Operational challenges with complex assets: Navigating technology solutions for diversified institutional investment portfolios

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Abstract

In recent years, institutional investors have begun diversifying into asset classes previously deemed too complex or high-risk to suit their objectives. While these investments may hold the potential for exceptional returns, they also pose significant challenges from an operations and accounting perspective due to their bespoke nature. This paper explores the diversification trend and investment categories that are attracting attention (and capital) from institutions. It outlines the key operational issues these investments raise, as well as some strategies that can help investors overcome those issues and optimise the benefits of diversification.

Keywords: insurance investment accounting, insurance investment outsourcing, insurance investment operations, institutional investing, private markets, private credit, private debt, commercial real estate debt funds, Schedule BA investments, enterprise risk management

INTRODUCTION: THE CHANGING LANDSCAPE

In the search for ever-higher yields, institutional investment portfolios have become increasingly diverse and complex, spanning both public and private markets. Even investors historically considered conservative — for example, pension funds and insurers — are increasing their allocations into an expanding range of alternative and esoteric asset classes and showing a greater appetite for risk commensurate with the return potential.

The movement toward more complex investments began during the prolonged period of low interest rates and falling fixed-income returns. Pension funds and insurers needed to find ways to shore up returns to match their long-term liabilities, while traditional asset managers faced pressure from high net worth and institutional investors to

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deliver alpha while trying to manage market volatility. As a result, investors across the spectrum have pursued diversification away from conventional stocks and bonds — or 'losing a taste for plain vanilla', as Investment Monitor reported.

> 'Institutional investors are increasing their exposure to alternative asset classes in a bid to diversify their portfolios, generate higher returns and minimize risks. Demand for alternative asset classes such as private equity, hedge funds, infrastructure, private debt, real estate and natural resources has been on the rise and is expected to further increase in the years to come.'[1]

The trend has continued even as interest rates have climbed out of their historic stagnation. The desire for higher returns and low correlations to public markets are among the chief drivers of interest in alternative, non-public, specialised and often hard-to-value assets. Access to these assets can take various forms, including direct investments, through private market funds or via limited partnerships (see Figure 1).

While investors seem more comfortable with market, credit and liquidity risks, there is another risk they may be overlooking that can have an impact on overall returns: operational risk. Many of these instruments present accounting nuances and operational challenges; they do not fit neatly into automated systems and processes built around everyday equities and fixed income. Operations teams can quickly become bogged down in spreadsheet-based workarounds, manual processes or in-house systems cobbled together to support a single asset class. Investors need to have confidence that they understand what they own, the data on their investments is reliable and they are accurately accounting for and valuing their positions.

Success with portfolio diversification depends to a great extent on an investor's ability to overcome operational obstacles and optimise efficiency and accuracy. Before taking a deeper dive into the operational issues that investors are bound to encounter, it is instructive to look at some of these investment categories and the roles they play in diversification strategies.

WHERE THE SEARCH FOR HIGHER RETURNS IS LEADING

Commercial real estate and distressed debt

Commercial real estate's struggles to recover from the COVID-19 pandemic have been widely documented. Remote and hybrid work have compelled many businesses to downsize their office space or renegotiate leases, putting downward pressure on commercial rents even as building owners' maintenance and financing costs are rising. Many borrowers are at risk of default and looking to refinance their commercial mortgage loans (CMLs). Banks, meanwhile, are balking at taking on new CMLs or refinancing, and looking to offload some of their existing CML portfolios.

This has created opportunities for investors in private lending, either by directly refinancing borrowers at rates appropriate to the risk or by acquiring CMLs from banks at a steep discount. Launches of distressed debt and 'special situation' funds have accelerated as well, with managers looking to acquire non-performing loans at bargain prices in anticipation of an eventual bounce-back.

For insurers, recent regulatory changes from the National Association of Insurance Commissioners (NAIC) have created more favourable treatment for certain types of real estate equity, debt and limited partnership investments in the form of relaxed risk-based capital charges. This in turn has reduced the amount of surplus or excess capital required to make such investments at a time when cash is becoming a more valued commodity.

