UKSIF
UK Sustainable Investment and Finance Association

SCOTTISH WIDOWS

CANBURY

Systemic risks:
A framework for portfolio resilience

MAY 2025

CONTENTS

ABOUT THE REPORT

This research was commissioned by UKSIF and Scottish Widows in response to the growing recognition of the challenges systemic risks present to investors and the need for wider investment professionals, beyond stewardship teams, to consider them. This report seeks to address a number of key questions confronting the investment community:

- Why are systemic risks particularly important for asset owners to consider?
- Can asset managers tackle these risks despite operating within short-term performance horizons?
- What practical steps can UK-based asset owners take today to address systemic risks?

Building on existing concepts of universal ownership and systemic stewardship, this research provides a framework that articulates pathways for action. It outlines potential roles and responsibilities for asset owners, asset managers, policymakers, regulators, academia, and consultants – suggesting a way for these stakeholders to collaborate to address market-wide challenges.

Findings are based on qualitative research methods, including interviews and a literature review, to identify current perceptions, key barriers to action, and potential solutions.

This research is not a technical analysis of specific systemic risk modelling methodologies, nor does it provide an exhaustive quantitative assessment of the financial materiality of different systemic risks. It also does not offer prescriptive, one-size-fits-all solutions that can be implemented without consideration of an institution's specific context. Rather, it serves as an introductory framework to guide decision-making and actions within the complex landscape of systemic risk management.

Areas for further research include navigating trade-offs between different systemic risks and developing more sophisticated approaches to measuring impact. While this report is UK-specific in its focus, there are likely additional nuances relevant to other geographical contexts that could be explored in future research.

EXECUTIVE BRIEFING

Systemic risks are un-diversifiable risks that can impact entire markets or economic systems through complex interconnections, potentially triggering chain reactions across multiple sectors and undermining overall market growth.

To illustrate: a cyberattack on a single company may disrupt operations but is unlikely to affect the broader market. However, a cyberattack on a widely used IT platform could disrupt thousands of organisations simultaneously, halting supply chains and eroding trust in digital infrastructure. This is a **systemic risk**—widespread, interconnected, and difficult to contain.

Why do systemic risks matter for investors?

Systemic risks should be on all investors' agendas because:

1. **Beta drives long-term returns**, particularly relevant to the end saver, and systemic risks threaten this market-wide growth component
2. **Markets may misprice or not price these risks**, and they're not addressed in traditional risk models because they are complex and often arise from externalities. Since these externalities aren't reflected in market prices or company accounts, their financial materiality remains hidden until the risks materialise, despite their potential to impact long-term market returns
3. **Many asset owners interpret their fiduciary duties to include responsibility for maintaining a well-functioning market**

Systemic risks are important for all investors and intermediation chain stakeholders as they affect the performance of markets that underpin all investments. These risks are particularly important to globally diversified investors (Universal Owners), passive investors, and long-term asset owners, who are significantly exposed to market-wide threats due to their broad market exposure.

Why now?

The UK investment landscape is undergoing transformative change with three key shifts: maturing defined benefit schemes moving toward buyout, accelerated pension pooling following policy emphasis on consolidation, and rapid growth of defined contribution schemes through auto-enrolment. These changes are developing more sophisticated institutional investors with enhanced capabilities to address systemic risks, all whilst coinciding with the UK's strengthening position as a global investment destination and a political window for impactful policy engagement.

Systems thinking: A foundation for managing systemic risk

The world is made up of interconnected systems, from ecosystems and economies to energy grids, supply chains, and financial markets. These systems are shaped not just by their individual parts, but by the relationships and feedback loops between them. It is this interconnectedness that gives rise to systemic risks that **cascade across sectors, geographies, and stakeholders in ways that are difficult to predict or contain.**

Systems thinking offers a way to understand and navigate this complexity. It focuses on how elements within a system, such as institutions, policies, sectors, and environmental factors, interact over time. Rather than analysing parts in isolation, it reveals how feedback loops, structural patterns, and interdependencies drive outcomes at scale. As Donella Meadows, environmental scientist and systems thinking pioneer, writes in *Thinking in Systems: A Primer (2008):*

"*The systems-thinking lens allows us to reclaim our intuition about whole systems, hone our abilities to understand parts, see interconnections, ask 'what-if' questions about future behaviors, and be creative and courageous about system redesign.*"

Using systems thinking as a concept, investors can seek to prepare and mitigate systemic risks by:

- **Identifying leverage points**: Small, strategic interventions, such as changing incentive structures or disclosure standards, can drive outsized impact
- **Understanding feedback loops**: Recognise how short-term decisions can entrench long-term vulnerabilities
- **Anticipating cross-system consequences**: Move beyond siloed analysis to understand second- and third-order effects

Beyond standard stewardship actions

In most cases, conventional investment and engagement approaches are insufficient for addressing systemic risks. Systemic risks extend beyond individual companies and require approaches that include, and go further than individual company engagements:

Standard stewardship actions	Systemic stewardship actions
• Company-level engagement focused primarily on company performance and ESG factors specific to individual holdings • Voting on company-specific issues without consideration of broader market/system implications • Divestment based on company-specific concerns • Investor conversations limited to quarterly updates and standardised ESG due diligence questionnaires • Assessing company performance narrowly within the context of its industry peer groups • Accepting company justifications for inaction that cite competitive disadvantage without challenging the underlying market structures	• Policy engagement to address system-level issues • Cross-industry collaboration on system-wide risks • Engaging with asset managers and companies on how they prioritise and tackle systemic risks (e.g., their policy engagements) • Filing resolutions and taking voting actions specifically to catalyse market-wide change (e.g. targeting companies strategically, communicating broader implications to the marketplace, generating industry discussion) • Engaging companies on their lobbying activities related to industry standards and regulations • Encouraging companies to collaborate with competitors on raising industry-wide standards

Priority actions should focus on policy engagement and collaborative stewardship initiatives, supported by targeted company-level activities where appropriate. This systemic approach recognises that market-wide threats cannot be effectively mitigated through isolated company engagements alone.

The role of asset owners

Addressing systemic risks requires collaborative, cross-industry approaches between investors, companies, regulators, policymakers, and wider stakeholders for comprehensive whole-of-economy resilience. No single actor can address systemic risks effectively.

However, asset managers, constrained by short-term performance metrics, may lack sufficient incentives to lead on systemic risks. Asset owners, particularly those with favourable existing processes (such as a policy/advocacy/public affairs team, or a supportive Trustee) are best positioned to lead within the investment chain due to their long-term investment horizons and fiduciary obligations to beneficiaries.

Summary for a CIO

Systemic risks are undiversifiable risks that threaten long-term portfolio performance by disrupting market-wide growth. By embedding systemic risk management as part of investment objectives and aligning teams, CIOs can enhance portfolio resilience. CIOs can lean on their stewardship team and develop a consistent, and strategic organisation-wide approach to systemic risks, which can include collaboration with other investors to engage key stakeholders (such as investee companies, policymakers, and regulators, with targeted asks) and develop industry-leading research.

Key problems and priority actors and actions[1]:

Misalignment problem: Short-term regulatory cycles, investor performance metrics, and evaluation cycles conflict with long-term systemic risks	**Influence problem:** First-mover disadvantages create 'free-rider problems' that discourage proactive approaches, and alone, investors can have limited impact	**Measurement problem:** Traditional models fail to capture complex, non-linear impacts of systemic risks, creating significant challenges in assessing their financial materiality and incorporating them into decision-making
Lead: Regulators and policymakers • Create clear long-term policy direction • Improve regulatory coordination Support: Asset owners • Hold asset managers accountable to addressing systemic risk priorities	**Lead: Asset owners (with cross-investor and cross-industry support)** • Policy engagement on key barriers to long-term approaches with pooled influence Support: Regulators • Tighten lobbying disclosure and integrate FMLC recommendations on fiduciary duty to relevant regulatory guidance	**Lead: Academia, asset managers, and consultants** • Lead interdisciplinary research on financial materiality of systemic risks • Develop improved measurement methodologies that capture complexity
Terminology and framing problem: Inconsistent understanding and framing of systemic risks leads to confusion and fragmented approaches		
Lead: Investor industry collaborations and policymakers • Call for an agreed-upon definition, and develop a consistent framework for asset owners to use • Create practical tools for prioritising and addressing systemic risks, and trade-offs		

Explanation of key concepts

- **The 'free-rider' effect:** When individuals or entities benefit from a shared resource (e.g. a well-functioning market), service, or effort without contributing their fair share to its provision or maintenance (e.g. not addressing systemic risks). This can lead to underinvestment in the resource or inaction, depending on whether some or all choose not to contribute, expecting others to bear the costs. For example, a textile manufacturer assumes other manufacturers drawing from a shared aquifer will invest in sustainable technology to reduce water consumption, but when no one does, the aquifer is overused and eventually depleted.

- **Externalities:** Unaccounted for costs or benefits that affect parties beyond those involved. Using the same example, a textile manufacturer discharges untreated wastewater into a river to save money, but the pollution harms downstream communities and industries by increasing health risks and reducing economic productivity. When these externalities are widespread, they can accumulate and create systemic risks.

[1] See the full summary set of priority actions in *How do I tackle systemic risks?*

WHAT ARE SYSTEMIC RISKS?

Systemic risks are undiversifiable risks that can impact entire markets or economic systems through complex interconnections, potentially triggering chain reactions across multiple sectors and undermining overall market growth.[2]

Broadly speaking, there are three components to how systemic risk can be defined:

1. Non-diversifiable
2. Impact on entire market or economic systems
3. Interconnected and chain reaction nature

Other, existing definitions include:

- "Systemic risks are those that may lead to the collapse of an industry, financial market or economy and include but are not limited to climate change and the failure of a business or group of businesses". (UK Financial Reporting Council)[3]
- "[A] risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy". (Bank for International Settlements)[4]
- "[T]he risk of threats to financial stability that impair the functioning of a large part of the financial system with significant adverse effects on the broader economy". (Freixas, X., Laeven, L., & Peydró, J. L.)[5]
- "[T]he risk or probability of breakdowns in an entire system, as opposed to breakdowns in individual parts or components". (Kaufman, G.G., & Scott, K. E., as cited by Schweizer, P., & Juhola, S.)[6]
- "[A] systemic risk…is one that affects the systems on which society depends – health, transport, environment, telecommunications, etc" (OECD, as cited by Schweizer, P., & Juhola, S.)[7]

