
# Concentration and Convexity: A Case Study of the iShares Russell Top 200 Growth ETF (IWY)

## Stress Testing, Scenario Analysis, and Policy Implications in an AI-Driven Market Cycle

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# Contents

# 1 Introduction

The iShares Russell Top 200 Growth ETF (IWY) is designed to replicate the performance of the Russell Top 200 Growth Index, thereby granting investors exposure to the largest growth-oriented companies in the United States. As of September 2025, the ETF is heavily tilted towards mega-cap technology firms, with NVIDIA, Microsoft, Apple, Amazon, Alphabet, and Meta collectively comprising the bulk of its top holdings. The top ten constituents alone account for approximately 62% of assets under management, underscoring a high level of concentration.

In recent years, IWY has outperformed broad-based benchmarks such as the S&P 500, largely due to the exceptional growth of firms at the forefront of artificial intelligence (AI), cloud infrastructure, and digital platform economies. Yet, the valuation of these companies has simultaneously risen to historically elevated levels, with IWY's trailing P/E ratio approaching 45x compared to the S&P 500's ~25x. This dynamic raises questions about whether IWY's performance is sustainable under alternative macroeconomic and sectoral conditions.

The purpose of this case study is to conduct a structured stress-test of IWY's potential performance under different earnings and valuation assumptions. By doing so, it contributes to the broader discourse on concentration risk, thematic investing, and the valuation of AI-linked equities in exchange-traded funds (ETFs).

# 2 Literature and Theoretical Context

## 2.1 Concentration Risk in ETFs

Scholarly work has consistently emphasized the dangers of portfolio concentration in index-linked products. Elton et al. (2002) and Cremers et al. (2016) demonstrate that ETFs tracking narrow or style-specific indices often derive the bulk of their performance from a small set of dominant firms. While this concentration can yield extraordinary returns during sectoral booms, it simultaneously amplifies idiosyncratic risk when those few firms falter. IWY illustrates this dynamic clearly. Despite holding more than one hundred securities, its performance is overwhelmingly shaped by the so-called "Magnificent 7," aligning its profile more closely with a thematic or sector ETF than with a genuinely diversified growth benchmark.

## 2.2 Valuation Sensitivity

A second strand of literature addresses the valuation dynamics of growth equities. Campbell and Shiller (1998) formalized how shifts in discount rates and growth expectations translate into volatility in equity valuations. Growth stocks, particularly in technology, are widely regarded as long-duration assets—their valuations are disproportionately dependent on earnings far into the future. This structural feature renders them acutely sensitive to changes in monetary policy and investor sentiment. In periods of technological exuberance, such as the current wave of optimism

around artificial intelligence, multiples can expand far beyond historical averages. Yet even modest increases in real rates or adjustments in earnings forecasts can provoke sharp repricing, underscoring the fragility of growth-led rallies.

### 2.3 Stress Testing and Scenario Analysis

Finally, the literature on financial stability provides tools for assessing resilience under stress. Regulatory frameworks such as Basel III and the Federal Reserve's Comprehensive Capital Analysis and Review (CCAR) have institutionalized **stress testing** as a forward-looking measure of systemic risk in the banking sector. Translating these methods into asset-level analysis offers valuable insights for ETF evaluation. Traditional metrics such as historical beta or tracking error capture only past co-movement, whereas scenario-based analysis reveals vulnerabilities under non-linear shocks to earnings, valuations, and policy environments. Applying stress testing to IWY allows analysts to move beyond backward-looking performance attribution and instead assess how concentrated exposures behave under plausible but adverse future states of the world.

## 3 Methodology

### 3.1 Portfolio Decomposition

To strengthen the robustness of the scenario analysis, the empirical design integrates quantitative stress-testing with statistical validation techniques. This dual approach ensures that projected outcomes are not only internally consistent with scenario assumptions but also externally anchored in historical and econometric evidence. Four methodological steps were undertaken:

**(a) Portfolio Concentration Analysis**

IWY's holdings were decomposed into two segments: the ten largest constituents, representing 62.1 percent of portfolio weight, and the remainder, constituting 37.9 percent. To formally quantify concentration risk, both the Herfindahl–Hirschman Index (HHI) and the Gini coefficient were computed. These measures provide complementary perspectives on the extent to which a small number of firms dominate portfolio risk, and whether apparent diversification is in fact illusory.

**(b) Correlation and Beta Estimation**

To assess co-movement and factor sensitivity, rolling 36-month correlations were calculated between IWY and major benchmarks, including the S&P 500 (SPY) and the Nasdaq-100 (QQQ). Firm-level correlations among IWY's top holdings were also estimated to evaluate intra-portfolio diversification benefits. In addition, standard Capital Asset Pricing Model (CAPM) regressions and Fama–French multi-factor regressions were employed to estimate IWY's beta, alpha, and exposures to systematic risk factors such as size, value, momentum, and profitability. This step

clarifies whether IWY delivers idiosyncratic exposure or primarily repackages well-known factor tilts.