One positive that came out of the Great

Global Private Capital Fundraising ($B) by Year x Fund Type

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023*
Private Capital	$526.0	$673.1	$854.3	$929.2	$1,084.3	$1,238.0	$1,328.0	$1,474.2	$1,401.4	$1,686.8	$1,450.0	$679.0
PE	$180.8	$269.0	$336.6	$274.1	$419.0	$423.6	$391.7	$577.9	$454.0	$608.0	$546.6	$298.7
VC	$59.8	$58.0	$83.9	$148.9	$192.0	$205.1	$355.3	$285.3	$258.8	$335.8	$298.7	$98.7
Debt	$73.0	$102.0	$117.4	$124.6	$145.8	$202.4	$177.8	$174.8	$211.6	$271.1	$210.2	$128.0
Real Estate	$80.0	$99.5	$115.0	$137.4	$132.6	$115.9	$144.2	$185.0	$147.7	$167.4	$136.8	$67.9
Real Assets	$28.8	$41.2	$35.6	$53.2	$21.9	$27.6	$36.7	$21.7	$16.9	$11.6	$5.3	$4.9
Infrastructure	$31.9	$38.4	$66.5	$86.7	$70.7	$76.8	$99.7	$98.7	$107.4	$138.0	$119.6	$8.3
Fund of Funds	$43.5	$31.6	$46.8	$48.4	$44.5	$116.8	$73.9	$76.5	$81.5	$65.0	$47.1	$14.2
Secondaries	$21.4	$25.6	$26.1	$29.0	$33.8	$37.1	$35.4	$25.1	$99.1	$59.8	$55.5	$46.9
Co-Investment	$6.8	$7.8	$26.3	$27.0	$24.1	$32.6	$13.2	$29.2	$24.4	$30.1	$30.2	$11.4

*As of 8/15/2023

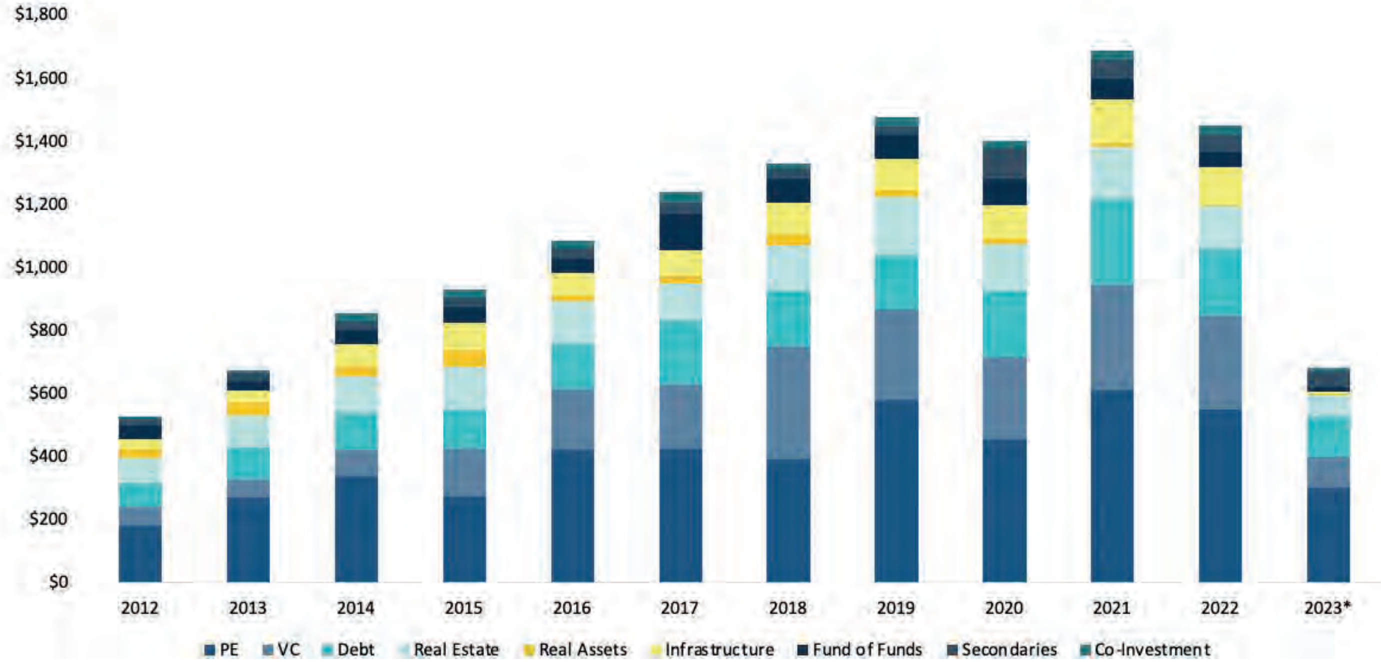

Figure 1 Fundraising across private market asset classes has more than doubled over the past decade, fuelled by institutional demand for diversification

Source: PitchBook Data, Inc.

Financial Crisis of 2008, was that the NAIC made favourable adjustments to risk-based capital (RBC) requirements for real estate investments. The previous process relied heavily on ratings agencies, which became skewed during the crisis. Insurers were left with heavy RBC requirements for investments that did not carry comparable risk. In 2021, the RBC base factor on Schedule A investments (direct ownership of equity real estate) was dropped from 15 per cent to 11 per cent. For Schedule BA investments (partnerships and funds where the carrier is not the sole owner), that figure went to 13 per cent from 23 per cent. In a time where cash is more expensive, this is especially important. The new requirements make it more attractive for some insurers to increase their holdings of real estate investments.

