHORT 1x 50Δ:** `VIX 08/20/25 C20 Index` @ \$1.61 ($\Delta=0.481$)
- **LONG 2x 10Δ:** `VIX 08/20/25 C38 Index` @ \$0.38 ($\Delta=0.107$)
- **Hedge:** UX1 Index futures

Net Position Delta: $(-1 \times 0.481) + (2 \times 0.107) = -0.267$ **Futures Hedge Needed:** +0.267 UX1 contracts

Files Created & Data Collected

Core Implementation Files

1. `final_vix_strategy.py` - Main strategy implementation
2. `vix_ticker_format_discovery.py` - Ticker format testing
3. `clean_vix_strategy_runner.py` - Simplified data collection
4. `windows_scheduler_setup.py` - Daily automation setup

Data Files Generated

- `current_vix_options_*.csv` - 19 current options with Greeks
- `target_positions_*.csv` - 2 specific positions (50Δ short + 10Δ long)
- `ux1_futures_data_*.csv` - 124 records of UX1 futures data
- `expiry_calendar_*.json` - 16 monthly expiry dates
- `final_strategy_summary_*.json` - Complete strategy configuration

Key Discovery Files

- `vix_format_discovery_*.json` - 60 ticker formats tested, 1 working
 - `robust_vix_options_test_*.json` - Detailed Bloomberg API testing
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Technical Implementation Details

Bloomberg API Connection Pattern

```
python
```

```
# Working connection sequence
sessionOptions = blpapi.SessionOptions()
session = blpapi.Session(sessionOptions)
session.start()
session.openService("//blp/refdata")
refDataService = session.getService("//blp/refdata")
```

Working Request Pattern for Options

```
python

request = refDataService.createRequest("ReferenceDataRequest")
request.getElement("securities").appendValue("VIX 08/20/25 C20 Index")
request.getElement("fields").appendValue("DELTA_MID")
request.getElement("fields").appendValue("PX_LAST")
session.sendRequest(request)
```

VIX Expiry Calendar Logic

- **Expiry Date:** 3rd Wednesday of each month
- **Calculation:** First day of month → find first Wednesday → add 14 days
- **Format:** MM/DD/YY for Bloomberg tickers

Contract Specifications

- **VIX Options:** \$100 multiplier per point
- **UX1 Futures:** \$1000 multiplier per point
- **Delta Targeting:** ± 0.05 delta points acceptable for entry

Strategy Logic Implemented

Position Initiation (Monthly)

1. **Find 50Δ call** closest to 0.50 delta → SHORT 1 contract
2. **Find 10Δ call** closest to 0.10 delta → LONG 2 contracts
3. **Calculate net delta:** $(\text{short_qty} \times \text{short_delta}) + (\text{long_qty} \times \text{long_delta})$
4. **Hedge with UX1:** $\text{futures_position} = -\text{net_delta}$

Daily Rebalancing (To Be Implemented)

1. **Track specific contracts** identified at initiation






2. **Monitor daily delta changes** for each position
3. **Adjust UX1 futures** to maintain delta neutrality
4. **Calculate daily P&L** on all components

Monthly Rolling (To Be Implemented)

1. **Close all positions** day before expiry
 2. **Find new 50Δ and 10Δ** options in next expiry
 3. **Initiate new positions** with updated hedge
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Data Quality & Validation

Successful Tests Completed

-  **VIX Index connectivity:** 257 records collected
-  **UX1-UX6 futures:** All formats working, 372 records
-  **VIX options format:** 1/60 formats working (MM/DD/YY C{strike})
-  **Option Greeks availability:** 9/10 Greek fields working
-  **Live position identification:** Both 50Δ and 10Δ found

Known Limitations

- **Options format sensitivity:** Only MM/DD/YY C{strike} format works
 - **Strike availability:** Not all strikes may be liquid for all expiries
 - **Weekend/holiday data:** Bloomberg may have gaps
 - **Greeks accuracy:** Dependent on market conditions and volatility
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Next Phase: Historical Backtesting System

Requirements for Phase 2

1. **Historical position identification** for past 5 years
2. **Daily tracking** of specific option contracts
3. **UX1 futures hedge calculation** and P&L
4. **Monthly roll management** and transaction costs
5. **Performance metrics** calculation (Sharpe, drawdown, etc.)

Implementation Strategy

1. **Generate historical expiry calendar** (60+ expiries over 5 years)
2. **Identify monthly entry points** using historical option data
3. **Track daily position P&L** for specific contracts
4. **Calculate hedge adjustments** using UX1 futures
5. **Aggregate performance metrics** and risk statistics

Expected Deliverables

- **Historical P&L series** (daily, 5 years)
 - **Risk metrics** (max drawdown, volatility, Sharpe ratio)
 - **Strategy attribution** (options vs futures P&L)
 - **Optimization insights** (strike selection, delta targets)
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Backup & Recovery

Critical Files to Preserve

- All `.py` implementation files
- All data files in `/data/final_vix_strategy/`
- `final_strategy_summary_*.json` (contains working ticker formats)
- This documentation file

Recovery Instructions

1. **Bloomberg API:** Ensure blpapi package installed
 2. **Data directory:** Recreate `/data/final_vix_strategy/` structure
 3. **Ticker formats:** Reference `final_strategy_summary_*.json` for working formats
 4. **Credentials:** Update email/Slack webhooks in config files
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Project Status: PHASE 1 COMPLETE

ACHIEVEMENTS:

- Bloomberg API integration working
- VIX ticker formats discovered and validated
- Live strategy positions identified
- Complete data collection framework operational

- Daily automation setup ready

READY FOR PHASE 2:

- Historical backtesting system development
 - 5-year performance analysis
 - Strategy optimization and risk management
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Checkpoint completed: July 20, 2025

Next milestone: Historical backtesting system implementation