**(c) Macro-Financial Linkages**

IWY's excess returns were regressed against changes in the 10-year U.S. Treasury yield and Federal Funds futures to evaluate sensitivity to monetary policy and interest rate regimes. This analysis was intended to capture *duration risk*, a characteristic often pronounced in growth-oriented portfolios whose valuations depend disproportionately on distant cash flows. By explicitly linking IWY's returns to macro-financial shocks, the analysis grounds the scenario design in empirically observed sensitivities.

**(d) Scenario Simulation and Stress Testing**

Stress scenarios were parameterized using a combination of consensus forward earnings estimates and historical analogues drawn from episodes of market dislocation (e.g., the dot-com correction, the 2008 Global Financial Crisis, and the 2022 tightening cycle). Monte Carlo simulations were conducted to introduce stochastic variation around baseline assumptions, thereby generating confidence bands around projected outcomes. This technique enhances robustness by recognizing uncertainty in both earnings' growth and valuation multiple paths.

## 3.2 Analytical Framework

The estimation of IWY's prospective performance is modeled using a multi-factor valuation framework that incorporates both fundamental and market-based dynamics. Instead of assuming a purely additive link between earnings growth and multiple expansion/contraction, this approach embeds sensitivities that reflect the complex behavior of growth equities.

**a) Earnings Growth Dynamics**

Earnings growth is proxied by forward EPS expectations for each constituent. However, instead of treating growth as exogenous, it is modeled as a function of two drivers:

$$g_i = g_i^{consensus} + \epsilon^{macro} + \epsilon^{sector}$$

where $g_i^{consensus}$ is the consensus estimate for firm $i$, $\epsilon^{macro}$ represents shocks from aggregate conditions (GDP growth, inflation, monetary policy), and $\epsilon^{sector}$ captures industry-specific risks (e.g., semiconductor supply chains, AI adoption cycles).

This allows stress tests to vary not only the level of earnings but also the dispersion of earnings risk across sectors.

**b) Valuation Multiples**

Valuation is expressed as a forward price-to-earnings (P/E) multiple that is endogenously linked to discount rates and risk premia:

$$P/E_I = \frac{1 - b_i}{r_f + \pi + \lambda_i + g_i}$$

where $b_i$ is the payout ratio, $r_f$ the risk-free rate, $\Pi$ the equity risk premium, $\lambda_i$ the firm-specific risk adjustment, and $g_i$ the growth rate.

This formulation embeds duration risk: higher discount rates $(r_f + \pi)$ exert disproportionate downward pressure on long-duration growth equities. Multiples are therefore not shocked arbitrarily but adjusted in response to plausible macro-financial conditions (e.g., rate hikes, risk-off sentiment).

**c) Interaction Effects**

The model explicitly recognizes that earnings growth and multiple dynamics are **not independent**. Faster earnings growth can offset some multiple contraction by improving investor sentiment and reducing perceived risk $\lambda_i$. Conversely, slowing growth may magnify multiple compression as investors demand higher premia.

This can be represented as:

$$\Delta P_i = \Delta EPS_i + \beta * \Delta Multiple_i(g_i)$$

where $\beta$ captures the elasticity of multiples to changes in earnings growth. Empirically, this elasticity is higher for technology firms, where valuation narratives are tightly coupled to long-term growth prospects.

**d) Portfolio Aggregation**

Returns are aggregated across IWY's holdings as:

$$R_{IWY} = \sum_{i=1}^{n} \omega_i R_i$$

where $\omega_i$ is the portfolio weight of security $i$, and $R_i$is the scenario-adjusted return derived from the earnings-multiple interaction model.

For tractability, this case study groups holdings into two buckets (Top 10 vs. remainder), but the framework is sufficiently flexible to allow security-level simulations if forward EPS and multiple data are available.

## 3.3 Scenario Design

To assess the potential range of outcomes for IWY, forward-looking scenarios were developed that integrate narratives, earnings assumptions, valuation dynamics, and portfolio implications. These scenarios capture both upside potential and downside risks under varying macroeconomic and sectoral conditions. Exhibit 6 provides a structured summary of the five regimes considered.

## 3.4 Data Sources and Period

The empirical analysis is grounded in publicly available financial and macroeconomic datasets. These sources provide the necessary inputs for portfolio concentration metrics, correlation testing, regression analysis, and scenario calibration. In keeping with best practice, reliance was placed on transparent and replicable datasets. Exhibit 5 summarizes the data sources, coverage, and their role in the analysis.

