■ Portfolio Analysis Report

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[] Production Mode: Standard charts disabled
Set PORTFOLIO_LEGACY_CHARTS=true for equity/drawdown/distribution charts
Focus on console text insights for decision making

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======================================================================
[SEARCH] PORTFOLIO TYPE ANALYSIS (Rule-Based Classification)
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[DATE] REGIME DI MERCATO RILEVATO:
--------------------------------------------------
   [RED] Regime: Include Crisi Sistemica
   Periodo: 33.0 anni

   [DOWN] CRISI SISTEMICHE RILEVATE (con evidenza quantitativa):
      • GFC (2007-10-09 → 2009-03-09)
        Trigger: Post-hoc: S&P500 -57%, VIX picco 80.86 (Nov 2008)
      • Euro Crisis (2011-04-29 → 2011-10-03)
        Trigger: Post-hoc: PIIGS spread >500bps, S&P -19%
      • China Deval / Oil Crash (2015-08-17 → 2016-02-11)
        Trigger: Post-hoc: Yuan -3% in 2 giorni, WTI $26, S&P -14%
      • Q4 2018 Selloff (2018-10-03 → 2018-12-24)
        Trigger: Post-hoc: Fed hawkish, S&P -20% in Q4
      • COVID Crash (2020-02-19 → 2020-03-23)
        Trigger: Post-hoc: S&P -34% in 33 giorni, VIX 82.69
      • Rate Tightening 2022 (2022-01-03 → 2022-10-12)
        Trigger: Post-hoc: Fed +425bps, S&P -25%, bonds -13%

   [CONF] SOGLIE APPLICATE (Normale vs Regime Attuale):
      Metrica                  Normale       Regime
      --------------------------------------------
      Min Sharpe                  0.55         0.20
      Max Drawdown                -30%         -55%

   [INFO] Le metriche osservate sono influenzate dalla presenza di regimi di stress sistemico (GFC, Euro Crisis, China Deval / Oil Crash, Q4

[CHART] FASE 3: DECOMPOSIZIONE TEMPORALE
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   [RED] PERFORMANCE DURANTE CRISI:
      GFC (2007-10-09 → 2009-03-09):
         Return:    -0.9%  Vol:   0.0%  MaxDD:    -0.9%
      Euro Crisis (2011-04-29 → 2011-10-03):
         Return:   -48.5%  Vol:  46.5%  MaxDD:   -48.7%
      China Deval / Oil Crash (2015-08-17 → 2016-02-11):
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          Return:   -14.4%  Vol:  22.0%  MaxDD:   -16.3%
       Q4 2018 Selloff (2018-10-03 → 2018-12-24):
          Return:   -17.6%  Vol:  19.6%  MaxDD:   -17.6%
       COVID Crash (2020-02-19 → 2020-03-23):
          Return:   -32.8%  Vol:  53.0%  MaxDD:   -32.8%
       Rate Tightening 2022 (2022-01-03 → 2022-10-12):
          Return:   -28.2%  Vol:  22.2%  MaxDD:   -28.2%

   [GREEN] PERFORMANCE IN EXPANSION:
      Periodo expansion: 29.8 anni
      CAGR expansion:    -0.5%
      Volatility:    14.2%

   [CYCLE] RECOVERY ANALYSIS (Time-to-Recover):
      Post-GFC: 21 mesi per recuperare
         (Recovery CAGR:   6.2%)

   [UP] ROLLING METRICS (only if unstable):
      Sharpe 3Y: min=-inf (instability detected)

      Sharpe 5Y: min=-inf (instability detected)

   [DOWN] WORST PERIODS:
      Worst 12M:   -60.4%  (ended 2011-12-30)
      Worst 24M:   -70.5%  (ended 2012-12-07)

[TARGET] ROBUSTNESS SCORE (comparative ranking tool):
--------------------------------------------------
   [#####...............] 25/100 (25%)
   [WARN] NOTA: Score per confronto RELATIVO tra portafogli, non giudizio assoluto.

