Supporting Analysis

USBRIF | Resource model, portfolio methods, and implementation | November 11, 2026

1. Management contribution

The management case combines staff capacity released, simpler oversight, continuity across private fund cycles and leadership changes, more selective private manager commitments, and flexible exposure. The 16-20 fund comparison quantifies one part of this case; the other capabilities support how the Investment Office selects, monitors, and adapts its investments. Portfolio sizing then tests whether an allocation can make a noticeable contribution within the selected illustrative limits.

The strategy replicating the US BRI (the “Strategy”) can be implemented through the USBRIF or a separately managed account (SMA). The modeled differences in initial and ongoing staff hours and resource costs between these implementation options are small and do not materially change the workload comparison presented here.

Staff capacity and operating workload. One strategy mandate replaces multiple separate diligence files, agreements, capital accounts, and review streams. The modeled annual difference is 905-1,146 staff hours, valued at $108,712-$137,562, available for other initiatives. The valuation measures the same released time, not an additional saving. Sections 2 and 3 show the workload and cost calculations.

Monitoring and reporting. A consistent holdings record and reconciliation process help the Investment Office focus on mandate limits, financing, collateral, and implementation differences. Reporting highlights limit breaches, reconciliation discrepancies, and other items requiring follow-up. These tasks are included in the workload model; no separate saving is added.

Continuous strategy exposure across fund cycles. An ongoing systematic mandate does not require successive closed-end funds to maintain exposure as earlier funds invest, exit, and wind down. This separates maintaining buyout-like exposure from deciding whether to commit to each new private fund vintage. Ongoing strategy and advisor oversight remains, while repeated successor fund selection is not a prerequisite for continuing the mandate.

Manager selection and commitment flexibility. The strategy provides an investable alternative against which the Investment Office can judge whether a private manager justifies the additional fees, illiquidity, and staff work. Continuous liquid exposure provides time to select preferred private opportunities and accept illiquidity when a private investment offers enough additional value to justify it. This gives the office more choice; it does not demonstrate that its manager selection will produce higher returns.

Leadership and advisor continuity. A mandate record covering rationale, funding source, review horizon, limits, and escalation triggers supports consistent decisions through leadership changes. With SMA implementation, direct ownership can permit retaining securities through an advisor transition, subject to account arrangements.

Exposure control. Under an appropriately authorized SMA, equity exposure can be adjusted within agreed limits without transferring capital to or from another investment manager. Fund exposure changes depend on fund terms.

Flexibility across investment mandates. The Investment Office can assess the strategy for buyout-like, public equity, or leveraged equity assignments. Where one allocation makes a separate manager mandate unnecessary, it could avoid that manager’s sourcing, diligence, onboarding, and oversight. Only work beyond the private fund comparison qualifies as additional savings. Capital and underlying risk remain counted once.

If the Investment Office identifies another assignment, we can apply the same cost and staff resource methodology to a separate, generally one-to-one mandate comparison at equal invested capital and comparable responsibilities. No additional hours or dollars are included in the current estimates.

Fit with existing investment processes. The strategy can be assessed as a public equity implementation of buyout-like exposure through existing manager selection, portfolio risk, and operational processes. The Investment Office determines mandate classification, permissions, and the approval route. First assess whether the strategy fits the portfolio. Then choose between fund and SMA implementation.

2. Operating comparison and workload

The operating comparison holds the stated capital amount equal between one allocation to the strategy and a new 16-20 private fund program. It estimates the Investment Office work each path requires. The separate portfolio illustration evaluates the strategy allocation's size within a generic portfolio; it does not determine the private program's appropriate size.

Program count. Jenkinson, Kim, and Weisbach report Preqin observations for 715 North American and 416 European buyout funds from the 2010 to 2016 vintages, averaging 12.89 and 10.33 deals per fund, respectively. Dividing approximately 200 by those averages results in 15.5 to 19.4 funds, rounded up to 16 to 20. [15] These averages provide a basis for estimating the fund count; actual company counts vary by fund.

Buyout replication construction. The US BRI uses sector allocation, company selection, and leverage to reflect broad buyout characteristics through publicly traded securities. Target sector allocations come from the inventory of companies backed by buyout funds tracked by PitchBook. Within those sectors, eligible public companies are ranked using a model that estimates their probability of being taken private. Selected constituents are equally weighted, with the number selected in each sector reflecting its target allocation. A leverage adjustment accounts for the greater financial leverage characteristic of buyout investing. These construction choices are designed to represent the broad characteristics of buyout portfolios. [1]

The workload model compares the Investment Office responsibilities associated with implementing and overseeing each approach. It does not assess the relative investment merits of the underlying portfolios.