# 4 Empirical Results

## 4.1 Concentration and Diversification Metrics

The structural dependence of IWY on a handful of mega-cap growth firms is confirmed through both numerical measures and graphical analysis. As of 2025, the ten largest positions—led by NVIDIA (12.9%), Microsoft (11.5%), and Apple (10.5%)—account for 62.1 percent of total assets. Quantitative concentration indicators reinforce this: the Herfindahl–Hirschman Index (HHI) is estimated at 0.054, corresponding to an effective number of holdings of ~19, and the Gini coefficient of 0.55 underscores pronounced inequality in portfolio weights.

This is visualized in Exhibit 1, which compares IWY's Lorenz curve against SPY. The divergence illustrates how IWY's diversification is largely illusory relative to a broad-market ETF.

## 4.2 Performance Context

Performance history illustrates the volatility associated with this concentration. Between 2020 and 2024, IWY's annual total returns ranged from –29.9 percent (2022) to +46.5 percent (2023), with three of the five years exceeding +30 percent. These swings align with the ETF's fact-sheet beta of 1.09 relative to the S&P 500 and three-year standard deviation of ~18 percent. IWY's trajectory therefore reflects the high-amplitude behavior typical of concentrated growth exposure.

## 4.3 Correlation Analysis

Correlation testing further evidences limited diversification. Rolling 36-month correlations show IWY tracking the Nasdaq-100 (QQQ) more closely ($\rho \approx 0.95$) than the S&P 500 ($\rho \approx 0.89$).

At the constituent level, intra-portfolio diversification is minimal: the average pairwise correlation among the top five holdings (NVIDIA, Microsoft, Apple, Amazon, Alphabet) exceeds 0.75. This pattern is illustrated in Exhibit 2, where IWY, its benchmarks, and its largest constituents cluster together with strong co-movement.

## 4.4 Scenario Simulation Outcomes

Stress testing was conducted to project IWY's performance under five forward-looking regimes. Outcomes combine observed concentration, empirical volatility, and calibrated shocks to earnings growth and valuation multiples. Exhibit 4 presents the modeled ranges, while Exhibit 3 provides a visual comparison with SPY and QQQ.

## 4.5 Result Interpretation

Three empirical insights emerge from the results:

1. **Asymmetric outcomes.** IWY's upside is concentrated in the *Technology-Led Expansion* scenario, where returns reach +16% to +20%. Downside risks are significantly larger, with potential losses of –20% to –28% in recessionary regimes. Monte Carlo simulations confirm that downside tails are fatter than upside gains.

2. **Duration sensitivity.** In the *Policy Tightening Shock* case, double-digit earnings growth is insufficient to offset valuation compression, leaving returns close to zero. This outcome is consistent with IWY's empirically observed rate sensitivity and high valuation multiples.

3. **Diversification illusion.** Despite nominally holding over 100 securities, the effective number of holdings (~19) and high intra-top-10 correlations confirm that IWY's risk-return profile is functionally driven by a handful of mega-cap technology stocks.

**Benchmark Comparison**

Relative to broad benchmarks, IWY exhibits higher convexity to growth narratives. In favorable conditions it outperforms both the S&P 500 and the Nasdaq-100, while in neutral or adverse environments it underperforms due to concentration and valuation risk. This asymmetric profile suggests that IWY is best treated as a satellite allocation for investors seeking targeted AI and technology exposure, rather than as a diversified core holding.

# 5 Discussion

The analysis of IWY reveals a portfolio shaped by structural concentration, asymmetric risk–return dynamics, and vulnerability to both market forces and policy shocks. While nominally diversified across more than 100 securities, IWY's effective diversification is closer to 19 holdings, with performance overwhelmingly dominated by a handful of mega-cap technology firms. This concentration gives rise to what can be termed a "diversification illusion"—investors perceive breadth, but risk is largely determined by the fate of a narrow set of correlated stocks.

Equally important is the ETF's convex risk profile. In scenarios of rapid AI adoption and technology-led expansion, IWY generates outsized returns, outperforming broad benchmarks. Yet when earnings momentum falters or policy conditions tighten, drawdowns are sharper than those of SPY or QQQ. IWY thus behaves less like a balanced growth proxy and more like a leveraged technology option, amplifying both upside and downside.

A third critical dimension is IWY's duration sensitivity. Growth equities, with valuations tied to distant cash flows, respond strongly to discount rate shifts. Even double-digit earnings growth is insufficient to offset the multiple compression triggered by higher real rates. IWY therefore operates as a "long-duration asset," systematically vulnerable to monetary tightening.