   Breakdown (criteri storici retrospettivi):
      • Recovery moderato: media 21 mesi (+15)
      • Rolling Sharpe 3Y volatile (min -inf) (+5)
      • Worst 12M severo (-60%) (+5)
      • CAGR insufficiente (-0.5%) (+0)

[MEASURE] RESILIENCE vs EFFICIENCY (Two-Axis Evaluation):
--------------------------------------------------
   EFFICIENZA:  [....................] 0/100 (LOW)
   RESILIENZA:  [####................] 20/100 (LOW)

   Quadrante: [DOWN] EQUITY_UNDERPERFORMING
   All-equity con scarsa efficienza E resilienza - concentrazione su asset deboli?

   Trade-off:
   Trade-off intrinseco: aumentare efficienza (più rischio) riduce tipicamente resilienza, e viceversa. La posizione ottimale dipende dagli o

[TAG]  TIPO IDENTIFICATO: [WORLD] EQUITY GROWTH (Diversified)
   Multi-core regionale, rischio distribuito ✓
   Confidence: 85%
   Motivazione: Global core + 6 regional tilts (con overlap), max position 25%

[CHART] COMPOSIZIONE PORTAFOGLIO:
--------------------------------------------------
   Core Globale:        25.0%  (VT, VWCE, IWDA)
   Core Regionale:       0.0%  (IVV, EWJ, VGK...)
   Tematico Puro:       20.0%  (URA, ARKK, SRVR...)
   --- Emerging Markets ---
     EM Broad:          20.0%  (EEM, VWO...)
   Altro Equity:        35.0%  (non classificato)
   Bond:                 0.0%
--------------------------------------------------
   TOTALE EQUITY:      100.0%

■ SOGLIE PER TIPO 'EQUITY_GROWTH_DIVERSIFIED':
--------------------------------------------------
   Max singola posizione:     45%
   Max top 3:                 70%
   Max satellite singolo:     15%
   Max satellite totale:      40%
   Max drawdown accettato:   -55%
   Min Sharpe atteso:        0.20
   → Equity Growth Diversified - multi-core regionale

[PIN] METRICHE PRIMARIE: cagr, sortino
   (Queste metriche sono critiche per tipo EQUITY_GROWTH_DIVERSIFIED)
   Secondarie: sharpe, max_drawdown

[WARN]  ATTENZIONE:

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   • Top 3 posizioni = 70.0% > 70% (soglia tipo EQUITY_GROWTH_DIVERSIFIED).

[CHART] CONTESTO REGIME DI MERCATO:
--------------------------------------------------
   • Sharpe Ratio -0.08 compresso per presenza crisi sistemica nel periodo. Soglia regime-adjusted: 0.20. Fisiologico, non fragilità struttu
   • Sortino Ratio -0.11 compresso per presenza crisi sistemica. Soglia regime-adjusted: 0.40.
   • Max Drawdown -83.7% durante crisi sistemica. Coerente con benchmark crisi sistemica (-50% per 100% equity). Capacità di sopravvivenza c

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[INFO] VERDETTO: [FAIL] DA_RIVEDERE (Score: 25/100)
   Score insufficiente (<50) - richiede revisione strutturale
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          RISK INTENT ANALYSIS v3.1 (Framework Istituzionale)
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[INFO] RISK INTENT DICHIARATO: AGGRESSIVE
   Portafoglio aggressivo, cerca excess return con higher beta
   Beta target: 1.0 - 1.3
   Beta min accettabile: 0.9
   Beta FAIL threshold: 0.6
   Benchmark: VT
   Max DD atteso: -45%

[TARGET] BETA GATING:
   Portfolio Beta: 0.57
   [FAIL] INTENT MISMATCH: Beta 0.57 < 0.6 (HARD FAIL gate, target ≥0.9) per risk intent AGGRESSIVE. Obiettivo errato, NON fragilità struttu
   [WARN] NOTA: Questo è un problema di OBIETTIVO, non di STRUTTURA

[CHART] CONFIDENCE: 96/100 (HIGH)

[DOWN] DRAWDOWN ATTRIBUTION:
   Tipo: PARTIALLY_STRUCTURAL
   Osservato: -83.7%
   Atteso (β-adj): -19.2%
   Excess DD: 64.4% [RED]
   → DD elevato ma con beta 0.57 sotto target - verificare INTENT
   [i] NOTA: Problema di INTENT, non fragilità strutturale