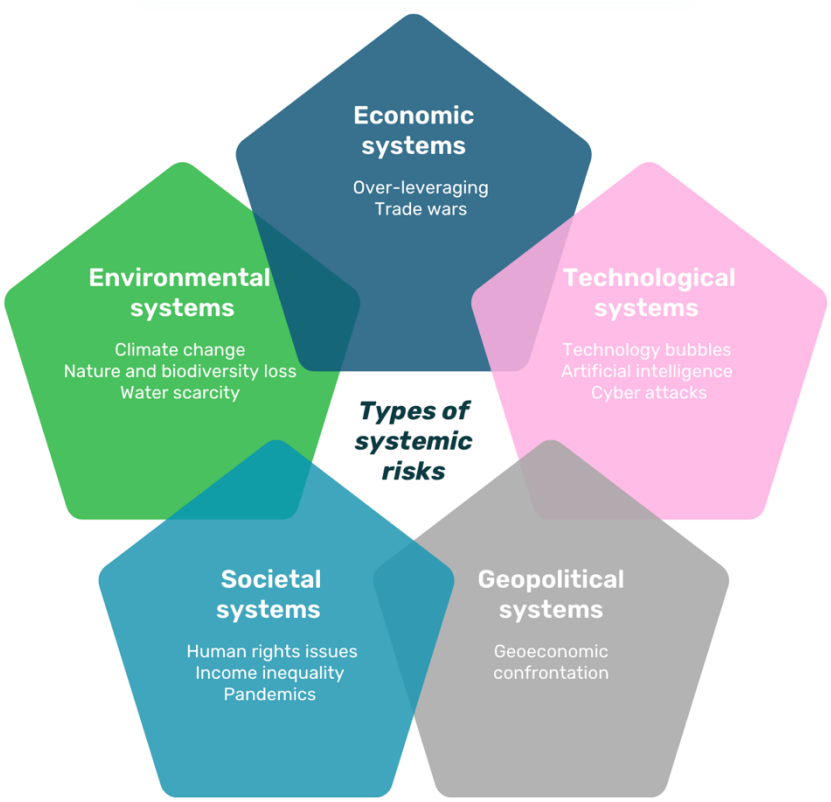
There is also a time component to systemic risks. Individual, repeated instances of some risks can amplify and result in a systemic one. Without intervention, risks can develop over decades and trigger a market shock or systemic crisis such as:

- The 2008 financial crisis, from accumulated excessive leverage and risk-taking in the financial system
- California's 2000-2001 electricity crisis, triggered by deregulation of the electricity market, leading to severe supply shortages and price manipulation by electricity companies[8]
- Russia's invasion of Ukraine, and the global wheat crisis, leading to increased food prices and insecurity[9]
- More generally, underpayment leading to increased inequality that continues to amplify with time and generations[10]
- US President Trump's April 2025 tariffs and resultant market shocks

> *"…one of the really important things to understand with systemic risk is that time horizons sort of don't apply…systemic risk is undiversifiable, and it is affecting all of your positions by varying degrees regardless of whether you own the securities that are making the largest contributions to it or not"*
>
> **Asset Owner**

[2] See Appendix
[3] The UK Stewardship Code 2020
[4] Systemic risk: how to deal with it? (2010)
[5] Systemic Risk, Crises, and Macroprudential Regulation (2023)
[6] What Is Systemic Risk, and Do Bank Regulators Retard or Contribute to It? (2003)
[7] Emerging Risks in the 21st Century (2003)
[8] California's Electricity Crisis
[9] How the Russian invasion of Ukraine has further aggravated the global food crisis
[10] This is an example of a positive feedback loop

Systemic risks can include, depending on the time scale and extent of the risk[11]:



These risks can all be interconnected, and feed into one another, creating cascading effects and compounding challenges across systems.

Comparing company-level and systemic risks

While sustainability and systemic risks overlap, they are distinct concepts. Not all sustainability challenges pose a systemic risk, and not all systemic risks stem from sustainability issues. For example, a specific environmental violation may represent a significant sustainability risk to a company without threatening the health of the broader market; in summary:

Aspect	Company-level risks	Systemic risks
Scope	Affect individual companies or sectors	Affect entire economies, financial systems, or global stability
Impact	Direct impact on a company's operations, finances, or reputation	Widespread and cascading impacts across multiple sectors and regions
Mitigation	Can be mitigated through company-specific strategies like diversification, compliance, or innovation	Require coordinated or systemic responses, such as policy changes or international agreements; undiversifiable
Interconnectedness	Limited to the company or sector, less likely to cause widespread disruption	Highly interconnected, with potential for cascading failures across systems

[11] Many risks could reasonably fall under multiple categories due to their cross-cutting nature and systemic interconnections. These 'systems' categories are based on the risk categories in the World Economic Forum Global Risks Perception Survey 2024-2025.

Systemic risks in literature

Existing literature[12] on systemic risk underscores its complex, pervasive, and interconnected nature across domains such as finance, environmental sustainability, and global governance. Foundational contributions like Meadows (2008) highlight the critical role of systems thinking in addressing these risks, while frameworks such as Gunderson and Holling's (2002) panarchy theory and Rockström et al.'s (2009) planetary boundaries emphasise the importance of adaptive governance and resilience-building. More recent work, such as Schweizer and Juhola (2024), defines systemic risks as disruptions to vital societal functions, arising from deep complexity, uncertainty, and delayed responses.

In the financial sector, these risks are further amplified by market interdependencies and feedback loops (Systemic Risk Centre, 2015), with traditional risk models falling short, as noted by Danielsson (2022) and Bolton et al. (2020). In response, emerging research advocates for integrated approaches that blend systems thinking, interdisciplinary collaboration, and strengthened risk governance to manage cascading effects and enhance long-term societal stability.

DEFINING SYSTEMIC RISK: INTERVIEWEE PERSPECTIVES

"…risks to the financial system as a whole as opposed to risks to any given financial institution."

Daniel Beunza, Bayes Business School

"[Systemic risks] are those sort of, overarching, macro themes that are affecting business, short, medium, longer term, of which climate is one, but there are many others."

Adam Black, Coller Capital

"The risk that diversified investors bear from the threats to the systems that underlie the entire economy."

Rick Alexander, The Shareholder Commons

"a systemic risk is one that cannot be diversified away through classical portfolio construction techniques, and therefore it's pervasive market wide and non-diversifiable risk"

Tom Gosling, London School of Economics and Political Science

"…[risks] that I can't diversify away from that will impact the portfolio value negatively."

Tegs Harding, Independent Governance Group

[12] See the literature review for further details and supporting sources.

WHY NOW: An inflection point for UK investors to address systemic risks

This paper has been written at a time of transformative change in the UK asset owner landscape. Historically, the UK pensions market has been characterised by fragmentation, with individual pension schemes operating with disparate governance structures and investment approaches. This fragmentation has created a power imbalance where asset owners typically function as 'product takers', accepting standardised offerings from asset managers who have traditionally held greater influence in the intermediation chain.

This fragmentation stands in contrast to markets like the Netherlands, Australia, and Canada, where greater consolidation has enabled asset owners to develop robust internal capabilities, particularly around systemic sustainability issues. These consolidated markets have demonstrated more effective implementation of long-term approaches to system-wide change, and universal ownership principles.[13]

Three significant structural shifts are now reshaping the UK landscape and rebalancing power towards asset owners:

1. Defined benefit pension schemes are increasingly reaching maturity and moving toward buyout stage, shifting investment priorities as they de-risk their portfolios. This transition often involves a move away from equity exposure towards more liability-matching fixed income strategies, and in many cases, the transfer of assets to insurance companies.
2. Pension pooling is gaining significant momentum. Following UK Chancellor Rachel Reeves' Mansion House speech emphasising LGPS consolidation, we are witnessing accelerated pooling beyond public sector schemes.[14]
3. Auto-enrolment has driven rapid growth across defined contribution (DC) schemes, particularly among master trusts such as Nest, People's Pension, and Smart Pensions. Specifically, since 2012, over 11.1 million UK workers have been auto-enrolled (as of December 2024)[15], fuelling the expansion of these entities to scales comparable to their international counterparts.

Maturing defined benefit schemes, accelerated pension pooling, and the growth of master trusts and fiduciary management (over the past 20 years[16]), are creating more sophisticated institutional investors with enhanced capabilities. Each of the 8 emerging 'mega-funds' is projected to average AUM of £50bn[17], significantly increasing their market influence. This shift in power is already visible in how asset owners are exercising their leverage over asset managers deemed insufficiently equipped to address systemic risks. [18]

While some systemic risks remain beyond direct investor engagement (such as international trade policies like US President Trump's tariffs), this growing consolidation creates both the capability and responsibility for asset owners to address those systemic risks where they can have meaningful impact, rather than relying exclusively on asset managers whose incentives may be misaligned with managing undiversifiable risks that affect entire systems.

According to PwC, **these changes also arrive at a time where the UK is strengthening its global investment position,** with the UK rising to become the second-most attractive destination for international investment, behind only the United States.[19]

[13] ABP sets new investment goals in a changing economy; The Future of Superannuation: A Shared Perspective; The Evolution of the Canadian Pension Model
[14] Mansion House 2024 speech
[15] Review of the Automatic Enrolment Earnings Trigger and Qualifying Earnings Band for 2025/26: Supporting Analysis
[16] 2017 KPMG UK Fiduciary Management Survey
[17] UK Pensions – LGPS Consolidation: a look ahead to 2025
[18] For example, see State street loses £28bn of The People's Pension's assets to Amundi and Invesco
[19] According to PwC's 28th Annual Global CEO Survey

At the same time, the current political landscape presents both challenges and opportunities. In the United States, there has been notable pushback against ESG considerations, creating potential risks for many UK asset owners with significant US exposure. In the UK itself, the 2024 change in government provided a window of opportunity for impactful policy engagement and regulatory development. UKSIF saw this as a key moment to reshape policies and restore investor confidence, notably calling for policy certainty[20].

In March 2025, the UK government explicitly opened a dialogue on regulatory reform, signalling its willingness to receive input and potentially implement significant changes to better support economic growth, address challenges of complexity, uncertainty, and risk aversion by streamlining processes, clarifying regulatory roles, and fostering innovation across key sectors, including finance, environment and technology[21].

Questions remain over the extent to which these efforts will entail simply streamlining of regulatory initiatives or instead go beyond this which could risk negative outcomes in markets and for consumers.

Historically, industry's approach to systemic risk has tended to be reactive rather than proactive. Risk preparation has typically followed crises rather than preceding them, as evidenced by events such as the LDI crisis and the 2008 financial crisis. These past crises highlight the consequences of insufficient preparation and the need for a change in approach.

With both the evolving market structure and political timing, systemic risks should be clearly relevant for UK asset owners. Now is a key inflection point: an opportunity to use growing influence to drive system-wide change for resilient markets and beneficiary outcomes.

[20] See UKSIF's "Financing the Future reports"

[21] New approach to ensure regulators and regulation support growth

THE CASE FOR ADDRESSING SYSTEMIC RISKS

BETA – WHY'S IT RELEVANT?

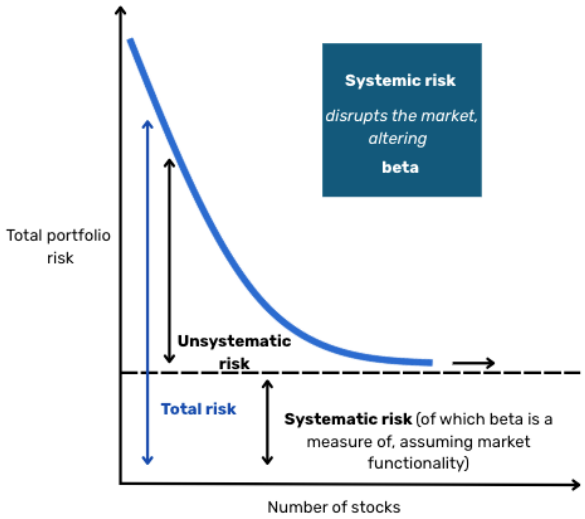
For diversified institutional investors with long time horizons, overall market growth is the primary driver of returns. This reality means that threats to entire market systems, systemic risks, demand particular attention, because they cannot be diversified away and may undermine the conditions that make long-term market exposure valuable.

