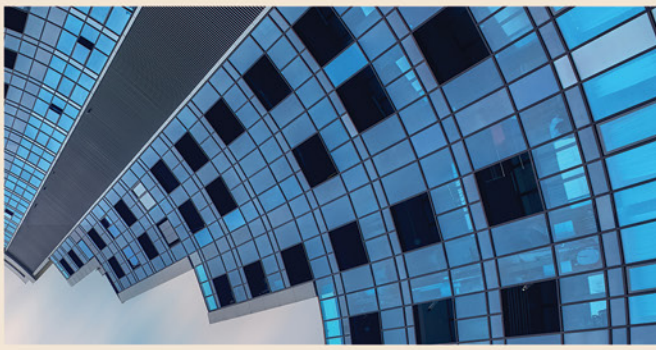
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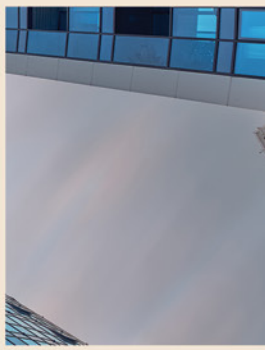
Literature Review

Total Portfolio Approach: A Critical Literature Review

Redouane Elkamhi
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TOTAL PORTFOLIO APPROACH: A CRITICAL LITERATURE REVIEW

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Introduction

The term "total portfolio approach" (TPA) may be relatively new, but the ideas underpinning it are not. Our aim with this literature review is to show how TPA fits within almost a century of evolving investment frameworks. We show how TPA helps clarify the different labels used for related ideas and evolving institutional needs, including integrating decisions, managing constraints explicitly, and adapting when the opportunity set changes.

At its core, TPA is best understood as a governing principle for institutional investing. It organizes decision-making, risk oversight, and accountability around the total fund (and, where relevant, the total balance sheet), rather than around asset-class silos. Within this view, the portfolio is not simply a fixed mix of assets, but a policy over time: It is a set of conditional actions taken under clearly specified objectives and constraints. In practice, institutions that adopt TPA typically do so because they do not view the optimal portfolio as static; instead, they believe that adapting to changing opportunity sets is necessary to achieve long-term objectives. While this belief is not universal, it is a central motivation for adopting a TPA framework.

The intellectual transition behind this view is clear. It runs from the logic of mean–variance diversification and separation (Markowitz 1952; Tobin 1958), which naturally supports fixed policy asset allocations, to the intertemporal logic of portfolio choice under changing opportunity sets (Samuelson 1969; Merton 1969, 1971, 1973), in which optimal decisions depend on state variables, hedging motives, and the evolution of future investment opportunities. TPA can be seen as the institutional expression of this shift: It translates a state-contingent view of portfolio choice into a governance structure capable of acting on it.

Over multiple decades, successive market cycles have exposed the limits not only of static policy portfolios but also of the governance frameworks designed to support them. Periods of inflation and disinflation, breakdowns in equity–bond correlations, episodes of stagflation, liquidity stress, and leverage unwind dynamics have all challenged the assumption that diversification alone provides reliable protection—particularly when it is needed most.[1] These experiences repeatedly forced institutions to confront a practical question that sits at the heart of TPA: Are the risk relationships and opportunity sets embedded in a policy decided years

[1]A large empirical literature documents that expected returns, volatilities, and correlations are conditionally time-varying and can shift across regimes (see, for example, Harvey 1989). Guidolin and Timmermann (2007) show that conditional moments and regime shifts materially alter diversification properties and optimal allocation.

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ago still the right ones today, and if not, does the governance system allow timely, disciplined adaptation?

A natural follow-up question is how TPA differs from the traditional practice of periodically reviewing and updating a strategic asset allocation (SAA). In a conventional SAA framework, adaptation typically occurs through discrete policy revisions, often triggered by changes in objectives or market conditions. By contrast, TPA embeds the capacity for continuous, cross-asset decision-making within the governance structure itself, including how decision rights, incentives, and evaluation frameworks are designed. The distinction is therefore not simply one of frequency but also of structure. Under TPA, adaptation is part of the operating model—supported by governance and incentive alignment—rather than an exception to it.

TPA is needed because the institutional context has changed. Large portfolios have become more complex; they now incorporate private assets, leverage, overlays, and explicit liquidity management. Governance systems originally designed for stable, liquid policy portfolios can struggle in this environment, particularly when risks cut across asset classes and regime shifts are material. Incentives and career concerns can further reinforce benchmark-centric behavior even when decision makers recognize the need for integration (Holmström 1979; Fama and Jensen 1983; Scharfstein and Stein 1990). For this reason, TPA is inseparable from governance: Delegation, decision rights, and evaluation design are themselves part of the investment technology (Elkamhi and Lee 2025b).

A key driver of this tension is the interaction between liquid and illiquid assets. Much of the empirical and theoretical foundation of asset allocation—developed from the 1960s through the 1990s—was based on public markets, where assets can be rebalanced continuously and liquidity is largely taken as given. In modern portfolios, however, private assets adjust slowly through capital calls, distributions, and valuation changes. This mismatch in adjustment speed makes static policy weights difficult to maintain in practice and introduces path dependence into portfolio evolution. These challenges are amplified by the widespread use of leverage and derivatives, which extend the problem from portfolio allocation to balance sheet management. Collateral requirements, financing constraints, and liquidity buffers must be managed at the total fund level, while illiquid assets cannot be readily mobilized to meet short-term needs, particularly in stress situations. As a result, portfolio construction, liquidity management, and risk management become inseparable.

These developments help explain why the idea of "managing the total portfolio" has gained prominence. At a high level, most institutions would agree with this objective. The more relevant question, however, is practical: If many organizations already claim to manage the total fund, what actually distinguishes TPA in practice?

To address this question, this literature review maps TPA against neighboring integrated frameworks and related terminology (e.g., ALM, LDI, LAI, reference portfolios, factor- and risk-budgeting approaches, and overlays).[2] This comparison helps separate differences in method, measurement, and governance, which are often conflated in practice. The literature is then organized along three lenses: (i) the conceptual and institutional foundations that explain why TPA has emerged and why it is becoming relevant; (ii) governance, delegation, culture,

[2]ALM, LDI, and LAI stand for asset/liability management, liability-driven investing, and liability-aware investing, respectively.

and incentive alignment, which determine whether a total fund perspective translates into decision-making; and (iii) the tools and implementation requirements that make such a framework operational, including factor lenses, risk budgets, overlays, and private asset integration (Bass et al. 2017; Rudin et al. 2020; Mladina and Moore 2020; Elkamhi et al. 2022a,b, 2023a,b, 2024a,b,c).

Finally, this review briefly sheds light on performance expectations. There is no theorem that states "total portfolio approach beats strategic asset allocation." Instead, the literature suggests mechanisms through which a well-governed, state-aware operating model could improve outcomes. For example, disciplined conditioning and dynamic risk management could improve performance, but implementation frictions could destroy that added value if governance and measurement are weak (Fleming et al. 2001).

The remainder of this review is organized as follows. The next section traces the evolution of portfolio construction from static allocation frameworks to intertemporal and state-dependent approaches. This is followed by a discussion of what distinguishes TPA from related integrated frameworks and why it has gained relevance in the current institutional context. The subsequent sections focus on implementation by examining governance, delegation, incentives, and the tools required to make total fund decision-making operational. The final sections discuss performance expectations, evidence, and measurement challenges.

To complement the conceptual discussion, the paper incorporates concrete examples and implementation illustrations throughout. Selected examples are introduced in the main text, where relevant, and are further summarized in the exhibits. The exhibits highlight how total fund decisions can be expressed in practice across asset classes, risk exposures, and liquidity management; in particular, the implementation section develops these ideas in more detail. Exhibit 5 provides a structured summary of how objectives, delegation, incentives, and reporting interact in a TPA framework. This structure is intended to ensure that readers can connect the high-level discussion to practical decision-making contexts.

Overall, the literature points to a consistent conclusion: TPA is best understood as an institutional response to a long-standing gap between theory and practice. While dynamic portfolio choice is theoretically optimal under changing opportunity sets, its implementation depends critically on governance, incentives, and organizational design. In this sense, TPA does not introduce a new portfolio theory; rather, it reflects an evolution in how existing theory is translated into institutional practice.

A Story of Portfolio Ideas and Institutional Practice

Once upon a time, portfolio construction appeared to be a clean mathematical problem. In the early 1950s, Harry Markowitz formalized the idea that investors should not evaluate securities one by one, but rather as parts of a portfolio whose risk depends on how assets move together.[3] In his mean–variance framework, an investor chooses weights to maximize expected return for a given level of variance (or, equivalently, to minimize variance for a given expected return). The key insight is that correlation is an input, not a footnote: Combining imperfectly correlated risky assets can reduce portfolio volatility without sacrificing expected return. Plotting the set of feasible portfolios in mean–variance space produces the efficient frontier: the set of portfolios for which no alternative offers higher expected return at the same level of risk (Markowitz 1952).

James Tobin then added a second, institutionally crucial step. Investors should also hold a "risk-free" asset (cash or a Treasury bill) so that the efficient frontier in risky assets becomes a straight line from the risk-free rate tangent to the risky frontier, known as the capital market line. This creates the two-fund separation result: The complex task of choosing among many risky assets collapses into two decisions. First, identify the single tangency risky portfolio (the "best" risky mix given prices). Second, choose how much total risk to take by mixing that risky portfolio with the risk-free asset: more risky allocation for a higher expected return, more risk-free allocation for lower volatility (Tobin 1958). In this way, "asset selection" and "risk appetite" become cleanly separable choices, a feature that would later prove attractive to boards and committees.

Together, Markowitz and Tobin delivered a governance-friendly story. Diversification is a disciplined optimization problem; there exists a well-defined "optimal risky portfolio"; and investors differ mainly in risk tolerance, not in which risky assets they should hold. In its simplest form, the prescription becomes almost procedural: Construct a diversified risky portfolio, pick your risk level, and maintain the mix through time.

For many institutions, that elegant idea was translated into a simple institutional operating rule: 60/40. In its most basic form, 60/40 is a practical expression of two-fund separation: Hold a single diversified risky portfolio (often proxied by equities), scale overall risk by mixing it with a safe asset (often proxied by high-quality bonds and cash), and then rebalance to a fixed policy mix. For committees, it also had an additional virtue: It could be explained simply and governed through a limited set of high-level decisions, primarily broad policy weights, rebalancing rules, and the overall level of portfolio risk. At the same time, many long-horizon institutions, especially pensions and insurers, do not define "risk tolerance" purely as tolerance for return volatility; they define it relative to obligations (e.g., funded status, interest-rate and inflation sensitivity, cash flow resilience). In that setting, the separation logic is naturally extended in practice toward a "three-building-block" view: a return-seeking risky portfolio, a safe or liquidity reserve, and a distinct hedge portfolio aligned with liability or state-variable risks.

What began as elegant theory thus evolved into something more consequential: a governance system. Strategic asset allocation (SAA) translated portfolio theory into an institutional

[3]Long before the formalization of modern portfolio theory, professional investing was primarily conceived as an exercise in security selection. The central task was to identify mispriced securities, insist on a margin of safety, and manage risk through valuation discipline and diversification across individual holdings (Graham and Dodd 1934; Graham 1949). In that framework, portfolio construction was largely an aggregation of security-level judgments, and the key governance question for institutions was whether they had selected the right managers and whether those managers followed a sound and repeatable investment process.

operating model—one built on fixed policy weights, benchmarks, and delegated mandates. By setting the structure, it made investing observable, auditable, and defensible. Asset classes became more than categories of risk; they became units of accountability.

A second institutional habit reinforced this structure. The Brinson decompositions (Brinson et al. 1986; Ibbotson and Kaplan 2000) were widely interpreted as showing that policy allocation explains most outcomes. Whether or not that interpretation was precise, it had a powerful effect: It legitimized stability. Over time, this hardened into a cultural norm—good investment processes are those that look deliberate, repeatable, and explainable relative to benchmarks. As markets expanded and portfolios diversified, SAA scaled accordingly. The endowment model popularized by David Swensen extended the opportunity set to include private equity, real assets, and alternative risk premia (Swensen 2005, 2009). Yet the governance model remained largely intact. New assets were added, but the structure persisted: more sleeves, more benchmarks, more interfaces. The result was a more sophisticated portfolio—but also a more fragmented one.

Academic research, meanwhile, did not remain confined to the single-period framework established by Markowitz and Tobin. Even as mean–variance optimization became the dominant practical template, researchers recognized that most investors do not make a one-shot allocation and walk away. They invest over many years, consume or pay benefits over time, face changing risks, and learn new information as markets evolve. Samuelson (1969) formalized this intuition by casting portfolio choice as a lifetime consumption–investment problem solved through dynamic programming. Under restrictive conditions, most notably stable opportunity sets and independent returns, he showed that a constant risky share can be optimal. In that sense, static allocation emerges as a special case, under heroic assumptions, rather than as a universal principle.

Merton (1969, 1971) extended the framework by allowing the investment opportunity set itself to vary through time. When expected returns, interest rates, volatilities, or correlations evolve, optimal portfolio choice becomes inherently state-dependent. In this setting, optimal holdings reflect two components. The first is a myopic demand, which resembles the Markowitz–Tobin solution applied as if the current period were the only one and captures the familiar intuition that investors allocate more to assets when expected returns are high and less when they are low. The second is an intertemporal hedging demand, which reflects the need to protect against unfavorable changes in future investment opportunities.

This distinction is subtle but important. Investors are not only choosing how much risk to take today but also determining how to position the portfolio to preserve their ability to take risk in the future. For example, if falling interest rates both increase the value of long-duration bonds and signal lower future expected returns, holding those bonds can hedge against a deterioration in future opportunities. Similarly, assets that preserve capital during market stress can serve as intertemporal hedges by maintaining an investor's ability to deploy capital when expected returns are higher following a drawdown. More broadly, maintaining liquidity buffers or inflation-sensitive exposures can help protect against states of the world—such as funding stress or rising inflation—in which future investment conditions become more constrained. These considerations are particularly important for liability-driven investors, such as pension funds, where liquidity and inflation exposures directly affect both asset performance and liability dynamics. In this sense, portfolio choice is no longer a one-time allocation but a dynamic policy that responds to both current valuations and expected changes in the investment environment.

Merton's intertemporal capital asset pricing model (CAPM) (1973) formalizes this insight further in equilibrium.[4] Expected returns reflect not only market exposure but also sensitivity to state variables that shift the opportunity set. This provides a conceptual bridge from static asset-class weights to dynamic risk-factor exposures: Portfolios that hedge relevant state variables may be valuable even if they appear suboptimal in a purely single-period, mean–variance framework. Campbell and Viceira (1999, 2002) translate these ideas into long-horizon allocation settings; they show how optimal exposures vary with predictors, such as interest rates, inflation, and expected returns, and quantify the welfare costs of ignoring hedging and timing considerations.[5] The implication is straightforward: When the opportunity set moves, "set it and forget it" is generally not optimal, even if it remains organizationally convenient.[6]

A complementary perspective that runs alongside the genesis of TPA comes from Andrew Lo's adaptive markets hypothesis (Lo 2004), which provides a behavioral and institutional explanation for why the investment opportunity set is time varying. In intertemporal models, state variables shift expected returns, volatilities, and correlations, implying that investors should adapt. Lo's adaptive markets hypothesis (AMH) argues that these shifts reflect competition, learning, innovation, and the evolving ecology of market participants rather than statistical noise. As strategies become crowded, premia can compress; after losses, capital may withdraw and opportunities re-emerge. Regulation and technology reshape who supplies liquidity and bears risk. Predictability and diversification are thus regime-dependent.[7] Lo's practitioner-oriented work (e.g., Lo 2012) extends this insight to institutions: The task is not merely to forecast returns but also to design robust decision processes that recognize regime change, model uncertainty, and limits to delegation. Intertemporal theory shows that the portfolio choice is a policy reacting to state variables. AMH explains why those state variables evolve and why fixed, one-size-fits-all allocations can fail when competitive dynamics shift.

The theory says that the opportunity set moves, so a fixed mix is generally not optimal. Practice says that the opportunity set is too uncertain, and delegation too fragile, to allow frequent policy changes. This created a quiet tension that still lives inside many investment committees. Even when investors believe in time-varying premia, the organizational costs of acting on that belief can dominate. Incentives amplify the inertia: Benchmark-centric evaluation can reward consensus behavior, encouraging herding and short-horizon risk management (Scharfstein and Stein 1990; Brown, Harlow, and Starks 1996).

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[4]This intertemporal framework builds on and is complemented by a broader literature that models dynamic portfolio choice with state variables and stochastic investment opportunities, including Breeden (1979); Cox and Huang (1989); Duffie and Epstein (1992); Campbell (1993); Kim and Omberg (1996); Campbell, Chan, and Viceira (2003); and Campbell et al. (2004), each of which formalizes in different ways how optimal portfolios depend on changing opportunity sets and investor preferences over time.

[5]Related empirical and predictive-return work further supports the idea that expected returns and discount rates vary with observable state variables. See, for example, Campbell and Shiller (1988) and Campbell (1993), which link valuation ratios and macro predictors to time-varying expected returns in ways that materially affect long-horizon allocation decisions.

[6]More generally, dynamic non-myopic portfolio behavior under predictable returns implies explicit hedging demands and state-contingent tilts beyond mean–variance logic (Kim and Omberg 1996; Campbell, Chan, and Viceira 2003), reinforcing the idea that static allocations are special cases of richer intertemporal policies rather than universal prescriptions.

[7]Related work on limits to arbitrage and behavioral dynamics further suggests that opportunity sets can evolve endogenously as investor behavior changes. See De Long et al. (1990) and Shleifer (2000), which emphasize that market structure and investor constraints can generate persistent mispricing and instability.

To be clear, many institutions did not ignore the intertemporal message entirely. Instead, they tried to incorporate it within the SAA architecture through "add-ons"—tactical tilts around policy weights, dynamic asset allocation overlays, opportunistic sleeves, or delegated mandates designed to time exposures or rotate across premia. The intent was sensible: If expected returns and risks vary with the state of the world, then some capital should be able to move as the opportunity set moves. In practice, this often took the form of modest tracking-error budgets, risk overlays, or "completion portfolios" meant to improve total fund outcomes without rewriting the policy portfolio itself. But these efforts also exposed a deeper institutional struggle. Fixed policy weights and benchmarks create a clear line of accountability: Everyone can observe deviations, attribute performance, and decide whether results reflect skill or luck. Material tactical or dynamic decisions, by contrast, tend to be harder to justify *ex ante* and easier to second-guess *ex post*. When a tactical tilt works, it can be dismissed as luck; when it fails, it can be framed as a violation of discipline. This asymmetry creates a governance "career risk" problem: Even if time-varying premia exist, the personal and institutional costs of acting on them can be high.

As a result, many funds treated dynamic positioning as something that must be contained, including a special mandate, a small sleeve, or a separate team, rather than something that belongs to the core portfolio construction process. The irony is that the institution may believe the opportunity set is changing yet still behave as if the policy portfolio is the only legitimate reference point. In a sense, implementation becomes a negotiation between two languages: the language of theory (state dependence, hedging demands, changing regimes) and the language of governance (benchmarks, tracking error, peer risk, and committee defensibility).

This gap is one reason "tactical vs. strategic" debates persist. In a strict SAA worldview, policy is long-term and legitimate, while timing is short-term and suspect. Yet many of the variables that move the opportunity set—such as interest rates, inflation regimes, volatility, liquidity, and the price of risk—do not move on convenient horizons. They evolve continuously, often faster than governance systems can adjust. The question becomes operational: Who can act, how much, and under what constraints?

The emergence of the modern "TPA" label reflects an attempt to resolve this tension. TPA is not a rejection of SAA's discipline; it is a redefinition of where that discipline resides. Under SAA, discipline is anchored in fixed policy allocations. Under TPA, it is anchored in a governing principle: that the portfolio should be managed as a single integrated balance sheet, with governance structures (e.g., decision rights, guardrails, and accountability) designed to support adaptation when conditions change. Put differently, if an institution truly manages its assets and, where relevant, liabilities as an integrated whole, TPA asks how decisions should be framed, who should make them, and how they should be evaluated. It also raises a natural follow-up: If opportunity sets, correlations, liquidity conditions, and economic regimes evolve, as suggested by Sharpe (2010), should a policy set years ago remain the default, or should institutions establish governed mechanisms to update it?

These experiences repeatedly forced institutions to confront a deeper question that sits at the heart of TPA. In addition to asking whether a policy set years ago should be updated, is a fixed, sleeve-based governance structure well suited to environments in which opportunity sets, correlations, liquidity conditions, and constraints can change materially over time? Because several of these distinctions can seem abstract at first, the later sections in this literature review provide more concrete implementation examples, culminating in Exhibit 5, which summarizes how objectives, delegation, incentives, and reporting fit together in practice.

Seen this way, TPA is less a new idea than a reconfiguration of existing ones. It takes the intertemporal insight—that optimal portfolios are state-contingent—and asks what kind of institution is required to act on it. Just as SAA translated Markowitz and Tobin into a governable structure, TPA can be viewed as an attempt to translate intertemporal portfolio theory into an implementable institutional framework.

What TPA Is—and Why It Is Gaining Relevance Now

This section clarifies what TPA means—and does not mean—in practice. It offers a working definition, addresses common sources of confusion, and situates TPA within the broader landscape of integrated portfolio approaches. Rather than introduce a new optimization framework, our goal is to make explicit what changes institutionally when an organization operates from a total fund perspective.

Defining TPA: What It Is—and What It Is Not

Practitioner definitions vary in phrasing, but at its core, TPA is best understood as a preparedness-centered governing principle for institutional investing. It is neither a new optimizer nor simply a statement that an institution "cares about the total fund." Its purpose is to ensure that the organization is structurally capable—analytically, operationally, and institutionally—of acting coherently in pursuit of total fund objectives as the opportunity set evolves. This distinction from SAA is fundamental: SAA emphasizes planning around a fixed policy mix, while TPA emphasizes preparedness (i.e., the ability to make and implement decisions as conditions change) within a governance framework that makes such actions both possible and legitimate.

Elkamhi and Lee (2025b) place this preparedness logic at the center of the TPA definition. They frame TPA as a repeatable decision architecture built around four explicit questions that many policy processes leave implicit: What should we do? How do we do it? Would we do it? And could we do it? The emphasis is not on optimization, but on institutional readiness. A total fund perspective must be translated into clearly defined decision rights, explicit guardrails, and executable pathways so that adaptation—particularly under stress—is governed rather than improvised.

TPA does not require eliminating the notion of a starting or long-run portfolio anchor. In practice, some institutions may retain a baseline portfolio—whether framed as a base allocation, reference portfolio, or long-run policy posture—that reflects their objectives and constraints. Others may choose not to formalize such an anchor at all. The key distinction is that, under TPA, the existence and design of any such anchor become a governance choice rather than a defining feature of the investment framework. What matters is not the presence of an anchor per se, but whether the institution is able to build and adjust the total portfolio in a way that reflects its long-term objectives as market conditions evolve, within clearly defined guidelines and constraints. When an anchor is used, its role is typically as a reference point—for example, for communication or performance evaluation—rather than as a fixed allocation that constrains subsequent decisions.

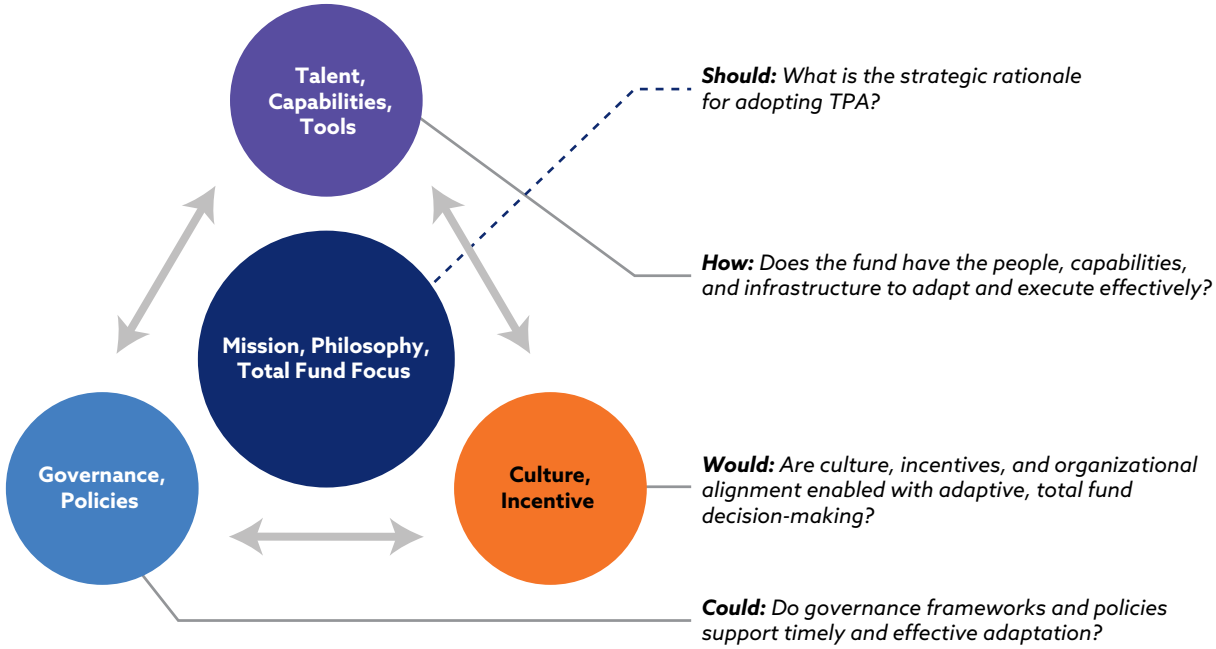
These four elements—answering the policy questions of should, how, would, and could we do it—are best understood not as sequential steps but as necessary and jointly binding conditions. A failure in any one dimension can prevent the institution from acting in a manner consistent with TPA. Together, they define whether the organization is capable of making coherent, timely, and accountable decisions at the total fund level.