By way of a simple example, under the old RBC factor rules, a typical life insurer investing US$1m in a Schedule BA real estate partnership would face a US$230,000 risk-based capital charge (assuming no debt leverage/encumbrance) — essentially requiring them to hold US$230,000 in surplus/reserve capital on their books to offset the potential risk. Post-2021 NAIC changes, the life insurer would only be required to hold US$130,000 in surplus/reserve capital for that same US$1m investment. Therefore, under the new factor rules, the insurer's US$230,000 in reserve capital stretches further, enabling it to invest US$1,769,231, or US$769,231 more capital, on the same cash reserve requirement, than under the prior rule treatment (see Figure 2).

Limited partnerships and private placements

Demand among investors for private placement participation reportedly drove robust growth in 2022. Unregistered and minimally regulated, private placements offer institutions and accredited investors a way to benefit from the need for capital among companies seeking an alternative to bank loans. They may take the form of equity or debt. Although often associated with early-stage, venture-backed companies that are not ready for an initial public offering (IPO), the borrower universe is actually quite diverse.

Limited partnerships are another vehicle for gaining access to non-public opportunities, including privately held companies as well as real estate, real assets and infrastructure projects. Investors in limited partnerships and private placements are willing to forego regulatory guardrails for returns that are significantly higher than those of publicly traded securities. Furthermore, similar to direct real estate investments, the RBC factor treatment for limited partnership investments was recently relaxed by the NAIC, allowing capital investments to stretch further for insurance investors (see Figure 3).

High-yield floating rate bank loans

In a rising interest rate environment, high-yield bank loans with floating rates pegged to the secured overnight financing rate (SOFR) (the US replacement for London Inter-Bank Offered Rate [LIBOR]) present an attractive alternative to high-yield bonds, particularly loans in larger, more stable sectors such as healthcare and services. Bank loans are typically shorter in duration than high-yield bonds (six to seven versus eight to ten years) and reach maturity faster. Bank loans are also higher up in the capital structure and typically secured by hard assets.

Private credit/debt

The last decade has seen a massive increase in private credit funds (see Figure 4). Although smaller than other private market categories in absolute terms, the growth of private credit (aka private debt) has significantly outpaced that of private equity, venture capital and real estate funds. For borrowers, private credit offers a more flexible alternative to bank lending, with the opportunity to negotiate terms and the likelihood of faster funding. For investors, private debt funds represent a source of steady, stable

Example for a Typical Life Insurance Company: Reserve Capital Stretches Further

RE INVESTMENT TYPE	OLD RBC FACTOR	OLD ENCUMBRANCE	NEW RBC FACTOR	NEW ENCUMBRANCE
Schedule BA Investments (RE Partnerships)	18% - 23%	1.75%	13%	1.75%
Schedule A Investments (Direct RE)	15% (pre-tax)	1.75%	11%	1.75%

Figure 2 Example of RBC change for a typical insurance company: reserve capital stretches further

Source: National Association of Insurance Commissioners, Risk Based Capital Guidelines for Real Estate, 2021

BA PARTNERSHIP INVESTMENT	PREVIOUS RBC	NEW RBC
$1,000,000	$230,000	$130,000
$1,769,231	$406,923	$230,000

Figure 3 Example: Change in reserve requirements for limited partnership investments

Source: SS&C calculation based on NAIC RBC Representative Capital Reserve versus Investment Leverage under old versus new RBC Guidelines