✓ VERDETTI (5 regole valutate):
   [OK] [V2]  [OK] CCR BILANCIATO: Nessun asset con risk leverage > 1.5x
   [OK] [V3]  [OK] DIVERSIFICATO: Correlazione media 0.60 < 0.70 (matric
   [OK] [V4]  [OK] DD ECCELLENTE: Drawdown migliore dell'atteso per beta
   [WARN] [V5] [INTENT_MISMATCH] [FAIL] INTENT MISMATCH: Beta 0.57 < 0.6 (HARD FAIL gate, tar
   [WARN] [V6]  [RED] SHARPE NEGATIVO (-0.08): Rendimento inferiore al risk

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              VERDETTO FINALE (Framework Istituzionale)
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   1. Risk Intent Dichiarato: AGGRESSIVE
   2. Coerenza Intent vs Dati: MISMATCH
   3. Coerenza Strutturale: OK

   Scores:
      Data Integrity:          96/100
      Structural Coherence:    90/100
      Efficiency:              50/100

      Tail Risk:               70/100
      ----------------------------
      AGGREGATE:               77/100

   4. VERDETTO: [WARN] INTENT MISALIGNED - Struttura coerente ma obiettivo errato
      → Verifica Risk Intent dichiarato vs struttura portafoglio

   Riepilogo: 3 OK, 1 Warning, 0 Structural, 1 Intent Mismatch
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        INVESTMENT COMMITTEE VALIDATOR (Gate System v4.3)
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[INFO] GATE STATUS:
--------------------------------------------------
   [OK] Data Integrity Gate: PASS
   [BLOCK] Intent Gate: VALID_FAIL
   [OK] Structural Gate: PASS (no causal fragility detected)
   [i] Structure Type: EQUITY_DIVERSIFIED_MIXED (55% confidence)
   [i] Benchmark Gate: OPPORTUNITY_COST
   [i] Final Verdict: INTENT_MISALIGNED_STRUCTURE_OK
   [i] Prescriptive Actions: 1
   [i] CCR Warnings (Diagnostic): 0

[CHART] DATA INTEGRITY GATE:
   [OK] DATA_INTEGRITY: PASS (NaN ratio 0% ≤ 20%)

[TARGET] RISK INTENT GATE (3-state beta gating):
   [FAIL] INTENT_MISMATCH (VALID FAIL): Beta 0.57 < 0.6 su 33.0 anni. Verdict CERTO: obiettivo errato.
   Beta state: [RED] HARD FAIL (beta < 0.6)
   Beta window: 33.0y → Intent verdict: VALID

   ■ AZIONI SUGGERITE (beta 0.57 < target 0.9):
      Opzione A: Abbassa Risk Intent → BALANCED o MODERATE
      Opzione B: Aumenta beta → +US Growth, -EM Value, -Small Global
      Opzione C: Aggiungi leva moderata (1.1-1.2x)

[PACKAGE] PORTFOLIO CLASSIFICATION (5-bucket):
   Core Global (world):           25.0%
   Core Regional (US/EU/EM...):   20.0%
   Satellite (classified):        10.0%
   Unclassified Equity:           45.0%
   Defensive (bond/gold):          0.0%
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   TOTAL:                        100.0%

   [TAG]  PORTFOLIO LABEL: Multi-Regional + Satellite Enhanced + Equity Portfolio (Low-Beta)

   ■■  STRUCTURE TYPE: EQUITY_DIVERSIFIED_MIXED (55% confidence)
       Diversified equity with 45% unclassified, but stable correlation structure. Not timing-based, lacks dominant core pattern.
   [WARN] Same-category benchmark: NOT ALLOWED (sector tilts, unclassified 45%)

[UP] BENCHMARK GATE:
   [BLOCK] BENCHMARK_GATE: Critica 'complessità' BLOCCATA (prerequisiti non soddisfatti)