While beta, a measure of an asset's sensitivity to market movements, and systemic risks are distinct concepts, they are closely interconnected. Beta reflects how individual securities move relative to the overall market, whereas systemic risks threaten the structure and functioning of the market itself. For highly diversified investors, particularly those using passive strategies, exposure to systemic risks becomes more consequential as idiosyncratic risks are diversified away and reliance on beta increases.

The relationship between beta and asset returns has been foundational in modern finance since the development of the Capital Asset Pricing Model (CAPM). Financial economists Black, Jensen, and Scholes (1972) provided strong evidence of a positive linear relationship between beta and returns using NYSE data from 1926–1966, though they also proposed refinements to CAPM, such as a two-factor model.[22] Later, financial economists Elsas, El-Shaer, and Theissen (1999) extended this work in the German stock market, demonstrating that beta continues to be a statistically significant driver of returns under various market conditions.[23] These studies together underscore that beta is a central driver of long-term returns, but its effectiveness can be impaired by systemic disruptions to the market itself.

While the role of beta in driving returns is established, long-term diversified investors, such as pension funds, are increasingly aware that their exposure to systemic risks can impair overall market growth, and thus the value of that beta exposure. This insight creates an important conceptual bridge between systematic and systemic risk.

As diversification reduces idiosyncratic risk, investors become more reliant on the performance of the market as a whole. Systematic risk captures how portfolios move with the market, but it is systemic risks, those that threaten market stability, that can fundamentally alter that movement. For these investors, managing systemic risks is not just prudent – it is essential to preserving long-term beta-based returns.



Note: Inspired by the systematic risk diagram in Systematic risk

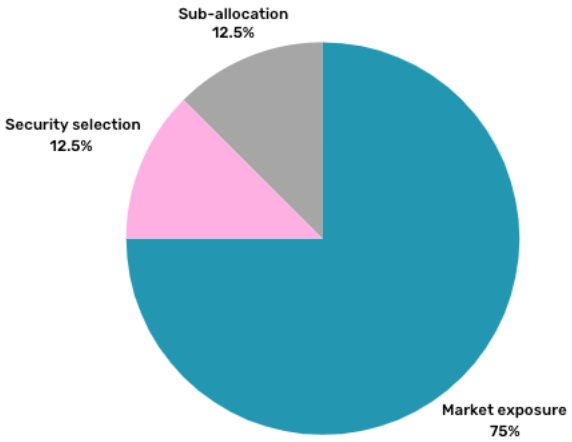
Finance professor Ibbotson (2010) provides important context by demonstrating that approximately 75% of a typical fund's return variation stems from general market movements, with only 25% attributable to specific asset allocation decisions and active management combined.[24] This finding underscores why general market conditions are key for institutional investors.

Since most return variation comes from market participation rather than fund-specific decisions, the health of market systems becomes particularly important. Ibbotson's research complements earlier studies on beta by highlighting how market-wide factors dominate returns regardless of allocation policies. For long-term institutional investors, this reinforces the

[22] Black, F., Jensen, M., & Scholes, M. (1972).
[23] Elsas, R., El-Shaer, M., & Theissen, E. (2000).
[24] Ibbotson, R. (2010).

importance of considering broad market conditions and potential systemic disruptions, as these factors will likely impact returns more than specific active management decisions.

Return drivers



Note: Based on the findings in The Importance of Asset Allocation.

Investors can't ignore systemic risk

For investors and wider intermediation chain stakeholders, addressing systemic risks that could impede overall market growth is very important. Passive investors, universal owners, and long-term asset owners are particularly exposed to market-wide risks due to their extended market participation and broad diversification.

The misalignment between the focus of asset management activities (alpha for active managers, benchmark tracking for passive) and the main source of value for diversified long-term investors suggests a need for a shift in approach. Both active and passive asset managers, to fully serve the needs of their clients, may need to allocate more resources towards addressing systemic risks and promoting overall market health. Both may need to develop or ensure robust systemic stewardship capabilities.

When asset managers focus disproportionately on company-specific factors (active) or replicating indices without engagement (passive) while neglecting market-wide systemic risks, they leave portfolios vulnerable to undiversifiable threats that can undermine overall market growth.

"...it informs our stewardship, knowing that we're diversified...we're reliant on a lot of market beta...How do we find and pursue the levers that can enhance better behaviour that, particularly from primary contributors, could change both the mid and the longer-term prospects of addressing something like energy transition?"

Asset Owner

"If you're talking about risks that cause dysfunctions within the system or risks that could lead to severe misallocations of capital...that is more where I think asset owners might say, well actually, yes, we would want to try and address that because that's a dysfunction, which we don't want."

Dan Mikulskis, People's Partnership

The mispricing of systemic risks

At the same time, systemic risks are undervalued in our system. Geopolitical tensions, for one, can greatly impact portfolio allocation decisions with increases in 'geopolitical distance' significantly cutting equity and bond investments.[25] On nature, despite strong dependency on ecosystem services and impact on biodiversity[26], much of the investment community agrees that biodiversity risk exposures are underpriced across asset classes.[27] Systemic risks may be under (or not) priced due to several factors, such as:

1. **Modelling limitations:** Climate finance researchers Campiglio et al. (2023) and actuarial professionals and climate scientists Trust et al. (2023) highlight that current climate-scenario models significantly underestimate climate risks, often excluding severe impacts such as tipping points and second-order effects
2. **Market failures:** Professor Sir Partha Dasgupta (2021) notes that biodiversity, as a public good, has no direct market price, making its value difficult to incorporate into financial assessments
3. **Accounting frameworks:** Current financial accounting systems do not adequately internalise ecosystem degradation, rendering biodiversity-related risks effectively 'invisible' in asset prices

[25] Catalán, M., Fendoglu, S., & Tsuruga, T. (2023). Specifically, this working paper suggests that a one standard deviation change (0.30 units (with -1 representing close agreement in UN voting patterns, and 1 representing strong disagreement in UN voting patterns) can cut equity investments by 40% and bond investments by 60%.

[26] Schrapffer, A., Riano Sanchez, J., & Bres, J. (2024).

[27] Giglio, S., Kuchler, T., Stroebel, J., & Zeng,X. (2023).

4. **Discounting bias:** Long-term risks are often undervalued in current discounting models, particularly problematic for slow developing but potentially catastrophic systemic risks. For example, in 2020 ExxonMobil announced an asset write-down of up to $20 billion, reflecting a reassessment of long-term value.[28]

Given either the undervaluation or mispricing of systemic risks (despite influence on investments), investors, in particular investors with long term horizons, should be factoring these risks into their risk management and engagement processes. As these risks evolve and intensify, addressing systemic risk becomes key to long-term portfolio resilience and fulfilling fiduciary duties.

Fiduciary duty

A narrow interpretation of fiduciary duty – focused solely on maximising short-term risk-adjusted returns – is incomplete. It fails to account for the systemic interconnections between financial markets and broader environmental, social, and economic systems, which in turn shape long-term financial outcomes. Broader interpretations of fiduciary duty have the following implications:

1. **Enhanced risk management**: Addressing systemic risks becomes an essential component of comprehensive portfolio risk management, not a separate 'sustainability' consideration
2. **Long-term value protection:** As stewards of capital with multi-decade obligations, protecting against systemic risks that could undermine the entire market aligns with fiduciary responsibilities
3. **Active system stewardship:** Engaging to maintain well-functioning markets becomes as important as security selection for long-term investors who cannot 'exit' the market

Systemic risk management ultimately rests on the recognition that for long-term, diversified investors, portfolio returns depend more on the health of environmental, social, and financial systems than on outperforming benchmarks. With these considerations throughout the investment process, CIOs can better fulfil their fiduciary duty to protect and grow capital over the timeframes relevant to their beneficiaries.

[28] Exxon tries to put the worst behind it with $20 billion writedown

WHY ARE SYSTEMIC RISKS CHALLENGING TO ADDRESS?

Institutional investors face several interconnected challenges in addressing systemic risks, including:

1. **Misalignment problem:** Short-term performance metrics and incentive structures discourage long-term approaches, particularly by asset managers assessed on investment returns.
2. **Influence problem:** Collective action challenges and limited individual investor impact.
3. **Measurement problem:** Systemic risks are too complex to measure by conventional, quantitative metrics, difficult to translate to materiality, and inadequately incorporated into market prices.
4. **Terminology problem:** Inconsistent understanding of these risks and a lack of clear pathways to address them effectively leads to confusion, fragmented approaches, and focus on company-level risks.

A key misalignment exists between short-term evaluation cycles and the long-term, sporadic nature of systemic risks. Investment managers are typically assessed quarterly or annually, while the benefits of systemic risk management materialise over decades. This temporal disconnect extends to policymaking, where short democratic cycles can create regulatory uncertainty, especially when systemic issues become politicised. This short-termism in both markets and policy frameworks undermine the long termism needed to address systemic risks effectively.

Fundamentally, there's also a significant gap between market prices and systemic risks, with many social and environmental impacts having limited transmission to market valuations.

Collective action problems disincentivise leadership on systemic issues by investors, in particular by asset managers. For example, the "free-rider problem" means that investors who take early action bear immediate costs while creating benefits that are shared by all market participants, including those who didn't contribute. This creates a rational economic incentive to wait for others to act first, resulting in widespread inaction. Smaller schemes face additional barriers as they may have limited influence alone, making it difficult to justify allocating resources to issues where they cannot individually drive meaningful change. An incomplete, narrow interpretation of fiduciary duty can be an excuse for inaction on systemic risks, despite the wide recognition of the interconnected nature of financial markets and broader environmental, social, and economic systems.

Policy engagement, while a key lever for addressing system-wide change, requires specialist resources (e.g. expertise and connections). The unpredictable timing of policy opportunities further complicates strategic engagement, especially for resource-constrained investors.

HOW DO I IDENTIFY SYSTEMIC RISKS?

Investors can consider their current investment themes and priorities and how they intersect with potential risks, for example by asking the following questions:

- What underlying systems do these themes depend on?
- How might disruption in these areas cascade through broader markets?
- Do these themes mitigate or potentially exacerbate systemic risks?

Interviewees suggested a number of different approaches to prioritising systemic risks:

- Materiality mapping
- Tiered analysis approach
- Influence mapping
- Horizon scanning

HOW DO I TACKLE SYSTEMIC RISKS?

While ultimately policymakers and regulators must provide clear regulatory frameworks and address structural barriers, within existing regulatory, incentive, and institutional barriers, asset owners are positioned as agents of change to facilitate this and address systemic risks, in coordination with other stakeholders across and outside of the intermediation chain.