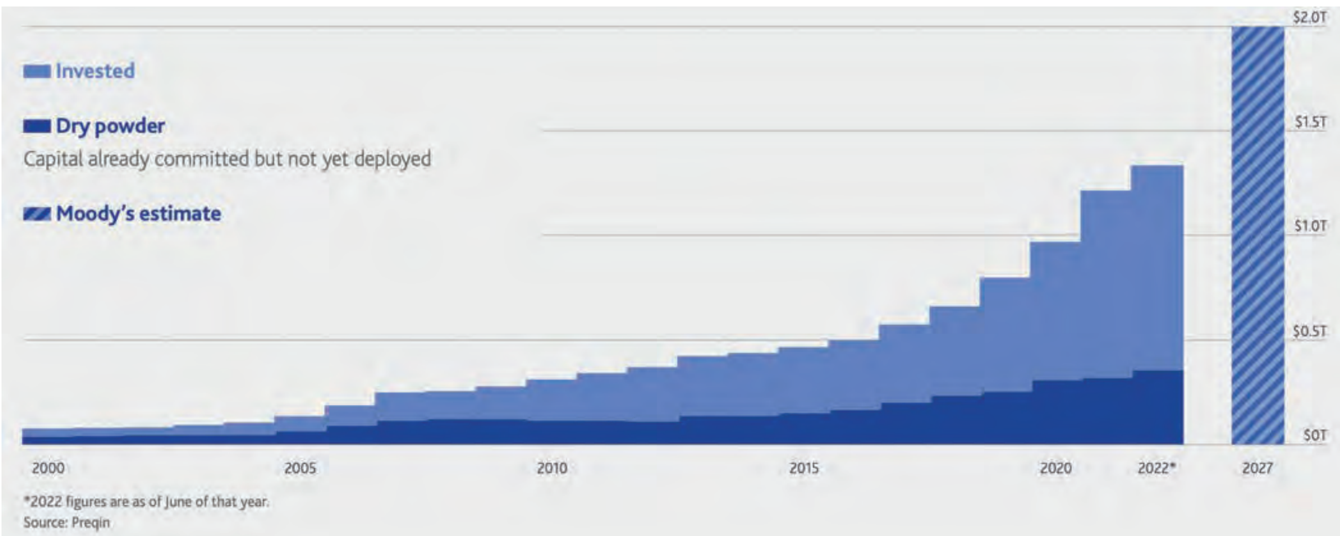

Figure 4 Private credit has been one of the fastest-growing private asset classes of the past decade

Source: Preqin data, reported by Moody's returns at attractive, risk-adjusted rates, even during volatile times. The market has been bolstered by an influx of institutional capital, most notably from pension funds seeking good-quality issues at relatively low risk to their stakeholders.

THE OPERATIONAL IMPLICATIONS

Investors are quickly learning that these opportunities for higher yields come with significant operational challenges. As a report from the Securities Industry and Financial Markets Association (SIFMA) framed it,

> 'The rapid growth of alternatives is putting buy-side operations teams under stress. In the world of alternative investments, a lack of public, standardized data combines with complex and heterogenous deal structures to make operations a challenge. The unique characteristics of alternative assets create a heavy load of manual and bespoke work demands.'[2]

Left unchecked, these operational impediments can exacerbate information latency, drag down efficiency, drive up operating costs and ultimately erode returns. In-house legacy systems are often inadequate to keep pace with the proliferation of instruments and their accounting nuances. This becomes most readily apparent in the following areas.

Bespoke terms

In private lending scenarios as well as credit-based funds, each loan is structured differently, with its own unique documentation, terms and covenants, rate, repayment schedule and maturity. As investments, loans do not lend themselves easily to standardisation and automation. This makes accounting for them extremely challenging, often requiring cumbersome manual processes and reliance on spreadsheets or disparate, single-purpose systems. This is not only inefficient, but also poses a risk of errors.

Document and data collection, aggregation and ingestion

Investors in private markets, whether debt or equity, receive thousands of documents from fund managers. All of them need to be captured, categorised, scraped for information, sorted and made accessible when needed. There is little to no standardisation of formats and data is frequently unstructured, often delivered in PDF attachments and at irregular intervals. Data needed for accounting must be extracted and put into a consumable form — which often means keying it into accounting systems manually, a laborious process fraught with risk.

Reconciliation of data and events

Investors in loans or credit-based instruments receive a steady stream of notices of loan life cycle events such as rate changes, interest payments, drawdowns, early paydowns, restructurings, payment-in-kind and more. Partnerships and other private investments require timely reconciliation of funded and unfunded commitments. Investors need better cash flow forecasting and modelling tools that can account for more volatility or less predictability resulting from capital calls, distributions and other events that may occur. All these events must be tracked and reconciled in accounting and valuation processes.

Valuations and pricing

Unlisted assets bring the additional challenge of arriving at accurate and supportable valuations and pricing. While there are a number of accepted valuation methods, the onus is on asset owners and fund managers to ensure consistency and transparency in the application of any methodology, and that they can explain their decisions to auditors, investment committees and other interested parties.

Financial and regulatory reporting

Investment committees, auditors and regulators are demanding greater transparency into institutional portfolios. Not only must allocators be able to report on investment performance, but they need to be able to identify and explain the sources of performance and risk in their portfolios with reliable metrics. With a proliferation of strategies and asset classes, this places greater demand on systems that can provide performance attribution and risk analytics across a wider spectrum of instruments. With investment data coming in from different sources and different formats, investors must be able to aggregate and standardise data for accounting and reporting to various entities, including regulators.

Enterprise risk management

When credit-based instruments are introduced into the asset mix, so too are new and more nuanced forms of risk. In addition to market risks, investors must be able to account for such nuances as credit, default and liquidity risks.