- **Should—Purpose and Design Layer.** The "should" dimension defines the strategic rationale for adopting TPA. It anchors the investment program in a fiduciary purpose and a clearly articulated objective function. This includes return targets, surplus management, resilience, downside tolerance, liquidity requirements, liability sensitivity, and any mission-specific constraints. At this level, the institution defines what success means. It establishes the objectives against which all portfolio decisions should ultimately be evaluated and ensures that the total fund—rather than individual asset-class mandates—is the unit of intent.
- **How—Capability and Infrastructure Layer.** The "how" dimension addresses whether the institution has the analytical capability, infrastructure, and balance-sheet capacity to act. This includes cross-asset risk and factor frameworks that allow exposures to be measured consistently across the portfolio (Ang 2014; Bass et al. 2017; Elkamhi et al. 2022a, 2023b; Lee and Salerno 2023). It also requires the ability to understand and manage liquidity, leverage, and funding constraints at the total fund level (Acharya and Pedersen 2005; Brunnermeier and Pedersen 2009). In addition, it includes the capacity to implement exposures efficiently—through mechanisms such as overlays and modular allocation tools—so that desired positioning can be achieved without unnecessary structural frictions (Rudin et al. 2020). Together, these capabilities determine whether identified opportunities can be translated into actionable positions. Without them, even well-specified objectives cannot be implemented effectively.
- **Would—Incentives and Culture Layer.** The "would" dimension addresses whether the organization will act, even when it has both the intent and the capability to do so. In practice, this is often where breakdowns occur. Benchmark-centric evaluation, peer risk, and career concerns can rationally induce herding or inertia, even when decision makers recognize the need for change (Scharfstein and Stein 1990; Chevalier and Ellison 1997). This layer focuses on whether incentive structures, performance evaluation frameworks, and organizational culture align behavior with total fund objectives (Elkamhi and Lee 2025b). It determines whether decision makers are encouraged—or discouraged—from making cross-asset trade-offs, reallocating risk, or deviating from established norms when warranted.
- **Could—Governance and Permission Layer.** The "could" dimension defines whether the institution is permitted to act. It reflects the governance framework within which decisions are made, including decision rights, committee structures, escalation protocols, and policy constraints. This layer determines whether capital and risk can be reallocated across the total fund in a timely and accountable manner. It specifies who has the authority to act, under what conditions, and with what oversight. Without this governance layer, even well-designed strategies and capable teams cannot translate insight into action.

Taken together, this framework shifts the focus from portfolio construction to decision design. It clarifies that TPA is not defined by the use of particular tools or models, but by whether the institution is organized to act on a total fund perspective. In this formulation, TPA treats the total fund—and where relevant the broader balance sheet—as the unit of decision, linking objectives, constraints, and accountability directly at that level. The preparedness framework illustrated in **Exhibit 1** provides a compact representation of this architecture and sets the stage for the discussion that follows.

Exhibit 1 makes explicit that TPA is not defined by a single tool or model. Instead, it is a system of interdependent conditions that together enable total fund decision-making.

Exhibit 1. Institutional Foundations for Successful TPA Implementation



Source: Adapted from Elkamhi and Lee (2025b).

Notes: This framework outlines the key elements required for TPA implementation. It emphasizes the alignment of mission, governance, culture, and capabilities to support adaptive, total fund decision-making.

TPA is often mistaken for a collection of tools—risk reporting, factor frameworks, reference portfolios, dynamic allocation, or liquidity-aware portfolio construction. These tools can support TPA, but they do not define it. An institution can use many of them and still operate under a traditional SAA model if decisions remain anchored to asset-class benchmarks, segmented authority, and relative-performance incentives.

The distinction is institutional. TPA becomes actionable only when governance, capabilities, incentives, and guardrails allow decisions to be made from a total fund perspective. Under SAA, discipline comes from adherence to target weights and benchmarks. Under TPA, discipline comes from alignment with total fund objectives and constraints, with flexibility exercised through governed decision-making.

Viewed this way, TPA is not defined by the instruments or models an institution uses, but by how decisions are made, evaluated, and implemented.

Exhibit 2 contrasts the conventional SAA model with the TPA orientation across key institutional dimensions. It highlights how changes in governance, objectives, risk language, decision rights, and learning systems reshape the investment process when the total fund becomes the primary unit of decision-making.

Exhibit 2. From SAA to TPA: A Framework Perspective

Dimension	Strategic Asset Allocation (SAA)	Total Portfolio Approach (TPA)
Primary Unit of Management	Asset-class sleeves or mandate buckets	Total fund (and, where relevant, total balance sheet)
Core Investment Question	What long-term asset mix should we hold?	How should the total fund be positioned given current conditions and constraints?
What Guides Portfolio Positioning	Fixed asset-class targets based on long-term assumptions	Total fund objectives and risk constraints, sometimes supported by a reference portfolio
Role of Asset Classes	Core building blocks of portfolio design	Tools for implementing desired total fund exposures
Objective Function	Benchmark-relative performance and policy adherence	Mission-driven outcomes (return, funded status, liquidity, resilience)
How Risk Is Defined	Tracking error and asset-class volatility	Total fund risk drivers and constraints (liquidity, leverage, concentration, tail risk)
How Decisions Are Made	Mostly within asset-class silos, coordinated periodically	Explicit cross-asset trade-offs at the total fund level
Default Adjustment Mechanism	Rebalance back to target weights	Reposition when opportunity set or constraints change
Governance Approach	Control through fixed allocations and benchmarks	Control through objectives, delegation, and guardrails
Decision Rights	Distributed across asset classes with escalation	Delegated authority with clear boundaries and accountability
Role of the Board	Approves asset mix and monitors deviations	Sets objectives and constraints; oversees outcomes
Role of the Chief Information Officer (CIO)/Team	Implement policy and add value within mandates	Allocate capital and risk across the total fund
Benchmarking Approach	Central to structure and evaluation	Supporting tool, secondary to total fund objectives
Performance Evaluation	Sleeve-level relative performance	Total fund outcomes, complemented by role-based evaluation
Incentives	Can reinforce silo behavior	Designed to align with total fund outcomes
Implementation Model	Multiple teams managing separate mandates	Coordinated teams managing one portfolio with clear delegation
Definition of Discipline	Staying close to target weights and benchmarks	Staying within total fund objectives and risk boundaries
Learning and Attribution	Allocation vs. selection within sleeves	Focus on total fund decisions and trade-offs

Why TPA Now, an Institutional Evolution

Given the context above, the rise of TPA is easier to understand. The first reason why TPA is gaining traction is because institutional portfolios and governance systems have been under stress simultaneously. There have been repeated cycles of recessions, inflation shocks, shifts in equity–bond correlations, liquidity events, and credit dislocations. There have been structural market transitions from the dot-com era to post-global financial crisis regulation. And now there is renewed inflation uncertainty. While navigating these cycles, many funds have learned a practical lesson: Large drawdowns and policy breaks are not easily recouped, and markets often move faster than committees can renegotiate changes in policy weights. The gap between market speed and governance speed becomes more costly as portfolios grow more complex and balance sheets become more intertwined through private assets, overlays, co-investments, and internal platforms (Snowden and Boone 2007).[8]

Initially, in response to these pressures, many institutions pursued an incremental path: They sought to preserve SAA as the anchor and add adaptation at the margin. Tactical tilts, dynamic asset allocation overlays, portable beta and portable alpha programs, completion portfolios, and opportunistic sleeves were all attempts to operationalize time-varying opportunity sets while retaining governance stability. The logic was sound, but the difficulty was structural. Meaningful reallocations inevitably competed with core sleeves and benchmark-relative evaluation, making large cross-asset moves politically harder than small tactical budgets. This tension reflects well-documented agency frictions in delegated investment management (Jensen and Meckling 1976; Holmström 1979; Scharfstein and Stein 1990; Brown, Harlow, and Starks 1996). What struggled was not the analytics, but the control system. This concern also connects to delegated-agent settings, in which pricing and portfolio outcomes depend on the incentives and constraints facing decision makers rather than solely on frictionless market assumptions (Cornell and Roll 2005).

The struggle with just adding adaptation to SAA helps explain why attempting to manage the "total portfolio" without redesigning governance can be incomplete and potentially destabilizing. Expanding discretion without redefining decision rights, escalation rules, committee structures, attribution systems, reporting frameworks, and risk budgets risks replacing disciplined adaptation with episodic discretion. The central challenge is not identifying better trades but specifying who can move capital, under what pre-commitments, and against which evaluation standard. Modern TPA discussions therefore emphasize governance design alongside portfolio construction mechanics (Drew and Walk 2019; CAIA Association 2024).

A second reason for "TPA now" is that the implementation tool kit has matured. Institutions increasingly employ factor-based and macro or state-variable decompositions that cut across asset classes, making it easier to articulate what risks are truly held at the total fund level rather than inferred from bucket labels. In public markets, advances in style-factor research have clarified systematic sources of return such as value and momentum (Fama and French 1993; Jegadeesh and Titman 1993; Asness et al. 2013). Across both public and private portfolios, improved decomposition of returns into beta, alpha, and illiquidity premia has sharpened understanding of how much return performance reflects systematic exposure versus skill

[8]Intermediary-constraint models and liquidity-risk frameworks help explain why risk can concentrate and propagate precisely when diversification is most needed (Brunnermeier and Pedersen 2009; Adrian and Shin 2010; Ang and Bekaert 2002).

or liquidity provision (Getmansky, Lo, and Makarov 2004; Acharya and Pedersen 2005; Ang 2014). At the total fund level, institutions are better able to identify overarching risk drivers, such as inflation exposure, real-rate sensitivity, growth shocks, and currency risk, rather than treating them as incidental by-products of asset-class allocation (Ang and Bekaert 2002; Ilmanen 2011, 2021). Advances in dynamic risk modeling, including ARCH and GARCH frameworks (Engle 1982; Bollerslev 1986), together with cross-asset risk budgeting approaches (Bass et al. 2017; Cavaglia et al. 2022), make it increasingly feasible to manage exposures deliberately across the whole fund rather than sleeve by sleeve.

In the environment described above, the label "TPA" has emerged as a way to consolidate practices that previously existed in fragments: reference portfolios, factor lenses, centralized capital allocation, and total fund risk budgeting.[9] It is therefore unsurprising that critiques of benchmarks and siloed mandates have become more explicit in practitioner debates (Anson 2004, 2024; Gilmore and Simonian 2025) and that these ideas now appear in public documents from prominent asset owners (e.g., GIC 2022, 2024; Gilmore 2025) and practitioner syntheses that increasingly emphasize governance, decision-making, and organizational design as central to total fund investing (CAIA Association 2024; Toledo 2024, 2026; Thinking Ahead Institute 2020, 2025).

At the same time, early adopters' descriptions point to a broader institutional shift. TPA reframes the CIO's mandate from staying close to a benchmark and selecting managers, toward managing the opportunity set and protecting institutional resilience. This reframing provides trustees with a vocabulary for flexibility that remains disciplined rather than discretionary. The spread of the TPA label therefore reflects institutional evolution. It is not the discovery of a new portfolio theorem, but a recognition that as portfolios, liquidity structures, and stakeholder expectations evolve, so too must the unit of decision, the unit of risk, and the unit of accountability.

Taken together, these developments point to a clear implication: Portfolio complexity has increased, and the tools for understanding and managing that complexity have improved. Institutions are increasingly able to view risk and return at the total fund level. What remains unresolved is how these capabilities are embedded within the organization. In this sense, TPA represents a convergence rather than a breakthrough: The analytical foundation exists, and the implementation tool kit is largely in place. The remaining challenge is institutional—aligning governance, decision rights, and incentives with a total fund perspective.

The implication is that the question facing institutions is no longer whether they can adopt elements of a total portfolio approach, but whether they are willing to redesign the governance model that determines how decisions are made. This requires returning to first principles—clarifying objectives, redefining accountability, and structuring decision processes to support timely and coherent action across the total fund. Viewed in this way, TPA is less about adopting a new framework and more about completing an incomplete transition. As portfolios and tools

[9]The diffusion of the "total portfolio approach" label is evident in public communications and industry coverage from major asset owners and media outlets. See, for example, GIC (2022); Russell Investments (2024); Swee Chiang (2024); White (2024, 2025); Ambachtsheer (2025); Nangle (2025); Yu (2025); Franklin Templeton (2025); Gilmore (2025); McCabe (2025); Ortec Finance (2025); Davis (2023); and Wang and Lee (2025). Practitioner roundtables and industry associations have likewise documented the shift (AIMA 2023; Pickett 2025). Many funds also have used similar approaches without the TPA label, including selected funds in Canada, Europe, and Australia. See ATP (2021) for a description of its total fund approach without the label.

have evolved, governance has lagged behind. The current moment presents an opportunity to realign these elements. Whether institutions take that step will determine whether TPA remains a label applied to existing practices or becomes a meaningful shift in how portfolios are managed.

TPA and Neighboring "Integrated Portfolio" Frameworks

A natural question that follows is how TPA relates to the range of approaches that institutions already use in practice—such as ALM/LDI/LAI, reference portfolios, factor-based allocation, and dynamic asset allocation. In many cases, these approaches are described as "integrated" and may appear similar in intent. The distinction, however, is not at the level of tools or techniques, but in how they are positioned within the investment process. The approaches discussed below address different aspects of portfolio management—objectives, measurement, construction, or implementation. TPA operates at a different level: It defines how these elements are brought together within a coherent decision-making framework at the total fund level. The purpose of this section is therefore not to contrast competing models, but to situate TPA within this broader ecosystem. In practice, many of these approaches can coexist with TPA or be incorporated within it. The key difference lies in their scope and role—whether they define how portfolios are constructed or how decisions about those portfolios are governed. The discussion that follows examines several commonly used frameworks and highlights where they overlap with TPA and where they differ in terms of institutional design.

A first set of related frameworks includes asset/liability management (ALM) and liability-driven investing (LDI). These frameworks make integration explicit by placing liabilities (or funded status) at the center of the problem—with objectives framed in terms of surplus risk, funding stability, inflation protection, and interest-rate hedging. In academic terms, many ALM results can be interpreted as dynamic portfolio choice where state variables include the liability term structure and inflation dynamics (Bodie 1990; Campbell and Viceira 2001; Brennan and Xia 2002). In practice, LDI is often implemented through a segmentation between "hedging" and "growth" portfolios, sometimes governed by rules tied to funded status or rates. TPA does not replace this logic but operates at a different level. ALM/LDI can sit within a TPA framework as ways of defining objectives and constraints. The distinction is organizational: TPA does not treat the hedge/growth split as the primary unit of decision-making if it limits cross-asset trade-offs, instead evaluating decisions at the total fund level. This becomes more relevant in implementation. LDI often implies leverage or balance-sheet extension to obtain hedging exposure without displacing return-seeking assets. In practice, these choices occur on a single balance sheet, with shared liquidity, collateral, and financing. TPA makes this explicit, treating LDI not as a separate structure but as one set of trade-offs within an integrated total fund framework.

A related extension is the distinction between liability-driven and liability-aware investing. Liability-aware investing (LAI) is often framed as the broader umbrella, emphasizing a total plan perspective in which risk is measured in terms of funded-status volatility rather than asset-only volatility. In this view, corporate LDI can be seen as a narrower, hedge-focused application within the broader LAI framework. Many institutions also implement liability-aware strategic asset allocation, retaining an SAA governance anchor while incorporating liability benchmarks, interest-rate sensitivities, and balance-sheet constraints into allocation decisions (Schuckardt et al. 2024). These approaches illustrate that integration can be introduced at the level of measurement and portfolio design without fully changing the operating model. An institution

may become more holistic analytically while leaving decision rights and governance structures largely unchanged.

A second nearby framework is the reference portfolio approach. The term "reference portfolio" is used in two related but distinct ways: as a baseline portfolio representing the institution's long-run risk posture, and as a broader governance framework in which that portfolio anchors decision-making and performance evaluation. Many organizations that adopt TPA retain a reference portfolio in the first sense, using it as a communication device or expression of risk appetite. The distinction becomes clearer at the framework level. In a reference portfolio–centric model, the reference portfolio often acts as the primary anchor for portfolio choice and evaluation. In a TPA framework, by contrast, a reference portfolio—if used—is one possible implementation tool rather than the defining structure. The key elements—authority, guardrails, incentives, and accountability—are specified not by the reference portfolio itself but by the surrounding governance system. In this sense, TPA and reference portfolios are not competing approaches. TPA provides a general operating principle, while a reference portfolio can be one way of implementing that principle. The relevant distinction is therefore not whether a reference portfolio exists, but whether it functions as a binding portfolio anchor or as one component within a broader system for total fund decision-making.

A third set of frameworks includes factor-based policy design and risk budgeting. These approaches represent the portfolio in terms of underlying risk drivers—such as growth, real rates, duration, credit, inflation, liquidity, and style premia—rather than asset-class labels (Roncalli 2014; Bass et al. 2017). This enables cross-asset comparability by revealing shared exposures across seemingly distinct strategies. Factor-based approaches are best understood as portfolio construction methodologies and risk frameworks. They define how exposures are measured and assembled and are widely used in practice. Many TPA implementations rely on this tool kit. However, they operate at a different level. Factor frameworks address how portfolios are constructed; they do not define how decisions are governed. TPA provides that layer by focusing on how capital and risk are allocated over time as conditions change. The distinction is therefore not whether factor exposures are used, but how they are governed. Factor-based design can support TPA, but it does not replace the broader institutional framework that determines how and when exposures are adjusted at the total fund level.

A fourth set of approaches includes portable beta, portable alpha, and overlay programs. These techniques separate market exposure from manager skill and allow institutions to adjust exposures more efficiently. They increase modularity, enabling risk to be reallocated, hedged, or expressed without dismantling existing mandates (Cavaglia et al. 2022). In this sense, overlays are well suited to a TPA context and are often used as implementation tools. They provide flexibility in how exposures are sourced and adjusted across the portfolio. However, they operate strictly at the implementation level. Overlays modify exposures within an existing structure; they do not define how decisions are made. They do not, on their own, determine decision rights, risk ownership, or the objective function of the total fund. The distinction is therefore clear—overlays enhance flexibility, but they do not create integration. They can support a TPA framework, but they do not constitute one.

A fifth and extremely common neighboring model is SAA combined with tactical asset allocation (TAA), often implemented as SAA with ranges. In this design, the board approves a strategic policy mix as the anchor while allowing tactical deviations based on valuations, macro conditions, or risk signals. This reflects a compromise between the recognition that opportunity

sets change and the governance preference for a stable, benchmark-centered policy. The distinction with TPA lies in how adaptation is structured and framed. In SAA+TAA frameworks, allocation changes are typically expressed as tilts away from a predefined anchor. In a TPA framework, the same positioning may instead be framed as the portfolio that best reflects current conditions, objectives, and constraints. The economic outcome may be similar, but the framing is different: one is deviation from policy; the other is policy itself. This difference is not semantic. It shapes how decisions are justified, evaluated, and governed. In SAA+TAA, adaptation is bounded around a reference point. In TPA, adaptation is embedded in the decision-making framework. Two institutions may therefore appear similar in positioning yet differ materially in how those positions are arrived at and sustained. That difference in institutional design, rather than the presence of tactical views, is what separates SAA+TAA from TPA.

Closely related is dynamic asset allocation (DAA). In practice, the term is used in two ways: as a systematic process that adjusts exposures as regimes or risk conditions change, or more broadly as a way of combining strategic and tactical views within a unified allocation process. It is often framed as a response to shifting macro conditions and higher volatility, with implementations ranging from outsourced multi-asset solutions to total fund reallocations (Taze-Bernard and Germano 2020). Academic and practitioner research also links DAA to regime shifts, nonlinear risks, and changing correlations (Wang, Sullivan, and Ge 2012). Within this landscape, DAA is best understood as an adaptation mechanism. It defines how and when exposures may be adjusted in response to changing conditions. As such, it can be implemented as an overlay within an SAA framework or serve as a central allocation process in more integrated settings. TPA operates at a different level. It is not defined by the presence of dynamic shifts, but by the institutional structure that governs them. It embeds cross-asset reallocation within the operating model—through decision rights, guardrails, and accountability—so that adaptation is part of a repeatable total fund process.

Taken together, these comparisons highlight a central point. TPA is not a distinct set of tools or a competing framework, but a different way of organizing these tools and frameworks. Many of the approaches discussed—ALM/LDI, liability-aware allocation, reference portfolios, factor-based design, dynamic allocation, and overlays—can all exist within a TPA framework. The distinction lies in how they are embedded within the institution.

In practice, most organizations implement these approaches within a governance structure still anchored in SAA. The board defines policy portfolios and benchmarks, management is evaluated relative to those benchmarks, and incentives are aligned accordingly. In this setting, benchmarks serve a dual role: They act both as the primary allocation mechanism and as the basis for performance evaluation. As a result, even when institutions adopt more "integrated" tools, portfolio decisions remain implicitly anchored to benchmark structures rather than expressed as explicit total fund trade-offs.

This is the core feature of the SAA model—and a primary source of confusion in the TPA discussion. Institutions may adopt many of the same tools associated with TPA yet operate under a governance system that constrains how those tools are used. The difference is therefore not in the presence of integration, but in whether the institution is structured to act on it. The distinctive contribution of TPA is to shift this foundation. It separates portfolio construction from decision governance and relocates discipline from adherence to benchmarks toward adherence to objectives and constraints at the total fund level. Integration is no longer expressed through allocation structures, but through decision rights, guardrails, and accountability.

This leads to a necessary—and intentionally unsatisfying—conclusion. Because TPA is a governing principle rather than a prescriptive framework, it cannot be reduced to a set of implementable steps. TPA is not a recipe that can be implemented by adopting a set of techniques. Simply relabeling an existing framework—adding overlays, factor models, or new allocation processes—and calling it "TPA" without redesigning governance, incentives, and accountability is unlikely to change outcomes. The core challenge is institutional, not technical.

A meaningful TPA transition therefore begins with first principles. It requires clarifying how decisions should be made at the total fund level, how authority is allocated, how performance is evaluated, and how incentives are aligned. The relevant test is practical: Does the institution have the structure to act when conditions change—can it act, will it act, and is it allowed to act (see Exhibit 1)? If so, it is operating in a manner consistent with TPA. If not, the label may have changed, but the underlying model remains the same.

To make these distinctions explicit, **Exhibit 3** summarizes how TPA relates to commonly used "integrated" approaches, distinguishing between governing principles, frameworks, and implementation tools.

Exhibit 3. TPA and Related "Integrated Portfolio" Approaches

Approach	What It Is (Primary Role)	What It Solves	What It Does *Not* Define	Relationship to TPA
ALM/LDI	Objective and constraint framework (liability-focused)	Linking assets to liabilities (funded status, hedging)	How decisions are governed across the total fund	Can sit within TPA as a way to define objectives and constraints
Liability-Aware Investing (LAI)	Measurement and risk-framing framework	Incorporating liabilities into risk measurement	Decision rights, governance, and capital allocation authority	Compatible with TPA; often used as analytical input without changing governance
Reference Portfolio (RP)	Implementation anchor/governance device (in some cases)	Defining long-run risk posture and evaluation baseline	Decision-making structure and authority	Can be used within TPA; not a substitute for governance design
Factor/Risk Budgeting	Portfolio construction methodology and risk language	Decomposing and allocating exposures across risk drivers	Who decides, when, and under what constraints	Common tool kit within TPA implementations
Portable Beta/ Overlays	Implementation technique	Efficiently adjusting exposures without restructuring mandates	Governance, objectives, and decision rights	Supports TPA by increasing flexibility; not a framework

(*continued*)

Exhibit 3. TPA and Related "Integrated Portfolio" Approaches (*continued*)

Approach	What It Is (Primary Role)	What It Solves	What It Does *Not* Define	Relationship to TPA
SAA + TAA	Hybrid governance model (policy + bounded deviations)	Introducing limited adaptability within stable policy	Full integration of decision-making across the fund	Precursor/partial form; differs from TPA in governance structure
Dynamic Asset Allocation (DAA)	Adaptation mechanism/ allocation process	Adjusting exposures as conditions change	Institutional decision-making framework	Can be implemented within TPA or SAA; not a framework itself

TPA Implementation: Governance, Incentives, Capabilities

Defining TPA conceptually is relatively straightforward. Implementing it is much harder. Once the unit of decision shifts from asset-class sleeves to the total fund, the institution must redesign the governance architecture that links objectives, authority, incentives, and tools. This section, therefore, examines the conditions under which a total portfolio philosophy can be translated into a functioning investment process.

TPA implementation is best understood as an institutional design problem. It is organized around a set of interdependent layers: (1) structural governance constraints, (2) the allocation of authority between the board and the CIO, (3) the incentive and benchmarking architecture, (4) cultural considerations, (5) the management of delegation risk as discretion expands, (6) the adaptive governance protocol (i.e., rules, triggers, escalation, and learning loops), and (7) the tools and infrastructure that make total fund decisions executable. Rather than sequential steps or a fixed blueprint, these layers are recurring design pressures observed in real institutions. The focus here is on concrete design choices and failure modes that arise when a total fund intent must be translated into durable operating practice. Recent practitioner discussions similarly emphasize that the primary challenge lies at the operational and governance level—translating total fund intent into decision rights, processes, and organizational structures that can function in practice (Toledo 2024).

Structural Governance Constraints

TPA is sometimes introduced as a portfolio construction idea, but in practice, it is a redesign of the institution's control system. Once the unit of decision shifts from asset-class sleeves to the total fund, the binding constraint is no longer identifying cross-asset opportunities but constructing a governance contract that makes integrated trade-offs legitimate, repeatable, and auditable. In this sense, TPA is as much institutional as portfolio design. It is ultimately

about preparedness, ensuring the institution is organized to recognize change, act within clear guardrails, and adjust positioning without losing coherence at the total fund level.

SAA became the dominant architecture precisely because it solved a governance problem. It compressed a complex investment program into a set of stable policy weights and benchmarks that boards could approve, monitor, and defend.[10] In that structure, benchmarks allocate authority, define success, and shape what is defensible in committee.[11] Agency theory predicts that when agents are evaluated on a metric, they optimize that metric rather than the principal's broader objective (Holmström 1979; Holmström and Milgrom 1991). In practice, this leads to local optimization under specialization. Each team is incentivized to perform within its mandate, protect its tracking-error budget, and maintain a benchmark-consistent narrative. Even with goodwill, this structure makes it difficult to reallocate capital toward the best-compensated risks across the fund because doing so requires relinquishing risk budgets and legitimizing cross-team trade-offs.

The governance challenge today is not simply a greater number of asset classes but also a higher degree of interaction across them. This interaction is between public and private assets, liquidity and leverage, and interest rates and equities, as well as across teams whose locally rational decisions may be globally inconsistent. When opportunity sets change and risks cut across buckets, a sleeve-based control system like SAA struggles to translate total fund intent into coordinated action. This is where the "total fund" aspiration collides with organizational reality.

Modern investment organizations are built on specialization for good reasons; however, specialization creates boundaries that themselves create friction. These boundaries are reinforced by mandates, benchmarks, and incentive systems that encourage local optimization within each sleeve. From a total fund perspective, these decisions compete for the same scarce resources—risk budget, liquidity, and balance-sheet capacity. What is locally rational can therefore become globally inefficient. The result is often a form of implicit zero-sum behavior across teams: Capital, risk, and attention are contested rather than jointly allocated. Institutions may optimize individual mandates while remaining suboptimal at the total fund level. The constraint is therefore not analytical but organizational. Moving toward TPA requires better models and a governance structure that enables global optimization rather than local optimization.