Addressing interconnected challenges requires coordinated action, with each stakeholder taking complementary roles in reshaping how systemic risks are understood, measured, and managed. Insights are informed by interviews and have been supplemented by a literature review. Many of these proposed actions could reasonably fit across multiple categories. The classification presented aims to highlight the primary focus of each solution, but there is inherent overlap between the misalignment, influence, and measurement categories, reflecting the interconnected approach required to tackle systemic risks. Priority actions include:

ASSET OWNERS:

To address the misalignment problem…

1. **Leverage position as the client to influence asset managers:**
- At selection, assess and benchmark asset manager's approach to systemic risk
- Integrate specific language on systemic risk into IMAs, and hold asset managers accountable for addressing systemic risks while balancing these requirements with other investment objectives and performance constraints
- Monitor ongoing interactions with portfolio companies and policymakers

To address the influence problem…

2. **Leverage policy engagement and where possible, pool influence and expertise:**
- Large asset owners to lead collaborative efforts with other asset owners, investee companies, and asset managers
- Build internal capacity for effective policy engagement, particularly on key real economy policies
- Where not already, use policy engagement more consistently and regularly as a tool to drive real world impact on financial services and real economy regulations
- As a starting point, consider barriers that disincentivise long-term investments, and draw from conversations with investee companies on barriers to investment
- Use conversations/surveys from beneficiaries to provide real-world case studies
- Maximise influence by proactively engaging on areas.
- To address misalignment, engage on decision-useful disclosure on stewardship activities (to address a resourcing issue)
- Consider ways to enhance engagement with actors beyond asset managers and corporates, for example governments and global standard setters (e.g. IFRS Foundation, IOSCO)

ASSET MANAGERS:

To address the misalignment problem…

1. **Support asset owners to address systemic risks as part of service provision:**
- Where feasible (and in consideration of other other investment objectives and performance constraints), address systemic risks that have near-term goals, such as emissions reductions for climate change

To address the influence problem…

2. **Support asset owner clients in policy engagement:**
- Provide insights from investee companies on how prospective policy changes might impact specific sectors or companies (e.g. to inform sector-specific transition plans), and develop expertise to engage on real economy policy measures accordingly
- Ask companies about any material impacts that systemic issues have had on supply chains

- Request disclosure of investee companies' and their trade associations' lobbying activities

3. **Provide transparency on stewardship costs and explore the use of emerging technological tools to streamline reporting:**

- To explore the potential for systemic stewardship as part of service offering

To address the measurement problem…

4. **Support and work with key academia and consultants to enhance research on the financial materiality of systemic risks:**

- Pilot investor-academic research collaborations, for example, by creating or supporting platforms for investment research with academic partners to improve the modelling of financially material systemic risks

POLICYMAKERS

To address the misalignment problem…

1. **Communicate a clear direction of travel for long-term policy objectives**

2. **Improve coordination between policymakers as well as financial and non-financial regulators on key systemic risk issues**

- For example, to create sectoral transition pathways and coherent cross-economy frameworks to provide clearer direction for capital allocation

To address the influence problem…

3. **Develop more opportunities for detailed investor-policymaker communication:**

- For investor input on incoming policy and ability to address systemic risks with current guardrails

To address the measurement problem…

4. **Explicitly address trade-offs in policy:**

- When designing policies carefully consider the effects on different stakeholder groups. For example, include social equity considerations in transition planning to address growing concerns about broader impacts of the net-zero transition
- Consider communicating with asset owners for beneficiary input, and asset managers for corporate input
- Consider up-to-date research from academia, and investors on trade-offs

REGULATORS

To address the misalignment problem…

1. **Develop coordinated regulatory approaches:**

- To establish consistent disclosure requirements across the investment chain
- Promote consistent expectations to industry with regulators to align their views and policies on systemic stewardship specifically (e.g. to the FCA, FRC, TPR)

2. **Provide a supportive vision for investor action on systemic risks:**

- Recognise the UK's existing leadership on stewardship and the need for it to continue to evolve and address systemic risks
- Encourage firms to further consider resourcing and high-quality disclosure of engagement activities

To address the influence problem…

3. **Tighten lobbying disclosure requirements:**

- To increase transparency, extending beyond consultant lobbyists; to include in-house lobbying

4. **Integrate the Financial Markets Law Committee's (FMLC's) recommendations on fiduciary duty:**

- Amend relevant regulatory guidance so that in the UK, there is less ambiguity on fiduciary duty and its definition by investment or legal teams

5. **Encourage investors to further consider resourcing to address systemic risks:**

- For example, lead by example and knowledge share through high-quality disclosure of engagement activities

6. **Maintain leading regulatory approaches that more clearly recognise systemic issues:**

- For example, in the FRC's Stewardship Code

To address the measurement problem…

7. **Consider more qualitative reporting frameworks that address multiple systemic risks:**
- To allow for more nuanced reporting on the interconnected and non-linear nature of systemic risks
- For example, streamline TCFD, and potential upcoming requirements such as TNFD, and TISFD

ACADEMIA

To address the measurement problem…

1. **Lead interdisciplinary research on systemic risks:**
- Address and lead on the financial materiality of systemic risks
- Collaborate across finance, environmental science, and social science departments, in addition to broader stakeholders, including institutional investors and policymakers

INVESTMENT CONSULTANTS

To address the influence problem…

1. **Facilitate coordination and collaborative action between investors and other stakeholders:**
- On policy engagement on systemic risks, where resourcing is limited

2. **Support asset owners and asset managers with the implementation of emerging technological tools:**
- To streamline reporting, and allow for efforts to be redirected to address systemic risks

To address the measurement problem…

3. **Facilitate coordination across industries on research**

ALL STAKEHOLDERS

To address the terminology and framing problem…

Moving forward, several areas require collaborative research and development, including:

1. **Understanding the trade-offs between addressing different systemic risks.** This includes exploring the interconnectedness of systemic risks to identify potential synergies and conflicts between addressing them (e.g. between social issues, and climate change).

2. **How to prioritise systemic risks.** Multiple interviewees cited the complexity and quantity of these risks as barriers to addressing them effectively. Cross-stakeholder collaboration may be needed to develop frameworks that can help investors navigate these complexities, and potentially highlight different priority areas for different investors, so that collectively the industry tackles different component of systemic risks.

SYSTEMIC RISK ASSESSMENT

This section could serve as a self-assessment tool for asset owners to evaluate their current approach to systemic risks. Below are key questions paired with responses to highlight potential pathways an asset owner could take to develop its approach to systemic risks:

Question	If no:
Have you formally defined what constitutes a systemic risk in an investment context?	Adopt a definition that considers the non-diversifiable, market-wide, and interconnected nature of systemic risks.
Do you distinguish between your approach to company-level ESG issues and broader systemic risks in your policies and frameworks?	Review your ESG framework to identify which elements may require company-level engagement and/or benefit from a systemic approach.
Do you have a documented process for identifying and prioritising systemic risks?	Consider implementing a prioritisation framework that includes factors such as materiality, beneficiary input, and priority investment themes.
Do you assess asset managers' capabilities to manage systemic risks during the selection process?	Develop specific questions and assessment criteria for evaluating asset managers' approach to systemic risks during selection, based on your own pre-identified priorities and considering an asset manager's wider activities (e.g. policy engagement). If your manager does not have the capability to address these risks, ensure alternative approaches are in place.
Do your investment management agreements (IMAs) include specific provisions related to systemic risk management?	Consider updating IMA templates to include language on systemic risk management expectations.
Do you have a dedicated resource or function for policy engagement?	Consider whether this capability can be developed internally or whether you can access it through collaborative initiatives or service providers.
Do you collaborate with other investors on addressing systemic risks?	Identify pre-established collaborative initiatives or other investors/investee companies aligned with your priority systemic risks.
Have you engaged with beneficiaries to understand their priorities regarding systemic risks?	Consider surveys or focus groups to gather research or including systemic risk-related topics in regular beneficiary communications.
Are you developing methods to better capture the materiality of systemic risks?	Consider supporting or participating in pilot investor-academic research collaborations focused on quantifying or otherwise valuing systemic risk impacts, acknowledging data constraints while working to develop better measurement approaches.
Do you have systems for monitoring emerging systemic risks?	Consider establishing cross-functional internal working groups that bring together relevant cross desk investment, risk, and sustainability teams to regularly review potential systemic risks.
Have you considered how different systemic risks interact with each other in your portfolio?	Consider developing qualitative/quantitative scenario analyses (depending on data constraints) that incorporate multiple interacting systemic risks rather than examining each in isolation. Evaluate potential synergies and conflicts in how these risks might manifest across different time horizons and geographies.

PROBLEM SETS AND PROPOSED RESOLUTIONS

The following sections provide explanation of the key challenges and potential solutions outlined in "How do I tackle systemic risks?" These problem sets are organised into four main categories: Misalignment, Influence, Measurement, and Terminology and framing. Each section examines barriers investors can face to addressing systemic risks and offers stakeholder-targeted 'proposed resolutions' as starting points. Unless otherwise referenced, the insights presented are derived from interviews and a roundtable discussion with asset owners, asset managers, and experts from across the investment space. A sample of existing frameworks and literature on systemic risks can be found in the literature review.

MISALIGNMENT: WHY DON'T LONG-TERM INVESTORS HAVE LONG-TERM INCENTIVES?

1A. Asset managers are not incentivised to address systemic risks

Asset owners, guided by long-term fiduciary duty, can justify addressing systemic risks. Asset managers, however, are often evaluated on short-term metrics like alpha generation or passive benchmark tracking and lack similar incentives.

Asset managers can also serve diverse client segments with varying expectations.[29] Some managers ignore systemic risks altogether, while others face conflicting client demands on how to address them, responding reactively rather than adopting a strategic approach and framework.

At the same time, during manager selection, few asset managers actively highlight their approach to systemic risks, making it difficult for asset owners to assess capability.

Overall, this mix of performance pressure, fragmented client expectations, and lack of proactive risk strategy undermines comprehensive systemic risk management from asset managers, making them generally not well placed to lead on systemic risks.

Proposed resolution: For asset owners: Lead on systemic risks and as part of this, ensure that asset managers meet established expectations. Specifically, asset owners can leverage their position as the client to influence manager behaviour.

Manager selection and mandates

At selection, asset owners can assess an asset manager's approach to systemic risk and include this as a factor in appointments. Expectations could be clarified by emphasising the importance of absolute returns. If expectations are not met, asset owners can be prepared to switch managers.

Language around systemic risks could be integrated into Investment Management Agreements (IMAs) (for example, in the objectives or guidelines sections). For portfolios where systemic risks are material, IMAs can require evaluation, regular monitoring, and reporting. Strategy-specific guidance can distinguish expectations for active versus passive approaches (e.g. passive strategies may focus on promoting sustainable markets through policy engagement). Investment policies can acknowledge the spectrum of materiality across different issues.

Segregated mandates are a potential tool for asset owners to embed expectations within investment structures. However, systemic risk strategies are usually considered at a firm-wide level, making it difficult to tailor and enforce specific expectations at an individual mandate level.