HIGH COMPLEXITY, LOW LIQUIDITY

Many alternative assets, such as those purchased through private arrangements, are extremely illiquid. Insurers must incorporate those investments within a solid risk appetite framework, whereby risks and exposures are carefully accounted for. This approach requires accurate models, which is an onerous challenge when in the presence of complicated optionality and structured payment schemes. In Figure 5, the upper left corner of the chart contains the most complex and illiquid asset classes,

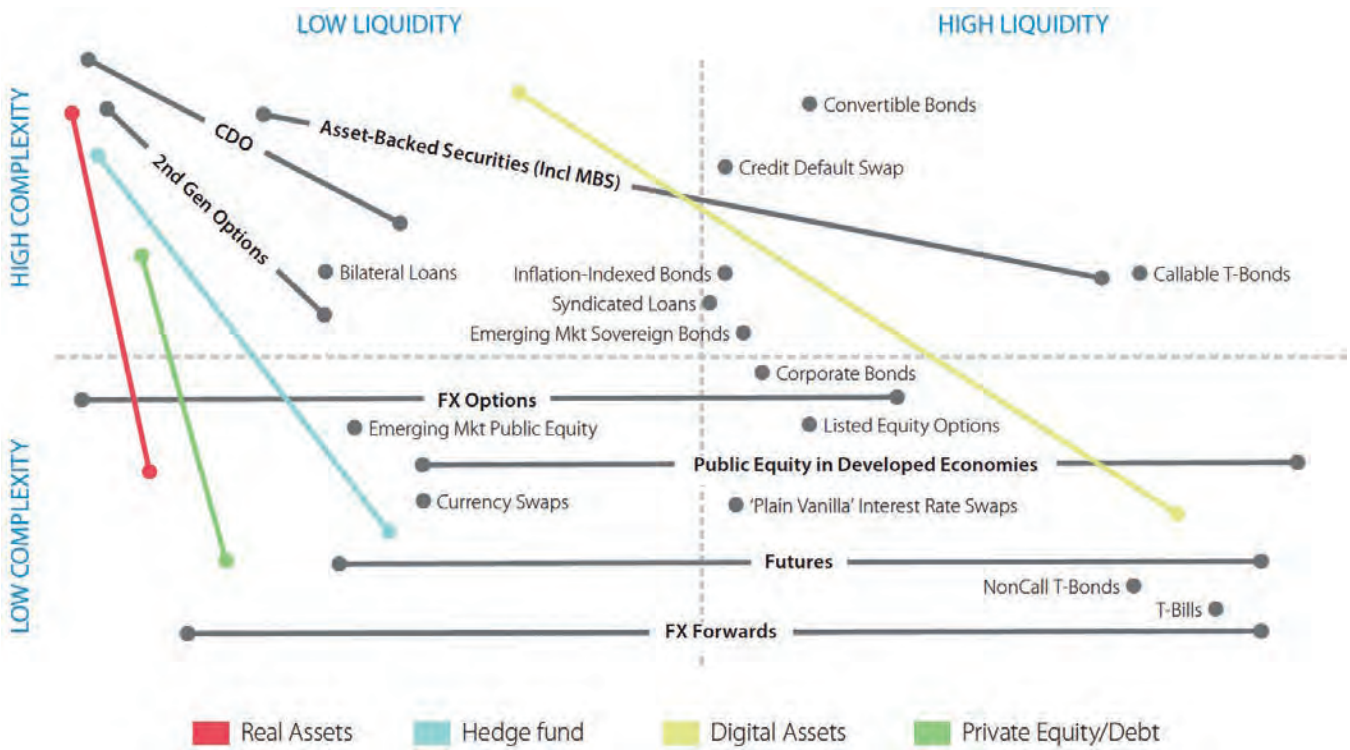

Figure 5 Alternative investments are characterised by lower liquidity and higher complexity than more traditional investments, introducing a wider range of risk factors to manage

Source: SS&C Algorithmics

where advanced pricing and risk analytics are mandatory.

WHAT IS NEEDED TO THRIVE

Assuming investors have satisfied their due diligence requirements on these less traditional, more complex investment opportunities, what will it take to overcome the operational impediments that threaten to dampen returns?

A modern technology ecosystem

The most fundamental requirement is a highly flexible, interoperable ecosystem that leverages best-of-breed technology that can handle the nuances of each of these complex investment types, while delivering a holistic view for enterprise risk management, forecasting and financial and regulatory reporting. As investors have diversified, they may have experienced a proliferation of disparate, single-purposes systems, either off-the-shelf or home-grown, that are intended to support different asset classes but do not communicate well with each other. The optimal scenario is a single system capable of accounting for and reporting on a broad range of asset classes, from traditional equities and fixed income to more esoteric alternative, credit-based and direct investments as well as new types of products that may emerge. Consolidating on one platform enables investors to eliminate redundant, overlapping systems and more easily gain a comprehensive view across all public, private, internally and externally managed investments.