Finally, correlation testing confirms IWY's role as a redundant beta exposure. With a correlation of ~0.95 to QQQ and high intra-top-10 co-movement (>0.75), IWY offers little incremental diversification. In practice, it is less a growth-style ETF and more a concentrated repackaging of the mega-cap technology trade.

## 5.1 Macro Policy Risks

IWY's fortunes are deeply intertwined with the trajectory of macroeconomic policy.

a) **Monetary Policy:** The ETF's duration profile makes it acutely sensitive to the Federal Reserve's policy stance. A 100-basis-point rise in long-term yields can contract valuation multiples by 15–20%, neutralizing earnings growth. Periods of tightening thus carry disproportionate downside risk.

b) **Fiscal and Industrial Policy:** Government investment in digital infrastructure and semiconductor capacity—exemplified by the CHIPS Act—provides powerful tailwinds to IWY's largest constituents. Yet fiscal retrenchment or subsidy rollbacks could undermine these supports, turning policy risk into a double-edged sword.

c) **Geopolitics and Trade:** As a technology-heavy ETF, IWY is indirectly exposed to U.S.–China tensions. Export controls on semiconductors, restrictions on AI hardware, or supply-chain disruptions would directly affect NVDA, AAPL, and AVGO, magnifying volatility.

Briefly put, IWY is not only a reflection of market cycles but also a policy-sensitive vehicle, with returns contingent on shifts in monetary, fiscal, and trade regimes.

## 5.2 Micro Policy Risks

At the micro level, IWY's top holdings face firm-specific policy exposures that aggregate into ETF-level risk.

a) **Antitrust and Regulation:** Big Tech firms—Microsoft, Apple, Amazon, Google, Meta—are under sustained antitrust scrutiny in the U.S. and EU. Regulatory interventions, from breakups to restrictions on platform dominance, could structurally erode their margins.

b) **Taxation:** Ongoing implementation of global minimum corporate taxes and digital service levies will compress net income, particularly for firms reliant on international profit shifting.

c) **ESG and Disclosure Regulation:** Governance and sustainability requirements are intensifying. Firms like Tesla and Meta face reputational and compliance costs that may reduce investor willingness to assign premium multiples.

These micro policy risks illustrate that IWY's concentration magnifies idiosyncratic firm-level vulnerabilities into systemic ETF-level exposures.

## 5.3 Implications for Investors

For investors, IWY embodies a high-convexity, policy-sensitive trade. The ETF offers meaningful upside in scenarios of technological optimism but exposes portfolios to amplified downside under rate tightening, policy reversals, or regulatory shocks. Three implications follow:

i. **Portfolio Role:** IWY is unsuitable as a core allocation. It should be deployed as a satellite exposure, complementing rather than substituting for broad growth benchmarks.

ii. **Risk Management:** Investors should actively hedge IWY's duration sensitivity (e.g., with Treasuries or value equities) and incorporate explicit policy scenarios into stress testing.

iii. **Redundancy Avoidance:** Given its near-perfect overlap with QQQ, IWY should be treated as a tactical substitute, not an additive holding. Holding both simply compounds downside exposure without providing incremental diversification.

# 6 Recommendations

The analysis of IWY points to several important lessons for different actors in the financial system. For investors, the case study confirms that IWY cannot reasonably be regarded as a core allocation vehicle. Despite its breadth on paper, effective diversification is limited to fewer than twenty holdings, and the ETF is functionally a concentrated bet on the performance of mega-cap technology stocks. In practice, IWY is best suited as a satellite exposure in a portfolio, offering tactical upside during periods of strong AI-driven earnings growth but exposing investors to pronounced downside in adverse regimes. Investors who choose to allocate to IWY must therefore treat it as a complement to more balanced strategies rather than as a substitute for broad growth benchmarks.

They should also be conscious of its redundancy with QQQ, recognizing that holding both funds compounds exposure without providing any additional diversification benefit. Effective use of IWY requires active risk management, including hedging its duration sensitivity through allocations to Treasuries or value equities, and, where appropriate, using options markets to guard against extreme tail risk. The responsibility of investors extends beyond recognizing concentration risk alone; they must also monitor shifts in macroeconomic and regulatory policy, earnings dispersion among the top ten constituents, and the potential for liquidity stresses in periods of market turbulence.

For portfolio managers and asset allocators, the findings highlight the importance of going beyond surface-level disclosure. While fund fact sheets report headline holdings, they seldom provide effective concentration measures. Reporting metrics such as the Herfindahl–Hirschman Index, the Gini coefficient, and the effective number of holdings would help clients better understand the hidden risks in funds like IWY.