This conflict between delegation and total fund optimization creates a parallel governance dilemma: Trustees are ultimately accountable for outcomes but cannot—and should not—manage a multi-asset portfolio directly. Governing through asset-class weights and benchmarks provided a solution: These are observable and auditable and support a clear separation between oversight and implementation. Empirical evidence is consistent with this logic. Delegated management and career concerns can induce conservative behavior, consensus positioning, and decisions that are easier to defend than to optimize (Scharfstein and Stein 1990; Brown, Harlow, and Starks 1996; Chevalier and Ellison 1997; Elkamhi and Lee 2026).

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[10]Empirical evidence confirms that governance structure and institutional characteristics materially influence asset allocation and performance. Larger and better-resourced pension plans often exhibit different risk-taking behavior and outcomes than smaller peers (Dyck and Pomorski 2011), and board structure and oversight practices are linked to allocation decisions (Bregnard and Salva 2023). These findings reinforce that portfolio design cannot be separated from institutional design.

[11]Related evidence shows that accounting conventions and liability discount-rate choices can shape asset allocation decisions, highlighting how institutional measurement rules influence risk-taking (Andonov et al. 2017).

This tension motivates TPA-type governance designs. Rather than controlling portfolios through detailed allocations, boards can define high-level guardrails—objectives, liquidity resilience, drawdown tolerance, total fund risk, surplus risk, and concentration limits. They can then delegate capital allocation decisions to management within those constraints (Fama and Jensen 1983; Drew and Walk 2019). The practical implication is not to abolish benchmarks, but to redesign the governance contract. If evaluation and escalation remain sleeve-based, the "total fund" remains rhetorical. Making it actionable requires aligning decision rights and incentives with total fund objectives. By doing so, the acts of reallocating risk, coordinating across teams, and accepting short-term deviation for long-term outcomes become part of normal operating discipline rather than exceptional actions. The implication is both operational and economic. Governance structures that reward local optimization constrain the institution's ability to allocate capital to its best opportunities. The result is a portfolio that is well managed in parts, but inefficient as a whole.

Allocation of Authority: Decision Rights and Accountability

TPA implementation forces explicit answers to questions that SAA often leaves implicit: What does the board own? And, what is delegated to the CEO/CIO? A useful starting point to answer these questions is the classic separation between decision control and decision management (Fama and Jensen 1983). Boards are typically better suited to define objectives and constraints, while investment executives are better positioned to make high-frequency trade-offs within those constraints. Aghion and Tirole (1997) sharpen this distinction: Formal authority may reside with the board, but real authority lies with those who have the information and initiative. Effective governance must therefore align information, authority, and accountability. In practice, this requires board-level reporting that aggregates information at the total fund level. Reporting is typically done through dashboards covering factor exposures, liquidity, leverage, stress scenarios, and deviations from approved guardrails, so that trustees evaluate the portfolio as an integrated whole rather than as a collection of sleeves.

In a TPA-oriented implementation, trustees should own the objective function and the guardrails. These include the fund's mission and success criteria (e.g., required return or funding goals), binding constraints (e.g., liquidity resilience, leverage limits, concentration tolerances, regulatory or reputational boundaries), and policy preferences (e.g., total fund risk appetite). The CIO and investment staff, in turn, own implementation: how policy preferences are expressed in positions, how scarce risk and liquidity budgets are allocated, and how exposures are adjusted as conditions change. The goal is to shift board oversight from managing asset-class sleeves to governing outcomes and risk at the total fund level.

A common cause of failure in TPA transitions is a mismatch between authority and accountability. If boards retain sleeve-level veto power while expecting cross-asset integration, decision-making becomes slow and politicized. In that case, integrated trades require multiple approvals, and inaction becomes the safest choice. Conversely, if discretion expands without clear guardrails, the institution becomes fragile: "Opportunity set management" risks degenerating into undisciplined tactical behavior. A sound TPA implementation therefore requires a deliberate intermediate layer that can arbitrate trade-offs across teams and connect the board's long-horizon intent with day-to-day portfolio decisions.

This intermediate layer also performs a critical translation function. It converts board-level objectives into risk appetite bands, mandate roles, and escalation protocols. It then translates

portfolio outcomes back into a coherent narrative for trustees. Without this translation, the board is pulled back toward the only language it can reliably audit—sleeve benchmarks—even when that language no longer reflects how risks are actually taken.

The importance of this governance structure becomes clearer when considering the types of decisions it enables. For example, private and public exposures are often managed as separate asset classes under traditional SAA structures. Under a TPA framework, however, these boundaries can be treated more flexibly. An institution may choose to modify the risk characteristics of private assets using public market instruments—for instance, adjusting interest rate exposure from fixed to floating, shifting nominal exposures toward real sensitivity, or hedging specific revenue risks through derivatives. A private asset with exposure to oil revenues, for example, could be partially hedged using commodity derivatives to manage downside risk in adverse states of the world.

These types of integrated decisions—combining private assets with public overlays—are conceptually straightforward but institutionally difficult. They require coordinated decision-making across teams, flexible mandates, and clear authority to act across traditional boundaries. In a sleeve-based SAA framework, such trades often fall between mandates and lack a clear owner. Under TPA, they can be treated as part of a unified total fund decision. The implication is straightforward but consequential: Without a clear allocation of authority, "total fund" remains a slogan rather than an operating model.

Incentives, Benchmarking, and Performance Evaluation

The board–CIO split only works if incentives and measurement reinforce it. In most institutions, the easiest metrics to monitor are sleeve-relative: risk limits, benchmark alpha, and concentration exposures. However, multi-task agency theory warns that rewarding what is easy to measure can crowd out what is important (Holmström and Milgrom 1991). If teams are rewarded for outperforming within buckets, they will rationally protect those outcomes, even when the best action for the total fund is to hedge elsewhere, provide liquidity, or accept short-term relative underperformance in exchange for long-term resilience.[12]

This is why benchmarking is a core component of the incentive architecture. Benchmarks simultaneously (i) define accountability, (ii) determine what counts as risk, (iii) provide a communication device for stakeholders, and (iv) shape compensation, status, and career risk. When a single benchmark is forced to perform all four roles, predictable distortions emerge—benchmark hugging, style drift, and siloed behavior that ignores total fund netting opportunities.[13] The empirical herding literature explains why, under costly deviation, even sophisticated actors converge toward consensus portfolios (Scharfstein and Stein 1990). For TPA, the objective is to design around these behaviors.

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[12]Institutional constraints themselves can distort equilibrium risk pricing; for example, leverage constraints help explain persistent anomalies such as the low-beta effect (Frazzini and Pedersen 2014). In benchmark-centric environments, similar structural constraints can bias portfolios toward exposures that are defensible rather than optimal at the total fund level.

[13]Empirical work shows that much apparent "skill" can reflect systematic factor exposure rather than genuine alpha; see Carhart (1997), for example. Measures such as active share (Cremers and Petajisto 2009; Petajisto 2013) or active weights (Doshi, Elkamhi, and Simutin 2015) further demonstrate that many benchmark-relative mandates embed substantial closet beta, reinforcing how benchmark design shapes risk-taking behavior.

The incentive problem can be understood as a "benchmarking prisoner's dilemma." If boards retain tight control and evaluate success primarily through sleeve benchmarks, the CIO's rational response is to minimize visible deviation and avoid cross-sleeve decisions that require political capital. If short-term deviations are penalized, pursuing genuine long-horizon added value becomes personally costly, even when institutionally optimal (Scharfstein and Stein 1990; Chevalier and Ellison 1997). Conversely, if boards expect management to use additional discretion but do not observe clear benefits, they may rationally withhold delegation. The result is a stable but inefficient equilibrium in which behavior is defensive and the portfolio reflects the scorecard rather than the underlying investment beliefs. Escaping this equilibrium requires pre-commitment on both sides. From the board, it needs a stable anchor with explicit horizon tolerance. From the management, it needs transparent benchmark policy and exposure reporting that prevents "moving the goalposts" and makes hidden betas visible (Elkamhi and Lee 2025a).

Recent TPA-adjacent work therefore treats benchmarking as a design choice rather than a fixed constraint. Elkamhi and Lee (2026) develop the concept of delegated benchmarking: The board retains ownership of a stable total fund reference point—along with guardrails around risk, liquidity, and horizon—while delegating the design and maintenance of mandate-level benchmarks to management. Delegation here is not a reduction in accountability; instead, it is a relocation of technical work to where information and decision-making reside. When implemented well, it improves the signal-to-noise ratio in performance evaluation and aligns incentives with total fund outcomes rather than with silo optics (Elkamhi and Lee 2025a, 2026).

A natural concern is that delegating benchmark design may allow management to weaken evaluation standards. In practice, the opposite is intended. The board retains ownership of the overall contract and the authority to revise or revoke delegation if it is not used appropriately. Management, in turn, assumes greater accountability: Benchmark design becomes part of the evaluation process rather than an exogenous input. If benchmarks are perceived as uninformative or strategically softened, the credibility of the framework—and management's authority within it—is at risk. In this sense, delegated benchmarking shifts discipline, placing greater responsibility on management to ensure that benchmarks remain economically meaningful and aligned with total fund objectives.

In practice, TPA-oriented organizations often adopt a hierarchy of evaluation that reflects this structure. Overall added value is assessed relative to a total fund reference or objective portfolio, while individual mandates are evaluated against baselines consistent with their intended role.[14] Risk is monitored using such measures as factor and scenario lenses that cut across asset classes (Anson 2004, 2024). Compensation design must align with this structure. Evidence shows that incentive structures influence risk-taking behavior, often encouraging managers

[14]This issue becomes even more pronounced in portfolios with significant allocations to illiquid and alternative assets. In such cases, reference or objective portfolios are often proxied using combinations of public market exposures, which may be analytically convenient but do not correspond to a fully investable or economically equivalent portfolio. As a result, a single benchmark or reference portfolio may provide only a partial and sometimes misleading representation of the true opportunity set and constraints faced by the institution. This reinforces the need for a more multi-faceted approach to evaluation under TPA. Rather than relying on a single portfolio comparison, institutions typically assess outcomes across multiple dimensions—including total fund objectives, risk exposures, liquidity conditions, and the role each component plays within the overall portfolio. In this setting, performance evaluation becomes less about tracking a single benchmark and more about assessing whether the portfolio is aligned with its objectives given the constraints and opportunities available.

to increase risk when behind and reduce it when ahead (Brown, Harlow, and Starks 1996; Sirri and Tufano 1998).

A practical implication is that TPA compensation cannot rely on a single metric. If compensation is based solely on total fund outcomes, free-riding becomes a concern. If based solely on mandate-level outcomes, re-siloing is inevitable. Most workable approaches therefore adopt a dual structure: total fund outcomes weighted more heavily for senior roles (e.g., CIO and total portfolio leaders), mandate-level outcomes for specialist roles, and an explicit qualitative component tied to collaboration, risk governance, and decision quality. This qualitative layer does not replace metrics; it reflects the reality that outcomes are noisy and that institutions must sometimes reward "good losses"—decisions that may underperform in benign environments but improve resilience and preserve the ability to act under stress.

Culture: An Enabling Condition for TPA

TPA is often framed as a governance and portfolio construction shift, but in practice, it is equally a cultural change. Moving from asset-class sleeves to total fund decision-making alters the social architecture of the institution: who owns success, how disagreement is handled, what counts as prudent risk-taking, and whether specialists are rewarded for protecting local mandates or for improving total fund outcomes. Formal delegation and better tools are necessary, but they are not sufficient. Where norms remain benchmark-centric, teams can continue to optimize local scorecards even after the organization has adopted the language of total fund integration. In this sense, culture is not a soft-side issue; it is part of the implementation mechanism itself. This is consistent with classic change literature showing that resistance usually reflects not irrationality, but the disruption of existing social equilibria, role expectations, and sources of status and control (Lewin 1947; Coch and French 1948; Lawrence 1969; Schein 1984).

TPA makes these frictions more acute because it redistributes decision rights and requires more cross-boundary coordination. Specialists who were previously evaluated within well-defined sleeves are asked to think in terms of marginal contribution to the whole fund. That shift can create three forms of resistance. The first is identity resistance: Staff may experience total fund integration as a weakening of specialist expertise or ownership. The second is coordination resistance: More cross-asset decisions mean more dependence on shared language, shared data, and mutual trust. The third is accountability resistance: If evaluation systems still privilege relative performance within sleeves, staff have little reason to bear the personal cost of making cross-asset trade-offs whose benefits accrue elsewhere. The organizational change literature suggests that adoption improves when people see not only the case for change but also their own efficacy within the new system—when participation reduces the sense that change is being imposed rather than co-created (Armenakis, Harris, and Mossholder 1993; Kotter 1995; Beer and Nohria 2000).

For TPA, culture therefore needs to be engineered through routines, incentives, and leadership behavior. At a minimum, institutions need a clear statement of total fund beliefs and decision principles; scorecards that combine local responsibility with total fund contribution; cross-functional forums where trade-offs are debated in a common risk language; post-mortems that assess decision quality rather than only outcomes; and leadership communication that consistently frames TPA as an evolution of expertise rather than its displacement. Psychological safety is especially important. If teams do not feel safe surfacing

disconfirming views, hidden concentrations, or concerns about liquidity and implementation risk, integrated decision-making will remain superficial. In changing environments, learning behavior depends on a culture in which interpersonal risk-taking is acceptable and dissent is treated as an input to better decisions rather than as disloyalty (Edmondson 1999; Schein and Schein 2017).

Successful TPA transitions treat culture as a design variable. That means aligning what people believe, how they are measured, and how they work together so that "one portfolio" becomes a lived operating principle rather than an aspirational slogan. The most robust institutions will be those that reduce the gap between formal structure and daily behavior: They replace local optimization, benchmark safety, and silo identity with shared ownership of total fund outcomes. Where this alignment is absent, TPA may exist in reporting form but not in decision-making substance (Scharfstein and Stein 1990; Chevalier and Ellison 1997; Oreg 2003; Oreg, Vakola, and Armenakis 2011). Specific illustrations of how these ideas are implemented in practice can be found in, among others, Rudin et al. (2019, 2020), Elkamhi et al. (2024b,c), and recent practitioner discussions by Thinking Ahead Institute (2025) and Gilmore (2025). We will further discuss the building blocks of TPA implementation as well as some tools in later sections.

Managing Delegation Risk: Principal–Agent Frictions

So far, we have addressed how authority and incentives must be structured under a TPA model. Once discretion is deliberately expanded to enable total fund decision-making, a new constraint becomes binding: the risks inherent in delegated management. Increasing capital mobility and cross-asset authority does not eliminate principal–agent problems—it intensifies them. The central question is no longer only who has the right to act, but how the institution ensures that delegated authority is exercised in ways consistent with total fund objectives.

Delegated investing gives rise to two familiar problems, even if they are not always described in technical terms. Before delegation, the challenge is selection: distinguishing true skill from luck when strategies are complex and outcomes are noisy. In practice, this often leads institutions to chase recent performance, even when persistent outperformance is difficult to sustain due to competition and capacity constraints (Berk and Green 2004). Evidence shows that hiring and firing decisions are frequently procyclical—managers are hired after strong performance and terminated after weak periods—reinforcing this pattern (Goyal and Wahal 2008).

After delegation, the problem shifts from selection to behavior. Because effort, risk-taking, and exposures are not fully observable, managers can take risks that are not immediately visible. These can include changing styles, concentrating exposures, or implicitly loading on risks that perform well under benchmark-relative evaluation but may be misaligned with total fund objectives. A large body of work shows how benchmarking and contract design shape these behaviors (Stoughton 1993; Ferson and Schadt 1996), while flow-driven incentives can amplify them at the market level (Vayanos and Woolley 2013).

In practical terms, this means that even well-intentioned managers can end up taking risks that look reasonable within their mandate but are inconsistent with the needs of the total fund. The issue is not misconduct, but incentives and visibility. People respond to how they are measured and what can be observed.

In a TPA context, the implication is straightforward: Expanding discretion to enable cross-asset integration increases the importance of how mandates are designed and monitored. Better analytics alone are not enough. Institutions need to clearly state what exposures they are trying to hold, be able to detect unintended risk accumulation, and be careful not to let short-horizon evaluation force procyclical decisions. In practice, this means more thoughtful mandate design, greater transparency around leverage and liquidity, and clearer escalation rules. These mechanisms play the same role institutionally as screening and monitoring in agency theory—they help ensure that delegated decisions remain aligned with total fund objectives (Jensen and Meckling 1976; Holmström 1979; Schein and Schein 2017).

A further challenge is both organizational and political. Greater capital mobility across teams inevitably redistributes risk budgets, influence, and perceived importance. Without careful design, this can create resistance to integration, even when it is economically sensible. Delegated benchmarking can help mitigate this problem by shifting the unit of account to the total fund and aligning mandate baselines with their role in the overall portfolio (Elkamhi and Lee 2025a). But formal design alone is not sufficient. In practice, a key remedy is sustained communication from leadership. The CIO and CEO must consistently reinforce total fund objectives, explain trade-offs, and encourage team-based behavior. Without these efforts, institutions may articulate "one portfolio" while continuing to operate through competing scoreboards.

Governing Adaptation: Rules, Triggers, and Learning

A common misunderstanding in the TPA debate is equating adaptability with frequent trading. In practice, credible TPA implementations remain anchored to a board-approved total fund reference portfolio and/or a set of guardrails around risk, liquidity, and other risk appetite metrics. Institutions define a default posture—often through factor targets or long-run risk budgets—and allow adaptation within pre-committed ranges. Flexibility is activated through explicit triggers and governance cadence, such as drawdowns, liquidity stress, extreme valuation spreads, funded-status changes, or regulatory shifts, which make reallocations both legitimate and explainable to stakeholders (Gilmore 2025; Thinking Ahead Institute 2025).

This translation of adaptability into governed decision-making is where the "should/how/would/could" framework (Elkamhi and Lee 2025b) shown in Exhibit 1 becomes operational. Boards primarily own the "should"—defining objectives and constraints that ensure resilience. Investment executives own much of the "how" and "could"—the tools, implementation pathways, and operating model. The "would" dimension—whether teams actually act when conditions change—is governed by incentives, reporting, and institutional culture. Effective TPA design makes action both permitted and supported and treats inaction in the presence of clear signals as a governance failure.

In practice, this leads to an explicit escalation architecture. Some decisions fall within delegated discretion, such as rebalancing within ranges or adjusting overlays within risk budgets. Others are pre-authorized conditional actions—for example, reducing illiquid pacing if liquidity buffers fall below a threshold or activating de-risking protocols after large drawdowns. A smaller set of decisions remains at the board level, including changes to mission objectives, leverage policy, or the reference portfolio. This governance structure is not bureaucracy for its own sake; it is how institutions achieve speed under stress while remaining auditable.

For public funds, an additional layer arises from political governance and stakeholder representation. Evidence shows that governance structures and representation can influence both investment decisions and risk-taking (Andonov et al. 2018). As a result, TPA transitions[15] are often staged: beginning with board education, followed by enhanced reporting and risk frameworks, and then gradual delegation of cross-asset authority, supported by clear documentation of rules and post-mortems. While implementations differ, the common requirement is coherence: Decision rights, incentives, and reporting must be aligned as a system for the total fund perspective to become actionable.

Finally, adaptive governance requires an institutional learning loop. Expanding discretion without structured feedback risks turning adaptation into noise. Effective TPA implementations therefore rely on decision logs, post-mortems, and attribution frameworks that link outcomes to total fund drivers. The focus is not only on outcomes but also on the quality of the decision-making process itself. While the final decision ultimately rests with the CIO, the objective is to create a system where decisions are consistently informed, evaluated, and refined over time. When learning is disciplined—identifying what works, what failed, and what risks were taken—TPA becomes a compounding capability. Institutions improve not only their portfolios but also their ability to make better decisions and act with confidence when conditions change (Drew and Walk 2019; Thinking Ahead Institute 2025).

Tools and Infrastructure: Making Total Fund Decisions Actionable

TPA is often described as a holistic approach, but discussions typically remain conceptual and provide limited guidance on implementation. It becomes actionable only when supported by a governance structure, operating model, and decision-making tools. These tools are not new or mysterious—many are extensions of standard portfolio practice. What changes is not the tools themselves, but how they are used. In TPA, tools are used to support decision-making at the total fund level rather than optimizing within asset-class silos.

Because the academic literature rarely treats the full implementation stack as an integrated system, practical guidance requires combining insights from multiple strands of research. These include portfolio construction techniques, intertemporal choice and state variables (why conditioning matters), agency and benchmarking (why measurement shapes behavior), and portfolio engineering (how exposures are expressed efficiently under constraints).[16] What follows highlights a set of commonly used tools and concepts that institutions draw on when implementing a TPA framework.

[15]Examples of these mechanisms include reference-portfolio structures, delegated benchmarking, overlay-based exposure adjustments, and liquidity-triggered pacing changes, several of which are discussed further in Exhibit 5.

[16]The literature includes a wide range of portfolio construction methods, from mean–variance optimization, inverse mean–variance, and risk parity to many newer approaches. See Grinold and Kahn (1999) for the building blocks of traditional portfolio construction and DeMiguel et al. (2009) for a comparative survey of allocation rules. More recent work, such as Elkamhi et al. (2025), extends this discussion by examining methods based on factor structures. Schnetzer and Hens (2022) add a complementary perspective by using evolutionary and adaptive reasoning to analyze multi-asset investing in changing environments.

Factor and Risk-Driver Lenses

Factor lenses have become a default language for describing what a portfolio actually owns because they cut across asset-class labels. Practitioner research increasingly argues that institutions should think in terms of underlying risk drivers rather than asset categories (Pástor 2000; Pástor and Stambaugh 2003; Bass et al. 2017). In this framing, factor-based allocation provides a way to make cross-asset trade-offs comparable and explicit (e.g., Ang 2014; Blyth et al. 2016; Elkamhi et al. 2022a; Lee and Salerno 2023). For example, Lee and Salerno (2023) propose a factor-targeted allocation approach that reverses the traditional process: starting from desired exposures and then determining how best to source them through asset allocation.

In a TPA context, flexibility extends beyond which risks to hold to how those risks are implemented. Once CIOs can reshape exposures through overlays, derivatives, and modular allocations, the portfolio is no longer constrained to static, cash-only building blocks. Instead, exposures can be engineered, hedged, and rebalanced with greater precision across the total fund. This flexibility, however, raises the bar for risk measurement.[17]

TPA also raises practical questions of cost and institutional capacity. Implementing a genuine total fund framework typically requires stronger governance, richer data and risk systems, broader internal coordination, and greater investment in reporting and decision infrastructure than a more traditional sleeve-based model. For that reason, TPA is likely to be more feasible for large or sophisticated institutions, while smaller investors may adopt only selected elements of the approach rather than its full operating model. At the same time, this comparison should be interpreted carefully. The apparent simplicity of traditional SAA frameworks partly reflects the assumption that fixed policy weights are broadly appropriate over time, which can reduce the need for continuous analysis, coordination, and adjustment. In that sense, SAA may appear less demanding in terms of resources. However, this does not imply that SAA is less costly in an economic sense. When opportunity sets, risk relationships, or constraints change, limited capacity or governance flexibility can lead to delayed or foregone adjustments, with potentially significant opportunity costs. TPA makes these trade-offs more explicit by requiring institutions to invest in the capabilities needed to act, rather than implicitly accepting the cost of inaction.

Standard factor models, typically based on linear regressions, remain useful as first-order approximations, but more is needed in TPA. Standard factor models can miss important features when payoffs are nonlinear (convexity), state-dependent (changing betas under stress), or path-dependent (constraints that bind after drawdowns). A credible TPA tool kit therefore extends beyond linear attribution to include stress and convexity diagnostics—such as scenario analysis, tail exposure mapping, and liquidity or collateral sensitivity. These tools help ensure that increased flexibility does not introduce hidden risks, such as implicit option selling, leverage fragility, or funding-liquidity feedback loops (Merton 1973; Perold and Sharpe 1988; Black and Perold 1992; Brunnermeier and Pedersen 2009).

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[17]Elkamhi et al. (2021) highlight why governance systems often talk past themselves (long-horizon objectives vs. short-horizon tracking error) and discuss motivating alignment of risk systems and investment decisions. Furthermore, the robustness of optimization and factor-based allocation depends critically on input stability and model design. See Kritzman et al. (2021) for a defense of constrained optimization relative to naive allocation rules, and see Kolm and Ritter (2021) for Bayesian approaches that blend prior structure, namely those from Black and Litterman (1992), and factor views to control estimation risk in practical portfolio construction.

At the same time, factor tools must be governed rather than treated as truth. The "factor zoo" problem—characterized by a proliferation of proposed premia, fragile signals, and model uncertainty—is directly relevant in a TPA setting, where a total fund process can easily overinterpret model outputs. A practical institutional stance is therefore to treat factors as a common language and diagnostic lens, insist on transparency of exposures, and apply caution when translating marginal signals into material allocation decisions (e.g., Ang et al. 2019; Swade et al. 2024).

Macro, State Variables, and Regime Awareness

TPA is premised on the idea that opportunity sets change. That premise is only operational if the institution has a disciplined view of the current state. The current state includes where it sits in the inflation, growth, credit, and liquidity cycles; what is tightening or easing; which constraints are becoming binding; and which hedges are likely to be effective in the current environment (Jurek and Viceira 2011; Bouyé and Teiletche 2025). This is the practical counterpart to the state-variable logic in intertemporal portfolio choice (Merton 1971).

In practice, implementing a regime-aware approach does not require a formal regime-switching model. It requires a shared framework—a set of dashboards and narratives that makes macro conditions, liquidity, and funding risks observable and discussable across the organization. Without this shared framework, adaptation risks becoming discretionary rather than governed and repeatable. At the same time, the academic literature provides formal frameworks for thinking about how portfolio allocations can adjust across economic regimes (e.g., Ang and Bekaert 2002; Brennan and Xia 2002; Guidolin and Timmermann 2007), offering a conceptual foundation even if institutions do not apply them mechanically.[18]

From an investment perspective, this translates into identifying which economic states matter for returns and assessing their likelihood. The objective is to evaluate how the distribution of possible outcomes is evolving (Elkamhi et al. 2023b). In this setting, investment decisions shift from forecasting levels to updating probabilities and adjusting exposures accordingly. This perspective is also consistent with recent work that explicitly examines portfolio behavior across inflationary, deflationary, and stagflationary regimes, highlighting how risk and return characteristics can shift materially across macroeconomic environments (Baltussen et al. 2023).

The advantage of this approach is that positioning becomes explicitly linked to changes in beliefs. Adjustments reflect shifts in the perceived balance of risks rather than discretionary judgments, making adaptation more disciplined and explainable. In this sense, "macro" is a core component of the decision system—informing when risks should be added, reduced, or restructured as conditions evolve.