Such a system needs to be interoperable with various upstream and downstream systems, such as trading platforms and data warehouses, as well as counterparties, including multiple asset and fund managers, custodians, property managers and external data sources. It should further enable investors to aggregate data and analytics across managers, lines of business and legal entities. This not only simplifies and streamlines tracking and reporting on diversified assets, but also significantly reduces the operational risks posed by a patchwork of systems.

Technology exists today to make the modern, unified ecosystem a reality. Some investment technology providers have made significant advancements on the concept of a single platform supporting multiple asset classes, leveraging artificial intelligence and cloud technology. Building systems in the cloud (as opposed to simply hosting software) helps achieve flexibility and scale and allows for continuous development and deployment of new and enhanced functionality. Modern software solutions available in the market today leverage a set of containerised modules to support highly customised calculation and reporting requirements. An essential component is a user-friendly interface, allowing business users to conduct their analyses without the intervention of IT teams.

Digitisation

As noted earlier, simply getting process-ready data into the core system is in itself a big challenge. Investors need a systematic way to collect high volumes of documents from fund managers and other sources, and to track information that has been received as well as outstanding. Operations teams can leverage intelligent technologies such as optical character recognition (OCR) and natural language processing (NLP) to extract, parse and process data from paper or PDF statements and notices, improving data accuracy and reducing the time, labour and risks of human error associated with manual input. This will help the accounting process while ensuring timely, accurate and reliable information on which to base its investment decisions.

By way of example, SS&C has calculated potential cost savings of 50–60 per cent by digitising the processing of non-standardised event notices received by investors, such as loan data updates from agent banks or capital call notices from limited partnerships, through the use of OCR and NLP technologies.

Enterprise risk management

From a risk perspective, investors would benefit from an effective enterprise risk management (ERM) platform that provides a framework for managing risks across the enterprise based on defined business objectives. The main goal of a cohesive risk management system is to protect the investor and stakeholders from adverse events while satisfying the expectations of oversight boards, auditors, rating agencies and regulators. Stress tests alone and deterministic projections are no longer enough to accurately assess risk in a highly diversified portfolio. Assets must be modelled very precisely, down to the individual holdings level, and simulations must cover the entire portfolio, including private and alternative assets. Liabilities must also be projected, often using proxy techniques, under a common risk-factor universe, so that assets and liabilities are projected in a correlated structure (see Figure 6).

ERM technology exists today that enables investors to incorporate asset and investment data alongside liabilities and cashflow so they can run risk scenarios across both sides of the balance sheet. High-performance software solutions are imperative to conduct extensive stochastic simulations to explore the impact of correlated and extreme events. Such a platform should be able to model credit risks and support full look-through into various fund structures to fully capture hidden exposures and concentration risk.

Specialised expertise

Investors overseeing diversified portfolios are realising they cannot be experts in all the asset classes in which they invest. Many may choose to outsource certain aspects of operations to specialists who bring specific expertise in the processing, accounting and regulatory nuances of complex alternative and credit-based instruments. Outsourcing services have evolved significantly over the past decade and have gained wider acceptance among investors, but concerns linger over the potential loss of transparency and control, as well as limitations of providers' systems. It is important to review

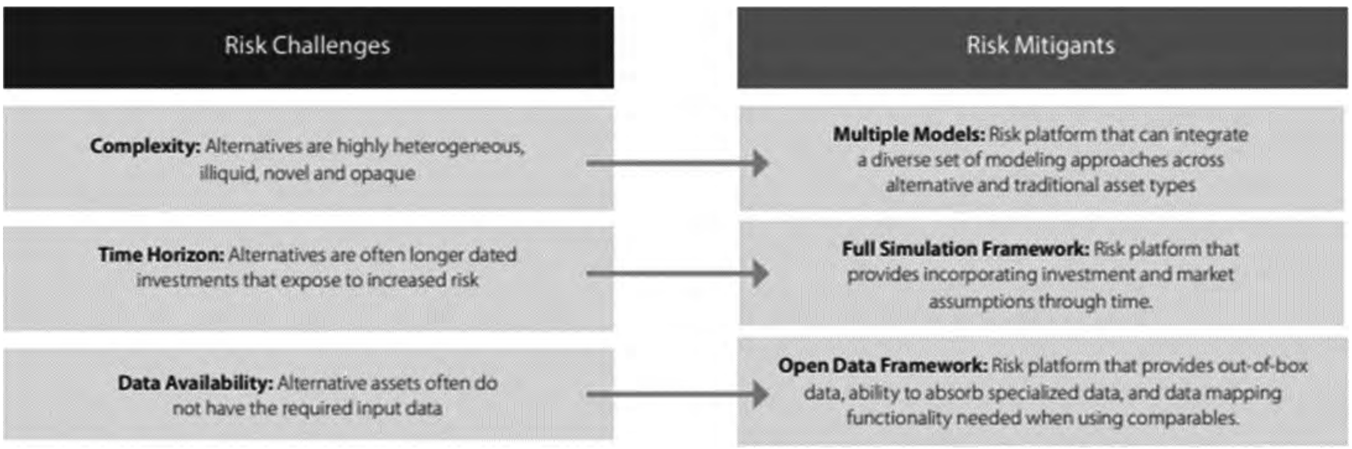

Figure 6 Risks commonly associated with alternative investments and how to mitigate them

outsourcing alternatives with great care. A provider should have a mechanism, such as a console or dashboard, that enables investors to view their workflow and obtain regular reporting. Providers should also demonstrate a commitment to continuous investment in the technology that underpins their services, enabling a high level of automation and scalability (see Figure 7).