From a construction perspective, managers who choose to use IWY should do so tactically, combining it with exposures that offset its weaknesses. Balancing IWY's growth bias with countercyclical or defensive sectors such as healthcare and utilities can help smooth overall portfolio performance. At the same time, allocators must remain aware of IWY's close correlation with QQQ and the risk of factor crowding. In stressed environments, crowding into the same set of mega-cap growth stocks increases the potential for volatility clustering and abrupt outflows, which can in turn widen bid–ask spreads and amplify tracking error at the ETF level.

The case also carries important implications for policymakers and regulators. IWY demonstrates how concentration risk in indices is transmitted through widely held passive vehicles, creating potential channels of systemic fragility. As household savings continue to flow into ETFs, the concentration of retail wealth in a narrow set of mega-cap firms raises questions of financial stability. Regulators could improve market transparency by requiring the publication of effective concentration metrics alongside conventional disclosures. Moreover, they should monitor the

exposure of retail portfolios to Big Tech firms that are simultaneously facing antitrust investigations, digital services taxation, and increasing ESG compliance costs. Policy shocks in any of these areas could trigger ETF-level drawdowns, even in the absence of broad market stress. Recognising this channel of risk transmission is essential for macroprudential oversight.

Finally, for researchers and academics, IWY provides a rich case study of how sectoral innovation cycles and policy regimes interact with portfolio concentration dynamics. The ETF embodies the transformation of market-cap-weighted indices into vehicles that concentrate systemic exposures rather than disperse them. Extending this analysis through factor regressions, option-implied volatility surfaces, and comparisons with international growth ETFs would yield further insights into how thematic concentration can amplify systemic fragility. Moreover, exploring the feedback loops between ETFs, derivatives markets, and underlying securities would deepen understanding of volatility propagation in concentrated vehicles such as IWY.

Taken together, these recommendations suggest that IWY is a product whose strengths and weaknesses must be handled with nuance. For investors, it can provide targeted upside but requires active hedging and careful portfolio placement. For managers, it demands a higher standard of transparency and tactical balancing. For regulators, it illustrates how concentration in passive strategies may pose risks to household wealth and market stability. And for academics, it opens avenues to study the intersection of innovation cycles, index construction, and systemic risk.

# 7 Exhibits

## 7.1 Exhibit 1. Lorenz Curves for IWY and SPY

This chart plots the cumulative distribution of portfolio weights for IWY and SPY. The divergence of IWY's curve from the equality line reflects its high concentration, with a Gini coefficient of 0.55. By contrast, SPY approximates a near-equal distribution consistent with broad-market diversification.