Regime awareness also supports TPA along two complementary dimensions. Over the long term, it provides a lens for assessing whether assets are adequately compensated for the risks they bear—that is, whether expected risk premia are attractive given prevailing conditions. This is the traditional valuation and risk compensation perspective viewed through a total fund lens. Over shorter and medium horizons, the focus shifts from levels to changes to answer whether shifts in the probability of different regimes alter the forward-looking opportunity set. Even if

[18]For example, an institution might reduce equity beta through futures while preserving private asset exposures, or it may hedge inflation-sensitive cash flows using derivatives rather than restructuring the underlying asset portfolio.

the current state is uncertain, changes in the likelihood of future states—such as rising inflation risk, tightening liquidity, or slowing growth—can have immediate implications for expected returns and correlations.

In a TPA context, this distinction between investment horizons is critical. The long-term perspective anchors strategic positioning, while the short- to medium-term perspective informs when and how positioning should adjust. Together, they provide a structured way to link evolving macro views to portfolio decisions in a disciplined and explainable manner.

Risk Budgets and Total Fund Constraints

Risk budgeting is a natural bridge between delegation and coherence.[19] By assigning explicit risk budgets to return sources—or to teams—institutions can decentralize decision-making while maintaining a coherent total fund posture.

Adaptive risk budgeting frameworks recognize that these budgets are not static. They can be state-dependent and must themselves be governed (Asness et al. 2012; Roncalli 2014; Rudin et al. 2020). In a TPA context, the key shift is that risk budgets are not merely analytical outputs but also governance tools.

In practice, risk budgets operate at multiple levels of the organization. At the total fund level, budgets may be expressed in terms of factor exposures or overall risk constraints. At the asset-class or strategy level, they can be calibrated to reflect the role of each sleeve within the broader portfolio. At the most granular level, portfolio managers may operate within risk budgets defined for specific strategies or mandates. In a TPA framework, these layers are linked: Risk budgets form a hierarchy that cuts across the institution, with different levels of authority assigned at each layer.

This hierarchy typically mirrors governance. The board defines the top-level risk tolerance and constraints for the total fund. The CIO translates these into factor- or asset-level risk budgets, consistent with the overall portfolio strategy. Portfolio managers then operate within mandate-level risk budgets aligned with their role. In this way, risk budgeting becomes a mechanism for connecting high-level objectives to day-to-day investment decisions.

The critical governance move in TPA is to elevate risk budgets to board-relevant guardrails. Risk budgets must be auditable, monitorable, and linked to explicit escalation protocols when breached. In this way, risk budgets define the boundaries within which discretion is exercised, allowing institutions to delegate decisions while retaining control over total fund risk.

Liquidity Integration and Total Fund Constraints

For many large institutions, liquidity is the binding constraint that makes a total portfolio perspective unavoidable. Integrating private equity and other illiquid assets requires linking pacing decisions, cash flow forecasting, and liquidity buffers directly to total fund risk management.

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[19]Risk budgeting and related risk-parity frameworks formalize how capital can be allocated in terms of risk contributions rather than capital weights. See Maillard et al. (2010) for properties of equal risk contribution portfolios and Roncalli (2014) for a broader treatment. These approaches illustrate how risk-based policy anchors can be made transparent and governance-friendly at the total fund level.

Practitioner work highlights how private assets can be incorporated into a total portfolio framework (Rudin et al. 2019; Shen et al. 2021; Elkamhi et al. 2024b,c) and how their underlying risk exposures can be better understood through factor-based analysis (Mladina and Moore 2020). Operational perspectives similarly emphasize the need to embed liquidity and cash flow forecasting within the investment process itself (Meyer 2025). The academic rationale is captured by the interaction between market liquidity and funding liquidity (Brunnermeier and Pedersen 2009). A fund's ability to hold risk through stress depends not only on asset volatility but also on financing conditions, collateral requirements, cash flow timing, and its ability to avoid forced selling.

Examples of tools that address these challenges include Shen et al. (2021), which highlight that incorporating private assets breaks the assumption of frictionless rebalancing by introducing path dependency and requiring allocation decisions to explicitly account for illiquidity through limits on exposure, disciplined pacing, and liquidity-aware planning. Building on this, Elkamhi et al. (2024b) show that rebalancing constraints can be mitigated by shifting from asset-based to exposure-based approaches using liquid instruments to adjust total fund factor exposures. Together, these approaches illustrate how institutions can both incorporate illiquidity constraints into allocation design and partially restore flexibility through exposure management, enabling more controlled risk and liquidity outcomes at the total fund level.

In practice, these considerations are translated into a set of liquidity metrics and guardrails. Institutions commonly monitor such measures as liquidity coverage ratios (LCRs), which assess the ability to meet short-term cash needs under stress; illiquidity ratios, which track the share of assets that cannot be readily liquidated; and explicit liquidity buffers, which define the level of immediately available assets required to absorb shocks. These are typically complemented by forward-looking cash flow forecasts and pacing models that project capital calls, distributions, and funding needs across private market programs.

Crucially, these tools are not merely operational—they are embedded in governance. Liquidity thresholds are often tied to escalation rules. Breaching a buffer may trigger adjustments to pacing, asset sales, or hedging actions. Similarly, pacing decisions are governed not only by opportunity but also by the institution's projected liquidity position under adverse scenarios. In this way, liquidity management becomes a core component of total fund decision-making rather than a separate operational function.

In a TPA context, embedding liquidity directly into governance and total fund decision-making shifts it from a constraint managed at the margins to a central element of portfolio design. Liquidity buffers, pacing decisions, and funding considerations must be integrated with total fund risk decisions rather than treated independently. Without this integration, institutions may appear well-diversified in normal conditions but become forced sellers under stress, undermining the resilience that TPA is intended to achieve.

Overlays, Modularity, and Implementation Channels

One practical reason TPA is feasible today is because exposures can now be adjusted without rewriting underlying mandates. Overlays, portable beta, and modular building blocks allow institutions to reshape risk efficiently at the total fund level, rather than being constrained by static asset-class structures.

A related strand of the literature shows that risk is state-dependent and can be scaled in disciplined ways. Volatility conditioning, for example, demonstrates how exposures can be adjusted dynamically in response to changing risk conditions (Fleming et al. 2001, 2003; Moreira and Muir 2017). These approaches align naturally with a TPA framework, where adaptation is governed rather than ad hoc.

Examples of such tools can be found in the literature. Cavaglia et al. (2022) show how portable beta and overlay strategies enable institutions to separate desired exposures from the assets used to implement them, allowing risk to be adjusted without restructuring underlying portfolios. In practice, this modular approach enables institutions to express views, rebalance exposures, and manage total fund risk using liquid instruments layered on top of existing holdings. The result is a more flexible and scalable portfolio construction process in which exposures can be adjusted independently of physical assets, provided implementation remains consistent with liquidity, cost, and governance constraints.

However, implementability remains the binding constraint for TPA to succeed. Dynamic strategies interact with transaction costs, market capacity, and organizational bandwidth. The academic literature on optimal trading under predictable returns and costs (Gârleanu and Pedersen 2013) reinforces a practical reality—even when conditioning is valuable in principle, capturing it requires a process that is explicit about turnover, liquidity, and operational risk. In a TPA context, then, the ability to express views is no longer the limiting factor; the challenge lies in implementing these views in a way that is scalable, transparent, and consistent with governance constraints. Overlays and modular tools expand the feasible set of actions, but without disciplined implementation, they can just as easily introduce complexity and hidden risks as they enable flexibility.

Total Fund Attribution and Measurement

If the unit of decision is the total fund, attribution must reflect total fund drivers—such as factors, regimes, and liquidity—rather than focusing solely on "allocation versus selection" within asset-class sleeves. Traditional measurement frameworks remain useful, but they are incomplete.

The Brinson decomposition shaped how institutions interpret performance (Brinson et al. 1986), though its implications are often misunderstood (Ibbotson and Kaplan 2000). In a TPA context, the limitation is structural: Sleeve-based attribution assumes that decisions are made within asset classes, whereas TPA shifts decision-making to the total fund level.

TPA further complicates measurement by moving away from traditional asset-class benchmarks toward reference portfolios, factor benchmarks, or outcome-based objectives. Measuring added value therefore requires a broader and more flexible framework. This includes style and factor attribution (Sharpe 1992, 1994), a clear definition of alpha relative to the chosen portfolio benchmark—or relative to the opportunity set available to the investment team. It also includes risk diagnostics that capture path-dependent outcomes and align with the institution's mission.

In this setting, attribution is no longer just a reporting exercise—it becomes part of the decision system. It must explain not only where returns came from but also whether decisions were consistent with total fund objectives and constraints. If the measurement framework does not align with how decisions are made, institutions risk evaluating performance in a language that systematically misrepresents added value.

Infrastructure and Data Integration

Beyond analytics, TPA requires enabling infrastructure. This includes clean and timely position and exposure data across both public and private holdings; consistent mappings across factors, scenarios, and regimes; integrated dashboards for liquidity, cash flows, and collateral (especially when overlays and derivatives are material); and strong model governance that treats risk systems as decision systems rather than compliance artifacts. This infrastructure forms the institutional "stack" that allows boards to define auditable guardrails—such as risk budgets, liquidity resilience, and leverage or collateral limits—while giving management the flexibility to act within those constraints. It connects measurement, decision-making, and governance into a coherent system. Without this foundation, TPA risks becoming superficial. Institutions may produce integrated reporting while continuing to operate through fragmented decision rights and siloed implementation. In that case, "TPA" becomes a narrative overlay rather than a change in how decisions are made (Drew and Walk 2019; CAIA Association 2024; Thinking Ahead Institute 2025).

Reporting, Transparency, and the "License to Operate"

TPA ultimately lives or dies by reporting design. Because discretion is higher—and because implementation often relies on derivatives, overlays, and cross-asset reallocations—the institution's license to operate depends on transparent, decision-relevant reporting. Reporting must be frequent enough to detect drift. It also must be focused enough to remain anchored on what matters: total fund risk budgets, liquidity and collateral positions, concentration, regime exposures, and whether actions remain within pre-committed guardrails.

Equally important is the organization's capacity to absorb this information. This requires board education, sufficient meeting time, and a governance cadence that prioritizes material trade-offs over routine sleeve-level reviews. Without this capacity, even well-designed reporting will fail to support effective decision-making.

In practice, the absence of transparency and sufficient attention in board and committee discussions leads to two predictable failure modes. TPA becomes politically fragile when stakeholders feel blindsided by decisions they do not fully understand. Alternatively, it becomes operationally timid when management self-censors to avoid scrutiny, which limits the very flexibility the framework is meant to enable. In both cases, the result is the same—adaptation is constrained, and the benefits of a total fund approach are not realized (Elkamhi and Lee 2025b).

Takeaway

The discussion above highlights that TPA does not depend on any single tool, but on how a set of capabilities is integrated into a coherent decision-making system. In practice, institutions draw on a range of established tools—spanning portfolio construction, risk measurement, liquidity management, and implementation—to support total fund decisions. These tools are not unique to TPA; what changes is how they are used and how they are embedded within governance, incentives, and decision rights. **Exhibit 4** summarizes a selection of commonly used tools, the functions they serve, and how they contribute to making a total portfolio approach actionable.

Taken together, these tools illustrate that implementing TPA is not about adopting new techniques but about integrating familiar capabilities within a governance framework that enables total fund decision-making. Each tool contributes a piece of the system—describing exposures,

Exhibit 4. Common TPA Tools and What They Operationalize

Tool/Capability	Primary Function	Illustrative Roots	Role in a TPA Framework
State-Variable Dashboards/ Regime Frameworks	Summarize evolving macro conditions (growth, inflation, real rates, liquidity, volatility)	Merton (1971); Ang and Bekaert (2002); Campbell and Viceira (2002); Detemple and Rindisbacher (2010)	Provides a shared language for assessing when adaptation is warranted and how the opportunity set is changing
Risk Budgets and Risk Allocation Frameworks	Allocate risk (rather than capital) across return sources or teams	Asness et al. (2012); Roncalli (2014)	Enables delegation while maintaining total fund coherence through governed risk constraints
Factor-Based Allocation and Portable Beta	Express exposures in terms of underlying risk drivers and implement them efficiently	Pástor (2000); Bass et al. (2017); Lee and Salerno (2023)	Makes cross-asset trade-offs comparable and supports total fund positioning beyond asset-class silos
Volatility or Risk-Scaled Overlays	Adjust exposure dynamically as risk conditions change	Fleming et al. (2001, 2003); Moreira and Muir (2017)	Provides a disciplined mechanism for scaling risk in response to changing market conditions
Liquidity Integration (Buffers, Pacing, Forecasting)	Link liquidity buffers, pacing, and cash flows to portfolio decisions	Brunnermeier and Pedersen (2009); Rudin et al. (2019); Mladina and Moore (2020)	Ensures liquidity constraints are embedded in total fund decisions and prevents forced selling under stress
Total Fund Attribution and Learning Systems	Attribute outcomes to total fund drivers and support post-mortem analysis	Brinson et al. (1986); Sharpe (1992, 1994); Ibbotson and Kaplan (2000)	Makes discretion auditable and supports institutional learning by linking decisions to outcomes

identifying regimes, allocating risk, managing constraints, or evaluating outcomes—but none is sufficient on its own. Their value depends on how they are connected to decision rights, incentives, and accountability. In this sense, TPA is not "more analytics," but governed analytics. Institutions become TPA-oriented by ensuring that the tools they use operate as part of a coherent system that supports timely, explainable, and disciplined decisions at the total fund level.

Summary: Making TPA Actionable

The discussion above highlights that implementing TPA is not primarily a portfolio construction problem, but an institutional design problem. The tools, analytics, and frameworks required to support a total fund perspective are largely available. What determines whether TPA becomes operational in practice is how governance, incentives, and decision rights are structured—and whether they form a coherent system.

At its core, TPA requires an explicit contract between the board and the investment organization. This contract defines objectives, allocates authority, aligns incentives, and establishes guardrails within which discretion can be exercised. Without this alignment, institutions may adopt the language and tools of total portfolio management while continuing to operate through siloed decision-making structures. **Exhibit 5** summarizes the key elements of this governance contract, clarifying how responsibilities are allocated between the board and the investment function and how these elements interact to make a total fund approach actionable.

Exhibit 5. Governance and Incentive Design for Making TPA Actionable

Decision Area	Board/Trustees (Own and Approve)	CIO/Investment Office (Design, Propose, Execute)	Practical Implementation Examples
Objectives and Success Definition	Define mission (e.g., real return, funded status stability), downside tolerance, and resilience objectives	Translate into investable targets (e.g., required return, surplus risk, drawdown tolerance)	Define target real return (e.g., CPI +4%), max drawdown tolerance, funded ratio volatility bands
Risk Appetite and Guardrails	Approve total fund risk limits (e.g., liquidity buffer, leverage cap, concentration limits)	Convert into risk budgets and constraints across factors, asset classes, and strategies	Total fund risk budget (e.g., 12% vol), max illiquid allocation (e.g., 40%), liquidity buffer
Delegation and Decision Rights	Define what can be done without approval and what requires escalation	Execute within ranges; escalate outside guardrails; arbitrate cross-asset trade-offs	Rebalance ±5% within asset classes autonomously; escalate if liquidity buffer breached
Total Fund Allocation and Positioning	Approve framework (reference portfolio, risk budget approach, or objective-based)	Allocate capital and risk dynamically across public/private asset classes, factors, and strategies	Shift from equities to credit/liquidity under stress; hedge inflation risk across asset classes; allocation based on a factor approach

(*continued*)

Exhibit 5. Governance and Incentive Design for Making TPA Actionable (*continued*)

Decision Area	Board/Trustees (Own and Approve)	CIO/Investment Office (Design, Propose, Execute)	Practical Implementation Examples
Benchmarking and Evaluation Framework	Define evaluation standard (reference portfolio, outcome benchmark, horizon)	Design mandate-level benchmarks aligned with role and total fund objectives	CIO evaluated vs. total fund benchmark; private equity performance tied to team-specific goals
Incentives and Compensation	Approve philosophy (long-term, total fund aligned, collaboration-focused)	Implement compensation structure (mix of total fund, mandate, qualitative metrics)	CIO incentive tied to 3- to 5-year total fund outcome; PMs on mandate + team contribution
Liquidity and Balance Sheet Management	Set liquidity policy, leverage limits, collateral rules; approve stress playbooks	Manage buffers, financing, and pacing; integrate liquidity into allocation decisions	Reduce PE commitments if liquidity < threshold; raise cash buffer during tightening cycle
Delegation Risk and Oversight	Define acceptable risk-taking behavior; retain right to revoke delegation	Ensure transparency of exposures; monitor hidden risks (leverage, factor tilts, liquidity)	Monitor "growth" factor exposures; require reporting of implicit leverage and liquidity sensitivity
Transparency and Reporting	Define reporting requirements (what matters, how often, escalation triggers)	Provide total fund reporting (risk budgets, liquidity, factor exposures, deviations)	Monthly total fund dashboard: factor exposure, liquidity, stress scenarios, deviation vs. plan
Adaptive Control and Escalation Rules	Approve trigger framework (drawdowns, liquidity stress, regime shifts)	Execute pre-authorized actions; escalate when thresholds breached	If liquidity buffer < X → halt illiquid pacing
Learning and Decision Process	Require post-mortems, decision logs, and accountability	Maintain logs, attribution, and process improvements	Document major reallocations; review process and investment thesis
Cross-Team Coordination	Encourage collaboration and total fund mindset	Coordinate across asset classes and teams; resolve conflicts	Public + private teams jointly manage inflation exposure; overlay team supports all mandates

These elements illustrate that TPA is not implemented by adopting a new set of tools, but by redesigning how decisions are made and governed. Each component—objectives, delegation, incentives, risk budgets, and reporting—must reinforce the others. If any element remains anchored in a sleeve-based framework, the system will tend to revert to siloed behavior.

Making TPA actionable is less about innovation and more about alignment. The institution must ensure that its governance structure, incentive system, and analytical capabilities all point toward the same objective: enabling coherent, timely, and accountable decisions at the total fund level. When this alignment is achieved, the total portfolio becomes more than an aspiration—it becomes an operating model.

Performance Expectations and Evidence

Whenever TPA is raised in a boardroom, the blunt question follows: Will this improve performance? The honest answer is that TPA is not an alpha strategy. It is an operating model for making capital allocation and risk decisions at the level that matters when opportunity sets, constraints, and cross-sleeve interactions evolve over time. A well-run SAA can perform very well; a poorly governed TPA can do worse. The performance case for TPA is therefore conditional. It depends on whether a total fund operating model improves decision quality in changing environments—and whether institutions can realize that benefit without allowing discretion to devolve into noise.

Why TPA Might Help: Theoretical Channels

The first mechanism by which TPA can be beneficial is that it reduces frictions that prevent long-horizon investors from acting on state-dependent information. Intertemporal portfolio theory implies that optimal policies depend on changing opportunity sets (Merton 1971). Later work translates this concept into implementable allocation rules (Detemple and Rindisbacher 2010; Elkamhi and Stefanova 2015). TPA's contribution is institutional; it makes these state-contingent trade-offs feasible in governance terms rather than merely optimal in models.[20]

A second mechanism by which TPA can be beneficial is capital mobility. When expected returns and risks vary (Kandel and Stambaugh 1996), value depends on identifying attractive exposures and on the ability to reallocate scarce balance-sheet capacity—risk budget, liquidity, leverage, and governance attention. TPA emphasizes preparedness. Flexibility has value only if the institution can act within legitimate guardrails.

A third mechanism by which TPA can be beneficial is state-dependent diversification. Correlations, volatilities, and hedge effectiveness vary across regimes, and regime-switching models show that acknowledging these shifts can materially alter allocation decisions (Ang and Bekaert 2002). For long-horizon institutions, the most relevant states of the world are those in which key constraints become binding, such as when liquidity is strained, drawdowns approach tolerance limits, or funded status deteriorates. In these environments, the institution's ability to take risk, meet obligations, or maintain its investment strategy is directly affected. These states

[20]Life-cycle and human-capital considerations further illustrate how risk capacity depends on balance-sheet flexibility rather than on asset volatility alone; see Bodie et al. (1992). For institutional investors, analogous flexibility in contributions, spending rules, or liability management affects the true risk capacity of the total fund.

therefore matter disproportionately because they can force changes in portfolio positioning, limit flexibility, or require defensive actions at precisely the moments when opportunities may be most attractive. TPA's promise lies not in frequent forecasting but in avoiding systematically wrong exposures in adverse regimes and preserving optionality when premia widen.

A fourth mechanism by which TPA can be beneficial relates to model risk. Return predictability is fragile out of sample (Campbell and Thompson 2008; Welch and Goyal 2008), and robust allocation frameworks under parameter uncertainty differ from standard mean–variance solutions (Garlappi et al. 2007; DeMiguel et al. 2009).[21] More broadly, this challenge extends beyond estimation risk to ambiguity, or Knightian uncertainty, in which the probability distribution of outcomes is itself uncertain. In such settings, decision-making cannot rely solely on known risks or fixed benchmarks but must also account for the possibility that models, expected returns, and even the structure of the opportunity set may be misspecified. This shifts the focus from optimizing against a single reference portfolio to ensuring that decisions remain robust across a range of plausible environments.

In this context, frameworks that emphasize robustness and learning under ambiguity provide a useful conceptual complement to TPA. They highlight the importance of resilience, adaptability, and decision quality when probabilities are not fully known (Viale et al. 2014). The implication is to govern, rather than avoid, adaptation. Dynamic policy should be bounded, disciplined, and supported by priors, rather than driven by reactive or overconfident timing.

A fifth mechanism by which TPA can be beneficial operates through benchmarking and incentives. In benchmark-centric systems, sleeve-level rationality can generate total fund inefficiency, as teams optimize local benchmarks even when cross-sleeve reallocations would improve outcomes. Delegated benchmarking reframes benchmarks as contracts, anchoring accountability at the total fund level while allowing mandate-level evaluation to reflect specific roles (Elkamhi and Lee 2025a). Escaping benchmark-driven equilibria is itself a potential source of performance improvement.

The final mechanism by which TPA can be beneficial is total fund liquidity management. Liquidity is often the dominant state variable in modern portfolios. Liquidity risk is priced (Pástor and Stambaugh 2003; Acharya and Pedersen 2005), and crises often involve reinforcing interactions between market and funding liquidity (Brunnermeier and Pedersen 2009). For illiquid and levered portfolios, the ability to avoid forced selling and provide liquidity during dislocations is central to long-horizon outcomes. TPA's emphasis on liquidity buffers, leverage discipline, and deployable capital directly targets these states.

Evidence on Dynamic Versus Static Policies

Empirical evidence on dynamic versus static policies is mixed and context dependent, but several strands are relevant to TPA. First, systematic risk scaling and volatility conditioning show measurable gains when risk is treated as state-dependent (Fleming et al. 2001, 2003; Moreira and Muir 2017). This suggests that fixed risk budgets in a changing volatility environment can be costly.

[21]Small-sample bias and persistence in predictive regressions further complicate inference about time-varying expected returns; see Stambaugh (1999). These statistical challenges reinforce the need for bounded conditioning and guardrail adaptation in institutional settings.

Second, evidence on the success of discretionary market timing is less supportive. Formal tests (Treynor and Mazuy 1966; Henriksson and Merton 1981) and later refinements (Bollen and Busse 2001; Jiang et al. 2007) find limited evidence of persistent timing skill. The governance implication is that discretion, if granted, must be bounded, rule-based, and evaluated over appropriate horizons.

Third, cross-asset signals, such as time-series momentum, appear broadly across asset classes (Moskowitz et al. 2012), and scaling exposures can improve outcomes (Barroso and Santa-Clara 2015). For TPA, the relevance lies in implementing these signals at the total fund level rather than confining them to sleeves.

Fourth, regime awareness matters, but it is fragile. Regime-switching frameworks highlight both the potential and the instability of state-based allocation (Ang and Bekaert 2002). The practical lesson is governance-oriented. Use regime tools to stress-test policy anchors and justify bounded adjustments, rather than relying on fragile classification schemes.

Fifth, nonlinear exposures become increasingly important in a TPA context. When overlays, derivatives, and convex instruments are used, exposures become state- and path-dependent. Traditional linear factor models may fail to capture these dynamics (Black and Perold 1992), requiring richer diagnostics.

Finally, implementation frictions are decisive. Even when conditioning is valuable in principle, trading costs, capacity limits, and governance delays can erode gains. Optimal trading under costs implies gradual and bounded adjustment (Gârleanu and Pedersen 2013). This reinforces a central theme: TPA's value lies in episodic, well-governed actions rather than continuous re-optimization.

Measuring TPA Outperformance

Before discussing measurement, it is important to clarify that "outperformance" (or added value) is an imperfect concept in the TPA context. TPA does not generate a standalone return stream; it is an operating framework. The relevant question is whether a total fund governance model improves outcomes relative to the feasible alternative under the same objectives and constraints. This immediately raises a deeper issue: Outperformance is always relative—to what benchmark, and under what assumptions? In traditional settings, this comparison is often made against a static SAA policy mix. However, if the opportunity set evolves and the institution has the ability to adapt, a fixed policy portfolio may not represent the true opportunity cost of inaction. The relevant comparison is therefore not simply TPA versus SAA as commonly implemented, but TPA versus the best feasible alternative policy under the same governance constraints. If the benchmark assumes a static allocation while the decision process is dynamic, the comparison may misstate both the cost of inaction and the value of adaptation.

This creates a fundamental measurement challenge. TPA changes the unit of decision from asset-class sleeves to the total fund, complicating both attribution and counterfactual construction. Traditional frameworks such as Brinson attribution (Brinson et al. 1986) were designed for a sleeve-based world, and their interpretation is often misunderstood (Ibbotson and Kaplan 2000). When allocations are intentionally dynamic, evaluation should be conditional on the information available at the time decisions were made (Ferson and Schadt 1996). Otherwise, dynamic exposures may be misclassified as alpha or penalized as style drift.

One practical response is delegated benchmarking. In this framework, the board defines a stable total fund "reference" portfolio and guardrails, while management designs mandate-level benchmarks aligned with the roles those mandates play in the portfolio (Elkamhi and Lee 2025a). This delegation creates a benchmark structure that reflects opportunity costs rather than rigid asset-class comparisons.

Even with such structures, empirical identification remains difficult. TPA adoption is not random. Institutions that adopt it differ systematically in governance, capability, and stakeholder tolerance. As a result, within-institution evidence around governance changes is often more informative than cross-sectional comparisons.

Measurement becomes further complicated in portfolios with significant allocations to private assets. Illiquidity, valuation smoothing, and hidden factor exposures distort return signals (Mladina and Moore 2020; Shen et al. 2021), while integrating these assets into a total fund framework introduces additional challenges (Rudin et al. 2019). In such settings, path-dependent risk metrics and scenario-based evaluation may be more informative than simple average-return comparisons (Kritzman et al. 2021).