EVOLVING OPERATIONAL MODELS: THE OUTSOURCING OPTION

Institutional allocators need to take a close look at the operational overhead needed to support their core investment activities; they may recognise a big opportunity to drive greater efficiency and cut costs. Instead of continuing to expand their legacy systems to accommodate diversification and multi-asset strategies, many may choose to partner with technology and service providers in order to take advantage of innovative technologies and specialised expertise.

Offloading certain processes to an external provider helps reduce technology spending and operational overhead while allowing the allocator to focus more resources on analysing opportunities and making decisions. It also frees companies from continued reliance on legacy systems that may not be able to accommodate changing strategies and asset classes. Outsourcing options range from selective outsourcing of specific operational processes — for example, performance measurement or reconciliation — to

	CHALLENGES	TECHNOLOGY AND SERVICE SOLUTIONS	BENEFITS
1	**Data & Document Collection** (Income, Fees, Appraisals)	Natural Language Processing, Optical Character Recognition, Robotic Process Autmoation	Fast, accurate data and document intake with on-demand user access
2	**Valuation Policies, Pricing and Market-to-Market Frequency**	Systems with flexible, client-configurable valuation and pricing policies	Ability to value, account for and report on RE investments in a timely and accurate manner
3	**Look-Through Transparency** (getting visibility into underlying RE investments via LP/JV vehicles) for compliance, risk, concentration/exposure monitoring	Systems and service teams that can gather, process and display look-through data from LPs/GPs and property managers on your behalf	Improved ability to view and manage concentration risk and exposure to underlying investment types, sectors, etc. with better ability to adhere to firm and regulatory investment policy limits or thresholds
4	**Liquidity Considerations & Counterparty Exposure** (creditworthiness, risk of default)	Specialized investment managers that can adequately RE deals and counterparties from a KYC standpoint	Reduced risk of default on investments or credit/interest payments
5	**Tracking** (ability to track transfers, purchases and sales of real assets within the portfolio)	Systems that can efficiently obtain and process RE transactions when they occur	Timely and accurate view of true RE positions and exposure for managing risk, forecasting cash flows, and evaluating new investment opportunities
6	**Regulatory Reporting** (reporting investments on appropriate NAIC Schedules for Statutory Reporting i.e., Schedule A, Schedule BA, Schedule B, etc.)	Systems that can properly track and tag RE investments and generate appropriate Schedule As, BAs and B's for quarterly and annual NAIC filings	Fewer errors, headaches and internal resource allocations during quarter-end and year-end filings and close processes, along with fewer post-close adjustments
7	**Surplus/Excess capital requirements & RBC tracking/reporting considerations**	Advanced risk analytics that can accommodate RE investment with unique liquidity and risk profiles	Ability to more holistically manage risk across the entire investment portfolio, while understanding sensitivity to certain types of shocks or economic scenarios
8	**Deal expertise** (identifying deals/opportunities, counterparty due diligence, ongoing management of investments etc.)	Outsourcing partners with extensive insurance-specific investment, operational, accounting and reporting expertise pertaining to RE equity or lending transactions	A team that can help bring increased efficiency and scalability along with reduced risk to operations as you look to increase allocation to RE investments

Figure 7 A variety of technology solutions available today can help investors address the operational challenges posed by complex alternative assets, enabling companies to automate and accelerate complex processes while improving accuracy and gaining visibility into complex portfolios

full business process outsourcing (BPO) (see Figure 8). Co-sourcing is an increasingly popular model in which internal operations teams share resources with third-party providers for specific requirements in order to improve efficiency.

The challenge here is to avoid having to fit into prescriptive processes and commoditised services with insufficient flexibility. An outsourcing provider must have the necessary breadth of capabilities to deliver a customisable service package that adapts to the investor's operating model instead of the other way around.

In view of the challenges previously outlined, institutions need to ask themselves if it makes sense to invest in updating their in-house systems and staff expertise to keep pace with a changing investment landscape, or if they should shift that responsibility to an external provider for whom technology and operations are core competencies. By taking the latter route, investment operations teams can get out of the information processing business and become more effective users of information for analysis and decision making.