Central staff hours	16 funds	20 funds	One Strategy allocation
Initial	1,514.50	1,889.00	72.00
Ordinary year	683.92	850.58	60.15
Full review year	1,277.92	1,593.08	91.81
Annual average: biennial full reviews	980.92	1,221.83	75.98
Initial hours released versus strategy	1,442.50	1,817.00	n/a
Annual hours released versus strategy	904.94	1,145.85	n/a

Initial private hours = 93.625 × fund count + 16.5 shared hours. Ordinary annual private hours = 41.6667 × fund count + 17.25 shared hours. A full review requires 42.4167 hours per private fund or 36.9583 strategy hours. Remove 5.2917 hours of overlapping annual work per mandate before spreading the incremental review across its frequency.

The "Work units" tab of the Inputs & Calculations workbook records 121 execution steps across 92 parent tasks, including initial diligence, legal review, onboarding, ongoing monitoring, cash administration, reporting, and full reviews. Hours equal event quantity × staff minutes / 60. Shared program work is counted once. ILPA guidance and PSERS, TMRS, and Milwaukee ERS policies inform activity scope; bfinance supplies additional practitioner context. We estimate task quantities and minutes for workload planning. [7-11, 13]

Base scope: the office performs the work in house, reviewing documents and conducting meetings remotely. The scenario for a new private fund program assumes four calls per fund annually and no distributions. Monthly account reconciliation, quarterly investment review, and weekly checks of financing and collateral buffers remain. Separate workbook sensitivities cover cash flows as private fund programs mature and approach liquidation. The baseline includes the account oversight tasks described above; the small fund implementation differences do not change the presented headline estimates.

3. Resource costs and savings

Modeled annual gross salary equivalents are $116,710 for analyst/operations, $205,308 for investment officer/counsel, and $282,030 for senior review. These preserve the original net salary reference inputs. The standardized 2026 U.S. federal income tax illustration uses married filing jointly, one income, the $32,200 standard deduction, no other income or credits, and no state/local or employee payroll tax adjustment. Loaded hourly cost equals gross salary equivalent × (1 + 46.06% employer cost proxy) / 2,080 paid hours. [5, 6]

The salary equivalence is an illustrative convention, not an estimate of actual staff filing status, tax reimbursements, or market compensation. No separate bonus, carry/equity, or overhead amount is added. The original BLS benefits/wages ratio, $17.03 / $36.97, is retained unchanged to isolate salary basis. This broad proxy includes paid leave and supplemental pay; it is not a separate accounting of employer costs. The workbook shows the gross-to-net reconciliation, editable inputs, and 35% and 55% employer allowance sensitivities.

Staff resource savings	16 funds versus strategy	20 funds versus strategy
Initial, one time	$176,735	$222,530
Annual, biennial full reviews	$108,712	$137,562
Annual, full reviews every year	$143,965	$182,135
Annual sensitivity to execution time, biennial reviews	$81,515-$135,909	$104,139-$170,986

The central annual range corresponds to 905-1,146 hours, approximately 0.44-0.55 staff years at 2,080 hours. Initial savings are separate from recurring savings. Hours, staff resource value, and equivalent staff years are alternative expressions of the same capacity; our totals do not add them together.

Annual savings measure	1.4% / $140M	1.85% / $185M	2.3% / $230M
Total staff resource savings	$108,712-$137,562	$108,712-$137,562	$108,712-$137,562
Savings per $1M invested	$777-$983	$588-$744	$473-$598
Cost savings / invested capital (bp)	7.77-9.83	5.88-7.44	4.73-5.98

Savings per $1M invested = annual resource value / invested capital × $1,000,000. Cost savings in basis points = annual resource value / invested capital × 10,000. The savings ranges represent 16-20 funds; uncertainty about execution time is shown separately above. Capital is the investor capital allocated to the strategy, not gross stock exposure or total institutional assets.

Resource savings value staff capacity available for other initiatives. Budget capacity can also arise from avoiding a planned hire or purchased service, but no institution-specific cash expense avoidance is included in these totals. Investment management fees, carry, borrowing, custody, and trading are separate from this operating resource comparison.

4. Portfolio contribution and sizing

Portfolio contribution and sizing use modeled net returns for the Strategy, constructed in Section 5. The baseline holds 60% MSCI ACWI Gross Total Return USD and 40% VBTLX, a US investment-grade bond proxy. Monthly rebalancing keeps target weights constant for this illustration. A strategy allocation of 1.4%, for example, reduces ACWI from 60% to 58.6%, with bonds unchanged. The sample spans January 2003-September 2026. The $10B asset base translates weights into dollars; it is not any institution's actual NAV. [2-4, 13]

Net portfolio result	1.4%	1.85%	2.3%
CAGR	7.7868%	7.8212%	7.8556%
Additional CAGR	10.75 bp	14.19 bp	17.62 bp
Annualized volatility	9.7752%	9.8222%	9.8697%
Additional annualized volatility	14.21 bp	18.90 bp	23.65 bp
Maximum drawdown	-35.5700%	-35.6425%	-35.7151%
Deeper maximum drawdown	22.55 bp	29.81 bp	37.07 bp
Worst rolling 36-month return gap	-59.98 bp	-79.29 bp	-98.61 bp

Baseline CAGR = 7.6793%, annualized volatility = 9.6331%, maximum drawdown = -35.3445%. The rolling gap is the difference between cumulative 36-month portfolio and baseline returns, not an annualized gap. Overlapping windows are descriptive observations, not independent trials.