Manager oversight

As part of ongoing oversight, asset owners can monitor managers' (and their industry groups') interactions with portfolio companies and policymakers to ensure consistency and alignment with stated commitments on systemic risks. This may include reviewing managers':

- engagement case studies
- public statements
- letters written to companies
- milestone setting processes

[29] Rothenberg et al., 2021

- voting patterns on director support and shareholder resolutions

Asset owners can adopt a constraints framework, a performance assessment approach that defines the limits of what can be achieved within boundaries such as data limitations, regulatory requirements, and market constraints. This framework could help to strategically assess asset managers, focusing on their ability to integrate systemic risks within current parameters.

Managers could be evaluated based on the outcomes of their engagements (e.g. on whether an investee company adopts a no-deforestation supply chain policy across key commodities) rather than just process metrics (e.g. ESG scores). By setting clear targets and commitments, asset owners can provide asset managers with a consistent structure and expectations for engagement that align with their broader systemic risk goals.

1B. Short-term performance metrics

There is a structural misalignment between short-term incentives and the long-term, and sporadic nature of systemic risks. Whilst market impacts manifest immediately in price movements, social impacts, for example, develop over decades and be subject to market shocks. This short-term outlook can reward actions that increase systemic risk and undermine long-term resilience.

Examples of embedded short-termism include:

- Fund managers are assessed on 1 to 3 year horizons, while systemic risk mitigation benefits typically emerge over much longer periods
- Companies and their directors are tied to short-term pay cycles, forcing trade-offs between long-term goals and current incentive structures
- Quarterly reporting embeds short-termism; systemic risks develop gradually and don't fit easily into quarterly or annual frameworks
- Activist hedge funds pressure firms to prioritise buybacks or asset sales for quick gains. Some long-term investors support these campaigns for short-term performance gains (despite, stated longer-term goals). Companies can pre-emptively cut resilience-building initiatives fearing activist intervention
- Asset owners must justify long-term gains against tangible short-term costs, while grappling with growing uncertainty in long-term modelling, all while meeting present-day obligations
- Stewardship teams engaged in multi-year efforts struggle to demonstrate value within organisations focused on short-term metrics
- Private equity firms operate on compressed timeframes, typically exiting within 5 years. Limited post-investment control shifts the focus to upfront due diligence, discouraging resilience strategies that pay off beyond exit
- Pension funds must balance competing time horizons and risk profiles, for example, between a 20-year-old and a 60-year-old member

Case study: **Performance metrics vs. investment in stranded assets**

For example, an asset manager might evaluate its fund managers quarterly, with bonuses tied to three-year performance cycles. This same asset manager has also committed to achieving net-zero portfolios by 2050. However, its short-term incentive structure creates a conflict, as its portfolio managers tend to favour higher-yielding traditional energy assets to meet their three-year performance targets.

The asset manager's internal modelling revealed that by 2035, they face significant financial risk from stranded assets. Addressing this long-term risk would require the asset manager to accept short-term underperformance against peers, creating a direct conflict between the firm's performance measurement frameworks and its stated climate objectives.

Proposed resolution: For asset owners: Leverage extended liability timeframes to drive action, recognising that markets inefficiently price systemic risks.

Asset owners with long-term horizons, such as pension funds and sovereign wealth funds, have both the capacity and responsibility to address systemic risks. Their extended timeframes provide a strong mandate to align risk management with long-term investment goals. Investment committees can reflect these horizons to avoid short-term decisions that undermine long-term resilience.

While younger pension scheme members' longer investment horizons create a stronger case for addressing systemic risks that materialise over decades, members approaching retirement can

still face multi-decade life expectancies. Systemic risks will affect both groups, reinforcing the need for long-term planning across the full beneficiary base.

SAA and TPA

Systemic risks can be considered in strategic asset allocation (SAA) through scenario-based stress testing (e.g., climate change) to refine capital market expectations and support more informed allocation decisions.[30] SAA and stress testing can help asset owners anticipate and adapt to these risks, but do not adjust the underlying threat as systemic risks are undiversifiable.

Asset owners may also explore the total portfolio approach (TPA) as an alternative to traditional SAA. TPA shifts focus to absolute returns, enhances responsiveness to changing conditions, and allows for more integrated sustainability considerations.[31] However, adoption has been mixed, as some asset owners report that incorporating systemic risks may increase expected volatility and reduce projected returns, without necessarily changing messaging or proving useful to allocation decisions.

"If you're a pension scheme and you've got a one-hundred-year time horizon...you can say, 'over the time horizons that we invest, markets are not efficient for the risks that we will actually live with this century.' They could accept that market values are not subjective value, or the value the institution wants to place on assets. Navigating between their real time horizons and a short-term 'efficient' market, they could put money into greening society, protecting biodiversity, and having social duties because that addresses their long-term financial risks."

Nico Aspinall, Newton Investment Management

1C. Short-term regulatory cycles

Democratic governments have short-term electoral cycles, which, depending on the regulatory context and the politicisation of systemic issues, can create policy uncertainty. Elections often lead to changes in leadership and policy priorities and can affect long-term investments and investor confidence. Maintaining consistent support for sustainability-related systemic risks is challenging, particularly when the issue is more partisan (notably, social issues). Geopolitical events can also shift priorities toward immediate concerns, potentially overshadowing longer-term issues, highlighting how some systemic risks may divert attention from and negatively impact others. Market dynamics, such as high oil and gas prices (often linked to systemic risks like geopolitical events), can further undermine long-term returns.

Proposed resolution: For asset owners: Consider framing systemic risk in terms of investment outcomes and fiduciary duty to avoid entanglement in the politicisation of ESG topics. Emphasise that engagement on all types of systemic risks, whether categorised as ESG or not, is a key component of fiduciary duty focused on long-term investment performance.

"Pension schemes, [as] very long-lived foundations, could have a time horizon where they say it is our fiduciary duty or amongst our fiduciary duties to arbitrate between short term financial returns and the long-term sustainability of the institution."

Nico Aspinall, Newton Investment Management

1D. Regulatory barriers

Sustainability-related financial regulations can be inefficient, encouraging 'box-ticking' instead of delivering real-world outcomes[32], or focusing exclusively on company-level engagements, overlooking efforts to mitigate systemic risk. Some regulators favour quantitative measures rather than narrative reporting, making it challenging to capture complex systemic risks that can't be precisely measured. Rigid, metric-driven rules can be barriers, especially for smaller firms and cross-jurisdictional investors, by diverting resources away from real-world actions such as such as supporting portfolio companies through economic transitions.

[30] See Bank of England report on climate-related risks and the regulatory capital frameworks

[31] As suggested by the Thinking Ahead Institute, in "Systemic risk | adapting our practices", 2024.

[32] For example, the Draghi report's criticism of EU regulation, stating it as a source of regulatory burden

Private market regulatory challenges

Private markets face several regulatory and disclosure hurdles:

- Limited disclosure requirements, creating information asymmetries
- Competitive pressures, reducing the scope for sustainability demands on private companies
- Older fund vintages were set up without sustainability in mind, making it difficult to apply embed systemic risk considerations retroactively

An asset manager noted that another challenge lies in the UK's financial regulatory framework, introduced after the 2008 financial crisis to prioritise stability and risk reduction. While these measures have strengthened the financial system, they have also created barriers to long-term, illiquid investments, such as those needed for infrastructure and the low-carbon transition.

Proposed resolutions: For regulators: Consider shifting towards more qualitative and outcome-based disclosure to better capture the complexities of systemic risks. Embed proportionality for smaller institutions, and support alignment across regulatory regimes.

Regulators can also consider developing coordinated regulatory approaches to establish consistent disclosure requirements across the investment chain, establish sectoral transition pathways, and develop cross-economy frameworks to guide capital allocation. Clearer and more consistent expectations, especially around systemic stewardship, should be jointly promoted by regulators such as the Financial Conduct Authority (FCA), the Financial Reporting Council (FRC), and The Pensions Regulator (TPR). Proposed resolution: For policymakers: Re-examine prudential rules and capital requirements that discourage long-term, illiquid investments. These frameworks, designed post-financial crisis to enhance stability, can make such investments appear overly risky and deter capital flows toward infrastructure and transition-related assets. Policymakers could also explore tools like securitisation to help shift risks off bank balance sheets and unlock greater investment capacity.[33]

"We've been placing significant focus on supporting the increase of transparency within the private credit market, also by collaborating with the Private Placements Investor Association to support the expansion of their sustainability survey to include metrics such as the mandatory Principal Adverse Impact (PAIs) and business involvement activities so that we and other investors can access the data needed to support investment decisions....incentivising transparency is particularly important within private markets, given the more limited disclosures and data availability compared to public markets."

Giulia Rado, MetLife Investment Management

[33] Letta, E. (2024). Much More than a Market

INFLUENCE: WHY HAVEN'T ASSET OWNERS ADDRESSED THE INCENTIVE CHALLENGE?

2A. Collective action challenges

Collective action challenges can disincentivise investor leadership on systemic risks as:

- Smaller schemes specifically may have limited influence alone
- All investors struggle to justify costs that yield shared rather than exclusive benefits
- A consensus from the majority of investors is needed for meaningful action and actions may not otherwise result tangible impact
- First-movers face disadvantages as they bear the costs while others benefit from resulting improvements without contributing, creating a 'free-rider effect' that discourages proactive approaches

Case study: **The 'free-rider effect'**

The 'free-rider effect' occurs when individuals or entities benefit from a shared resource, service, or effort without contributing their fair share to its provision or maintenance. This leads to underinvestment in the resource, as rational actors may choose not to contribute, expecting others to bear the costs.

For example, imagine a small group of UK pension schemes invest £2 million to develop an enhanced climate-biodiversity-social risk assessment tool. Most other institutional investors decline to contribute.

Upon publication, non-contributing schemes implement these tools without having invested into the product, and receive identical benefits to the funders. Although overall, the new risk assessment tool has meant the market is more incentivised and informed on how to address these risks collectively, the project delivered reduced functionality and coverage than it could have done if all investors contributed, diminishing its effectiveness for addressing systemic risks across the investment landscape, despite the collective risks that the issues bring.

2B. Policy engagement expertise gap

Multiple investors emphasised that policy engagement is a key lever to address systemic risks, but it requires expertise and connections investors may lack. Stewardship teams, while skilled in corporate engagement, may not have the capabilities needed for effective policy engagement.

Some noted that if asset owners attempt to influence policy beyond their expertise, they risk appearing ideologically motivated rather than focused on portfolio or investment resilience and can damage credibility and undermine engagement efforts.

With limited resources, investors may also miss time-sensitive opportunities for impact. Government consultations often arise unpredictably, requiring investors to be prepared with positions in advance. The reactive nature of policy engagement further strains already limited expertise.

Proposed resolution: For asset owners and asset managers: Leverage internal specialists to engage on policies aligned with their expertise, and work with strategic partners to engage in policy areas outside of their expertise. For example, investors should involve relevant investee companies in real economy policy discussions, recognising that corporate voices can be more impactful.