MASTERING COMPLEXITY

The trend toward more diverse portfolios and complex investments shows little signs of abating. Institutional investors have been well rewarded for venturing out of their comfort zone. It is also clear, however, that operational gaps and a lack of automation can compound the risks and dilute the returns that less conventional investment categories are expected to deliver. As allocators seek to optimise investment performance, they also

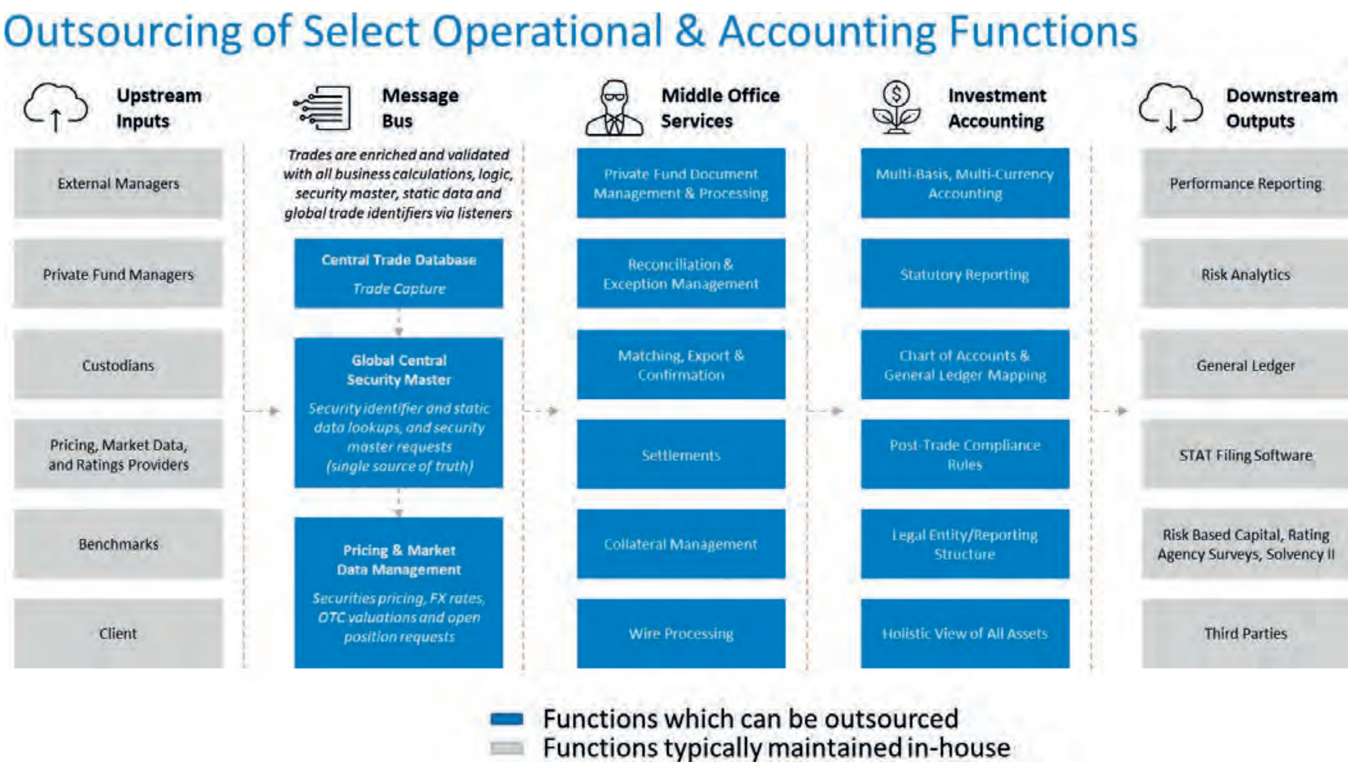

Figure 8 An example of how middle and back-office functions can be divided between an investment company's in-house teams (in grey) and an outsourcing provider (in blue) that offers specific expertise and supporting technology in those areas

need to pay attention to operational performance to realise the benefits of increased portfolio diversification. The good news is that innovative, intelligent technologies, cloud-based delivery models and partnerships with specialised experts are making it easier to master the complexities of new asset classes, enabling institutional investors to focus on sourcing opportunities.

References

(1) Karadima, S. (May 2022), 'Why are institutional investors shifting towards alternative asset classes?', Investment Monitor, available at https://www.investmentmonitor.ai/institutional-investment/alternative-asset-classes-institutional-investors/#catfish (accessed 28th August, 2023).

(2) Broadridge/SIFMA (2023), 'Future of Operations: Scaling Alternative Investments', available at https://www.sifma.org/wp-content/uploads/2023/05/Future-of-Operations-Scaling-Alternative-Assets-SIFMA-AMG-and-Broadridge.pdf (accessed 28th August, 2023).