Selected illustrative screens: at least +10 bp net CAGR; no more than 50 bp added volatility or deeper drawdown; and no worse than a 100 bp rolling three-year shortfall. These are not institution-specific limits. The shortfall sets the upper bound: 2.3% results in -98.61 bp; 2.4% results in -102.90 bp. Added CAGR is 9.9854 bp at 1.3% and 10.7509 bp at 1.4%. The range uses 10 bp steps and monthly rebalancing.

Rebalancing sensitivity. Resetting weights each January, with drift between resets, changes added net CAGR at 1.4% / 1.85% / 2.3% to 9.04 / 11.94 / 14.83 bp and the worst rolling three-year shortfalls to 74.41 / 98.26 / 122.08 bp. The same screens then qualify 1.6-1.8% on the 10 bp grid. The main illustration holds weights constant monthly to isolate allocation effects; neither convention includes rebalancing costs.

Excluding 2003, 2009, and 2013, the three strongest complete net return years, leaves positive added CAGR of 6.89, 9.09, and 11.28 bp; the minimum and midpoint then fall below the 10 bp hurdle.

Each additional 10 bp allocated adds approximately 0.77 bp net CAGR, 1.05 bp annualized volatility, and 1.61 bp deeper drawdown. Across 1-4% allocations, actual increments are 0.76-0.77 bp, 1.03-1.11 bp, and 1.61-1.62 bp. Reverse for reductions; use the workbook grid for exact sizes.

Rolling three-year portfolio results

The 250 overlapping 36-month windows use the same net series and portfolio rebalancing. These results cover hypothetical three-year holding periods; they are not based on actual leadership changes.

Three-year portfolio contribution	1.4% allocation	1.85% allocation	2.3% allocation
Windows above baseline	195 / 250	195 / 250	194 / 250
Percentage above baseline	78.0%	78.0%	77.6%
Median cumulative advantage	+35.49 bp	+46.89 bp	+58.27 bp
Worst cumulative shortfall	-59.98 bp	-79.29 bp	-98.61 bp

Gaps are cumulative return differences in bp. At each allocation, the largest shortfall occurred over March 2023-February 2026. Windows overlap.

5. Return methodology and data verification

We construct the modeled net return series for the Strategy used in portfolio contribution, sizing, and rolling three-year portfolio calculations from Morningstar's published levered index returns. The index targets 1.5 times equity exposure, resets semiannually, and allows daily drift. Published index returns already include borrowing at Fed Funds +2%; that expense is not subtracted again. [1, 2]

At target exposure, investor capital C supports 1.5C in stocks and 0.5C in borrowing. Reducing the borrowing spread from +2% to +0% saves 0.5C × 2% = 1.00% of investor capital annually. The advisory fee is 1.50% of investor capital, excluding borrowed exposure. Modeled net monthly return = published index monthly return + (1.00% / 12) - (1.50% / 12) = published index monthly return - (0.50% / 12). Both adjustments use opening investor NAV and enter the modeled return at month-end. [13]

The financing credit is a fixed approximation based on target borrowing, not a reconstruction of historical daily debt and invoices. Modeled net means after the specified advisory and financing adjustments; trading, market impact, and additional account expenses are excluded. The 50 bp annual rate adjustment does not imply an exactly 50 bp difference in compounded CAGR. Portfolio contribution and sizing calculations use this same modeled net monthly series throughout.

Gross and modeled net returns	Gross US BRI	Modeled net Strategy
CAGR	15.9539%	15.3800%
Annualized volatility	30.8109%	30.8109%
Maximum drawdown	-69.8719%	-70.1517%
Cumulative return	3,263.3797%	2,889.5414%

A constant monthly subtraction leaves sample monthly volatility unchanged while changing compounded return and drawdown. Separate calculations confirm that each of the 285 modeled monthly returns is below the published index return by 0.50% / 12, equivalent to 4.1667 bp per month.