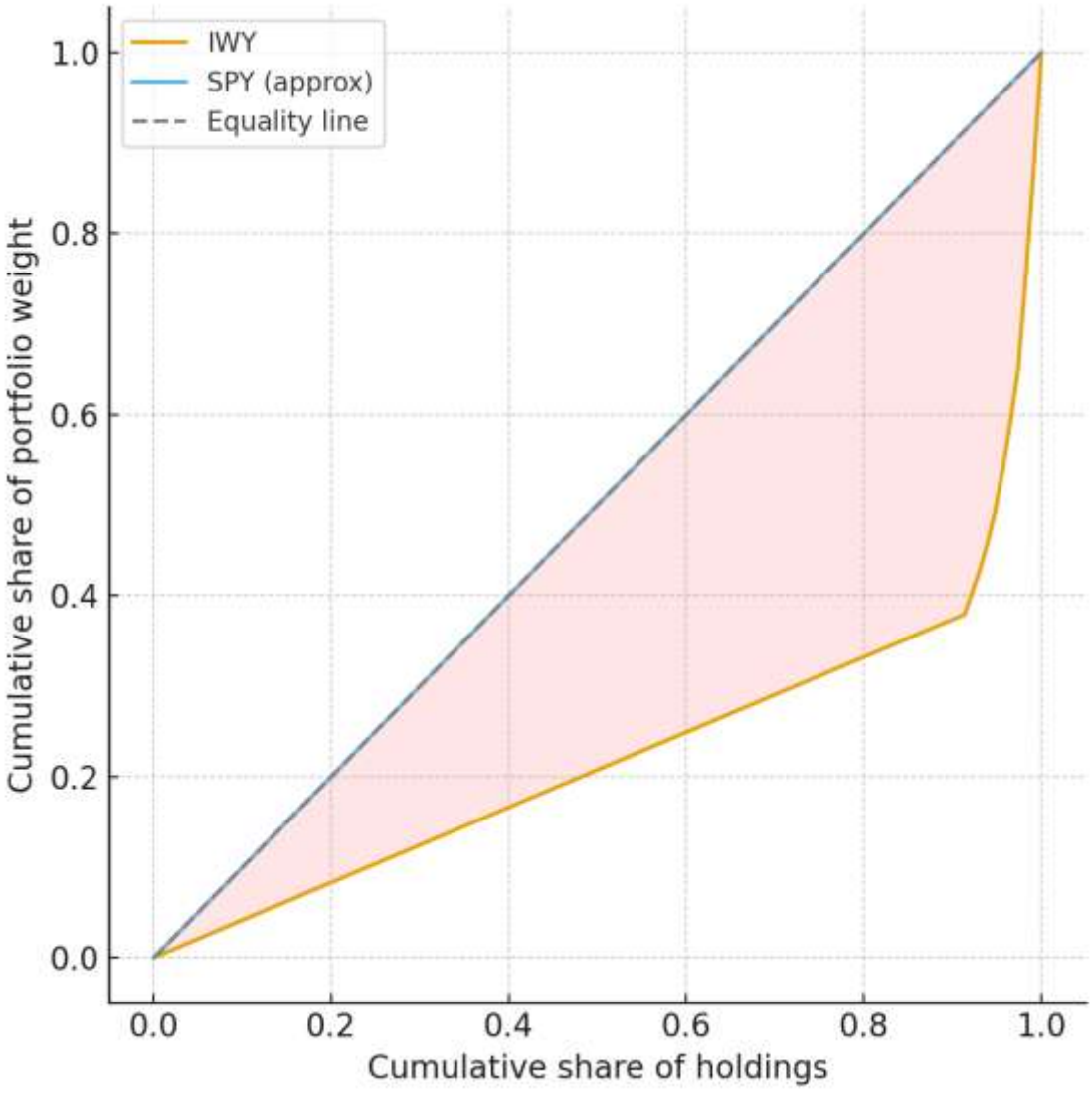


*Figure 1. Lorenz curves for IWY and SPY. IWY exhibits significantly higher concentration, with a Gini coefficient of 0.55, relative to the broadly diversified S&P 500.*

## 7.2 Exhibit 2. Correlation Matrix: IWY, SPY, QQQ, and IWY's Top Holdings (2019–2025)

This heatmap shows the degree of co-movement among IWY, major benchmarks, and its largest constituents. IWY is almost perfectly correlated with QQQ (ρ ≈ 0.95) and strongly aligned with SPY (ρ ≈ 0.89). Intra-top-5 correlations exceed 0.75, confirming limited diversification within the ETF.