======================================================================
                    PRESCRIPTIVE ACTIONS
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   [RED] CRITICAL [INTENT_MISMATCH_HARD]
   Confidence: [#########.] 95%
   Portfolio beta 0.57 is incompatible with AGGRESSIVE (requires ≥0.9)
   → Actions:
      • OPTION A: Change RISK_INTENT to MODERATE (matches beta 0.57)
      • OPTION B: Increase beta by 0.33 via:
      •    - Add 15-20% US large-cap growth (QQQ, VGT, XLK)
      •    - Remove low-beta positions (bond proxies, min-vol, utilities)
      •    - Reduce EM value / small-cap (typically low-beta)
      • OPTION C: If intentional defensive tilt, relabel as BALANCED
   [BLOCK] Blocks if not addressed: All structural analysis, Benchmark comparisons, Diversification recommendations

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                      FINAL VERDICT
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   [WARN] INTENT MISALIGNED - Struttura OK

   [PIN] Why this verdict is not contradictory:
   IMPORTANT: Questo NON è un problema strutturale. Il portafoglio è strutturalmente coerente, ma il Risk Intent dichiarato non corrisponde a

   [INFO] AZIONI CONSENTITE:
   [OK] Tutte le azioni di portafoglio consentite
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                      PORTFOLIO ANALYSIS REPORT
                   (Professional Diagnostic v3.1)
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[WARN]  METODOLOGIA E ASSUNZIONI
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   • Metriche STORICHE: descrivono il passato, non predicono futuro
   • Returns finanziari: fat tails, volatility clustering
   • VaR/CVaR: storico (non parametrico), scaling annuale indicativo
   • Range plausibile*: variabilità campionaria (bootstrap)
   • Correlazioni: osservate, possono convergere in crisi
   • Monte Carlo: scenari ipotetici, non previsioni

[UP] PERFORMANCE
--------------------------------------------------
  Total ROI:                    -14.46%
  CAGR (geometric):              -0.47%
    Range plausibile*:    [-6.47%, 4.67%]
  Volatility (ann.):             15.56%

[CHART] RISK-ADJUSTED METRICS
--------------------------------------------------
  Sharpe Ratio:                   -0.08
    Range plausibile*:    [-0.42, 0.23]
    Precision:            ±0.19 (33.0 yrs)
  Sortino Ratio:                  -0.11
  Calmar Ratio:                   -0.01
  Profit Factor:                   1.01
  Gain/Loss Ratio:                 3.17

[DOWN] DRAWDOWN ANALYSIS
--------------------------------------------------
  Max Drawdown:                 -83.66%
    Worst plausibile*:    [-92.2%, -39.5%]

    Peak Date:               2011-02-02
    Trough Date:             2016-01-20
  Avg Drawdown:                 -33.31%
  Current Drawdown:             -27.34%

[WARN]  TAIL RISK (VaR storico, 95% confidence)
--------------------------------------------------
  VaR (daily):                    1.43%
  CVaR (daily):                   2.52%
  VaR (annual, indicative):      27.32%
  CVaR (annual, indicative):     45.47%
  [i]  Scaling annuale: sqrt(T), può sottostimare rischio ~20-40%

[DATE] MONTHLY STATISTICS
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  Months Up:                    108 / 398 (27.1%)
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Months Down: 290 / 398
Best Month: 28.65%
Worst Month: -28.96%
Avg Month: 0.08%

■ YEARLY STATISTICS

Years Up:	10 / 34
Years Down:	24 / 34
Best Year:	33.02%
Worst Year:	-60.44%

[PIN] DAILY STATISTICS

Days Up:	2031 / 8391 (24.2%)
Days Down:	6360 / 8391
Best Day:	11.15%
Worst Day:	-17.39%

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RISK CONTRIBUTION (Component Contribution to Risk)

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Ticker	Weight	MCR	CCR	RC%
VWCE.DE	25.00%	0.1505	0.0376	20.38%
IWQU.L	25.00%	0.1563	0.0391	21.17%
EIMI.L	20.00%	0.1708	0.0342	18.50%
URA	10.00%	0.2739	0.0274	14.84%
BOTZ	10.00%	0.2379	0.0238	12.89%
QTUM	10.00%	0.2258	0.0226	12.23%
TOTAL	100.00%		0.1846	100.00%

[CHART] RC% NORMALE vs CRISI (come cambia in stress)