Source monthly returns are rounded to the nearest 0.01% (1 bp). Derived statistics retain calculation precision for reconciliation; this does not increase source precision. Compounding produces a gross cumulative return of 3,263.3797%, versus the reported 3,263.74%. Rounding may explain the difference; exact reconciliation requires unrounded returns or index levels. Annual returns for 2016-2025 differ from the official levered index factsheet by at most 2.81 bp, and the ten-year maximum drawdown matches displayed precision.

The construction rules list a backtest start of December 20, 2002, and overall index inception of November 25, 2024; the levered variant factsheet lists a January 7, 2025 launch. January 2003 is the first full month used. The early record is backtested, and none of these results is a live track record for the USBRIF.

Portfolio calculation methods

Sample: January 2003-September 2026; 285 monthly observations. Using returns as decimals, CAGR = [product of (1 + each monthly return)]^(12 / 285) - 1. Annualized volatility = sample standard deviation of monthly returns × √12. Monthly drawdown = (wealth / highest wealth reached to date) - 1, starting with wealth of 1. Maximum drawdown is the most negative monthly drawdown on that path. Monthly portfolio return = baseline return + strategy weight × (strategy return - ACWI return).

6. Implementation and investment context

Implementation structure. The Strategy may be implemented through the USBRIF or an SMA. Direct account implementation can avoid a separate pooled fund's investor/NAV administration and standalone fund audit. Fund investors instead review fund reporting, providers, financial statements, and investor terms. The modeled 1.50% management fee applies to investor capital; financing is reflected separately. Fund operating costs, trading, and other implementation expenses are excluded from modeled returns. Actual expense allocation, permissions, liquidity, and commercial terms govern each implementation. [13]

Benchmark use. Private manager comparisons should match cash flow dates, net costs, and relevant strategy and vintage exposures. PME is a comparison method that can use the US BRI as its reference index; it is not a competing index. Peer quartiles remain a separate comparison. [14]

Implementation steps: agree upon mandate classification and limits; confirm the selected vehicle's custody, financing, and investor terms; complete advisor and operational diligence; document authority, liquidity, and termination; assign reporting, exception escalation, and responsibilities for financing and collateral buffers; approve and fund the allocation. Actual permissions and commercial terms govern implementation. [1, 13]

Private equity comparison. Across 93 final quarters, January 2003-March 2026, compounded quarterly CAGR is 15.54% for the US BRI, 14.97% for the modeled net Strategy, and 14.46% for PitchBook Global PE net. PitchBook's series includes buyout, growth/expansion, turnaround, and diversified PE; it is not exclusively US buyouts. Quarterly aggregate NAV growth adjusted for cash flows is not a fund investor IRR. Fees and carry are already reflected in the PE series. [12]

Holdings overlap. As of September 30, 2026, the 192-company basket of the US BRI shared nine names with the ACWI ETF proxy; these represented 4.65% of the US BRI's weight. The IWM small-cap proxy shared 145 names (76.51% of the US BRI's weight), and the IVV S&P 500 proxy shared 16 names (8.47%). This snapshot helps the office review overlapping holdings and concentration when deciding which existing allocation would fund the strategy; it does not establish historical independence or low return correlation. [16]

7. References

[1] Morningstar Indexes. US Buyout Replication Index construction rules. July 2025.

[2] Morningstar. US Buyout Replication LR TR USD factsheet, F00001P1NO. September 2026.

[3] MSCI. ACWI Gross Total Return USD, index 892400.

[4] Vanguard. Total Bond Market Index Fund (VBTLX), annual returns; monthly history via Yahoo Finance.

[5] Third Wire. Gross salary equivalents and role mapping in the accompanying Inputs & Calculations workbook. November 2026.

[6] US Bureau of Labor Statistics. Full-time private-industry compensation. June 2026.

[7] ILPA. Due Diligence Questionnaire 2.0. 2021.

[8] PSERS. External Investment Manager Due Diligence and Monitoring Policy.

[9] TMRS. Investment Practices and Performance Evaluation. 2024.

[10] Milwaukee ERS. Private Equity Policy. September 2023.

[11] bfinance. Operational due diligence process.

[12] PitchBook. Global Benchmarks Q1 2026 with preliminary Q2 2026, pages 4-5 and 17. Primary analysis uses final quarters only.

[13] Third Wire. Implementation assumptions, resource estimates, and portfolio calculations presented in this analysis and the accompanying Inputs & Calculations workbook. November 2026.

[14] CFA Institute. Guidance Statement on Benchmarks for Firms. 2021, pages 12-13. Private market benchmark selection and PME methodology.

[15] Jenkinson, T., Kim, H., and Weisbach, M. S. Buyouts: A primer. Handbook of the Economics of Corporate Finance, Vol. 1, 2023, Table 2, p. 206. Preqin fund data.

[16] BlackRock iShares. ACWI, IWM, and IVV fund holdings, September 30, 2026; reconciled with the US BRI constituent basket.