Proposed resolution: For asset managers: Draw on internal expertise and advocate for coherent sectoral pathways that de-risk investee companies and support long-term performance. Firm-level positioning documents, rather than product-level, can help to ensure cohesive, timely engagement when opportunities arise.

Proposed resolutions: For asset owners: Collaborate with other asset owners to amplify impact by pooling capital, expertise, and responsibilities. Engaging with beneficiaries on systemic risk topics can create additional regulatory pressure and complement direct policy engagement by providing real-world perspectives. Insights from corporate engagements can also inform policymaker discussions with sector-specific input.

Investors with limited resources can focus efforts on domestic policy where their leverage is strongest, and coordinate with other investors.

Schemes with more resources may benefit from a dedicated public affairs team to lead and coordinate direct, informed policy engagement, beyond broad letter campaigns. The priority can

be on achieving regulatory clarity and certainty rather than debating precise policy design.[34]

"There have been some interesting discussions around whether or how trustees or investors should have input on real economy policy. There's quite a bit of nervousness about whether they have the right expertise. I would say they often have useful expertise on what makes something investable, and I think they bring an important perspective."

Claire Jones, Lane Clark & Peacock

"...shareholder engagement campaigns that are more effective tend to be those that simultaneously have a social movement component that is addressed at policymakers and a shareholder dialogue component where representatives of the investors are speaking directly to corporate management."

Daniel Beunza, Bayes Business School

"You can't micromanage every company, but there are guard rails that you can impose on systemically important practices."

Rick Alexander, The Shareholder Commons

"...asset owners engaging with governments on how to set up policies to attract capital to hit the net zero transition, and also saying that 'for our members, we believe that the net zero transition is the best thing'... I think that's a perfectly reasonable stance for asset owners to take."

Tom Gosling, London School of Economics and Political Science

"One of the best ways to target systemic risk is to spend your time engaging with people who are systemic agents, and that's policymakers, government standard setters and so on...so things like the ISSB."

Asset Owner

"We need policies to drive company behaviour, so we need accounting rules to change so that companies have to value their externalities."

Tegs Harding, Independent Governance Group

2C. Resource constraints

Limited resourcing can mean that the identification, assessment, and mitigation of systemic risks fail to receive the attention, expertise, and sustained time investment needed to address these complex, interconnected issues.

For example, given resource constraints, asset owners can struggle to verify asset managers' engagement claims beyond voting records, creating an accountability gap in the intermediation chain. Pension funds with fewer resources can rely on asset managers' stewardship as an 'end-product', which reduces their opportunities for ongoing engagement regarding the manager's approach to systemic risks.

Proposed resolution: For asset owners: Consider implementing an assessment of systemic risk approaches in service provision to ensure alignment with managers' and service providers' objectives. During mandate changes, asset owners can review systemic risk approaches. Asset owners with greater resources can lead on and share emerging research and best practice with asset owners with fewer resources.

Proposed resolution: For asset owners and asset managers: Questions exist around the premium placed on stewardship services, where margins lie, how pricing structures are determined, and whether these costs are being appropriately passed on, especially in relation to assets under management (AUM).

Reassess how systemic stewardship costs are evaluated, allocated, and justified through:

- Greater transparency on stewardship costs
- Adding in expectations for stewardship delivery and associated costs into IMAs
- Exploring the use of emerging technological tools and automation to reduce reporting burden
- More broadly, pushing for streamlined and consolidated reporting frameworks at the policy level

Despite potential resource constraints, asset owners with long-term investment horizons cannot afford to ignore systemic risks, and by extension, asset managers, to fully serve their clients' interests, cannot disregard them either.

[34] See UKSIF's "Financing the Future Financial Services" as an example

2D. Regulatory inertia and lobbying imbalances

Competing lobbying efforts can result in 'cancelling out' or regulatory inertia. Industry groups with contradictory objectives advocate for opposing regulatory approaches, complicating consensus. Some influence policy and regulation through opaque lobbying practices (e.g. by supporting trade associations that contradict public sustainability commitments). Industries with specific economic interests typically have more resources to lobby. In the UK, only 'consultant for). lobbyists' are required to disclose lobbying activities (meaning all 'in-house' and other lobbying is not accounted for). [35]

Proposed resolution: For regulators: Consider establishing or extending the scope of lobbying disclosure to ensure comprehensive transparency around in-house corporate political engagement, to enable investors and other stakeholders to identify misalignments between investee companies' or service providers' public commitments and private advocacy. This ensures investors are informed and can engage with stakeholders.

Proposed resolution: For asset owners and asset managers: Request disclosure of investee companies' and industry groups' lobbying activities.

2E. Fiduciary duty uncertainty and policy disconnect

Ambiguity on the interpretation of fiduciary duty leads to confusion on investors' legal capabilities, creating hesitancy to manage systemic risks that might go beyond traditional financial considerations. This lack of clarity can also become an excuse for inaction from investors.

The disconnect between investors and policymakers has also led governments to overestimate the capability of finance to fund the transition without necessary guardrails and evidence of real economy policy changes to provide confidence and support investor decision-making. This limits investor confidence and therefore ability to address systemic risks.

Proposed resolutions: For regulators: Integrate the Financial Markets Law Committee's (FMLC's) recommendations on fiduciary duty by amending relevant regulatory guidance so that in the UK, there is less ambiguity on fiduciary duty and its definition by investment or legal teams Encourage investors to further consider resourcing to address systemic risks, for example, by leading by example and knowledge sharing through high-quality disclosure of engagement activities

Proposed resolution: For policymakers: Consider developing more opportunities for detailed investor-policymaker communication, for investor input on incoming regulation and ability to address systemic risks with current guardrails.

[35] According to the Lobbying Act 2014; see the 2024 House of Commons Committee report on recommendations here

MEASUREMENT: IF SYSTEMIC RISKS ARE IMPORTANT, WHY AREN'T THEY CAPTURED TRADITIONAL RISK MODELS?

3A. Disconnect between market prices and systemic risks

Market prices fail to reflect broader societal outcomes as social and environmental impacts have limited transmission to pricing, leaving systemic risks inadequately valued. Current methodologies that attempt to measure environmental or social impacts predominantly focus on sectors and economic activities, without geographic specificity, meaning, investors are unable to:

- Quantify risks at the individual asset level
- Readily prioritise risks based on materiality
- Account for geographic nuances

3B. Challenges in measuring systemic risks

Market-based solutions like carbon pricing or ESG investing address only some aspects of systemic risks due to structural limitations. A key challenge is quantifying risks that haven't yet manifested as realised events (or clearly defined crises); because of this:

- 'Success' in addressing these risks is difficult to measure by standard metrics
- The cost of inaction remains largely invisible
- Intangible benefits and long-term impacts are particularly difficult to evaluate, making justification of investment decision-making difficult
- Complex trade-offs between different factors lack adequate assessment frameworks

This creates misaligned incentives for investors, as it is difficult to measure whether they are effectively addressing systemic risks.

> *"...there's not been a realised event on a lot of these [risks]... a lot of it's still theoretical and therefore tougher [to address]... it's much easier now to think what the effect of a pandemic might be on returns and be able to quantify that..."*
>
> **Matthew Brennan, Scottish Widows**

Nature and biodiversity

Asset managers report a lack of robust nature-related data for effective company targeting, with existing datasets not capturing biodiversity impacts or dependencies with sufficient granularity or reliability. Many methodologies designed for climate don't adequately translate to the complexity of ecosystem services and biodiversity loss. At the same time, asset managers are waiting for better data before setting company targets, but this data will likely not be readily available.

In "Economics of Biodiversity: The Dasgupta Review", Dasgupta, P. (2021) highlights several key issues:

- Biodiversity, as a public good without market pricing, is not correctly reflected in financial assessments, with economic models often assuming replaceable natural capital and discounting models undervaluing long-term risks
- Past thresholds, biodiversity loss is irreversible, and therefore has non-linear and unpredictable consequences (cascading failures, and tipping points)
- Current financial accounting frameworks do not internalise ecosystem degradation, making biodiversity-related risks effectively "invisible" in asset prices
- Because biodiversity loss is systemic, individual actors lack incentives to act on it (the tragedy of the commons)

Social factors

Current climate scenarios used by industry don't adequately incorporate social and macroeconomic factors (for example, they don't include information on or consider unemployment effects, wage pressures, and industry-specific impacts of the transition). Social value creation requires new 'quantification' methods beyond traditional financial metrics, as existing tools fail to capture social outcomes in ways that can be integrated into investment decision-making. Some also note that social disparities are more sector-specific than other systemic themes, making consistent assessment across portfolios challenging.

Accessing social data is difficult, with limited information on the saliency and materiality of social risks. Social disparities as systemic issues offer fewer cross-cutting regulatory engagement opportunities compared to climate, with less government outreach on social issues compared to climate change topics, limiting policy influence channels.

The lack of data and polarisation make social issues difficult for investors to address. Without intervention, growing inequality can exacerbate

political polarisation in a negative feedback loop[36], destabilising democratic systems (with frequent policy changes) and regulatory environments necessary for investor confidence and portfolio resilience.

Climate change

Campiglio et al. (2023) and Trust et al. (2023), suggest that current climate-scenario models significantly underestimate climate risks:

- Climate models are significantly underestimating climate risk (Campiglio et al., 2023; Trust et al., 2023), potentially leaving financial institutions unprepared
- Carbon budgets may be smaller than anticipated and risks may develop more quickly than predicted (Campiglio et al., 2023)
- Regulatory scenarios introduce the risk of group think, with scenario analysis outcomes being taken too literally (Campiglio et al., 2023)
- Models exclude severe climate change impacts such as tipping points and second-order effects (Trust et al., 2023)
- Some model results implausibly show the hot-house world to be economically positive (Trust et al., 2023)
- A critical disconnect between climate scientists, economists, and model users in financial services exists (Trust et al., 2023)
- Damage functions used in many models exclude important risks like sea level rise and involuntary mass migration (Trust et al., 2023)
- General equilibrium economic models used in many approaches contain simplifying assumptions that don't hold in the real world (Trust et al., 2023)
- Financial institutions need to critically evaluate their climate risk models and consider a broader range of potential outcomes (Campiglio et al., 2023)

Due to data challenges and complexity, the integration of systemic risks into materiality frameworks remains underdeveloped, and the quality of evidence for materiality is generally stronger over shorter timeframes, when impacts are observable and measurable, meaning current models bias investors toward short-term risk visibility.

Proposed resolution: For asset managers: Acknowledge data limitations by starting with broad risk identification before selecting tools. Use multiple methodologies rather than relying on a single framework to better capture systemic risks.[37]

Proposed resolution: For Investors, service providers, and academia: Work collaboratively to strengthen portfolio-level frameworks that prioritise systemic risks and support long-term risk management. Develop cost-benefit analyses for long-term impacts and tools that integrate global-to-local capital allocation needs. For climate, enhance scenario analysis and macroeconomic modelling to improve both risk assessment and capital decisions. In the short term, use prioritisation and materiality mapping, even with current data constraints.

Proposed resolution: For regulators: Acknowledging its limitations, regulators can improve capabilities on systemic risk assessment tools such as climate stress testing.[38]

[36] See Inequality, identity, and partisanship: How redistribution can stem the tide of mass polarization

[37] Campiglio, E., Daumas, L., Monnin, P., & von Jagow, J. (2023).