Ticker	Normale	Crisi	Delta	Note
VWCE.DE	19.5%	21.8%	+2.3%	≈ stabile
IWQU.L	21.0%	18.4%	-2.5%	≈ stabile
EIMI.L	18.0%	23.9%	+5.9%	[WARN] +rischio
URA	15.8%	12.6%	-3.2%	≈ stabile
BOTZ	13.2%	11.7%	-1.5%	≈ stabile
QTUM	12.5%	11.5%	-1.0%	≈ stabile

Giorni normali: 1473
Giorni crisi: 39

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INDIVIDUAL ASSET METRICS (annualized)

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	Weight	CAGR	Vol	RiskContrib%
VWCE.DE	0.2500	0.1171	0.1792	0.2038
IWQU.L	0.2500	0.1243	0.1780	0.2117
EIMI.L	0.2000	0.0713	0.2000	0.1850
URA	0.1000	0.1964	0.4103	0.1484
BOTZ	0.1000	0.0988	0.2862	0.1289
QTUM	0.1000	0.2505	0.2808	0.1223

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CORRELATION MATRIX (osservata su tutto il periodo)

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Ticker Ticker	VWCE.DE	IWQU.L	EIMI.L	URA	BOTZ	QTUM
VWCE.DE	1.00	0.85	0.70	0.33	0.55	0.52
IWQU.L	0.85	1.00	0.77	0.38	0.60	0.56
EIMI.L	0.70	0.77	1.00	0.44	0.60	0.58
URA	0.33	0.38	0.44	1.00	0.59	0.57
BOTZ	0.55	0.60	0.60	0.59	1.00	0.88
QTUM	0.52	0.56	0.58	0.57	0.88	1.00

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[RANDOM] MONTE CARLO STRESS TEST

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[CHART] SCENARIO NORMALE (distribuzione storica):

Median return 1Y: 13.9%
Worst case 5%: -23.5%

[WARN] SCENARIO STRESS (crisi strutturale):

Median return 1Y: -28.3%
Worst case 5%: -57.0%

■ TAKEAWAY:

Stress peggior caso: -57% vs normale -24% (delta 33%)

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[CHART] BENCHMARK COMPARISON (vs alternative passive)

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[CONF] METODOLOGIA: BENCHMARK_COMPARISON

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   Confronto vs alternative passive. Distingue same-category vs opportunity-cost.

   [INFO] Rule 8 Parameters:
      Defensive allocation: 0.0%
      Has sector tilts: True

   vs Global Equity (VT) [[CHART] OPPORTUNITY-COST]:
--------------------------------------------------
      [i] Rule 8: Portfolio has sector tilts (Rule 8)
      Benchmark CAGR:       9.41%
      Benchmark Vol:       20.67%

      Benchmark Sharpe:      0.45
      Benchmark MaxDD:     -50.2%

      Excess Return:       -9.88%
      Tracking Error:      20.09%
      Information Ratio:    -0.49
      Beta:                  0.57
      Alpha (Jensen):      -6.66%

      Verdict: ALTERNATIVE_STRATEGY
      Global Equity (VT) ha dato rendimento maggiore - ma è strategia diversa, non errore.

      Nota: "Global Equity (VT) rappresenta opportunity cost, non confronto diretto same-category."
            "Portfolio ha caratteristiche che modificano il profilo di rischio."

   vs S&P 500 (SPY) [[CHART] OPPORTUNITY-COST]:
--------------------------------------------------
      [i] Rule 8: Portfolio has sector tilts (Rule 8)
      Benchmark CAGR:      10.90%
      Benchmark Vol:       18.64%
      Benchmark Sharpe:      0.55
      Benchmark MaxDD:     -55.2%

      Excess Return:      -11.37%
      Tracking Error:      18.92%
      Information Ratio:    -0.60
      Beta:                  0.34
      Alpha (Jensen):      -5.46%

      Verdict: ALTERNATIVE_STRATEGY
      S&P 500 (SPY) ha dato rendimento maggiore - ma è strategia diversa, non errore.