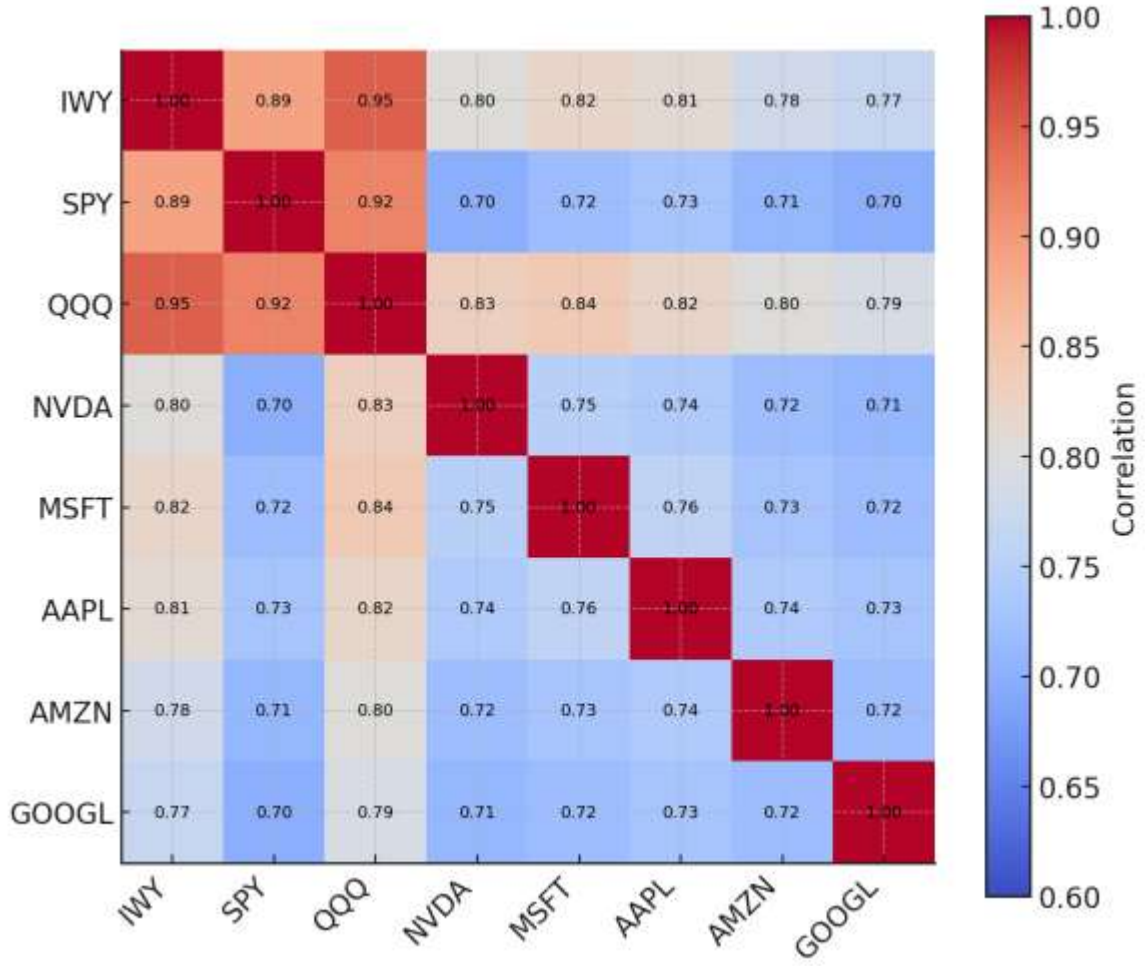


*Figure 2. Correlation matrix for IWY, SPY, QQQ, and IWY's largest holdings (2019–2025). Average intra-top-5 correlation exceeds 0.75, confirming limited diversification.*

## 7.3 Exhibit 3. Scenario Outcomes: IWY vs SPY vs QQQ

Modeled outcomes for five scenarios—technology-led expansion, soft landing, policy tightening, AI correction, and macro recession—demonstrate IWY's asymmetric profile. Relative to SPY and QQQ, IWY offers higher upside in expansion (+16–20%) but steeper drawdowns in adverse regimes (–20 to –28%).