The literature does not establish that TPA systematically outperforms SAA. Instead, it supports a set of conditions under which a total fund approach may add value. Opportunity sets vary, ignoring state dependence can be costly, and bounded conditioning can improve outcomes when implemented carefully (Fleming et al. 2001, 2003; Moreira and Muir 2017). At the same time, measurement must explicitly account for conditioning information and benchmark design to avoid misinterpreting outcomes (Ferson and Schadt 1996).

In practice, institutions respond to these challenges by adopting a multi-dimensional approach to performance evaluation. Rather than relying on a single metric, TPA-oriented funds combine total fund outcomes, relative benchmarks, and qualitative scorecards to reflect the different objectives embedded in the investment process. Relative benchmarks remain important—particularly at the mandate level, where they capture security selection and implementation skill—but they are no longer the sole measure of success.

This reflects a broader principle: Incentives drive behavior. TPA requires balancing multiple objectives. Investment teams are expected to generate value within their mandates while contributing to total fund outcomes, such as return targets, risk management, liquidity resilience, and capital allocation. Incentive frameworks therefore tend to combine relative metrics, total fund measures, and qualitative assessments of decision quality and collaboration. Some institutions also are beginning to evaluate performance relative to the opportunity set available at the time decisions were made, although these approaches are still evolving. This reflects a shift toward evaluating decisions against feasible alternatives rather than static benchmarks.

The key question, therefore, is not simply whether TPA "outperforms" SAA but what success looks like under a total fund framework. In practice, success is inherently multi-dimensional. It requires achieving the fund's objectives while demonstrating skill in capital allocation, risk management, and decision-making under uncertainty. This understanding of success naturally leads to a system of multiple performance measures rather than a single metric, aligning evaluation with the governance structure that TPA requires. The credible claim for TPA is therefore probabilistic rather than deterministic. A well-governed total fund model may increase the likelihood of better outcomes—particularly in periods of stress—by enabling adaptation, liquidity management, and cross-asset trade-offs within a disciplined framework.

At a practical level, the relevant test of outperformance is not whether TPA outperforms a static benchmark, but whether decisions improve outcomes relative to the counterfactual portfolio that would have been held under the same constraints. In this sense, TPA outperformance reflects the quality of capital allocation under disciplined discretion, rather than a claim of systematic alpha.

Concluding Thoughts

The total portfolio approach (TPA) is best understood not as a new portfolio construction technique, but as a governing principle for institutional investing—one that is implemented through an operating model organized around the total fund. Its defining feature is a shift in the unit of decision, risk ownership, and accountability from asset-class sleeves to the total portfolio and, where relevant, the broader balance sheet. In this framing, the portfolio is a policy over time, not a static mix of assets. It is a governed set of conditional actions—rebalancing, reallocations, hedging, liquidity management, overlays, and pacing—executed within clearly defined objectives and constraints.

Conceptually, TPA can be seen as the institutional counterpart to the evolution of portfolio theory. It extends the single-period logic of diversification and separation (Markowitz 1952; Tobin 1958) toward the intertemporal and state-contingent framework of Samuelson (1969) and Merton (1969, 1971, 1973). TPA connects naturally to later perspectives emphasizing regime dependence, adaptive behavior, and learning in complex systems (Lo 2004). What distinguishes TPA is not the recognition that opportunity sets change—this is well understood—but the attempt to embed that recognition within governance, decision-making, and accountability structures.

The recent prominence of TPA reflects changes in institutional context rather than the discovery of a new theorem. The traditional governance contract underlying strategic asset allocation (SAA)—anchored in policy weights and asset-class benchmarks—was designed to make delegation auditable and defensible. It performs well when opportunity sets are relatively stable and when reallocations are infrequent. However, repeated episodes of inflation shocks, liquidity stress, correlation breakdowns, and structural market transitions have exposed a recurring limitation of SAA: Governance systems often adjust more slowly than the opportunity set itself. This mismatch becomes more pronounced in portfolios that incorporate illiquid assets, leverage, overlays, and cross-sleeve factor exposures, where risks are inherently interconnected.

In this environment, the central question of TPA is institutional rather than mathematical. The "what" of the portfolio cannot be separated from the "how" of decision-making. Implementation requires a redesign of the governance contract: Boards retain ownership of mission, success criteria, and binding constraints, while management is delegated authority to make cross-asset trade-offs within those guardrails. This structure reflects the separation between decision control and decision management (Fama and Jensen 1983), as well as the insight that effective delegation requires alignment between authority, information, and accountability (Aghion and Tirole 1997). Without such alignment, integration remains conceptual rather than operational.

Benchmarking and incentives play a central role in this transition. Benchmarks are not neutral reference points; they define what is measured, what is rewarded, and what is defensible.

When evaluation remains sleeve-based, local optimization can dominate even when total fund decisions would improve long-term outcomes. This is consistent with agency theory, which predicts that behavior will align with observable metrics rather than broader objectives (Holmström 1979; Scharfstein and Stein 1990; Holmström and Milgrom 1991). TPA-oriented designs therefore treat benchmarking as a contractual choice. Reference portfolios and delegated benchmarking approaches seek to anchor accountability at the total fund level while allowing mandate-level evaluation to reflect the roles managers are expected to play (Elkamhi and Lee 2025a, 2026). The objective is to relocate discipline so that incentives reinforce total fund decision-making.

From an implementation perspective, TPA depends on a set of tools and infrastructure that make integration actionable. Cross-asset factor lenses provide a common language for understanding exposures (Ang 2014; Bass et al. 2017). State-variable and regime frameworks translate intertemporal logic into practical situational awareness (Ang and Bekaert 2002; Campbell and Viceira 2002). Risk budgets connect delegation with coherence (Roncalli 2014). Integrated liquidity systems link pacing, buffers, collateral, and funding risk (Brunnermeier and Pedersen 2009; Rudin et al. 2020). Attribution frameworks and decision logs support institutional learning by linking outcomes to decisions (Ferson and Schadt 1996). Individually, these tools are well known; collectively, they form the infrastructure that allows a total fund operating model to function.

The performance implications of TPA must be framed carefully. There is no universal proof that TPA outperforms SAA. Its value is conditional on context. When opportunity sets are stable and constraints are simple, a traditional SAA framework may remain effective. However, when returns, risks, and constraints are state-dependent, a governance model that enables adaptive, cross-asset decision-making may improve outcomes. The literature suggests several potential channels: disciplined risk scaling in changing volatility regimes (Fleming et al. 2001, 2003; Moreira and Muir 2017), more efficient allocation of balance-sheet capacity (Kandel and Stambaugh 1996), improved resilience under shifting correlations and liquidity conditions (Ang and Bekaert 2002; Brunnermeier and Pedersen 2009), and the avoidance of benchmark-driven distortions (Scharfstein and Stein 1990). At the same time, expanded discretion introduces new risks. Without clear governance, robust measurement, and aligned incentives, flexibility can lead to procyclical behavior, hidden exposures, or decision noise (Gârleanu and Pedersen 2013).

Ultimately, TPA is best viewed as a continuum of institutional design choices rather than as a binary identity. Some institutions will remain SAA-centric, with incremental flexibility layered on top. Others will adopt elements such as liability-aware frameworks, factor-based allocation, or reference portfolios without fundamentally changing decision rights. A smaller group—the one that fully implements TPA—will align governance, incentives, and measurement around total fund objectives in a way that makes cross-asset adaptation routine, disciplined, and auditable.

The contribution of the modern TPA literature is to clarify a distinction. Integration is not defined by the presence of tools, models, or reporting frameworks; instead, it is defined by whether the governance contract enables the institution to act on a total fund perspective. In this sense, TPA is less about what the portfolio looks like at any point in time and more about whether the institution is structured to change the portfolio—coherently, deliberately, and with accountability—when conditions demand.

BIBLIOGRAPHY

The annotated bibliography that follows contains 170 sources in total and is organized into three sections. Each section reflects the main strands of literature that inform the total portfolio approach (TPA). While the label "TPA" is relatively recent, the underlying ideas draw on a much broader body of work that spans academic research, practitioner journals, and institutional discussions among asset owners and consultants. As a result, the relevant literature is not confined to traditional academic sources. A distinguishing feature of the TPA discussion is that developments in practice and institutional governance have often evolved alongside—and in some cases ahead of—formal academic treatment.

The three sections are as follows. Section A includes 86 academic sources that provide the theoretical and empirical foundations relevant to TPA. They cover such areas as intertemporal portfolio choice, dynamic asset allocation, liquidity risk, agency problems in delegated investment management, factor-based risk decomposition, and institutional governance. Section B contains 58 contributions from practitioner-oriented sources, primarily the *Journal of Portfolio Management* and the *Financial Analysts Journal*. These works often translate academic insights into implementable frameworks and, in several cases, have played an important role in shaping the modern articulation of total fund investment concepts. Section C includes 26 sources from asset-owner publications, consulting reports, and industry outlets. Because many of these are institutional or online publications, links are provided where available, with an emphasis on widely recognized sources and contributions from major asset owners, consultants, and industry organizations.

Taken together, this mix of sources reflects the nature of the TPA discussion. While academic research provides the conceptual foundations, many of the practical ideas associated with total fund management have been developed and debated within practitioner communities and asset-owner networks. The literature therefore combines theory, implementation frameworks, and institutional experience.

Within this broader set of references, a subset of works focuses directly on TPA or closely related total fund governance frameworks, while many others provide the foundational concepts and tools that help explain why such approaches emerge. The annotated bibliography therefore serves two purposes. First, it identifies works that explicitly address total portfolio frameworks and institutional implementation. Second, it highlights the wider theoretical and empirical literature—covering dynamic allocation, factor exposures, liquidity risk, agency frictions, and governance—that underpins these ideas. For each reference, the annotation summarizes the main contribution and explains its relevance to TPA. In some cases, this relevance lies in governance design and incentive alignment; in others, it relates to portfolio construction tools, factor and macro frameworks, liquidity management, or empirical evidence on dynamic allocation and market behavior. As a whole, the three sections provide a structured map of the academic foundations, practitioner frameworks, and institutional perspectives that collectively inform the modern discussion of TPA.

Section A. Academic Literature

Acharya, V. V., and L. H. Pedersen. 2005. "Asset Pricing with Liquidity Risk." *Journal of Financial Economics* 77 (2): 375–410. doi:10.1016/j.jfineco.2004.06.007.

Provides a formal model and empirical evidence that assets with high sensitivity to market liquidity require higher expected returns. For TPA, the relevance is that portfolios heavy in illiquids or leveraged exposures can embed large implicit liquidity bets. The paper supports the idea that liquidity is a first-class risk factor that should be managed across the total portfolio, especially under regimes where funding liquidity and market liquidity interact.

Adrian, T., and H. S. Shin. 2010. "Liquidity and Leverage." *Journal of Financial Intermediation* 19 (3): 418–37. doi:10.1016/j.jfi.2008.12.002.

Develops a framework linking intermediary balance-sheet expansion and contraction to asset price dynamics, showing how leverage and liquidity conditions amplify cycles. Relevant to TPA because institutional portfolios are increasingly interconnected with funding markets, derivatives, and leverage channels. The paper supports the argument that total fund risk must incorporate balance-sheet fragility and liquidity propagation mechanisms rather than relying solely on asset-class diversification assumptions.

Aghion, P., and J. Tirole. 1997. "Formal and Real Authority in Organizations." *Journal of Political Economy* 105 (1): 1–29. doi:10.1086/262063.

Distinguishes formal authority (who has the right to decide) from real authority (who effectively decides because they have information and initiative). Highly relevant to TPA governance: Boards may retain formal authority over policy portfolios, but real authority often sits with investment teams that possess market information. When formal authority is too rigid, agents reduce initiative; when it is too loose without guardrails, discipline can erode. The model motivates the delegation logic in "delegated benchmarking" and, more broadly, the idea that effective TPA requires carefully designed decision rights.

Andonov, A., R. M. M. J. Bauer, and K. J. M. Cremers. 2017. "Pension Fund Asset Allocation and Liability Discount Rates." *Review of Financial Studies* 30 (8): 2555–95. doi:10.1093/rfs/hhx020.

Examines how pension funds choose asset allocations and discount rates, highlighting the interaction between financial objectives and institutional constraints. Relevant to TPA because it illustrates that policy portfolios are not purely financial outcomes; they reflect governance, accounting, and regulatory environments. The paper is a reminder that "integrated portfolio management" must grapple with institutional measurement conventions (e.g., discount rates) that shape incentives and risk-taking.

Andonov, A., Y. V. Hochberg, and J. D. Rauh. 2018. "Political Representation and Governance: Evidence from the Investment Decisions of Public Pension Funds." *Journal of Finance* 73 (5): 2041–86. doi:10.1111/jofi.12706.

Documents that political representation and governance structures can materially influence investment decisions. In a TPA review, this evidence matters because TPA typically increases discretion and reduces reliance on simple benchmarks; such changes require trust

and stable governance. The paper underscores that governance frictions are not abstract—they affect real allocations and outcomes. It also helps explain why TPA adoption may be easier for certain institutional forms (e.g., sovereign funds) than for others (e.g., politically exposed public pensions).

Ang, A., and G. Bekaert. 2002. "International Asset Allocation with Regime Shifts." *Review of Financial Studies* 15 (4): 1137–87. doi:10.1093/rfs/15.4.1137.

A canonical regime-switching allocation paper showing that correlations and volatilities can change across regimes, altering diversification benefits. Relevant to TPA because many institutional governance narratives implicitly assume stable diversification (especially the role of bonds as a hedge). Regime-switching logic supports the idea that risk systems and policy design should be able to analyze state-dependent behavior rather than rely on single unconditional covariance estimates.

Armenakis, A. A., S. G. Harris, and K. W. Mossholder. 1993. "Creating Readiness for Organizational Change." *Human Relations* 46 (6): 681–703. doi:10.1177/001872679304600601.

Distinguishes readiness for change from resistance to change and argues that successful transitions depend on shaping beliefs, attitudes, and intentions before implementation begins. Relevant to TPA because a governance reset will work only if staff believe the shift is necessary, appropriate, and feasible within the institution's capabilities.

Asness, C. S., T. J. Moskowitz, and L. H. Pedersen. 2013. "Value and Momentum Everywhere." *Journal of Finance* 68 (3): 929–85. doi:10.1111/jofi.12021.

Documents that value and momentum premia exist across multiple asset classes, not just equities. For TPA, the relevance is that systematic return drivers cut across traditional bucket definitions. This supports the factor-lens logic of total portfolio construction: Exposures should be evaluated at the level of underlying drivers rather than asset labels.

Barroso, P., and P. Santa-Clara. 2015. "Momentum Has Its Moments." *Journal of Financial Economics* 116 (1): 111–20. doi:10.1016/j.jfineco.2014.11.010.

Shows that scaling momentum strategies by volatility can improve their performance and reduce crash risk, illustrating a broader point: Conditioning exposures on risk states can change outcomes materially. For a TPA review, the relevance is not to recommend momentum per se, but to demonstrate that state-dependent risk management can be a general tool used across strategies. It reinforces the practical TPA idea that risk budgets and allocations at the policy and strategy levels (both) should not be static when the risk environment changes.

Berk, J. B., and R. C. Green. 2004. "Mutual Fund Flows and Performance in Rational Markets." *Journal of Political Economy* 112 (6): 1269–95. doi:10.1086/424739.

Develops a rational model where competition and decreasing returns to scale limit persistent outperformance, even when managers are skilled. In a TPA setting, this supports a sober view of "dynamic allocation skill": Governance and capacity constraints often dominate, and systematic exposures may be more scalable than discretionary timing.

Black, F., and A. F. Perold. 1992. "Theory of Constant Proportion Portfolio Insurance." *Journal of Economic Dynamics & Control* 16 (3–4): 403–26. doi:10.1016/0165-1889(92)90043-E.

Develops the theoretical mechanics of CPPI, a rule-based dynamic strategy that adjusts risky exposure as wealth changes. Included because it illustrates a general TPA lesson: Dynamic rules can be analyzed rigorously, but their desirability depends on constraints (trading, leverage, liquidity) and on how the institution defines and governs downside risk.

Bodie, Z. 1990. "Pensions as Retirement Income Insurance." *Journal of Economic Literature* 28 (1): 28–49.

Provides an economic framing of pensions as insurance products and highlights why liability characteristics matter for investment policy. This literature is adjacent to TPA because many TPA implementations implicitly re-derive ALM logic: The relevant risk is not asset volatility per se, but the risk of failing to meet promised (or desired) outcomes.

Bodie, Z., R. C. Merton, and W. F. Samuelson. 1992. "Labor Supply Flexibility and Portfolio Choice in a Life Cycle Model." *Journal of Economic Dynamics & Control* 16 (3–4): 427–49. doi:10.1016/0165-1889(92)90044-F.

Shows how human capital and labor flexibility affect optimal portfolio choice over the life cycle. For institutions, the analog is the flexibility of contributions, spending rules, and liability management; these balance-sheet features influence the true risk capacity of the total fund and therefore connect naturally to TPA framing.

Bollen, N. P. B., and J. A. Busse. 2001. "On the Timing Ability of Mutual Fund Managers." *Journal of Finance* 56 (3): 1075–94. doi:10.1111/0022-1082.00356.

Uses daily data to revisit market timing and finds that timing evidence can be sensitive to measurement frequency and methodology. The paper is a useful reminder for TPA performance attribution: Dynamic decisions are often higher frequency than policy decisions, so evaluation windows and data choices matter. It also illustrates the broader point that persistent tactical skill is difficult to establish in traditional settings, motivating humility and robust governance for dynamic positioning.

Bollerslev, T. 1986. "Generalized Autoregressive Conditional Heteroskedasticity." *Journal of Econometrics* 31 (3): 307–27. doi:10.1016/0304-4076(86)90063-1.

Introduces the GARCH framework for modeling time-varying volatility. Relevant to TPA because dynamic risk scaling, stress testing, and volatility-aware overlays rely on the recognition that conditional variance evolves over time. The paper provides foundational support for state-dependent risk management rather than static volatility assumptions embedded in fixed policy portfolios.

Breeden, D. T. 1979. "An Intertemporal Asset Pricing Model with Stochastic Consumption and Investment Opportunities." *Journal of Financial Economics* 7 (3): 265–96. doi:10.1016/0304-405X(79)90016-3.

A classic equilibrium paper emphasizing that investment opportunities and consumption risk evolve, generating state-variable hedging demands. In a TPA review, its main role is to show that "changing opportunity sets" is not an ad hoc practitioner claim; instead, it is embedded

in equilibrium reasoning. The state-variable perspective is also useful for explaining why total portfolio risk language often shifts from asset classes to underlying macro drivers.

Bregnard, N., and C. Salva. 2023. "Pension Fund Board Governance and Asset Allocation: Evidence from Switzerland." *Journal of Pension Economics and Finance* 22 (3): 400–24. doi:10.1017/S1474747221000494.

Provides evidence on how board governance characteristics relate to strategic asset allocation choices. Useful for a TPA review because it connects governance variables (board structure, oversight practices) to the very object (policy allocation) that TPA seeks to move beyond. It reinforces the messages that portfolio policy is endogenous to governance design and that changing the investment framework requires attention to board capability and incentives.

Brennan, M. J., and Y. Xia. 2002. "Dynamic Asset Allocation under Inflation." *Journal of Finance* 57 (3): 1201–38. doi:10.1111/1540-6261.00459.

Models inflation as a state variable and derives optimal dynamic allocations across assets, including maturity choices for bonds. This paper is directly relevant to TPA because inflation and real-rate regimes are central to institutional risk management and because many TPA implementations in pension plans explicitly monitor inflation and rate regimes. It shows how an integrated portfolio policy changes when inflation risk is treated as a first-class constraint rather than as an afterthought.

Brown, K. C., W. V. Harlow, and L. T. Starks. 1996. "Of Tournaments and Temptations: An Analysis of Managerial Incentives in the Mutual Fund Industry." *Journal of Finance* 51 (1): 85–110. doi:10.1111/j.1540-6261.1996.tb05203.x.

Examines how compensation and ranking incentives affect risk-taking behavior among mutual fund managers. The paper documents a "tournament" dynamic: Managers who underperform mid-year tend to increase portfolio risk in an attempt to catch up, while out-performers often reduce risk to preserve their relative standing. Although the empirical setting is mutual funds, the core insight generalizes to institutional investing—namely, that incentive structures shape risk behavior in systematic and often destabilizing ways. In a TPA context, the relevance lies in governance design. Total portfolio frameworks explicitly seek to reduce siloed, benchmark-relative incentives that encourage such asymmetric risk-taking. The paper therefore serves as an early empirical foundation for why incentive alignment and total fund evaluation metrics are likely to be central to successful TPA implementation.

Brunnermeier, M. K., and L. H. Pedersen. 2009. "Market Liquidity and Funding Liquidity." *Review of Financial Studies* 22 (6): 2201–38. doi:10.1093/rfs/hhn098.

Develops the feedback loop between market liquidity and funding liquidity, highlighting how liquidity can evaporate in crises and amplify losses. This is relevant to TPA because TPA explicitly treats optionality and liquidity buffers as strategic choices, not residuals. The model helps explain why portfolios that look diversified in normal times can behave as if they share the same liquidity factor in stress and why governance should monitor liquidity and leverage exposures at the total fund level.

Campbell, J. Y. 1993. "Intertemporal Asset Pricing without Consumption Data." *American Economic Review* 83 (3): 487–512.

A bridge between intertemporal theory and empirical implementation: shows how state variables can be inferred and used even without direct consumption data. The paper's relevance to TPA is its operational spirit—use observable predictors and state variables to characterize the opportunity set and to think about hedging demands. It supports the idea that a total portfolio framework can be grounded in empirically observable macro and financial indicators rather than purely theoretical constructs.

Campbell, J. Y., and R. J. Shiller. 1988. "The Dividend–Price Ratio and Expectations of Future Dividends and Discount Factors." *Review of Financial Studies* 1 (3): 195–228. doi:10.1093/rfs/1.3.195.

A foundational paper linking valuation ratios to time-varying expected returns and discount rates. It underpins much of the modern predictability literature that motivates strategic (state-dependent) allocation rather than a permanently fixed mix. This is relevant for TPA as it formalizes in different ways how optimal portfolios depend on changing opportunity sets and investor preferences over time.

Campbell, J. Y., and S. B. Thompson. 2008. "Predicting the Equity Premium Out of Sample: Can Anything Beat the Historical Average?" *Review of Financial Studies* 21 (4): 1509–31. doi:10.1093/rfs/hhm055.

Shows that simple, constrained forecasting models can improve out-of-sample equity premium prediction relative to unconstrained models, highlighting the role of economic restrictions and robustness. Relevant to TPA because it illustrates an implementable lesson: If institutions are going to condition on state variables, they should do so in a way that respects estimation risk and avoids extreme positions. It supports the design idea of bounded and guardrailed adaptation rather than unconstrained timing.

Campbell, J. Y., and L. M. Viceira. 1999. "Consumption and Portfolio Decisions When Expected Returns Are Time Varying." *Quarterly Journal of Economics* 114 (2): 433–95. doi:10.1162/003355399556043.

A landmark paper quantifying the welfare consequences of time-varying expected returns and intertemporal hedging for long-horizon investors. For TPA, it provides one of the strongest theoretical statements that static, myopic portfolio rules can be materially suboptimal when the opportunity set moves. It is often used to justify the idea that long-horizon institutions should treat asset allocation as state dependent and should explicitly manage hedging and timing demands.

Campbell, J. Y., and L. M. Viceira. 2001. "Who Should Buy Long-Term Bonds?" *American Economic Review* 91 (1): 99–127. doi:10.1257/aer.91.1.99.

Shows how long-term bonds can serve as intertemporal hedges for long-horizon investors when expected returns and interest rates vary. Supports the TPA idea that the role of an asset depends on state variables and horizon, not on static bucket labels.

Campbell, J. Y., and L. M. Viceira. 2002. *Strategic Asset Allocation: Portfolio Choice for Long-Term Investors*. Oxford University Press. doi:10.1093/0198296940.001.0001.

A comprehensive synthesis of intertemporal portfolio choice, empirical return predictability, and practical long-horizon allocation. The book is relevant to TPA because it is essentially "dynamic allocation for long-horizon institutions" expressed in an implementable way. Many of the tools discussed in TPA practice, such as state variables, long-horizon hedges, and regime sensitivity, can be viewed as practitioner descendants of the strategic asset allocation program developed here.

Campbell, J. Y., G. Chacko, J. Rodriguez, and L. M. Viceira. 2004. "Strategic Asset Allocation in a Continuous-Time VAR Model." *Journal of Economic Dynamics & Control* 28 (11): 2195–214. doi:10.1016/j.jedc.2003.09.005.

Extends strategic allocation methods in a continuous-time VAR setting and emphasizes implementability under a changing opportunity set. Relevant to TPA as another rigorous demonstration that long-horizon optimal policy depends on state variables and that hedging demands can be sizable. The paper provides technical underpinnings for the style of scenario and state-variable analytics that appear in practitioner TPA tool kits.

Campbell, J. Y., Y. L. Chan, and L. M. Viceira. 2003. "A Multivariate Model of Strategic Asset Allocation." *Journal of Financial Economics* 67 (1): 41–80. doi:10.1016/S0304-405X(02)00231-3.

Develops a multivariate VAR-based framework for long-horizon allocation across multiple assets and state variables. The key contribution for TPA is demonstrating how an empirically calibrated, state-dependent allocation can be implemented systematically and how hedging demands arise naturally. It is a foundational reference for regime and state-variable tools used in modern institutional risk systems.

Carhart, M. M. 1997. "On Persistence in Mutual Fund Performance." *Journal of Finance* 52 (1): 57–82. doi:10.1111/j.1540-6261.1997.tb03808.x.

Shows that much of apparent mutual fund "skill" persistence can be explained by common risk factors, such as momentum, and that true persistent alpha is rare. For TPA, the message is that institutions should attribute outcomes to systematic drivers (factors) before concluding that a governance change or tactical decision created value.

Chevalier, J., and G. Ellison. 1997. "Risk Taking by Mutual Funds as a Response to Incentives." *Journal of Political Economy* 105 (6): 1167–200. doi:10.1086/516389.

Studies how mutual fund managers adjust portfolio risk in response to performance rankings and career concerns. The evidence shows that incentives systematically shape risk-taking behavior, particularly for managers whose careers are more sensitive to short-term results. Although the setting is mutual funds, the core conclusion generalizes that compensation and evaluation structures materially influence portfolio risk decisions. In a TPA context, this finding reinforces the importance of total fund governance and incentive alignment, designed to reduce benchmark-driven distortions and promote risk-taking consistent with long-horizon institutional objectives.

Coch, L., and J. R. P. French, Jr. 1948. "Overcoming Resistance to Change." *Human Relations* 1 (4): 512–32. doi:10.1177/001872674800100408.

A classic field study showing that resistance to change is reduced when the people affected by the change participate in shaping it, rather than simply receiving it. Relevant to TPA because governance and role redesign are more likely to succeed when investment teams are involved in defining how collaboration, delegation, and accountability will work in practice.