      Nota: "S&P 500 (SPY) rappresenta opportunity cost, non confronto diretto same-category."
            "Portfolio ha caratteristiche che modificano il profilo di rischio."

   vs 60/40 Portfolio [[CHART] OPPORTUNITY-COST]:
--------------------------------------------------
      Benchmark CAGR:       8.49%
      Benchmark Vol:       12.08%
      Benchmark Sharpe:      0.58
      Benchmark MaxDD:     -34.7%

      Excess Return:       -8.96%
      Tracking Error:      18.14%
      Information Ratio:    -0.49
      Beta:                  0.85
      Alpha (Jensen):      -7.96%

      Verdict: ALTERNATIVE_STRATEGY
      60/40 Portfolio ha dato rendimento maggiore - ma è strategia diversa, non errore.

   [INFO] VERDETTO COMPLESSIVO (solo same-category): NO_SAME_CATEGORY_BENCHMARK
   Nessun benchmark same-category disponibile per confronto.

   ■ PROXY BENCHMARK SUGGESTION (non-official):
   Nessun benchmark same-category disponibile per questo portfolio.
   Considera come proxy di riferimento:
      • Global Equity (VT) (Global Equity) - opportunità costo base equity
   Nota: Questi benchmark NON sono comparabili direttamente (strategie diverse),
         ma utili per valutare opportunity cost e posizionamento relativo.

======================================================================
                SECTOR ALLOCATION & TOP HOLDINGS
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[PIN] SETTORI (allocazione portafoglio)
--------------------------------------------------
  technology            31.9%
  industrials           14.4%
  financial_services    12.3%
  energy                 9.5%
  consumer_cyclical      7.5%
  communication_services    6.8%
  healthcare             6.6%
  Other                  3.8%
  basic_materials        3.8%
  consumer_defensive     3.3%

[PIN] TOP HOLDINGS (Top 10 per ETF)
--------------------------------------------------
  VWCE.DE
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      4.62%  NVDA - NVIDIA Corp
      4.20%  AAPL - Apple Inc
      3.80%  MSFT - Microsoft Corp
      2.34%  AMZN - Amazon.com Inc
      1.94%  GOOGL - Alphabet Inc Class A
      1.69%  AVGO - Broadcom Inc
      1.56%  GOOG - Alphabet Inc Class C
      1.53%  META - Meta Platforms Inc Class A
      1.34%  TSLA - Tesla Inc
      1.27%  2330.TW - Taiwan Semiconductor Manufacturing Co Ltd

  IWQU.L
      5.04%  NVDA - NVIDIA Corp
      4.83%  AAPL - Apple Inc
      4.29%  MSFT - Microsoft Corp
      3.74%  META - Meta Platforms Inc Class A
      3.33%  V - Visa Inc Class A
      3.01%  ASML.AS - ASML Holding NV
      2.29%  LLY - Eli Lilly and Co
      2.03%  GOOGL - Alphabet Inc Class A
      1.96%  MA - Mastercard Inc Class A
      1.82%  TJX - TJX Companies Inc

  URA
     24.50%  CCO.TO - Cameco Corp
      8.00%  OKLO - Oklo Inc Class A Shares
      6.51%  UEC - Uranium Energy Corp
      5.62%  NXE.TO - NexGen Energy Ltd
      4.61%  KAP - National Atomic Co Kazatomprom JSC ADR
      3.97%  EFR.TO - Energy Fuels Inc
      3.69%  LEU - Centrus Energy Corp Class A
      3.31%  PDN.AX - Paladin Energy Ltd
      3.02%  DML.TO - Denison Mines Corp

  BOTZ
     11.21%  NVDA - NVIDIA Corp
     10.16%  ABBN.SW - ABB Ltd
      9.02%  6954.T - Fanuc Corp
      6.07%  ISRG - Intuitive Surgical Inc
      5.75%  6861.T - Keyence Corp
      4.76%  6383.T - Daifuku Co Ltd
      3.83%  6273.T - SMC Corp
      3.40%  277810.KS - Rainbow Robotics Ordinary Shares
      2.97%  6506.T - YASKAWA Electric Corp
      2.84%  JBTM - JBT Marel Corp

  EIMI.L
     10.83%  2330.TW - Taiwan Semiconductor Manufacturing Co Ltd
      4.12%  005930.KS - Samsung Electronics Co Ltd
      3.87%  0700.HK - Tencent Holdings Ltd
      2.90%  9988.HK - Alibaba Group Holding Ltd Ordinary Shares
      2.69%  000660.KS - SK Hynix Inc
      0.87%  HDFCBANK.NS - HDFC Bank Ltd
      0.76%  00939 - China Construction Bank Corp Class H
      0.71%  RELIANCE.NS - Reliance Industries Ltd
      0.68%  2317.TW - Hon Hai Precision Industry Co Ltd
      0.67%  2454.TW - MediaTek Inc