[38] Bolton, P., Despres, M., Pereira da Silva, L. A., Samama, F., & Svartzman, R. (2020).

TERMINOLOGY AND FRAMING: WHY ISN'T THERE CONSENSUS ON DEFINING AND PRIORITISING SYSTEMIC RISKS?

4A. Lack of consistent terminology

A lack of consistent terminology on systemic risks can create confusion, despite existing frameworks (such as Rockström et al.'s 'Planetary Boundaries'[39]). Investors frequently cite the absence of a consistent, practical framework that defines and addresses systemic risk as a barrier:

- Investors across the intermediation chain interpret 'systemic risk' differently
- Various frameworks emphasise different aspects of risk
- No standardised approach exists for prioritising systemic risks or frameworks understanding trade-offs between different systemic priorities
- Complexity detracts from addressing these risks in the real world
- Different interpretations can conflate 'ESG risks' to 'systemic risks' despite being distinct concepts, but with significant overlap depending on the type and scale of the ESG risk
- No standardised approach exists for linking systemic risks to portfolio-level and fund-level models and investment decision-making

With the complexity of systemic risks and frameworks, investors struggle with competing systems priorities, noting the conflict between maintaining stability while promoting resilience and adaptation. Asset managers note that because systemic risks are not 'clear-cut', decision-making is more difficult.

> *"...in the RI policy, we tried hard to make a nod to trade-offs, right, which is about as good as you can do. We would have loved to have got deep into that, have great frameworks for how to handle trade-offs. It is really hard. There isn't much to go on."*
>
> **Dan Mikulskis, People's Partnership**

Proposed resolutions: For asset owners and asset managers: Accept the ambiguity and complexity in conceptualising systemic risks, recognising that while stakeholders may differ in priorities, systemic risks ultimately affect the whole system and thus demand collective attention. On prioritisation, insights from interviews highlight several considerations for investors looking to prioritise systemic risks:

- **Conduct regular materiality mapping** (e.g. every three years) to identify and prioritise systemic risks. This process should assess data availability, explore opportunities for investor collaboration, and incorporate beneficiary or customer research to reflect their concerns and priorities.
- **Adopt a tiered approach to systemic engagement**—operating across system, sector, company, and individual levels. Alternatively, develop 'influence maps' to identify and target key leverage points for engagement.
- **Focus on risks with cascading potential across multiple systems.** This includes both ESG and non-ESG risks, enabling a more holistic understanding of systemic exposure.
- **Prioritise financially material systemic risks** (acknowledging data limitations), using indicators such as inflation expectations, growth forecasts, and market perceptions. Investors may also apply a '3D investing' model, integrating risk, return, and real-world impact, by setting goals that include positive, intentional, and additional social and environmental outcomes alongside financial objectives.[40]

Proposed resolutions: For asset owners: Challenge the assumption that education is the main barrier to addressing systemic risk. Structural and incentive issues play a central role. Focus on intentional policy engagement to clarify roles, address trade-offs in policy, align industry frameworks and standards, and understand different stakeholder perspectives.[41] One way for asset owners to facilitate this could be through gathering beneficiary perspectives on key systemic issues.

Proposed resolution: For policymakers: Incoming policies should address trade-offs. For example, social equity considerations should be central in transition planning to address growing concerns about broader impacts. When designing policies, regulators can carefully consider effects on different stakeholder groups, recognising that transition costs and benefits are not evenly distributed.

[39] Rockström, J., Steffen, W., Noone, K. et al. (2009).
[40] As suggested by the Thinking Ahead Institute, in "Systemic risk | adapting our practices", 2024.
[41] Ahlström, H., Williams, A., & Vildåsen, S. (2020); Ahlström, H., Williams, A., Wassénius, P., & Downing, J. (2024).

"We define our ESG priorities for monitoring portfolios, conducting and overseeing stewardship activities and fostering dialogue with policymakers and standard setters, according to a set of criteria. These include our customer views, insights from our materiality assessment using inputs from multiple stakeholders, the nature of the topic as representing a possible negative externality to portfolios, the availability of data to monitor and measure company performance, and the existence of collaborative initiatives to amplify our actions."

Valeria Piani, Phoenix Group

4B. Fragmented risk management and organisational silos

The inconsistency in terminology is compounded by the fragmented nature of risk management practices. Investors typically tackle only individual facets of systemic risk at a time For example, through different, non-overlapping strategies and goals for climate change and human rights, without recognising the interconnected role of approaches for the just transition[42]. At the same time, the mis-framing of systemic risk as a pureplay sustainability issue has meant:

- Over-reliance on sustainability and stewardship teams for systemic risk management (when systemic risk concerns risk, and investment teams)
- Under-involvement of investment and risk teams
- Misaligned expectations about what constitutes systemic risk management

This framing can result in and is amplified by the already existing siloing and disconnect of internal resources and expertise – even though systemic risks are by nature cross-industry, and cross-subject matter. For example:

- The implementation gap between high-level risk management policies and frontline actions. While risk managers push firms to establish policies, these often fail to influence engagement or investment decisions. Instead, front-line investors continue to prioritise short-term gains without adequately considering longer-term systemic risks like another financial crisis
- The integration of systemic risk considerations into portfolios faces varying levels of portfolio manager acceptance, meaning it can fail to be considered in core investment processes
- When equity analysts do not receive training in systemic risk considerations, they are less likely to integrate these factors into their valuation models and investment recommendations, perpetuating traditional approaches that may undervalue systemic risks

Without integration into core processes, the management of systemic risks remains peripheral rather than central to investment activities and day-to-day decision-making, but effective systemic stewardship requires firm-wide commitment rather than isolated fund-level implementation.

Proposed resolution: For asset owners: View sustainability as both a risk management and value-add tool. This includes considering transformation opportunities (e.g., decarbonisation).

Proposed resolution: For asset owners and asset managers: Increase lines of communication between teams, and include systemic risk to be a topic at investment and risk committee meetings.

Proposed resolution: For academia: Consider integrating systemic risk considerations into education, revising traditional curricula, and encourage questioning of assumptions about returns, risk, and investor responsibilities.

"...it's about trying to get trustees away from the idea that they need to have perfect modelling and perfect numbers to manage systemic risks. Instead, they should think about whether they've got the right investment managers in place with the right skills and expertise to cope with uncertainty, for example by having qualitative discussions about how these managers approach scenario analysis."

Claire Jones, Lane Clark & Peacock

[42] Defined by the International Labour Organisation (ILO) as "Greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind", according to UNDP.

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UKSIF and its members have been hugely active in, and supportive of, efforts to promote the sustainable finance agenda and worked closely with policymakers and others to find new ways to overcome the barriers to the growth of sustainability and deliver progress towards decarbonisation of the economy.

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APPENDIX

Systemic risk

The definition stated in What are systemic risks? is synthesised from a range of interviews and a roundtable discussion with asset owners, asset managers, and other industry experts. Perspectives varied from technical definitions based on efficient markets theory to more conceptual frameworks focused on systems thinking. Some emphasised the non-diversifiable aspect, while others focused on interconnectedness and chain reactions. There was notable variation in how broadly systemic risk should be applied, with some cautioning against labelling all issues as systemic while others viewed almost all ESG risks as potentially systemic in nature. There were varying views on measurement challenges and how time horizons for materialisation factor in.

LITERATURE REVIEW

This represents a sample of existing literature. Literature varies from journal articles to relevant industry work and newspaper articles. The literature review provides an overview of existing research and frameworks. Their inclusion in the review does not imply endorsement of approaches or conclusions. Rather, the review aims to map out the current literature on relevant topics.

A. Frameworks and background to systemic risk and systems-thinking

Fundamental to contemporary systems-thinking is Meadows' (2008) exploration of complex systems' interconnected nature in Thinking in Systems: A Primer. Meadows positions financial systems within broader networks and highlights how feedback mechanisms perpetuate systemic risks in non-linear ways, contradicting our natural tendency for linear thinking. Meadows provides clear examples of how the dynamics of systemic risk operate through both positive and negative feedback loops. The work advocates for cooperation to achieve mutual benefits and realign goals—a collaborative approach essential when addressing cascading systemic risks. This limitation is further compounded by our habit of siloing and lacking a broader perspective.

Gunderson and Holling (2002) propose institutional restructuring as a strategy for managing systemic risk in Panarchy. They characterise institutions as having evolving interrelated hierarchies that mirror systemic risks. Their framework endorses adaptive management approaches that acknowledge unpredictability, foster innovation and strengthen resilience. Importantly, they warn that when a social-ecological system's resilience thresholds are breached, the system may transform dramatically or collapse, entering a phase of rapid change and heightened uncertainty.

Ahlström et al. (2024) defined systemic sustainability risks as self-reinforcing feedback loops between economic activity, environmental degradation, and social justice. Their Social-Ecological Systems (SES) approach highlights cross-scale interactions and cascading risks, using palm oil supply chains as a case study to illustrate systemic risk amplification and resultant financial instability. Their conceptual framework draws on interdisciplinary literature synthesis across business ethics, finance, and environmental science, demonstrating the necessity of integrated approaches to risk governance.

Schweizer and Juhola (2024) refine the definition of systemic risks as implying breakdown of systems which provide essential functions to society. They identify five key features of systemic risks: transboundary/cross-sectoral scope, high interconnectedness, non-linear relationships with tipping points, stochastic effect structures, and lags in policymaking responses. Schweizer and Juhola identify complexity, uncertainty and ambiguity as core challenges for governance, demonstrating how connectivity between systems enables cascading effects.

The planetary boundaries framework introduced by Rockström et al. (2009) provides a environmental perspective on systemic risk, defining the 'safe operating space for humanity' within Earth's systems through nine critical boundaries, including climate change and biodiversity loss. The researchers note that these boundaries are tightly coupled, creating cascading systemic risks where crossing one threshold increases danger to others through non-linear feedback loops. Many of earth's subsystems respond abruptly when thresholds are crossed, potentially shifting into new states with catastrophic consequences for humanity.

Danielsson (2022) identifies a gap in current financial risk assessment frameworks—the neglect of the human-risk component, resulting in incomplete assessment of wider 'systemic' risk.

Danielsson argues that individual interactions driven by beliefs and objectives limit the ability to identify widespread risks originating outside the financial system. To successfully identify and manage systemic risks, wider and more holistic reporting is necessary to account for this essential 'human' element of risk.

The Systemic Risk Centre (2015) identified 'endogenous risk', created by the interaction of market participants, including policy authorities. This suggests systemic risk is difficult to singularly identify and isolate as it exists within the regulatory authorities themselves. From this perspective, systemic risk can be amplified by feedback loops between financial, economic, legal and political systems, known as amplification mechanisms. It is therefore essential to take a multidisciplinary approach to the analysis of systemic risk to ensure crisis prevention and mitigation.

From an investment perspective, Lydenberg (2017) examines environmental, societal, and financial systems that investors must consider, and argues that long-term institutional investors need to balance private portfolio returns with management of systems-level risks as global pressures increase. This approach emphasises both preservation (environmental) and enhancement (social/financial) in investment approaches while maintaining portfolio diversification.