Cox, J. C., and C.-F. Huang. 1989. "Optimal Consumption and Portfolio Policies When Asset Prices Follow a Diffusion Process." *Journal of Economic Theory* 49 (1): 33–83. doi:10.1016/0022-0531(89)90067-7.

Provides a state-price/martingale approach to intertemporal portfolio choice that underpins many later decompositions of optimal portfolio policies. While technically oriented, the paper supports the conceptual point that dynamic portfolio decisions can be expressed in terms of pricing kernels and state variables. For TPA, the relevance is that "total portfolio" frameworks often operationalize state dependence through scenario analysis and factor exposure management, which are practical descendants of this framework.

Cremers, M., and A. Petajisto. 2009. "How Active Is Your Fund Manager? A New Measure That Predicts Performance." *Review of Financial Studies* 22 (9): 3329–65. doi:10.1093/rfs/hhp057.

Introduces active share and shows how it relates to performance and fees. This connects to TPA because a total portfolio framework in the SAA framework was mainly driven by hugging benchmarks, and the incentives to deviate were slim. This paper gives insights that activeness generates value, and the TPA structure may give a framework that fosters that.

De Long, J. B., A. Shleifer, L. H. Summers, and R. J. Waldmann. 1990. "Noise Trader Risk in Financial Markets." *Journal of Political Economy* 98 (4): 703–38. doi:10.1086/261703.

Shows that irrational "noise" traders can affect prices and create limits to arbitrage, implying that mispricings can persist. TPA relevance is indirect but important: If markets can be inefficient and regimes can persist, institutions may want governance that allows them to be contrarian at the total fund level—while managing the career and political risks of being early.

DeMiguel, V., L. Garlappi, and R. Uppal. 2009. "Optimal Versus Naive Diversification: How Inefficient Is the 1/N Portfolio Strategy?" *Review of Financial Studies* 22 (5): 1915–53. doi:10.1093/rfs/hhm075.

Demonstrates that optimized mean–variance portfolios often fail to outperform simple equal-weighted (1/N) strategies out of sample due to estimation error. The findings highlight the fragility of highly parameter-dependent optimization. In a TPA implementation context, this reinforces the importance of building allocations that are robust, transparent, and implementable. When performance is evaluated at the total fund level, institutions have stronger incentives to favor resilient portfolio construction over theoretically optimal but unstable solutions.

Detemple, J., and M. Rindisbacher. 2010. "Dynamic Asset Allocation: Portfolio Decomposition Formula and Applications." *Review of Financial Studies* 23 (1): 25–100. doi:10.1093/rfs/hhp040.

Provides a portfolio decomposition that cleanly separates mean–variance demand from hedging demands related to changing investment opportunities. For TPA, this decomposition is communicatively powerful: It can be used to explain to governance bodies why dynamic investing is not simply "tactical bets" but also a rational response to state-variable risks. It also informs practical risk reporting, where exposures can be decomposed into structural and hedging components.

Doshi, H., R. Elkamhi, and M. Simutin. 2015. "Managerial Activeness and Mutual Fund Performance." *Review of Asset Pricing Studies* 5 (2): 156–84. doi:10.1093/rapstu/rav005.

While the paper shows that active weight measures are effective at identifying managers who persistently outperform, a related and useful by-product is that most benchmarked managers remain close to their benchmarks. Rather than taking large, differentiated positions, many appear constrained by tracking-error considerations and benchmark-based evaluation. In a TPA context, this highlights how siloed mandates can limit meaningful deviation and reinforces the rationale for total fund frameworks that reduce benchmark hugging and align incentives with overall portfolio outcomes.

Duffie, D., and L. G. Epstein. 1992. "Stochastic Differential Utility." *Econometrica* 60 (2): 353–94. doi:10.2307/2951600.

Introduces recursive utility in continuous time, allowing risk aversion and intertemporal substitution to be separated. This is relevant to long-horizon investing because it affects the magnitude and sign of hedging demands and long-run risk pricing. In TPA terms, it provides theoretical justification for why institutions may care about long-horizon risks (inflation, growth, liquidity crises) in ways that are not captured by short-horizon mean–variance objectives.

Dyck, I. J., and L. Pomorski. 2011. "Is Bigger Better? Size and Performance in Pension Plan Management." Rotman School of Management Working Paper 1690724. doi:10.2139/ssrn.1690724.

Studies how pension plan size relates to net performance, often interpreted through the lens of governance and internalization: Larger plans may access scale economies and build internal capabilities, but they also face governance complexity. The relevance to TPA is that TPA adoption is often associated with large, sophisticated funds; this literature helps separate what is "TPA" from what is "scale and governance." It also motivates why institutional evolution—such as professionalization, internal teams, and improved oversight—can be a precondition for making TPA work.

Edmondson, A. 1999. "Psychological Safety and Learning Behavior in Work Teams." *Administrative Science Quarterly* 44 (2): 350–83. doi:10.2307/2666999.

Introduces psychological safety as a shared belief that a team is safe for interpersonal risk-taking and links it to learning behavior. Relevant to TPA because integrated portfolio management depends on teams being willing to surface disagreements, admit uncertainty, and challenge portfolio trade-offs without fear of political or career penalties.

Elkamhi, R., and D. Stefanova. 2015. "Dynamic Hedging and Extreme Asset Co-movements." *Review of Financial Studies* 28 (3): 743–90. doi:10.1093/rfs/hhu074.

Develops and estimates a model of state-dependent dependence (tail co-movement) and shows how hedging effectiveness changes precisely when it matters most. For the TPA narrative, it is a concrete example of why a static view of diversification and risk budgets can fail: Correlations, betas, and hedge ratios are regime-dependent, so optimal positioning must be conditioned on the state of the world.

Engle, R. F. 1982. "Autoregressive Conditional Heteroskedasticity with Estimates of the Variance of United Kingdom Inflation." *Econometrica* 50 (4): 987–1007. doi:10.2307/1912773.

Introduces the ARCH model, formalizing time-varying volatility estimation. Important for TPA because volatility is not constant across regimes, and institutional risk systems increasingly incorporate conditional variance modeling in stress testing, liquidity management, and dynamic allocation overlays.

Fama, E. F., and K. R. French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33 (1): 3–56. doi:10.1016/0304-405X(93)90023-5.

Introduces the three-factor model, identifying market, size, and value factors as systematic drivers of stock returns and extending the framework to bonds. The paper establishes that a substantial portion of cross-sectional returns can be explained by a small set of common, measurable risk factors. Over time, these factors have become well understood and supported by widely available data, enabling practical construction and monitoring. In a TPA context, this work provides part of the analytical foundation for moving from asset-class labels to factor-based risk decomposition, supporting total portfolio design, and integrated exposure management.

Fama, E. F., and M. C. Jensen. 1983. "Separation of Ownership and Control." *Journal of Law & Economics* 26 (2): 301–25. doi:10.1086/467037.

Explains how complex organizations split decision-making and control and why this complexity arises to mitigate agency problems. In the TPA context, it provides a lens for understanding why boards ended up relying on formal benchmarks and why organizations build layered oversight structures. It also motivates why changing the portfolio without changing the control architecture often fails: The system (benchmarks, committees, reporting) is part of the investment technology.

Ferson, W. E., and R. W. Schadt. 1996. "Measuring Fund Strategy and Performance in Changing Economic Conditions." *Journal of Finance* 51 (2): 425–61. doi:10.1111/j.1540-6261.1996.tb02690.x.

A seminal paper on conditional performance evaluation, showing that fund performance should be assessed relative to public information about economic conditions. For TPA, it offers a measurement lesson: If opportunity sets vary, then evaluation must account for conditioning information; otherwise, managers can appear to add or destroy value simply because exposures correlate with state variables. The paper supports TPA-style evaluation methods that compare results to state-aware benchmarks or reference portfolios.

Fleming, J., C. Kirby, and B. Ostdiek. 2001. "The Economic Value of Volatility Timing." *Journal of Finance* 56 (1): 329–52. doi:10.1111/0022-1082.00327.

Demonstrates that adjusting market exposure in response to volatility forecasts can have meaningful economic value, even when predictive power is imperfect. This is directly relevant to TPA because many total portfolio implementations use volatility-based risk scaling (some versions of risk parity) and stress-aware risk budgets. The paper provides evidence that "timing" can be a rational response to time-varying risk and that the value of timing depends on costs, constraints, and the investor's objective.

Fleming, J., C. Kirby, and B. Ostdiek. 2003. "The Economic Value of Volatility Timing Using Realized Volatility." *Journal of Financial Economics* 67 (3): 473–509. doi:10.1016/S0304-405X(02)00259-3.

Extends volatility timing analysis using realized volatility measures, reinforcing that timing can add value under certain conditions. For TPA, the key lesson is not that volatility timing is universally optimal, but that state-dependent risk management can improve outcomes when executed systematically and when governance permits. The paper is also useful for understanding how to evaluate such strategies relative to static benchmarks.

Frazzini, A., and L. H. Pedersen. 2014. "Betting Against Beta." *Journal of Financial Economics* 111 (1): 1–25. doi:10.1016/j.jfineco.2013.10.005.

Shows that leverage constraints can create a low-beta anomaly, generating a "betting against beta" factor. For TPA, the relevance is conceptual: Institutions often face constraints (leverage, liquidity, governance) that shape which premia are accessible and how exposures should be packaged at the total fund level.

Garlappi, L., R. Uppal, and T. Wang. 2007. "Portfolio Selection with Parameter and Model Uncertainty: A Multi-Prior Approach." *Review of Financial Studies* 20 (1): 41–81. doi:10.1093/rfs/hhl003.

Shows that when investors account for parameter and model uncertainty, optimal portfolios become more conservative and diversified relative to standard mean–variance solutions. The paper formalizes the idea that estimation risk materially affects portfolio construction. In a TPA context where incentives are aligned at the total fund level, the implication is that institutions must explicitly build portfolios that are robust to uncertainty rather than rely mechanically on point estimates. Total fund accountability makes model risk a governance issue, reinforcing the need for robust and uncertainty-aware allocation frameworks.

Gârleanu, N., and L. H. Pedersen. 2013. "Dynamic Trading with Predictable Returns and Transaction Costs." *Journal of Finance* 68 (6): 2309–40. doi:10.1111/jofi.12080.

Develops a dynamic portfolio framework that incorporates predictable returns and transaction costs, showing that optimal trading balances expected alpha against adjustment costs and risk. The model implies gradual position changes and state-dependent rebalancing rather than constant reshuffling. In a TPA context, the paper underscores that portfolio construction is inherently dynamic and path-dependent, particularly when costs, liquidity, and funding constraints matter. It supports the view that total fund implementation requires disciplined rebalancing rules and cost-aware capital allocation rather than static policy weights or frictionless optimization assumptions.

Getmansky, M., A. W. Lo, and I. Makarov. 2004. "An Econometric Model of Serial Correlation and Illiquidity in Hedge Fund Returns." *Journal of Financial Economics* 74 (3): 529–609. doi:10.1016/j.jfineco.2004.04.001.

Demonstrates how illiquidity and return smoothing create serial correlation in reported returns. Highly relevant to TPA because private and alternative assets often embed hidden liquidity risk and valuation smoothing. The paper supports the need for total fund liquidity integration and for adjusting risk estimates when portfolios include illiquid components.

Goyal, A., and S. Wahal. 2008. "The Selection and Termination of Investment Managers by Plan Sponsors." *Journal of Finance* 63 (4): 1805–47. doi:10.1111/j.1540-6261.2008.01375.x.

Studies how institutional plan sponsors hire and terminate external investment managers, documenting systematic patterns consistent with performance chasing and agency frictions. Relevant to TPA because a total fund operating model still relies on delegation. TPA changes the contract and the evaluation lens, but it does not eliminate adverse selection in manager selection.

Guidolin, M., and A. Timmermann. 2007. "Asset Allocation Under Multivariate Regime Switching." *Journal of Economic Dynamics & Control* 31 (11): 3503–44. doi:10.1016/j.jedc.2006.12.004.

Extends regime-switching allocation methods and highlights the sensitivity of optimal policies to regime identification and transition probabilities. For a TPA review, the paper is useful as both motivation and caution: Regime-aware allocation can add value if regimes are real and detectable, but the approach can be fragile if regimes are misspecified. This supports a common TPA design principle: Use regime analysis to inform decisions and stress tests, not as a mechanical trigger.

Harvey, C. R. 1989. "Time-Varying Conditional Covariances in Tests of Asset Pricing Models." *Journal of Financial Economics* 24 (2): 289–317. doi:10.1016/0304-405X(89)90049-4.

An influential contribution on time-varying covariances and conditional asset pricing—relevant to TPA because dynamic risk management requires acknowledging that correlations and volatilities move through time. The paper provides early empirical evidence that conditional moments matter, reinforcing the motivation for TPA tool kits that monitor the opportunity set and stress-test diversification assumptions.

Henriksson, R. D., and R. C. Merton. 1981. "On Market Timing and Investment Performance. II. Statistical Procedures for Evaluating Forecasting Skills." *Journal of Business* 54 (4): 513–33. doi:10.1086/296144.

Develops formal statistical procedures for evaluating market timing. This is relevant for TPA because total portfolio frameworks often include time-varying risk postures; measuring whether such postures add value requires careful counterfactual design. The Henriksson–Merton framework is a cornerstone for understanding why timing is hard to detect and why performance evaluation can be noisy, reinforcing the need for long-horizon evaluation and process-based oversight.

Holmström, B. 1979. "Moral Hazard and Observability." *Bell Journal of Economics* 10 (1): 74–91. doi:10.2307/3003320.

A classic principal–agent model showing how incentives must be designed when actions are unobservable and outcomes are noisy. Institutional portfolio decisions fit this structure: Skill is hard to observe, and short-run outcomes are dominated by noise. The implication for TPA is that simple, short-horizon benchmark rules can be attractive as monitoring devices but can also induce risk shifting and benchmark hugging. The paper supports the argument for outcome-based but guardrailed evaluation systems.

Holmström, B., and P. Milgrom. 1991. "Multitask Principal–Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design." *Journal of Law Economics and Organization* 7: 24–52. doi:10.1093/jleo/7.special_issue.24.

Shows that when agents perform multiple tasks, high-powered incentives tied to one measurable task can distort effort away from harder-to-measure tasks. TPA is an archetypal multitask environment: Teams must generate returns, manage liquidity, hedge tail risks, collaborate cross-asset, and protect the institution's mission. Benchmark-centric compensation often rewards the most measurable dimension (relative return) at the expense of collaboration and resilience. This paper provides a rigorous explanation for why TPA implementations often require redesigned incentives and evaluation metrics.

Jegadeesh, N., and S. Titman. 1993. "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency." *Journal of Finance* 48 (1): 65–91. doi:10.1111/j.1540-6261.1993.tb04702.x.

Documents medium-term momentum in equity returns. Momentum and related trend signals often appear in TPA tool kits as candidates for dynamic tilts or de-risking overlays. This paper anchors that discussion in the academic evidence and highlights that such signals are systematic and can be treated as policy exposures rather than as discretionary bets.

Jensen, M. C., and W. H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3 (4): 305–60. doi:10.1016/0304-405X(76)90026-X.

The foundational paper on agency theory that frames why delegated decision-making requires incentive and monitoring structures. For TPA, the relevance is that institutional investing is inherently delegated, outcomes are noisy, and monitoring is imperfect—conditions under which proxies (benchmarks, peer comparisons) become tempting but can distort behavior. The paper provides the basic vocabulary (e.g., agency costs, incentive alignment, monitoring, and residual loss) that underpins later governance discussions in the TPA literature.

Jiang, G. J., T. Yao, and T. Yu. 2007. "Do Mutual Funds Time the Market? Evidence from Portfolio Holdings." *Journal of Financial Economics* 86 (3): 724–58. doi:10.1016/j.jfineco.2006.09.006.

A holdings-based analysis of timing that provides a richer view than return-based tests. Relevant to TPA because total portfolio frameworks often emphasize decision documentation and holdings-level transparency as part of governance. The paper illustrates how holdings data can reveal whether managers systematically adjust exposures and how

those adjustments relate to market conditions. It also reinforces that timing is difficult, but measurable, when detailed portfolio data are available.

Jurek, J. W., and L. M. Viceira. 2011. "Optimal Value and Growth Tilts in Long-Horizon Portfolios." *Review of Finance* 15 (1): 29–74. doi:10.1093/rof/rfq013.

Studies long-horizon style tilts when expected returns and state variables evolve. In a TPA review, the paper illustrates that "positioning" can be horizon dependent and that factors/styles can be part of long-horizon strategic policy rather than short-term tactical overlay. It also highlights the practical challenge: Implementing these ideas requires a governance system that tolerates time-varying exposures and can evaluate them over appropriate horizons.

Kandel, S., and R. F. Stambaugh. 1996. "On the Predictability of Stock Returns: An Asset-Allocation Perspective." *Journal of Finance* 51 (2): 385–424.

Shows that even modest statistical predictability of returns can imply large changes in optimal portfolio weights when the investor cares about economic value and not just *t*-statistics. This is a key cautionary and motivating result for TPA—ignoring time-varying opportunity sets can be costly, but exploiting them requires careful treatment of estimation risk. The paper is frequently cited in the strategic allocation literature for precisely that tension.

Kim, T. S., and E. Omberg. 1996. "Dynamic Nonmyopic Portfolio Behavior." *Review of Financial Studies* 9 (1): 141–61. doi:10.1093/rfs/9.1.141.

A core dynamic portfolio choice model with predictable returns, producing explicit non-myopic hedging and timing components. Useful for a TPA review because it provides a clean illustration of why optimal allocations should vary with predictors and horizon, even in relatively simple settings. It helps connect the abstract intertemporal logic to the practitioner question: What changes in the portfolio when expected returns vary?

Lewin, K. 1947. "Frontiers in Group Dynamics: Concept, Method, and Reality in Social Science; Social Equilibria and Social Change." *Human Relations* 1 (1): 5–41. doi:10.1177/001872674700100103.

A foundational paper on group dynamics and social change that frames organizations as social equilibria rather than as collections of isolated individuals. Relevant to TPA because it helps explain why moving from siloed mandates to total fund behavior requires changing the underlying equilibrium of norms, relationships, and influence—not just redrawing the formal structure.

Markowitz, H. 1952. "Portfolio Selection." *Journal of Finance* 7 (1): 77–91.

The foundational statement of mean–variance portfolio theory and the modern language of diversification. In a TPA review, Markowitz is the starting point because SAA is essentially a governance-friendly implementation of mean–variance thinking. The limitations of fixed-weight SAA become clearer when contrasted with the dynamic extensions that followed; TPA can be interpreted as an institutional attempt to operationalize those extensions while preserving the governance benefits of a policy portfolio.

Merton, R. C. 1969. "Lifetime Portfolio Selection Under Uncertainty: The Continuous-Time Case." *Review of Economics and Statistics* 51 (3): 247–57. doi:10.2307/1926560.

Extends dynamic portfolio choice to continuous time and provides foundations for later intertemporal CAPM and hedging-demand results. Relevant to TPA because it formalizes how optimal allocations depend on state variables and constraints and it sets up the decomposition between short-term (myopic) and long-term (hedging) motives that underlies many arguments against rigid SAA.

Merton, R. C. 1971. "Optimum Consumption and Portfolio Rules in a Continuous-Time Model." *Journal of Economic Theory* 3 (4): 373–413. doi:10.1016/0022-0531(71)90038-X.

Develops the canonical continuous-time consumption-portfolio problem and clarifies the structure of optimal policies when investment opportunities evolve. For TPA, the practical relevance is the conceptual template: The optimal portfolio is state dependent, and long-horizon investors care about more than a single-period risk–return trade-off. It is a theoretical anchor for claims that static allocations can be welfare costly when the opportunity set varies.

Merton, R. C. 1973. "An Intertemporal Capital Asset Pricing Model." *Econometrica* 41 (5): 867–87. doi:10.2307/1913811.

Introduces the intertemporal CAPM, in which state variables shift the opportunity set and investors demand hedging portfolios against those shifts. This paper is central to the "dynamic versus static" distinction that motivates TPA's emphasis on preparedness, changing opportunity sets, and hedging changing opportunity costs. It also links portfolio choice to macroeconomic state variables, which is one reason why factor and macro-regime tools are so common in TPA implementations.

Meyer, T. 2025. "Integrating Private Assets in a Total Portfolio Approach." *Journal of Securities Operations and Custody* 17 (2): 130–41. doi:10.69554/TFXB7809.

A practice-focused article applying TPA ideas specifically to private assets. Its contribution is to translate total portfolio principles into operational requirements: cash flow forecasting, liquidity management, and integration of private and public assets within a unified risk framework. Useful for highlighting a common driver of TPA adoption: Once private markets are large, the portfolio becomes path dependent and governance needs to manage that path dependence explicitly.

Moreira, A., and T. Muir. 2017. "Volatility-Managed Portfolios." *Journal of Finance* 72 (4): 1611–44. doi:10.1111/jofi.12513.

Shows that scaling exposure by volatility can improve risk-adjusted performance for certain assets, a result often interpreted as evidence of time-varying risk premia or leverage constraints. Relevant to TPA because it provides a modern empirical foundation for volatility-based risk budgeting and dynamic leverage/risk scaling, tools that appear in many total portfolio implementations. The paper also highlights an important governance point: Simple, transparent rules can sometimes capture dynamic benefits without relying on fragile return forecasts.

Moskowitz, T. J., Y. H. Ooi, and L. H. Pedersen. 2012. "Time Series Momentum." *Journal of Financial Economics* 104 (2): 228–50. doi:10.1016/j.jfineco.2011.11.003.

Finds that trend-following (time-series momentum) effects appear across asset classes, not only within equities. This is relevant to TPA because a total portfolio framework can implement trend and risk-control signals across the entire opportunity set, potentially improving crisis behavior if governance permits systematic overlays.

Oreg, S. 2003. "Resistance to Change: Developing an Individual Differences Measure." *Journal of Applied Psychology* 88 (4): 680–93. doi:10.1037/0021-9010.88.4.680.

Develops a dispositional measure of resistance to change and shows that individuals differ systematically in their tendency to prefer routine, react emotionally, think rigidly, and focus on short-term disruption. Relevant to TPA because some transition frictions will reflect stable individual differences, implying that change management must be tailored rather than treated as a purely structural problem.

Oreg, S., M. Vakola, and A. Armenakis. 2011. "Change Recipients' Reactions to Organizational Change: A 60-Year Review of Quantitative Studies." *Journal of Applied Behavioral Science* 47 (4): 461–524. doi:10.1177/0021886310396550.

Reviews six decades of quantitative research on how employees react to organizational change and synthesizes the main drivers of supportive versus resistant responses. Relevant to TPA because it provides an evidence base for why trust, fairness, communication, participation, and perceived personal impact matter when institutions ask teams to move from local mandate optimization to total fund responsibility.

Pástor, L. 2000. "Portfolio Selection and Asset Pricing Models." *Journal of Finance* 55 (1): 179–223. doi:10.1111/0022-1082.00204.

Examines how uncertainty about the validity of asset-pricing models affects portfolio choice. The paper is relevant to TPA because it supports a disciplined treatment of model uncertainty: investors should not rely mechanically on a single expected-return model, but should account for uncertainty around model specification, parameter estimates, and the resulting implications for portfolio construction. For TPA, this provides an academic foundation for using multiple lenses, stress-testing, and judgment when translating asset-pricing models into total fund decisions.

Pástor, L., and R. F. Stambaugh. 2003. "Liquidity Risk and Expected Stock Returns." *Journal of Political Economy* 111 (3): 642–85. doi:10.1086/374184.

Provides evidence that liquidity risk is priced in equity markets. Relevant to TPA because liquidity exposure is often a total fund phenomenon rather than an asset-class phenomenon. The paper reinforces the need to monitor and manage liquidity risk across public and private assets jointly.

Samuelson, P. A. 1969. "Lifetime Portfolio Selection by Dynamic Stochastic Programming." *Review of Economics and Statistics* 51 (3): 239–46. doi:10.2307/1926559.

One of the earliest formal treatments of multi-period portfolio choice. The paper shows that for investors with constant relative risk aversion utility, the optimal fraction of wealth

invested in risky assets is independent of age, wealth level, or time remaining to retirement. This paper formalizes the assumptions under which static portfolio weights can be optimal, which, in turn, also implies that a TPA adaptive approach is justified as long as the assumptions are not satisfied.

Scharfstein, D. S., and J. C. Stein. 1990. "Herd Behavior and Investment." *American Economic Review* 80 (3): 465–79.

Provides a theory of herding driven by career concerns and reputational incentives. The TPA relevance is direct: Institutional decision makers often face asymmetric penalties for being wrong alone versus wrong together, which can lock the industry into convention (e.g., rigid policy benchmarks) even when better designs exist. This paper gives a formal foundation for the "prisoner's dilemma" intuition used to explain why SAA dominance persisted and why deviating from benchmarks can be risky to one's career.

Schein, E. H. 1984. "Coming to a New Awareness of Organizational Culture." *Sloan Management Review* 25 (2): 3–16.

A foundational article defining organizational culture as a learned pattern that helps groups solve problems of external adaptation and internal integration. Relevant to TPA because it frames culture as much more than a soft add-on. In TPA, culture is the mechanism through which total fund beliefs, shared language, and cross-team coordination become embedded in day-to-day decision-making.

Schein, E. H., and P. Schein. 2017. *Organizational Culture and Leadership*. 5th ed. Wiley.

A foundational text on organizational culture, relevant to TPA because TPA adoption is often framed as a culture shift: moving from siloed benchmark optimization to collective total fund responsibility. We stressed in this review that systems and tools are insufficient without cultural alignment and trust. Schein and Schein's framework—particularly the distinction between artifacts, espoused values, and underlying assumptions—provides useful language for diagnosing the cultural conditions that enable or inhibit TPA adoption.

Shleifer, A. 2000. *Inefficient Markets: An Introduction to Behavioral Finance*. Oxford University Press. doi:10.1093/0198292279.001.0001.

Synthesizes evidence and theory on market inefficiencies and limits to arbitrage. Provides conceptual support for time-varying opportunities and regimes. It adds useful context for why institutional opportunity sets may not be stable, which can be viewed as one of the foundational pieces of the TPA framework.

Sirri, E. R., and P. Tufano. 1998. "Costly Search and Mutual Fund Flows." *Journal of Finance* 53 (5): 1589–622. doi:10.1111/0022-1082.00066.

Shows that investor flows respond strongly and nonlinearly to performance, consistent with costly search and attention constraints. This evidence underpins tournament-style incentives and helps explain why benchmark-relative evaluation can generate state-dependent risk-taking. This is an important governance consideration that funds try to avoid and therefore helps for TPA transitions.

Stambaugh, R. F. 1999. "Predictive Regressions." *Journal of Financial Economics* 54 (3): 375–421. doi:10.1016/S0304-405X(99)00041-0.