  QTUM
      2.04%  QNC.V - Quantum eMotion Inc
      1.87%  MU - Micron Technology Inc
      1.66%  MKSI - MKS Inc
      1.65%  LRCX - Lam Research Corp
      1.61%  LMT - Lockheed Martin Corp
      1.57%  ASM.AS - ASM International NV
      1.51%  ASML - ASML Holding NV ADR
      1.50%  8035.T - Tokyo Electron Ltd
      1.48%  NOC - Northrop Grumman Corp
      1.44%  BIDU - Baidu Inc ADR

======================================================================
         TOP HOLDINGS AGGREGATE (pesate per peso ETF)
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  NVDA           3.54%  NVIDIA Corp
  2330.TW        2.48%  Taiwan Semiconductor Manufacturing Co Ltd
  CCO.TO         2.45%  Cameco Corp
  AAPL           2.26%  Apple Inc
  MSFT           2.02%  Microsoft Corp
  META           1.32%  Meta Platforms Inc Class A
  ABBN.SW        1.02%  ABB Ltd
  GOOGL          0.99%  Alphabet Inc Class A
  6954.T         0.90%  Fanuc Corp
  V              0.83%  Visa Inc Class A

======================================================================
[INST]  SENIOR PORTFOLIO ARCHITECT ANALYSIS
    Framework Istituzionale (Vanguard Style)
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[TAG]  CLASSIFICAZIONE ETF (deterministica, no metriche)
--------------------------------------------------
   VWCE.DE      25.0%  EQUITY_UNKNOWN       risk=UNKNOWN    (DEFAULT)
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   IWQU.L       25.0%  EQUITY_UNKNOWN       risk=UNKNOWN    (DEFAULT)
   EIMI.L       20.0%  EQUITY_UNKNOWN       risk=UNKNOWN    (DEFAULT)
   URA          10.0%  EQUITY_UNKNOWN       risk=UNKNOWN    (DEFAULT)
   BOTZ         10.0%  EQUITY_THEMATIC      risk=VERY_HIGH  (KEYWORD:THEMATIC)
   QTUM         10.0%  EQUITY_UNKNOWN       risk=UNKNOWN    (DEFAULT)

[WORLD] ESPOSIZIONE GEOGRAFICA EFFETTIVA:
--------------------------------------------------
   (Calcolata considerando composizione interna ETF)

   [US] USA              47.0%  ##################
   [ASIA] Emergenti         25.0%  ##########
   [EU] Europa           12.8%  #####
   [GLOBAL] Altri DM           9.8%  ###
   [JP] Giappone          5.5%  ##
--------------------------------------------------
   Totale:                     100.0%

   [WARN] GEOGRAPHIC DATA MISSING:
      2 ticker (20.0% del portfolio) usano DEFAULT_GEO.
      Ticker: BOTZ, QTUM
      L'esposizione geografica per questi assume 60% USA (può essere impreciso).


[CONF]  ESPOSIZIONE PER FUNZIONE ECONOMICA:
--------------------------------------------------
   [UP] Core Growth (rendimento principale)     60.0%  #####################
   [ASIA] Esposizione Emergenti                   20.0%  #######
   [TARGET] Tematici Alpha (scommesse)              20.0%  #######


[RESEARCH] ANALISI CONCENTRAZIONE E OVERLAP:
--------------------------------------------------
   Max posizione singola:     25.0%
   Top 3 posizioni:           70.0%
   Top 5 posizioni:           90.0%
   HHI (concentrazione):      0.195  (più basso = più diversificato)
   N. effettivo posizioni:      5.1  (vs 6 nominali)

   ✓ Nessuna falsa diversificazione significativa rilevata


[STRONG] PUNTI DI FORZA STRUTTURALI:
--------------------------------------------------
   1. Esposizione USA bilanciata (47%), non eccessivamente concentrato né sottopesato
   2. Esposizione EM adeguata (25%) per catturare crescita mercati emergenti

======================================================================
[INFO] VERDETTO FINALE: [WARN] INTENT_MISALIGNED_STRUCTURE_OK
   [WARN] INTENT MISALIGNED - Struttura OK

   [PIN] IMPORTANT: Questo NON è un problema strutturale. Il portafoglio è strutturalment...