There are a number of research groups that have already conducted or actively conduct research on systemic risks, and contribute to the evolving understanding of how systemic risks can be identified, measured, and mitigated; these include:

- Rocky Mountain Institute
- School of System Change
- Systemic Risk Centre
- The Investment Integration Project
- The Predistribution Initiative
- The Shareholder Commons
- Thinking Ahead Institute

B. Evidence of beta

Black, Jensen, and Scholes (1972) tested the Capital Asset Pricing Model (CAPM) using comprehensive data from NYSE stocks between 1926-1966. Their research confirmed that beta is an important measure of risk, demonstrating a consistent linear relationship with returns. However, they challenged the traditional CAPM's assertion that beta is the only factor determining expected returns. This suggests that while beta captures important aspects of market-wide risk exposure, it may not fully account for the complex interconnections and potential cascading effects characteristic of systemic risks.

Elsas, El-Shaer, and Theissen (2000) extended this research to the German stock market, addressing previous studies that had failed to find a significant relationship between beta and returns. Applying their refined methodology to data spanning 1960 to 1995, the researchers identified a statistically significant relationship that aligned with theoretical predictions. This relationship remained consistent across all subperiods, providing important validation for the use of beta in assessing exposure to market-wide systemic risks. Notably, the authors observed that the average market risk premium in their sample period was close to zero, potentially explaining why previous studies failed to identify the beta-return relationship – finding that highlights how systemic risk dynamics can vary across different market cycles.

Ibbotson (2010) demonstrates that while asset allocation policy is important, it is not responsible for 90% of return variation as previously believed. The study separates fund returns into three components: (1) general market movement, (2) specific asset allocation policy, and (3) active management (timing, security selection, and fees). Analysis reveals that approximately 75% of a typical fund's time-series return variation stems from general market movements (i.e., beta), with the remaining 25% split roughly equally between specific asset allocation decisions and active management activities. This pattern is particularly evident during extreme market conditions, such as 2008 and 2009, when nearly all funds moved in the same direction regardless of their specific allocation policies. The research suggest that active management has approximately the same impact on performance as a fund's specific asset allocation policy.

More recent research by Ouchen (2022) has explored how environmental, social, and governance (ESG) factors influence beta and systematic risk exposure. The study found that ESG portfolios (MSCI USA ESG Select) demonstrated lower volatility than market benchmarks (S&P 500), with greater resilience during crisis periods. This effect was more pronounced in the 2005-2019 period compared to 2005-2020 (which included the COVID-19 pandemic), with ESG portfolios exhibiting longer periods of stability and shorter crisis durations. These findings suggest that attention to systemic sustainability risks may reduce exposure to market-wide systematic risk as measured by beta.

C. Market mis-valuation

Campiglio et al. (2023) provide a review of how markets underprice climate-related risks, finding that forward-looking methodologies suggest substantial potential impacts not currently reflected in asset prices. Their analysis of empirical evidence and theoretical frameworks for climate risk pricing reveals mixed evidence on whether these risks are efficiently priced, with particular concern regarding the mispricing of systemic and network effects. This suggests that traditional market valuation approaches may fail to incorporate the potentially catastrophic and non-linear impacts of climate change on financial systems.

Trust et al. (2023) further highlight these valuation challenges by examining the use of climate change scenarios in financial services. Their research reveals significant limitations in current modelling approaches, concluding that "Current techniques exclude many of the most severe impacts we can expect from climate change, such as tipping points and second order impacts – they simply do not exist in the models." This systematic exclusion of potentially catastrophic outcomes suggests that market valuations based on these incomplete models may substantially underestimate climate-related systemic risks.

Bolton and Kacperczyk (2021) suggest that while capital markets do partially recognise carbon-related transition risks, with carbon-intensive firms commanding higher returns, this pricing is inconsistent across regions. This inconsistency creates two significant barriers: firstly, the incomplete or uneven pricing of carbon risk leading to market mispricing; secondly, uncertainty regarding global policy coordination creates the potential for abrupt repricing events should climate policies tighten, thereby amplifying systemic risks.

The Dasgupta Review (2021), commissioned by the UK Treasury, explores the economic importance of biodiversity and demonstrates how natural capital degradation poses widespread risks to economic systems. This comprehensive assessment provides evidence that financial markets have generally failed to incorporate the value of biodiversity and ecosystem services into asset prices, creating potential for significant market corrections as these natural capital dependencies become more apparent.

The Global Assessment Report on Biodiversity and Ecosystem Services (IPBES, 2019) examines the relationship between nature, ecosystem services, and human wellbeing. This landmark assessment concludes that biodiversity loss constitutes a serious risk to global economies, food security, and social stability—risks that remain largely unpriced in financial markets. The report's findings suggest that conventional financial valuation methodologies fail to capture the systemic dependencies between economic activities and the natural systems that support them.

Ahlström, Williams and Vildåsen (2020) highlight how addressing certain systemic issues can inadvertently amplify others, creating unintended consequences, and how the complexity of addressing interrelated issues can be a barrier.

Stewart (2024) notes the lack of robust empirical studies demonstrating clear links between non-financial factors and value creation as a significant barrier to integrating systemic considerations into mainstream investment practices.

Catalán, Fendoglu, and Tsuruga (2024) examine the impact of geopolitical tensions on cross-border asset allocation of investment funds using a gravity model approach. They find that funds allocate smaller portfolio shares to countries that are geopolitically more distant, as measured by dissimilarity in UN General Assembly voting patterns. A one standard deviation increase in geopolitical distance (0.30 units on a -1 to 1 scale) is associated with a 40% reduction in equity investments and a 60% reduction in bond investments between countries. The study also reveals an investment diversion effect, where countries attract additional investments when their source countries become geopolitically distant from third-party nations. These findings suggest that geopolitical tensions can lead to significant financial fragmentation and potential systemic risks not fully captured by traditional market valuation approaches.

D. How investors are addressing or could address system-wide risks

Campiglio et al. (2023) emphasise the necessity for considering both gradual climate changes and shock scenarios in risk assessment. They suggest enhanced climate-related disclosures and the development of sophisticated network models capable of capturing systemic interconnections, acknowledging the limitations of traditional risk assessment frameworks when confronted with complex, interconnected challenges.

In "Moving Beyond Modern Portfolio Theory: Investing That Matters", Lukomnik and Hawley (2021) propose a reconceptualisation of investment theory. They argue for expanding beyond traditional Modern Portfolio Theory to address non-diversifiable systemic risks, emphasising the importance of considering the

broader impacts and externalities of investment decisions. Lukomnik and Hawley aim to tackle the "MPT paradox", the inability of traditional diversification strategies to adequately address systemic risks.

Alexander et al. (2024) identify and categorise barriers to global climate action, organised by the acronym PIVOT: Policy vacuum, (self-)Interest, (mis-)Valuation, (In)active ownership, and Transition misalignment, and suggest ways for policymakers and investors to address these barriers.

Burckart and Lydenberg's (2021) six-step process for system-level investing provides a framework for investors to address systemic risks and opportunities. This approach, outlined in their book "21st Century Investing," details recommendations on goal setting, asset allocation, tool application, progress measurement, and reporting.

Eccles (2021) focuses on the role of asset owners in addressing system-level risks. It highlights how current asset allocation trends, particularly the shift towards higher-risk assets and capital consolidation in private markets, can contribute to systemic risks in the economy and financial markets. The piece argues that while these strategies have been profitable, they may exacerbate issues like inequality and underinvestment in areas crucial for long-term economic health. The author emphasises the need for asset owners to take responsibility by aligning their investment mandates and practices with long-term, responsible investing that considers broader economic, social, and environmental impacts. The article concludes with recommendations for asset owners to improve their approach to system-level risk management.

The Transition Plan Taskforce (2024) provides detailed recommendations for asset managers to develop and disclose climate transition plans. The guidance emphasises a comprehensive approach that addresses decarbonisation, climate resilience, and supporting the broader economic transition. By referencing existing industry frameworks and focusing on areas unique to asset management, it aims to drive more consistent and impactful climate-related disclosures in the sector, aligned with the goal of achieving net-zero emissions by 2050.

Ahlström et al. (2024) suggest that "researchers need to work with managers to broaden the scope of risk analysis", noting that collaborative approaches between academics and investors are needed to develop more comprehensive systemic risk modelling.

Barnett, Brock and Hansen (2020) identify the substantial "multiplicative" impacts of climate change on asset pricing and call for new quantification methods beyond traditional financial metrics.

Similarly, Bolton et al. (2020) characterise climate change as a "Green Swan" event—an extreme, highly uncertain risk that conventional financial models struggle to price—and advocate for stress-testing and scenario analysis incorporating tail risks.

In "Systemic risk | adapting our practices", Thinking Ahead Institute (2024) proposes a fundamental shift in how investors approach systemic risk, proposing a whole-ecosystem framework that places sustainability at its core. They recommend transitioning from traditional Strategic Asset Allocation to a Total Portfolio Approach, to better integrate systemic risk considerations and sustainability issues. The institute also promotes '3D investing,' which combines risk, return, and real-world impact, going beyond conventional ESG integration. To implement these changes, they emphasise the importance of systems thinking, strengthening risk culture and governance, and employing tools like horizon scanning and scenario analysis to better understand and prepare for potential systemic risks.

The CFA Institute (2024) proposes recalibrating climate commitments towards more achievable goals, emphasising government policy influence as the primary lever for climate action. Their recommendations include abandoning portfolio-level decarbonisation targets in favour of more impactful measures and focusing engagement on specific, achievable outcomes within investor influence.

Pensions for Purpose (2025) explores systemic stewardship in addressing large-scale risks. It identifies climate change and biodiversity as top priorities, highlighting challenges in aligning asset owners' and managers' approaches. The study emphasises the importance of collaborative engagement, effective escalation practices, and industry-wide initiatives. While asset managers play a crucial role in stewardship, the paper notes a growing trend of asset owners taking more direct involvement. Key challenges include resource constraints, especially for smaller funds, and the need to focus on tangible outcomes rather than just engagement activities. The research concludes that while progress is being made, significant gaps remain in assessing and driving meaningful change through stewardship practices.

The UN-Convened Net-Zero Asset Owner Alliance (UNAOA) (2023) establishes a framework for asset owners to evaluate their asset managers' climate engagement strategies through four principles: governance integration, transparent strategy development, aligned implementation practices, and accountability through disclosure. The UNAOA emphasises that asset managers must adopt consistent, outcome-oriented approaches that recognize climate change as a systemic risk, with clear consequences when companies fail to meet expectations.

Building on this framework, the UNAOA (2024) calls for urgent government action to address systemic climate risks that threaten institutional investors' ability to provide secure returns. With accelerating global warming and research suggesting increased climate sensitivity, the UNAOA advocates for decisive policy interventions aligned with 1.5°C pathways, including fossil fuel demand reduction, carbon pricing, transition planning requirements, coal phase-out, and scaled financing for emerging markets, framing climate action as essential financial risk management

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