This paper examines statistical issues in return-forecasting regressions, such as small samples, persistent predictors, and bias. This matters for TPA because dynamic allocation often relies on state-variable forecasts. A disciplined TPA process must therefore account for estimation risk and avoid overfitting when making asset allocation decisions.

Stoughton, N. M. 1993. "Moral Hazard and the Portfolio Management Problem." *Journal of Finance* 48 (5): 2009–28. doi:10.1111/j.1540-6261.1993.tb05140.x.

A classic principal–agent model of delegated portfolio management in which effort and risk-taking are imperfectly observable. Provides a formal foundation for why benchmark choice, risk limits, and compensation design are central to aligning manager behavior with the principal's objective—which are core issues in making TPA actionable.

Tobin, J. 1958. "Liquidity Preference as Behavior towards Risk." *Review of Economic Studies* 25 (2): 65–86. doi:10.2307/2296205.

This paper argues that holding cash (liquidity preference) is a rational response to uncertainty regarding future interest rates, rather than just a response to transaction needs. It uses risk aversion to explain why investors diversify between safe cash and risky, interest-bearing assets. The work was designed to explain why individuals hold money as a risk-management strategy, directly impacting portfolio choice theory. Therefore, the investor's decision is divided into two steps: (1) choosing the optimal mix of risky assets (the risky fund), and (2) deciding how to allocate wealth between that portfolio and the risk-free asset. This paper can be viewed as the foundation of the 60/40 portfolio that used to be an anchor for many asset management companies.

Vayanos, D., and P. Woolley. 2013. "An Institutional Theory of Momentum and Reversal." *Review of Financial Studies* 26 (5): 1087–145. doi:10.1093/rfs/hht014.

Develops a model where delegated managers, relative-performance evaluation, and performance-sensitive capital flows generate time-varying demand that can amplify trends and create reversals. Relevant to TPA because it links benchmarking and institutional incentives to market dynamics, reinforcing the idea that "opportunity sets" and risk premia can be endogenous to institutional behavior.

Viale, A. M., L. Garcia-Feijoo, and A. Giannetti. 2014. "Safety First, Learning Under Ambiguity, and the Cross-Section of Stock Returns." *Review of Asset Pricing Studies* 4 (1): 118–59. doi:10.1093/rapstu/rat017.

Develops an asset-pricing framework in which investors face ambiguity, or Knightian uncertainty, about the true probability distribution of returns and therefore adopt "safety-first" preferences. In this setting, investors place greater weight on downside risk and robustness and then update beliefs over time through learning. The model shows that ambiguity aversion can generate cross-sectional differences in expected returns; assets that perform poorly in adverse or uncertain states command higher premia, even after controlling for standard risk factors.

For TPA, the relevance is that institutional decision-making is often conducted under ambiguity rather than well-defined risk. This implies that portfolio construction and evaluation cannot rely solely on fixed models, expected returns, or single benchmarks; instead, they must account for model uncertainty, learning, and the potential for misspecification of the opportunity set. The paper therefore supports the emphasis in TPA on robustness, resilience, and multi-dimensional evaluation frameworks when designing and assessing total fund decisions.

Welch, I., and A. Goyal. 2008. "A Comprehensive Look at the Empirical Performance of Equity Premium Prediction." *Review of Financial Studies* 21 (4): 1455–508. doi:10.1093/rfs/hhm014.

A cautionary empirical paper showing that many equity premium predictors perform poorly out of sample. For TPA, this serves as an important counterweight to overconfident conditioning. The implication is not that predictability is absent, but that exploiting it is hard and unstable. This supports a TPA governance principle: Treat signals as uncertain inputs, diversify across information sources, and rely on guardrails and robustness rather than on single-variable forecasts.

Section B. Practitioner Literature

Ang, A. 2014. *Asset Management: A Systematic Approach to Factor Investing*. Oxford University Press. doi:10.1093/acprof:oso/9780199959327.001.0001.

A practitioner/academic book that advocates a factor-based view of portfolio construction, risk control, and implementation. Relevant to TPA insofar as factor lenses help translate disparate asset classes into a common language of drivers. The book also highlights the operational importance of constraints, transaction costs, and governance.

Anson, M. J. P. 2004. "Thinking Outside the Benchmark." *Journal of Portfolio Management* 30 (5): 104–12. doi:10.3905/jpm.2004.442632.

A classic practitioner piece arguing that rigid benchmark-centric thinking can distort institutional decision-making. Although written long before the modern "TPA" label, the article is frequently cited in contemporary TPA discussions because it attacks the same structural problem: When the benchmark becomes the objective, portfolio construction becomes constrained and misaligned with the investor's true goals. It provides historical context for why TPA proponents emphasize outcome-based oversight and more flexible benchmark design.

Anson, M. J. P. 2024. "Thinking Outside the Benchmark: Part II." *Journal of Portfolio Management* 51 (1): 123–31. doi:10.3905/jpm.2024.51.1.123.

Revisits the benchmark problem in the context of modern institutional portfolios and explicitly discusses "total portfolio" concepts. Valuable because it connects the benchmarking conversation to governance design by exploring what boards should oversee, what should be delegated, and how to evaluate skill when the strategic reference is not a simple asset-class mix. In TPA terms, it reinforces the idea that benchmark design and incentive design are not technical afterthoughts; they are core to making the operating model work.

Asness, C. S., A. Frazzini, and L. H. Pedersen. 2012. "Leverage Aversion and Risk Parity." *Financial Analysts Journal* 68 (1): 47–59. doi:10.2469/faj.v68.n1.1.

Argues that leverage constraints help explain both the demand for and performance characteristics of risk parity allocations, as investors overweight high-volatility assets when leverage is limited. The paper highlights how portfolio construction outcomes depend not only on risk premia but also on institutional constraints around borrowing and derivatives. In a TPA context, this is directly relevant: Total portfolio design often relies on risk frameworks whose effectiveness depends on governance decisions about leverage. As risk conditions evolve over time, maintaining balanced exposures may require explicit leverage adjustments, making the institution's stance on derivatives, balance sheet usage, and risk tolerance central to implementation. The paper therefore reinforces that portfolio architecture and leverage policy are inseparable in a dynamic total fund framework.

Baltussen, G., L. Swinkels, B. van Vliet, and P. van Vliet. 2023. "Investing in Deflation, Inflation, and Stagflation Regimes." *Financial Analysts Journal* 79 (3): 5–32.

Examines asset class and factor performance across distinct macroeconomic regimes—specifically deflation, inflation, and stagflation—using long-term historical data. The paper documents that return distributions, correlations, and diversification benefits vary significantly across regimes, with some assets and factors performing well in certain environments and poorly in others. This highlights the importance of conditioning portfolio decisions on the macroeconomic state rather than relying on average historical relationships. For TPA, the relevance is that regime-dependent behavior directly affects total fund risk and return characteristics, particularly for long-horizon institutions exposed to inflation, growth, and liquidity dynamics. The paper supports the use of macro and regime-based frameworks as inputs into portfolio construction and risk management, reinforcing the idea that a static allocation based on unconditional assumptions may fail when economic conditions shift.

Bass, R., G. Gladstone, and A. Ang. 2017. "Total Portfolio Factor, Not Just Asset, Allocation." *Journal of Portfolio Management* 43 (5): 38–53. doi:10.3905/jpm.2017.43.5.038.

A practitioner journal argument for designing policy portfolios around underlying factors rather than asset-class buckets. The relevance to TPA is twofold: (i) factor language provides a common risk vocabulary that enables cross-asset integration, and (ii) factor-based policy design can make it easier to rebalance and reposition the total portfolio without being trapped by legacy asset-class allocations. The paper is also a useful reference point for the distinction between "TPA as factor allocation" and TPA as a broader governance framework.

Beer, M., and N. Nohria. 2000. "Cracking the Code of Change." *Harvard Business Review* 78 (3): 133–41.

Distinguishes between "hard" change focused on structure and economics and "soft" change focused on culture and capability, arguing that durable transformation usually requires both. Relevant to TPA because new benchmarks, delegations, and governance charts are unlikely to be sufficient unless they are accompanied by cultural change, staff buy-in, and new collaborative routines.

Black, F., and R. Litterman. 1992. "Global Portfolio Optimization." *Financial Analysts Journal* 48 (5): 28–43. doi:10.2469/faj.v48.n5.28.

Introduces the Black–Litterman framework, a practical method for blending equilibrium returns with investor views to produce more stable optimized portfolios. Relevant to TPA because it supports the idea that total portfolio frameworks often involve combining multiple signals and expressing views about macro regimes, risk premia, or relative value across asset classes. The Black–Litterman framework provides a disciplined way to incorporate such views while moderately controlling the instability that can arise in mean–variance optimization.

Blyth, S., M. C. Szigety, and J. Xia. 2016. "Flexible Indeterminate Factor-Based Asset Allocation." *Journal of Portfolio Management* 42 (5): 79. doi:10.3905/jpm.2016.42.5.079.

Develops a factor-based allocation framework designed to remain flexible when parameters are uncertain and when investors do not want to commit to a single precise set of exposures. Relevant to TPA because it reflects a practical philosophy of adaptability within structure: Define a risk language and allowable ranges, then use discretion to reposition as conditions evolve. It also illustrates how factor-based thinking can be used to reduce the brittleness of traditional asset-class policy weights.

Bouyé, E., and J. Teiletche. 2025. "Regime-Based Strategic Asset Allocation." *Financial Analysts Journal* 81 (4): 84–102. doi:10.1080/0015198X.2025.2558354.

A practitioner/academic treatment of regime-aware asset allocation, focusing on how allocation policies can be conditioned on identifiable regimes. Relevant to TPA as a tool reference: Regime frameworks provide a structured way to talk about adaptation while keeping a disciplined policy narrative. It also highlights the growing practitioner appetite for regime-based governance language, especially after episodes where classic diversification relationships have broken down.

Brinson, G. P., L. R. Hood, and G. L. Beebower. 1986. "Determinants of Portfolio Performance." *Financial Analysts Journal* 42 (4): 39–44. doi:10.2469/faj.v42.n4.39.

A foundational practitioner/academic study showing that a large share of time-series variation in a portfolio's returns is explained by its policy mix (asset allocation)—often cited as support for SAA discipline. In the TPA context, it is best read as evidence that policy choices matter, while leaving open how flexible that policy should be when the opportunity set changes.

Cavaglia, S., J. H. Fan, and Z. Wang. 2022. "Portable Beta and Total Portfolio Management." *Financial Analysts Journal* 78 (3): 49–69. doi:10.1080/0015198X.2022.2087448.

A practitioner discussion of integrating alternative risk premia (or factor overlays) with a reference portfolio to improve total portfolio outcomes. Relevant to TPA because it treats overlays as part of the total fund design rather than as stand-alone products and frames "beta management" as a portfolio-level decision. The paper is also useful for illustrating the modular logic often used in TPA: Separate desired systematic exposures from implementation vehicles, then reassemble the total portfolio to meet objectives.

Cornell, B., and R. Roll. 2005. "A Delegated-Agent Asset-Pricing Model." *Financial Analysts Journal* 61 (1): 57–69. doi:10.2469/faj.v61.n1.2684.

Develops an asset-pricing framework in which investment decisions are made by delegated agents operating under benchmark-relative incentives rather than by a single representative investor. The model shows that prices can reflect the constraints, incentives, and evaluation criteria faced by managers, including benchmarking and career concerns, rather than purely fundamental risk–return trade-offs. For TPA, the relevance is that portfolio outcomes are shaped not only by market opportunities but also by the institutional structure through which decisions are made. In particular, benchmark-centric evaluation can distort risk-taking and lead to equilibrium allocations that differ from those implied by unconstrained optimization. This provides a theoretical foundation for the emphasis in TPA on governance design, incentive alignment, and the role of benchmarking as part of the investment technology rather than as a neutral reference point.

Drew, M. E., and A. N. Walk. 2019. *Investment Governance for Fiduciaries*. CFA Institute Research Foundation. doi:10.2139/ssrn.3485768.

This is a monograph on governance, delegation, and fiduciary decision-making. Highly relevant to TPA because it provides the governance vocabulary needed to discuss decision rights, oversight, and accountability without defaulting to simplistic benchmark rules. The work also helps position TPA as a governance innovation: The portfolio framework and the fiduciary framework must be consistent.

Elkamhi, R., and J. S. H. Lee. 2025a. "The Benchmarking Prisoner's Dilemma." Working paper (8 June). https://ssrn.com/abstract=5504679.

Argues that rigid, board-set benchmarks can create a stable but suboptimal equilibrium in which managers rationally engage in index-hugging and beta reliance to protect careers and reputations. Using a game-theoretic lens, the paper shows how benchmarking structures can unintentionally suppress innovation and limit genuine outperformance. It proposes delegated benchmark design within board-defined objectives and risk guardrails. This is a way to reduce agency frictions while preserving accountability at the total fund level. In a TPA context, the paper reinforces the importance of aligning governance, incentives, and evaluation with total portfolio outcomes rather than mandate-level tracking error to position benchmarking as a measurement tool rather than as a steering mechanism.

Elkamhi, R., and J. S. H. Lee. 2025b. "Total Portfolio Approach." *Journal of Portfolio Management* 51 (8): 109–27. doi:10.3905/jpm.2025.1.728.

A concise practitioner article that frames TPA as a mindset of total fund preparedness rather than a prescriptive allocation recipe. It clarifies why traditional SAA assumptions (stable opportunity sets, liquidity, and stable diversification relations) are strained for modern institutional portfolios, and it emphasizes that implementation success depends on governance alignment, guardrails, and culture. The paper also organizes implementation tools into market-monitoring tools and portfolio-construction tools, with supporting infrastructure such as liquidity forecasting.

Elkamhi, R., and J. S. H. Lee. 2026. "Delegating Benchmarks: Aligning Incentives for Better Total Fund Performance." *Journal of Portfolio Management* 52 (4): 26–43. doi:10.3905/jpm.2025.1.803.

Develops a governance argument directly relevant to TPA. Benchmarks are essential, but when they are designed and applied at the asset-class level, they can create structural misalignment between boards and investment teams. The paper frames the problem through a principal–agent lens and proposes "delegated benchmarking," where the board anchors a total fund benchmark while the investment executive designs mandate benchmarks to align incentives with total fund outcomes. The key contribution is to make benchmark design an explicit part of the incentive contract and to show (in a stylized model) how delegation can reduce benchmark gaming and encourage uncorrelated alpha rather than beta tilts.

Elkamhi, R., J. S. H. Lee, and S. Sadik. 2021. "Bridging the Gap Between Strategic Allocation and Investment Risk." *Journal of Portfolio Management* 47 (6): 89–100. doi:10.3905/jpm.2021.1.235.

Addresses a recurring implementation issue: the disconnect between long-horizon policy allocations and the short-horizon risk metrics used for oversight. This is central to TPA because TPA requires a risk language that is consistent across horizons and across the total fund. The work is useful for highlighting why governance systems often talk past themselves (long-horizon objectives versus short-horizon tracking error) and for motivating alignment of risk systems and investment decisions.

Elkamhi, R., J. S. H. Lee, and M. Salerno. 2022a. "Factor Investing Using Capital Market Assumptions." *Journal of Portfolio Management* 48 (2): 119–43. doi:10.3905/jpm.2021.1.291.

Discusses how capital market assumptions (CMAs) can be translated into factor views and then into portfolio design. Relevant to TPA because many institutions still operate with CMA-based ALM studies and policy portfolios, while TPA tool kits increasingly rely on factor lenses. This type of work provides a bridge between those two worlds: It shows how to map traditional expected-return frameworks into the factor language used for integrated risk and allocation decisions.

Elkamhi, R., J. S. H. Lee, and M. Salerno. 2022b. "Financial Anomalies in Asset Allocation: Risk Mitigation with Cross-sectional Equity Strategies." *Journal of Portfolio Management* 49 (1): 118–45. doi:10.3905/jpm.2022.1.422.

Examines how cross-sectional equity anomaly strategies (e.g., value, momentum, quality) can be incorporated at the asset-allocation level as risk-mitigation tools rather than purely alpha sleeves. Relevant to TPA because total fund frameworks blur the line between "alpha" and "beta" and evaluate strategies based on their contribution to total portfolio risk and drawdown control. The paper shows how systematic equity factors can improve portfolio resilience when viewed through a total fund lens, making it a practical example of integrating return-seeking strategies into policy design rather than treating them as standalone mandates.

Elkamhi, R., J. S. H. Lee, and M. Salerno. 2023a. "How Optimal Are Risk-Based Portfolios?" *Journal of Portfolio Management* 50 (1): 19–45. doi:10.3905/jpm.2023.1.543.

Evaluates risk-based portfolio constructions. It is relevant to TPA because risk parity and risk budgeting often appear as alternative policy designs within total portfolio frameworks.

The value for a literature review is to represent a pragmatic view: Risk-based portfolios can improve diversification and governance clarity, but their optimality depends on assumptions and constraints. This supports the TPA emphasis on model risk management and on stress-testing correlation assumptions rather than treating any risk-based benchmark as universally best.

Elkamhi, R., J. S. H. Lee, and M. Salerno. 2023b. "Portfolio Tilts Using Views on Macroeconomic Regimes." *Journal of Portfolio Management* 49 (3): 7–24. doi:10.3905/jpm.2022.1.438.

Presents a framework for translating macro regime views into portfolio tilts, consistent with the TPA tool category of market monitoring and conditioning. The relevance is that many TPA implementations explicitly discuss regimes (e.g., inflation, growth, policy) and adjust exposures within guardrails. The work provides an example of how regime views can be expressed in a disciplined way while acknowledging uncertainty in regime identification.

Elkamhi, R., J. S. H. Lee, and M. Salerno. 2024a. "Enhancing the Inverse Volatility Portfolio Through Clustering." *Journal of Financial Data Science* 6 (1): 43–60. doi:10.3905/jfds.2023.1.145.

Proposes improvements to inverse-volatility (risk-based) portfolios by incorporating clustering techniques to better capture underlying correlation structures. Relevant to TPA because many total portfolio implementations rely on risk budgeting or volatility-based allocations as organizing principles. The clustering enhancement addresses a key TPA concern—model and correlation instability—by reducing reliance on potentially unstable correlation or covariance estimates while making risk-based allocations more structurally aware. The contribution can therefore be viewed as a technical tool that strengthens the robustness of risk-based policy designs within a total fund framework.

Elkamhi, R., J. S. H. Lee, and M. Salerno. 2024b. "(Re)Balancing Act: The Interplay of Private and Public Assets in Dialing the Asset Allocation." *Journal of Portfolio Management* 50 (7): 162–82. doi:10.3905/jpm.2024.1.607.

Focuses on the rebalancing and integration challenges that arise when private assets become a large component of the total portfolio. This is directly relevant to TPA because capital mobility and rebalancing discipline are central mechanisms through which TPA is expected to add value. The paper maps operational constraints that illiquids introduce and supports the need for liquidity-aware guardrails, pacing models, and governance that treats rebalancing as a total fund decision rather than an asset-class maintenance task.

Elkamhi, R., J. S. H. Lee, and M. Salerno. 2024c. "Rebalancing Portfolios with Private Assets." In *The Palgrave Encyclopedia of Private Equity*, 1–9. Springer International Publishing. doi:10.1007/978-3-030-38738-9_258-1.

An encyclopedia-style overview of rebalancing when portfolios include illiquids—emphasizing cash flow dynamics, valuation lags, and the risk of forced sales. Relevant to TPA because TPA adoption is often triggered by illiquid-heavy portfolios that cannot mechanically rebalance to fixed weights. The chapter provides a structured overview of the mechanics and risks involved to help practitioner readers who need a conceptual framework rather than a narrow model.

Fabozzi, F. J. 2024. "Editor's Introduction to the 50th Anniversary Issue." *Journal of Portfolio Management* 51 (1): 1–6. doi:10.3905/jpm.2024.51.1.001.

An editorial piece that signals how mainstream the "total portfolio" conversation has become inside practitioner journals. Its value is not in technical content but in diffusion: It frames TPA and benchmark redesign as part of a broader evolution in institutional portfolio management.

Gilmore, S., and J. Simonian. 2025. "Some Practical Considerations for the Total Portfolio Approach to Pension Fund Management." *Journal of Portfolio Management* 51 (10): 40–48. doi:10.3905/jpm.2025.1.748.

A practitioner-oriented complement to conceptual TPA articles that focuses on implementation details and the fact that TPA adoption is typically a continuum rather than an "all or nothing" choice. Useful for highlighting how institutions can adapt the approach to their own objectives and constraints and for spelling out principles, such as integrated risk factor analysis, multiple concurrent objectives, and cross-team collaboration. The article shows how implementers talk about trade-offs and institutional design in practice.

Graham, B. 1949. *The Intelligent Investor*. Harper & Brothers.

Articulates the principles of margin of safety, disciplined valuation, and long-horizon investing. Included in the TPA narrative as historical context: Institutional investing originally centered on security selection and prudence rather than optimization. It provides intellectual background for the evolution from manager-centric governance to portfolio-level governance frameworks.

Graham, B., and D. Dodd. 1934. *Security Analysis*. McGraw-Hill.

A foundational work in value investing and security analysis. Relevant historically to the TPA story because it represents the pre-modern portfolio theory era in which risk was managed security-by-security rather than through portfolio covariance structures. It helps situate SAA and later TPA developments within a broader evolution of investment thought.

Grinold, R. C., and R. N. Kahn. 1999. *Active Portfolio Management*. 2nd ed. McGraw-Hill.

A foundational practitioner text on forecasting, risk modeling, portfolio construction, and performance measurement. While not written for TPA, it provides many of the technical building blocks: the separation of alpha and risk, the role of constraints, and the importance of consistent measurement. In a TPA context, it helps frame portfolio construction skill and highlights that total fund success depends not only on security selection but also on how risks are aggregated and constrained across the full portfolio.

Ibbotson, R. G., and P. D. Kaplan. 2000. "Does Asset Allocation Policy Explain 40, 90, or 100 Percent of Performance?" *Financial Analysts Journal* 56 (1): 26–33. doi:10.2469/faj.v56.n1.2327.

Clarifies common misinterpretations of the Brinson decomposition by distinguishing cross-sectional differences in returns from time-series variation. Useful in a TPA review because it sharpens the debate: TPA is not a denial that policy matters; it is a proposal to redefine what "policy" means (e.g., a dynamic policy, dynamic risk, or adaptive portfolios) and how exceptions are governed.

Ilmanen, A. 2011. *Expected Returns: An Investor's Guide to Harvesting Market Rewards*. Wiley. doi:10.1002/9781118467190.

A comprehensive practitioner synthesis of risk premia, predictability, diversification, and implementation. Useful to TPA because it treats expected returns as multi-dimensional and time-varying, reinforcing the idea that long-run policy and short-run opportunity management should be connected—with humility about estimation risk.

Ilmanen, A. 2021. *Investing Amid Low Expected Returns: Making the Most When Markets Offer the Least*. Wiley.

A practitioner synthesis focused on the challenge of achieving institutional objectives when expected returns are low and diversification benefits may be fragile. Relevant to TPA because it frames the environment many asset owners face: The desire for flexibility and for multiple return sources increases when the baseline is less generous. The work is useful for discussing motivations for overlays, factor diversification, and explicit risk budgeting, which are common components of total portfolio frameworks.

Kolm, P. N., and G. Ritter. 2021. "Factor Investing with Black–Litterman–Bayes: Incorporating Factor Views and Priors in Portfolio Construction." *Journal of Portfolio Management* 47 (2): 113–26. doi:10.3905/jpm.2020.1.196.

Combines factor investing ideas with Bayesian updating/Black–Litterman-style blending of priors and views. The relevance to TPA is that it offers a disciplined way to express and update beliefs about factor premium and regimes while controlling estimation risk. In a total portfolio setting, such frameworks can support dynamic positioning while maintaining the governance requirement that decisions be explainable and grounded in a coherent model of uncertainty.

Kotter, J. P. 1995. "Leading Change: Why Transformation Efforts Fail." *Harvard Business Review* 73 (2): 59–67.

Identifies common failure points in large-scale organizational transformations, including lack of urgency, weak leadership coalitions, poor communication, and failure to anchor change in culture. Relevant to TPA because it frames implementation as a staged process rather than a one-off redesign: Governance changes, incentive alignment, and cultural adoption must reinforce each other over time. The paper supports the view that TPA transitions fail not due to flaws in portfolio construction, but due to breakdowns in execution, leadership alignment, and institutional buy-in—highlighting that culture and change management are core components of making a total fund model operational.

Kritzman, M., D. Li, G. Qiu, and D. Turkington. 2021. "Portfolio Choice with Path-Dependent Scenarios." *Financial Analysts Journal* 77 (1): 90–100. doi:10.1080/0015198X.2020.1841539.

Proposes a scenario analysis framework where scenarios are defined as paths (sequences) rather than as single-period averages, enabling richer portfolio metrics and more realistic stress testing. This aligns with TPA because many institutional objectives (spending, liquidity, drawdowns, political constraints) are path-dependent; a total portfolio governance system benefits from tools that make path risk explicit. Addresses a key practical issue for institutional portfolios: path dependence. Portfolios with illiquids, leverage constraints, or drawdown-sensitive governance can experience outcomes that depend on the sequence of returns, not just long-run averages. This is relevant to TPA because TPA often emerges when

portfolios become path dependent due to private market allocations and liquidity constraints. The paper provides formal tools for scenario analysis and risk management in such settings.

Kritzman, M., S. Page, and D. Turkington. 2010. "In Defense of Optimization: The Fallacy of 1/N." *Financial Analysts Journal* 66 (2): 31–39. doi:10.2469/faj.v66.n2.6.

Responds to the 1/N versus optimization debate by emphasizing that optimization can be valuable when done with robust inputs and constraints. In a TPA context, if total portfolio is always the focus, portfolio construction techniques and their challenges have to also be at the center of management. This paper also supports a balanced view: Total portfolio optimization is useful only when combined with governance-aware constraints, estimation humility, and clear policy anchors.

Lawrence, P. R. 1969. "How to Deal with Resistance to Change." *Harvard Business Review* 47 (1): 4–6.

A classic managerial article arguing that employees are often not resisting technical change itself, but the social disruption, loss of status, and uncertainty that accompany it. Relevant to TPA because much of the friction in shifting to one-portfolio thinking is likely to come from role identity and informal power changes rather than disagreement with the investment logic alone.

Lee, J. S. H., and M. Salerno. 2023. "Factor-Targeted Asset Allocation: A Reverse Optimization Approach." *Financial Analysts Journal* 79 (3): 75–94. doi:10.1080/0015198X.2023.2214074.

Proposes a reverse-optimization method for constructing portfolios that target desired factor exposures. This is directly relevant to TPA because it provides an operational tool for separating the strategic question (what exposures do we want?) from the implementation question (which assets, public or private, deliver those exposures given constraints?). The approach supports the TPA emphasis on flexibility and on treating asset classes as vehicles rather than as the primary strategic object.