   Motivazioni:
   • Portafoglio classificato come EQUITY_GROWTH_DIVERSIFIED con struttura coerente rispetto agli obiettivi impliciti
   • Esposizione USA bilanciata (47%), non eccessivamente concentrato né sottopesato
   • Trade-off identificato: Top 3 posizioni = 70.0% > 70% (soglia tipo EQUITY_GROWTH_DIVERSIFIED)....
   • Metriche di lungo periodo: CAGR -0.5%, Sortino -0.11, Max DD -84%
   • Costruzione solida con trade-off consapevoli e documentati

----------------------------------------------------------------------
   Analisi condotta secondo framework Senior Portfolio Architect
   Standard: Vanguard/BlackRock Institutional Guidelines
======================================================================

======================================================================
                        DATA QUALITY
======================================================================
FX converted: ['VWCE.DE']
Survivorship confidence: MEDIUM (77%)
Survivorship warning: Survivorship bias: confidenza MEDIUM (77%). Red flags: 1. Bias contenuto: risultati ragionevolmente affidabili per ETF
Correlation shrinkage intensity: 0.0%

======================================================================
                  OPTIMIZATION ANALYSIS (Markowitz)
======================================================================
Current Sharpe (expected):   0.839
Current Volatility (exp):    18.46%
Current Exp. Return:         17.50%
Current Sharpe (historical): 0.755
Current CAGR (historical):   13.98%
Current Vol (historical):    18.46%
Current MaxDD (historical):  -32.77%
Efficiency score vs. optimal: 75.5%
Sharpe gap: 0.272
Volatility gap: 1.45%

Suggestions:
- [Expected] Sharpe sub-ottimale: 0.84 vs 1.11 (gap 0.27)
- [Historical] Sharpe migliorabile: 0.76 vs 1.37 (gap 0.62)

Key portfolios (CAGR/Vol/MaxDD/Sharpe | weights):
```

```
  min_variance CAGR=11.59%
    Vol=17.01% MaxDD=-33.00% Sharpe=0.67 | VWCE.DE:40.0%, IWQU.L:39.2%, EIMI.L:19.1%, URA:0.3%, BOTZ:0.0%, QTUM:1.5%
  max_sharpe   CAGR=32.47%
    Vol=22.63% MaxDD=-35.74% Sharpe=1.37 | VWCE.DE:32.5%, IWQU.L:87.9%, EIMI.L:-47.5%, URA:20.9%, BOTZ:-93.7%, QTUM:100.0%
  max_return   CAGR=22.14%
    Vol=26.50% MaxDD=-33.52% Sharpe=0.88 | VWCE.DE:0.0%, IWQU.L:20.4%, EIMI.L:0.0%, URA:39.6%, BOTZ:0.0%, QTUM:40.0%
  risk_parity  CAGR=14.59%
    Vol=19.14% MaxDD=-32.76% Sharpe=0.77 | VWCE.DE:22.1%, IWQU.L:21.2%, EIMI.L:19.1%, URA:11.1%, BOTZ:12.9%, QTUM:13.5%

Frontier points: 128 successful

======================================================================
                     INTEGRATION TEST RESULTS
======================================================================
Status: FAIL
Summary: exit_code=4
Duration: 0.32s

stdout (tail):
  ============================= test session starts ==============================
  platform linux -- Python 3.14.2, pytest-9.0.2, pluggy-1.6.0 -- /usr/bin/python3
  cachedir: .pytest_cache
  rootdir: /home/nic/Desktop/Developer/GitHub/analisiPortafogli
  configfile: pyproject.toml
  plugins: cov-7.0.0, anyio-4.12.1
  collecting ... collected 0 items
  ============================ no tests ran in 0.01s =============================

stderr (tail):
  ERROR: file or directory not found: tests/integration

[CHART] Placeholder grafico salvato: output/portfolio_analysis.png (legacy charts disabled)
```