GLASSBOX Portfolio Optimization & Beta Hedging Tool Introduction Guide | Version 1.0 | February 2026

IMPORTANT DISCLAIMERS

1. **Not Financial Advice:** Glassbox is an educational and analytical tool only. The recommendations and analysis provided are not financial advice. Always consult with a qualified financial advisor before making investment decisions.

2. **Historical Data Limitations:** Analysis is based on historical price data. Past performance does not guarantee future results. Market conditions change rapidly, and historical correlations may break down.

3. **Model Assumptions:** Our efficient frontier assumes normal distributions and stable correlations. Real markets exhibit fat tails, volatility clustering, and regime changes that models cannot predict.

4. **Beta Calculation Risk:** Beta is calculated from historical data and may not reflect future market sensitivity. Market betas change during crises and tail events.

5. **Hedging Costs Not Included:** Recommendations do not account for transaction costs, slippage, margin interest, or commissions. Actual costs may significantly impact returns.

6. **Data Quality:** While we use Yahoo Finance data, errors in price data, corporate actions, or adjustments may occur. Verify critical data independently before trading.

7. **Use at Your Own Risk:** Trading and investing carry substantial risk of loss. Use Glassbox's recommendations at your own discretion and risk tolerance.

What is Glassbox?

Glassbox is a modern portfolio optimization and beta hedging tool designed for individual investors, financial advisors, and quantitative analysts. It helps you discover optimal asset allocations, understand market exposure, and implement hedging strategies.

Three Core Features

1. **Efficient Frontier Analysis:** Visualize the risk-return tradeoff and identify optimal portfolios (GMV, Max Sharpe, Target).

2. **Beta Calculation:** Understand your portfolio's sensitivity to S&P 500 market movements.

3. **Hedging Recommendations:** Get specific sizing for market-neutral or target-beta positions using SPY or ES futures.

Key Concepts

• **Efficient Frontier:** The efficient frontier is the set of optimal portfolios offering the highest expected return for a given risk level. Three key portfolios:

  ◦ **Global Minimum Variance (GMV):** Lowest possible volatility. Good for conservative investors.

  ◦ **Maximum Sharpe Ratio:** Best risk-adjusted returns. Optimal for most investors.

  ◦ **Target Portfolio:** Any custom allocation matching your specific risk/return target.

• **Beta:** Beta measures portfolio sensitivity to S&P 500 movements. Beta = 1.0 means portfolio moves with the market. Beta = 1.5 means 50% more volatile than the market.

• **Hedging:** Reduces market exposure by shorting SPY (ETF) or ES (futures). For example, a beta-1.5 portfolio requires shorting specific amounts of SPY to achieve market-neutral exposure (beta = 0).

How to Use Glassbox

• **Step 1: Select Assets** Enter your target stocks (e.g., AAPL, MSFT, NVDA). SGOV is automatically included as a risk-free asset. Specify quantities you own or plan to own.
• **Step 2: Run Analysis** Click "Analyze" to fetch historical data (2 years by default) and calculate optimal portfolios. Analysis completes in 10-30 seconds.
• **Step 3: Review Results**
  ◦ **Efficient Frontier Chart** shows risk vs. return. Your current portfolio is marked on the chart.
  ◦ **GMV Portfolio** displays lowest-risk allocation and expected performance.
  ◦ **Max Sharpe Portfolio** shows best risk-adjusted returns and asset weights.
• **Step 4: Consider Hedging** Review your portfolio beta and hedging recommendations. Short the recommended SPY shares or ES contracts to achieve zero market exposure or custom target beta.
• **Step 5: Save & Track** Save analysis to compare multiple portfolio strategies over time.

Known Limitations

• **Historical Data Only:** Correlations and volatility may change significantly.
• **No Transaction Costs:** Real trading involves commissions, spreads, and taxes.
• **Assumes Normal Distributions:** Real markets exhibit extreme events that models underestimate.
• **Rebalancing Not Modeled:** Maintaining optimal weights requires periodic rebalancing with costs.
• **No Fundamental Analysis:** Purely statistical. Does not assess company fundamentals or strategic risks.
• **Limited Time Horizon:** Structural market changes may invalidate recommendations.

Ready to Get Started?

1. Visit glassbox.space and click "Start Analysis"
2. Enter your target tickers and quantities
3. Review your efficient frontier and optimal allocations
4. Save your analysis for future reference
Remember: Glassbox is a tool for education and analysis. Always consult with a financial advisor before making investment decisions.

Glassbox — Portfolio Optimization with Transparency