Lo, A. W. 2004. "The Adaptive Markets Hypothesis." *Journal of Portfolio Management* 30 (5): 15–29. doi:10.3905/jpm.2004.442611.

Introduces the adaptive markets hypothesis, emphasizing that market efficiency and risk premia can evolve as participants adapt. For TPA, the relevance is conceptual: It provides a rationale for why "stationarity" is a fragile assumption and why institutions should be prepared for structural change. It also strengthens the argument that long-horizon governance must be able to update beliefs and exposures without requiring a wholesale reinvention each time the environment changes.

Lo, A. W. 2012. "Adaptive Markets and the New World Order (Corrected May 2012)." *Financial Analysts Journal* 68 (2): 18–29. doi:10.2469/faj.v68.n2.6.

A practitioner-facing extension of adaptive markets ideas that emphasizes structural change and the limits of static models. It is relevant to the TPA conversation because it reinforces the motivation for adaptive governance: Risk premia and correlations can change when institutions, policy regimes, and investor behaviors change. The piece is useful as a narrative bridge between academic theory and the practitioner desire to move beyond fixed policy portfolios.

Maillard, S., T. Roncalli, and J. Teiletche. 2010. "The Properties of Equally Weighted Risk Contribution Portfolios." *Journal of Portfolio Management* 36 (4): 60–70. doi:10.3905/jpm.2010.36.4.060.

A key academic/practitioner reference formalizing risk parity (equal risk contribution) portfolios and their properties. For TPA, the relevance is twofold: (i) Risk parity illustrates how a policy portfolio can be defined in terms of risk rather than capital weights, and (ii) it highlights the importance of model assumptions (especially covariances) in defining balanced exposures. It is a useful benchmark for discussions of alternative policy portfolios and for explaining why TPA often insists on model risk–aware guardrails rather than a single fixed covariance narrative.

Mladina, P., and D. Moore. 2020. "Detecting Factor Risk in Private Asset Returns." *Journal of Portfolio Management* 46 (2): 156–67. doi:10.3905/jpm.2019.1.113.

Addresses the measurement challenge of estimating factor exposures in private asset returns, where appraisal smoothing and infrequent pricing complicate inference. This is important for TPA because integrated factor-based risk reporting across public and private assets requires credible exposure estimates. The paper highlights pitfalls in naive factor regressions and offers methods to better detect underlying risks.

Perold, A. F., and W. F. Sharpe. 1988. "Dynamic Strategies for Asset Allocation." *Financial Analysts Journal* 44 (1): 16–27. doi:10.2469/faj.v44.n1.16.

Explains dynamic allocation strategies, such as constant-mix and portfolio insurance, in intuitive terms and shows how path dependence matters for outcomes. Relevant to TPA because many institutions already implement de facto dynamic rules (rebalancing, de-risking triggers) without labeling them as such; TPA is partly about making these rules explicit and governed.

Petajisto, A. 2013. "Active Share and Mutual Fund Performance." *Financial Analysts Journal* 69 (4): 73–93. doi:10.2469/faj.v69.n4.7.

Extends the active share framework and discusses how active share relates to performance and fees. Useful for TPA because "total fund" conversations often start with cleaning up duplication and unintended bets across managers; active share and factor attribution help distinguish genuine active risk from overlapping exposures, allowing institutions to structure mandates in a way that supports intentional, value-adding activeness rather than accidental complexity.

Roncalli, T. 2014. *Introduction to Risk Parity and Budgeting*. Chapman and Hall/CRC.

A widely cited reference on risk parity and risk budgeting, offering both intuition and formal methods. Relevant to TPA because risk budgeting provides a natural governance-friendly framework: It allows boards to specify risk appetite at a high level and allows management to allocate that risk budget across strategies and factors. The book also clarifies when risk-based approaches are helpful and when they can be fragile (for example, dependence on covariance estimates), which matters for TPA tool design and stress-testing.

Rudin, A., J. Mao, N. R. Zhang, and A.-M. Fink. 2019. "Fitting Private Equity into the Total Portfolio Framework." *Journal of Portfolio Management* 46 (1): 60–73. doi:10.3905/jpm.2019.1.106.

A practitioner journal treatment of integrating private equity into a total portfolio risk framework. Particularly relevant because private equity is a common driver of TPA adoption, yet its risk measurement and liquidity dynamics differ from public assets. The paper discusses how to map private equity exposures and how to incorporate them into total fund construction and risk budgets, illustrating the operational bridge between total portfolio principles and real-world illiquid implementation.

Rudin, A., V. Mor, and D. Farley. 2020. "Adaptive Optimal Risk Budgeting." *Journal of Portfolio Management* 46 (6): 147–58. doi:10.3905/jpm.2020.1.148.

Develops an adaptive approach to risk budgeting, allowing risk allocations to change with the environment while preserving a disciplined budgeting structure. This aligns closely with TPA's central tension: how to be adaptive without becoming ad hoc. The paper is useful for showing how risk budgets can serve as governance guardrails and for providing a technical framework that connects state variables and risk budgets to implementable portfolio changes.

Schnetzer, M., and T. Hens. 2022. "Evolutionary Finance for Multi-Asset Investors." *Financial Analysts Journal* 78 (3): 115–27. doi:10.1080/0015198X.2022.2071581.

Uses evolutionary and adaptive reasoning to discuss multi-asset investing under changing environments. Its relevance to TPA is primarily conceptual and pedagogical: It supports the idea that because investor behavior and market structure evolve, policy portfolios should not be treated as immutable. It also reinforces the narrative that TPA is an institutional response to a world where the opportunity set is not stable and where learning and adaptation are part of the investment process.

Schuckardt, M., M. Kleweken, A. Stoll, and J. Chen. 2024. "Liability-Aware Strategic Asset Allocation." DWS Research Institute Working Paper (May). https://download.dws.com/download/asset/a6a21a36-ce2c-4a82-b595-3345a7c3bcae?tenant=DWScom.

Examines how liability metrics can be integrated into strategic asset allocation frameworks. Relevant to TPA because it illustrates that policy portfolios can incorporate balance-sheet constraints while retaining governance anchors. It clarifies the boundary between liability-aware SAA and full total portfolio integration.

Sharpe, W. F. 1992. "Asset Allocation: Management Style and Performance Measurement." *Journal of Portfolio Management* 18 (2): 7–19. doi:10.3905/jpm.1992.409394.

A classic practitioner/academic discussion of performance analysis that decomposes a portfolio into effective asset-class exposures ("style") and active bets. Relevant to TPA because moving from sleeves to a total portfolio lens often requires a more nuanced language for what the portfolio actually owns, beyond labels in the policy book.

Sharpe, W. F. 1994. "The Sharpe Ratio." *Journal of Portfolio Management* 21 (1): 49–58. doi:10.3905/jpm.1994.409501.

Introduces and interprets the Sharpe ratio as a reward-to-variability metric. In a TPA context, it is a reminder that total fund performance evaluation often needs simple, communicable summary statistics, even when the underlying policy is dynamic and multi-objective.

Sharpe, W. F. 2010. "Adaptive Asset Allocation Policies." *Financial Analysts Journal* 66 (3): 45–59. doi:10.2469/faj.v66.n3.3.

Proposes an adaptive policy framework that updates allocations as conditions change while retaining a disciplined structure. Relevant to TPA because it represents an early practitioner/academic attempt to reconcile long-horizon policy discipline with time-varying opportunities. The paper is useful for framing adaptation as a policy choice, not as ad hoc discretion, and for motivating the need for governance rules that specify how and when the policy can evolve.

Shen, J., D. Li, G. T. Qiu, V. Jeet, M. Y. Teng, and K. C. Wong. 2021. "Asset Allocation and Private Market Investing." *Journal of Portfolio Management* 47 (4): 71–82. doi:10.3905/jpm.2021.1.211.

Discusses the strategic and portfolio-construction implications of private market investing, including liquidity, diversification, and risk measurement. Relevant to TPA because private markets introduce path dependence and because integrating them requires a total fund view rather than siloed asset-class thinking. The paper provides practitioner language and analytic framing that can be used when describing why fixed-weight SAA is strained for portfolios with large illiquid components.

Snowden, D. J., and M. E. Boone. 2007. "A Leader's Framework for Decision-Making." *Harvard Business Review* (November). https://hbr.org/2007/11/a-leaders-framework-for-decision-making.

Introduces a widely used framework (often associated with the Cynefin model) for matching decision approaches to problem types (simple, complicated, complex, chaotic). In TPA governance discussions, this framework is useful as an analogy: Some parts of the portfolio problem are complicated (optimizable), while others are complex (requiring adaptation and learning). It helps motivate why rigid SAA governance—designed for a simpler era—can struggle with modern portfolios that combine illiquids, regime risks, and multiple objectives.

Swade, A., H. Lohre, S. Nolte, M. Shackleton, and L. Swinkels. 2024. "A Century of Macro Factor Investing: Diversified Multi-Asset Multi-Factor Strategies through the Cycles." *Journal of Portfolio Management* 50 (5): 37–56. doi:10.3905/jpm.2024.1.587.

A practitioner journal survey of macro factor investing over long horizons. Relevant to TPA because macro factors (growth, inflation, rates, credit, liquidity) often serve as a common risk language in total portfolio frameworks. The paper helps practitioners connect factor exposure management to historical regimes and provides context for why macro factor lenses have become prominent in institutional risk systems.

Swensen, D. F. 2005. *Unconventional Success: A Fundamental Approach to Personal Investment*. Free Press.

Extends Swensen's institutional philosophy to individual investors, advocating disciplined asset allocation, cost control, and long-term rebalancing while warning against performance chasing and excessive complexity. Although written for a different audience, the framework reinforces principles central to TPA: clarity of objectives, structural diversification, and governance-aware implementation. The book underscores that portfolio success depends less on tactical precision and more on adherence to a coherent policy structure and disciplined rebalancing—elements that in institutional settings become formalized as guardrails and total fund governance processes. In a TPA context, it illustrates how philosophy, structure, and implementation discipline interact to determine outcomes.

Swensen, D. F. 2009. *Pioneering Portfolio Management: An Unconventional Approach to Institutional Investment*. Free Press.

Articulates the institutional model associated with the "Yale model," emphasizing equity orientation, heavy allocations to illiquid alternatives, active management, and governance discipline. Relevant to TPA because it represents an early and highly influential move away from rigid asset-class silos toward a more integrated, opportunity set–driven allocation framework. Swensen places governance, manager selection, and long-horizon orientation at the center of policy design, implicitly shifting the focus from benchmark-relative thinking to total fund outcomes. Within a TPA literature review, the book serves as a precursor: It demonstrates how institutional structure, liquidity tolerance, and governance capability shape portfolio architecture at the total fund level.

Treynor, J. L., and K. Mazuy. 1966. "Can Mutual Funds Outguess the Market?" *Harvard Business Review* (July–August): 131–36.

Introduces an early return-based test for market timing ability and is a classic reference in the timing literature. For TPA, the relevance is mostly cautionary: The empirical record on timing skill in conventional mutual fund settings is limited, which helps temper the claim that dynamic allocation is easy. It supports a core TPA message: Adaptation should be governed and disciplined, and institutions should not assume that short-horizon tactical forecasting will reliably add value.

Wang, P., R. N. Sullivan, and Y. Ge. 2012. "Risk-Based Dynamic Asset Allocation with Extreme Tails and Correlations." *Journal of Portfolio Management* 38 (4): 26. doi:10.3905/jpm.2012.38.4.026.

Develops a dynamic asset allocation framework that explicitly accounts for extreme tail risks and time-varying correlations, rather than relying on stable covariance assumptions. The paper shows that portfolio risk can change materially in stressed environments, requiring allocation adjustments that reflect nonlinear dependence structures. In a TPA context, this supports the emphasis on building portfolios that are robust to shifting correlation regimes and tail events. Rather than emphasizing static policy weights based on average historical relationships, it reinforces the need for dynamic risk monitoring, stress testing, and adaptive risk budgeting within a total fund framework.

Section C. Selected Articles by Asset Owners, Consultants, News Outlets, and Other Industry Sources

AIMA. 2023. "AIMA Global Investor Board Insights: Total Portfolio Approach" (video, 14 March). www.aima.org/article/aima-global-investor-board-insights-total-portfolio-approach.html.

A practitioner panel discussion that captures how allocators and managers describe TPA in real-world language and where they see the implementation friction. Useful for understanding how the concept is communicated and for identifying recurring themes, such as governance, liquidity, and cross-asset collaboration.

Ambachtsheer, K. 2025. "Where Did the Total Portfolio Approach (TPA) Come From?" *The Ambachtsheer Letter* (5 June). https://kpa-advisory.com/the-ambachtsheer-letter/view/where-did-the-total portfolio-approach-come-fromand-where-is-it-going.

A reflective practitioner essay on the lineage of TPA and why it has gained traction. Its value is less about providing a technical framework and more about tracing institutional history: how benchmarking conventions, consultant models, and governance preferences shaped the dominance of SAA, and why some large funds have started to break from that equilibrium. This kind of "history of practice" explains the institutional forces behind adoption.

Ang, A., K. Gallagher, K. Fergus, and P. Hodges. 2019. "Building Resilience with Macro Factors." White paper, BlackRock (18 September).

A practitioner treatment of mapping portfolios to macro factors as a way to understand resilience across regimes. This aligns with TPA's emphasis on total fund preparedness and on identifying the economic drivers that cut across asset classes. For a literature review, it is useful as an example of the macro-factor tool kit: a way to talk about exposures that matter (inflation, growth, rates) without being trapped by asset-class labels.

ATP. 2021. "ATP's Investment Approach." www.atp.dk/en/dokument/atps-investment-approach-2021.

An example of a sophisticated asset owner that has long emphasized total fund risk management, factor exposures, and explicit hedging programs. Although it may not use the "TPA" label consistently, the approach illustrates several TPA-consistent ideas: outcome-based objectives, clear risk budgets, and active management of exposures that matter for the institution's liabilities and funding needs. Useful as a case reference when discussing that "TPA-by-name" is recent but many of its core principles have been practiced for some time by sophisticated asset owners under different labels.

CAIA Association. 2024. "Innovation Unleashed: The Rise of the Total Portfolio Approach." https://caia.org/total-portfolio-approach-2024.

A practitioner synthesis that popularizes the modern label "TPA" and situates it within the evolution of institutional portfolios. The report is useful for (i) describing why large asset owners feel constrained by asset-class buckets, and (ii) documenting the governance and organizational changes that accompany a total portfolio view (e.g., cross-asset teams, outcome-based oversight, and reference portfolios). It is also a helpful source that is written as case study–style examples.

Davis, J. 2023. "Evolving Asset Allocation: Implementing a Total Portfolio Approach." *ACPM Observer* (30 October). www.acpm.com/observer/evolving-asset-allocation-implementing-a-total-portfolio-approach.

A practitioner article from a pension perspective discussing the organizational and process changes required to move from asset-class policy weights to a more holistic approach. Useful because it emphasizes implementation realities (governance, decision rights, and stakeholder communication) rather than only theory. Such sources help triangulate what practitioners see as the binding constraints in TPA adoption.

Fernandez, H., A. Lester, R. Bookstaber, and J. Giguere-Morello. 2024. "How Asset Owners Are Redefining the Total Portfolio Approach." MSCI *Research and Insights* (blog, 12 November). www.msci.com/research-and-insights/blog-post/how-asset-owners-are-redefining-the-total-portfolio-approach.

A market practitioner piece emphasizing how asset owners are reframing portfolio construction around total fund risk and outcome objectives. Useful for documenting the diffusion of TPA language beyond a small set of early adopters and for highlighting implementation themes that show up repeatedly (e.g., factor lenses, liquidity-aware construction, and cross-asset decision processes). Because it is written from a data provider's perspective, it also signals where measurement and analytics are most demanded by adopters.

Franklin Templeton. 2025. "Alternative Allocations: The Rise of the Total Portfolio Approach" (7 April). www.franklintempleton.com/articles/2025/alternatives/alternative-allocations-the-rise-of-the-total-portfolio-approach.

A media-style practitioner discussion illustrating how TPA concepts are entering broader investment conversation. Useful as evidence of diffusion and as a summary of common themes (integration across public/private, outcome objectives, and governance change). Like other media pieces, it is best treated as contextual background rather than as a technical authority.

GIC. 2022. "GIC's Total Portfolio Approach" (22 August). www.gic.com.sg/thinkspace/portfolio-construction/gic-total-portfolio-approach/.

A primary description of TPA principles from a large sovereign investor. Valuable for highlighting the organizational side of TPA: coordination across teams, common objectives, and a portfolio-wide view of risk and opportunity. This write-up emphasizes, from a sovereign fund point of view, that total portfolio thinking requires a disciplined decision process and a culture of collective action.

Gilmore, S. 2025. "Total Portfolio Approach and Transition Considerations." CalPERS, board presentation. (13 January). www.calpers.ca.gov/sites/default/files/spf/docs/board-agendas/202501/full/2-presentation-tpa-and-transition-considerations_a.pdf.

A primary source document illustrating how a major public pension fund frames the move toward a total portfolio operating model. Particularly useful for understanding the governance conversation in concrete terms: how decision rights shift, what risk guardrails are emphasized, and what the institution expects to gain (e.g., improved capital mobility and better alignment of teams).

McCabe, C. 2025. "CalPERS Ushers in New Investment Era with the Total Portfolio Approach." *Forbes* (11 December). www.forbes.com/sites/carriemccabe/2025/12/11/calpers-ushers-in-new-investment-era-with-the-total-portfolio-approach/.

A general audience summary of CalPERS' move toward a total portfolio framing. It is best used to document the public narrative (and expectations) around TPA rather than as evidence of performance, but it provides context on why governance and risk-framing are central to the transition.

Nangle, Toby. 2025. "The Hot New Investment Trend Is the 'Total Portfolio Approach.' Does It Work?" *Financial Times* (November 17). www.ft.com/content/540b2f9a-9c58-44f5-8ae9-36a58c95d26c.

A skeptical but informative media discussion of whether the TPA label corresponds to a materially different process and whether it can deliver better outcomes. Useful in a literature review to surface the key practitioner questions: what exactly changes, how performance is evaluated without traditional benchmarks, and what evidence exists.

Ortec Finance. 2025. "Applying a Total Portfolio Approach (TPA): A Multi-Factor Lens for Investment Decisions." www.ortecfinance.com/en/insights/whitepaper-and-report/total portfolio-approach-for-pension-funds.

A tool-focused practitioner piece describing how a multi-factor framework can support total portfolio decision-making. Relevant to the "tools and measurement" pillar of TPA: It illustrates how vendors position their analytics as enabling integrated risk reporting, regime awareness, and trade-off analysis across asset classes. Useful as evidence that the analytics ecosystem is adapting to total fund use cases.

Pickett, Melanie. 2025. "Empowering Institutional Investors: The Shift Toward a Total Portfolio View." AIMA (22 September). www.aima.org/article/empowering-institutional-investors-shift-toward-total-portfolio-view.html.

A trade association perspective describing why institutional investors increasingly evaluate risk and return at the total fund level. Particularly relevant for documenting how alternative investments are framed within total portfolio narratives: as components of a holistic system rather than as siloed allocations.

Russell Investments. 2024. "Total Portfolio Management: A Holistic Approach to Investing." https://russellinvestments.com/-/media/files/nz/insights/0904-the-rediscovery-of-real-assets/research/2020/total portfolio-management-active-passive-and-everything-in-between.pdf.

A practitioner overview of total portfolio management emphasizing holistic decision-making and the integration of objectives, risk, and implementation across asset classes. Useful for capturing how mainstream investment firms explain TPA to clients: as a framework for capital allocation across the entire opportunity set rather than within predefined buckets.

Swee Chiang, C. 2024. "Singular Focus, Collective Action: The Key to a Total Portfolio Approach." GIC (20 March). www.gic.com.sg/thinkspace/enterprise-excellence/singular-focus-collective-action-the-key-to-a-total-portfolio-approach/.

A companion piece emphasizing culture and teamwork as prerequisites for total portfolio management. Relevant because it echoes a common theme across TPA implementations:

The hardest part is not computing the "optimal" allocation, but making multiple teams act as if they manage one portfolio. It is a useful summary from GIC to motivate why governance, incentive alignment, and shared success metrics appear repeatedly in the literature.

Taze-Bernard, E., and M. Germano. 2020. "Multi Asset: A Solid Total Portfolio Approach for a Complex World." Amundi (2 June). https://research-center.amundi.com/article/multi-asset-solid-total-portfolio-approach-complex-world.

An asset manager perspective that frames multi-asset investing as an applied form of total portfolio thinking. Useful for highlighting that TPA ideas are not confined to a single region or investor type. The paper also reflects a common practitioner theme: A total portfolio approach requires a coherent framework for navigating multiple objectives and regimes, rather than a single static policy mix.

Thinking Ahead Institute. 2020. "Total Portfolio Approach (TPA): A Global Asset Owner Study into Current and Future Asset Allocation Practices." www.thinkingaheadinstitute.org/content/uploads/2020/11/Total_Portfolio_Approach-1.pdf.

A widely cited practitioner report that consolidates how asset owners describe "TPA" in practice and why they are moving away from rigid strategic asset allocation. Useful as an anchor for definitions and for mapping implementation patterns (reference portfolios, total fund reporting, and governance changes). The report is also helpful for understanding the adoption continuum: Many funds apply TPA principles while still retaining policy portfolios or asset-class structures for operational purposes.

Thinking Ahead Institute. 2025. "From Vision to Execution: How Investors Are Operationalizing the Total Portfolio Approach." In collaboration with CAIA Association. www.thinkingaheadinstitute.org/content/uploads/2025/10/2025-TPA-Report-from-Vision-to-Execution.pdf.

Focuses on the implementation layer: how institutions translate TPA principles into operating models, decision rights, and reporting. Particularly relevant for the "how" question—what needs to change in governance, risk systems, and organizational structure to make a total fund decision process workable. The value for a literature review is that it captures the language used by adopters, which often differs from academic terminology but maps cleanly to agency and dynamic-allocation concepts.

Toledo, Matt. 2024. "Total Portfolio Approach: A New Way to Construct Asset Allocations." Chief Investment Officer (22 March). www.ai-cio.com/news/total-portfolio-approach-a-new-way-to-construct-portfolios/.

A practitioner explainer that introduces TPA to a broad institutional audience and highlights the contrast with traditional asset-class buckets. It is useful for the diffusion story: how TPA is translated into accessible messaging (flexibility, risk consciousness, and total fund objectives) and how it is positioned relative to SAA.

Toledo, Matt. 2026. "Implementing Total Portfolio Approach at an Operational Level." Chief Investment Officer (20 January). www.ai-cio.com/news/implementing-total-portfolio-approach-at-an-operational-level/.

Provides a practitioner-focused discussion of how institutions translate total portfolio approach (TPA) principles into operational practice. The article emphasizes that the primary

challenges are organizational rather than analytical—highlighting the need to redesign decision-making processes, clarify decision rights, and align governance structures to support total fund thinking. It also discusses the importance of cross-team coordination, integrated risk frameworks, and clear accountability mechanisms in enabling effective implementation. For TPA, the relevance lies in its focus on execution: It reinforces that adopting a total portfolio perspective requires more than analytical tools but instead depends on embedding that perspective into the institution's operating model. The article supports the view that governance, incentives, and organizational design are central to making TPA actionable in practice.

Urwin, R., and J. Kyrklund. 2024. "Total Portfolio Approach (TPA) with Roger Urwin and Johanna Kyrklund." Schroders (video, interview). www.schroders.com/en-ca/ca/professional/insights/total-portfolio-approach-tpa-with-roger-urwin-and-johanna-kyrklund/.

Positions TPA as a holistic institutional framework and connects it to common asset-owner challenges: fragmented mandates, hidden factor overlaps, and governance systems that inhibit adaptation. Particularly relevant as a bridge between "TPA-by-name" and the broader institutional investment literature on decision rights, collaboration, and long-horizon objectives. Useful for articulating the positive case for TPA in practitioner language while recognizing that implementation depends on governance readiness.

Wang, L., and J. Lee. 2025. "'Total Portfolio Approach' Is Shaking Up How Trillions Get Managed." Bloomberg News (11 November). www.bloomberg.com/news/articles/2025-11-11/-total-portfolio-approach-is-shaking-up-institutional-trillions?embedded-checkout=true.

A media-style overview of the institutional adoption narrative, highlighting large funds that are publicly rebranding their investment process around TPA. This write-up shows how the idea is being communicated to stakeholders and what claims are being made about expected added value.

White, A. 2024. "CPP Evolves Total Portfolio Approach." Top1000funds.com (28 May). www.top1000funds.com/2024/05/cpp-evolves-total-portfolio-approach/.

A short industry update describing how a major asset owner frames its evolution toward a total portfolio lens. This write-up can be viewed as useful, especially for identifying which operational aspects are highlighted publicly (governance, risk oversight, and team integration).

White, A. 2025. "How CalPERS Aims to Add 50-60 bps Using TPA." Top1000funds.com (16 December). www.top1000funds.com/2025/12/how-calpers-aims-to-add-50-60-bps-using-tpa/.

A practitioner media source summarizing expected added value estimates associated with CalPERS' TPA transition. It is a useful read for documenting the ambition and the stakeholder messaging.

Yu, Sun. 2025. "CalPERS Adopts New Approach to Assess Risk and Returns." *Financial Times* (17 November). www.ft.com/content/6a715c58-4f58-4576-914f-84a17401d221.

A high-visibility news piece documenting the mainstreaming of TPA language among the largest public funds. Useful for tracing diffusion and for illustrating the public-facing rationale: a desire to evaluate risk and return at the total fund level rather than relative to siloed benchmarks.

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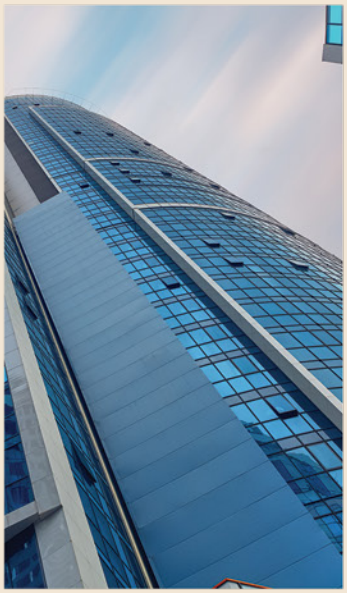
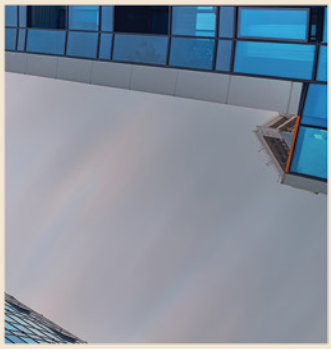
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