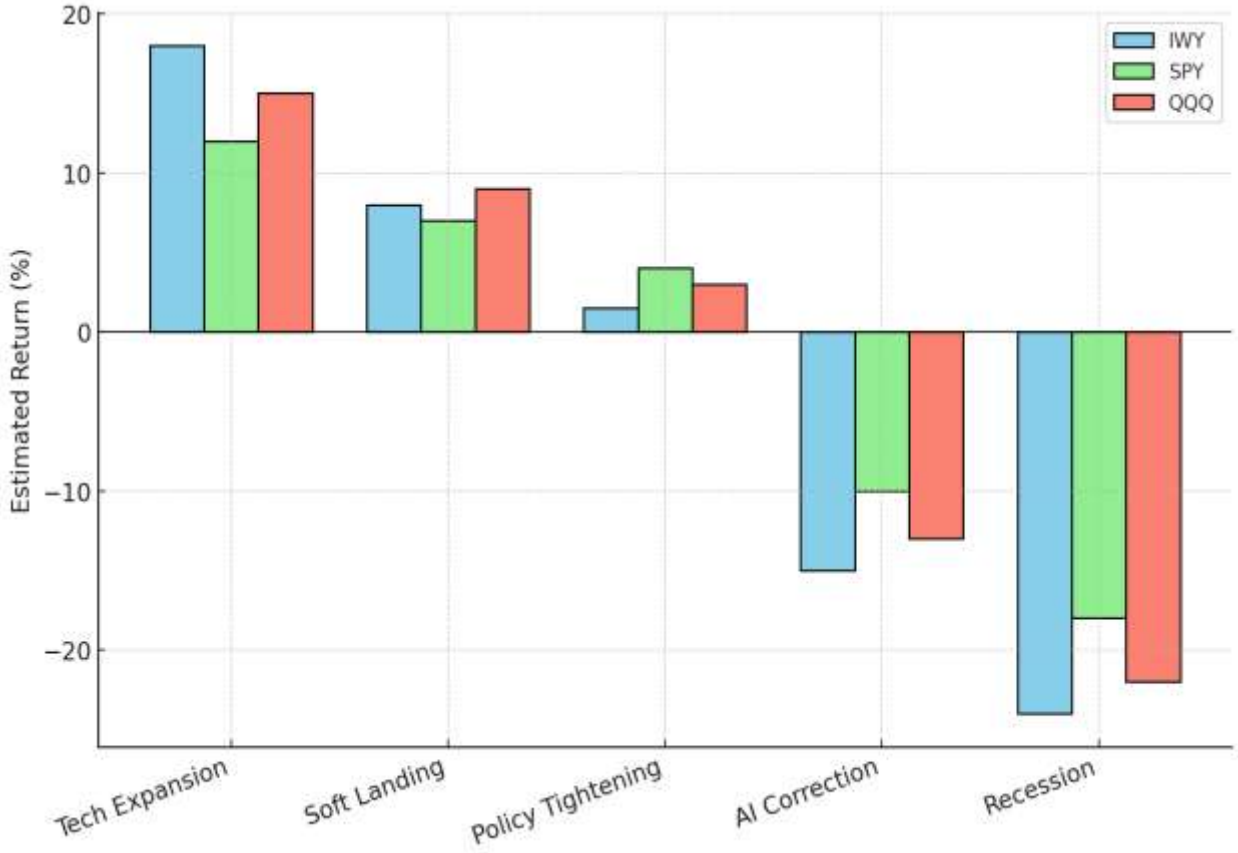


*Figure 3. Modeled scenario outcomes for IWY, SPY, and QQQ. IWY shows higher upside in technology-led expansion but deeper drawdowns under stress, reflecting concentration and valuation risk.*

## 7.4 Exhibit 4. Scenario Outcomes Table for IWY

| Scenario | Earnings Dynamics (Top Holdings) | Multiple Effect | Estimated IWY Return (Range) |
|---|---|---|---|
| Technology-Led Expansion | 20–30% earnings growth sustained by AI demand | Multiples stable to +5% | **+16% to +20%** |
| Soft Landing | 12–18% earnings growth; remainder at 8–12% | –5 to –10% | **+6% to +10%** |
| Policy Tightening Shock | 10–15% earnings growth persists | –15 to –20% | **0% to +3%** |
| AI Overinvestment / Correction | 5–8% earnings; margins compressed in semis/cloud | –20 to –30% | **–12% to –18%** |
| Macro Recession | 0–3% earnings (flat to negative) | –25 to –35% | **–20% to –28%** |

## 7.5 Exhibit 5. Data Sources for Empirical Analysis

| Data Type | Source | Coverage / Period | Purpose in Analysis |
|---|---|---|---|
| ETF holdings & weights | iShares (fund fact sheets) | Quarterly snapshots, 2020–2025 | Portfolio decomposition; HHI and Gini calculation |
| Firm-level prices & EPS forecasts | Yahoo Finance, Bloomberg consensus | 2015–2025 | Earnings growth assumptions; forward P/E ratios |
| Market indices (SPY, QQQ) | CRSP / Yahoo Finance | 2010–2025 | Benchmark correlations; comparative returns |
| Factor data (Fama–French) | Kenneth French Data Library | 2010–2025 | Beta and factor load estimation |
| Macroeconomic variables (10y yields, Fed Funds futures) | FRED (St. Louis Fed) | 2010–2025 | Regression of returns on interest rate changes |
| Historical stress episodes | S&P Global, NBER recession dates | 2000–2023 | Calibration of scenario shocks; Monte Carlo parameters |

## 7.6 Exhibit 6. Scenario Matrix for IWY Stress Testing

| Scenario | Narrative Context | Earnings Growth (Top Holdings) | Earnings Growth (Remaining Portfolio) | Valuation Multiple Behavior | Expected IWY Performance |
|---|---|---|---|---|---|
| **Technology-Led Expansion** | Accelerated AI adoption and continued digital infrastructure investment sustain exceptional profitability among mega-cap firms. | 20–30% | 12–15% | Stable to modest expansion (0 to +5%) as optimism outweighs discount rate pressures. | Strong outperformance; returns concentrated in top 10 holdings; IWY materially exceeds broad benchmarks. |
| **Soft Landing** | Macroeconomy slows but avoids recession; aggregate demand moderates without systemic stress. | 12–18% | 8–12% | Mild contraction (–5 to –10%) consistent with normalization of equity risk premia. | Moderate positive returns; narrower outperformance margin versus broad growth indices. |
| **Policy Tightening Shock** | Elevated real rates and liquidity withdrawal constrain valuations despite resilient earnings. | 10–15% | 6–10% | Significant contraction (–15 to –20%) due to higher discount factors and investor risk repricing. | Underperformance relative to broad benchmarks; earnings growth insufficient to offset valuation pressure. |

| | | | | | |
|---|---|---|---|---|---|
| **AI Overinvestment / Sectoral Correction** | Overcapacity in semiconductors and cloud infrastructure leads to margin compression and investor sentiment reversal. | 5–8% | 4–6% | Sharp contraction (–20 to –30%) as AI optimism unwinds. | Pronounced drawdowns; IWY disproportionately affected given concentration in AI-linked equities. |
| **Macro Recession** | Broad demand shock from financial instability, geopolitical conflict, or policy missteps; systemic stress dominates fundamentals. | 0–3% (may turn negative) | 0–2% (may turn negative) | Severe contraction (–25 to –35%) in line with historical crisis episodes. | Substantial absolute and relative losses; concentration in cyclical growth equities amplifies downside. |

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