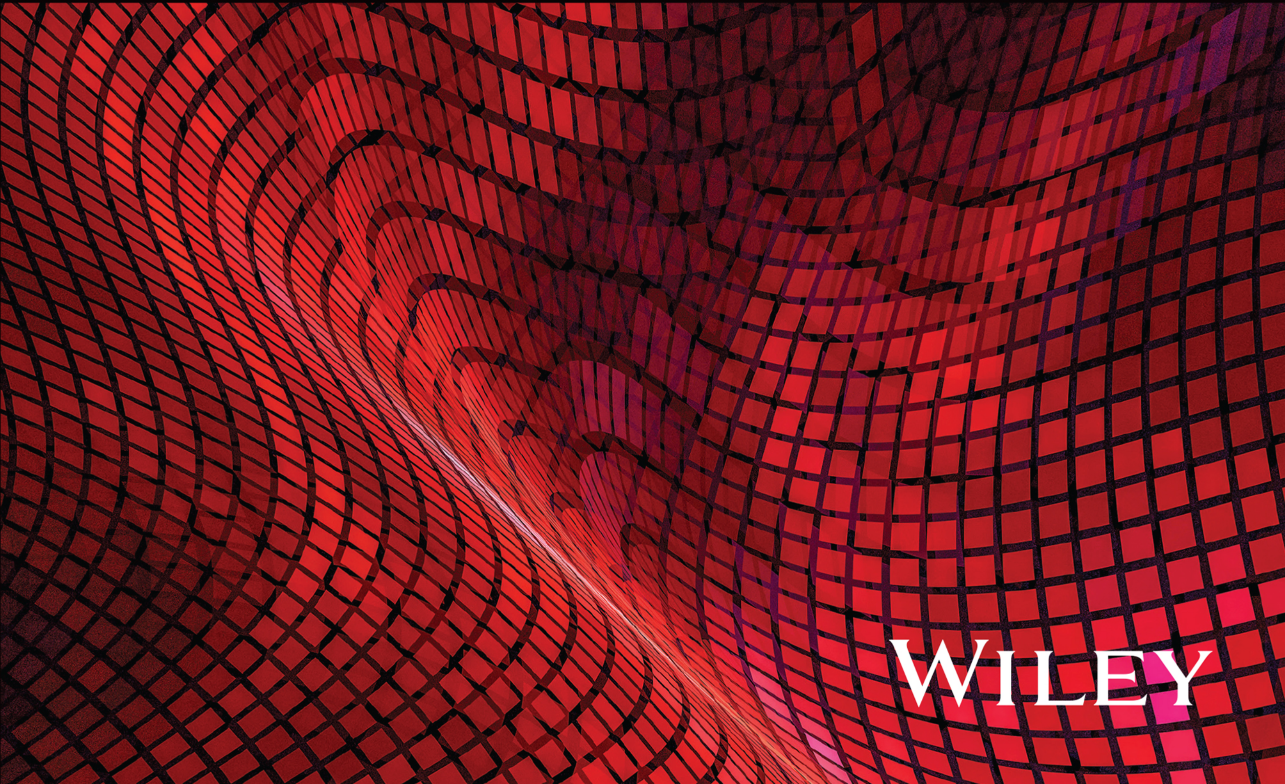
Wiley Finance Series

THE ART OF COMMITMENT PACING

Engineering Allocations to Private Capital

THOMAS MEYER



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Acknowledgements

‘MBAs once scoffed at the thought of relying on a scientific and systematic approach to investing, confident that they could hire coders if they were ever needed. Today, coders say the same about MBAs, if they think about them at all.’ Zuckerman (2019)

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CHAPTER 1

Introduction

This book is about commitment pacing for private capital. As Preqin describes, what now is termed 'private capital' originally emerged as an offshoot of private equity.[1] It comprises a wide range of assets that are not available on public markets and, therefore, are highly illiquid. This also includes, but not exclusively, venture capital (VC), private debt, real estate, infrastructure, commodities, timberland, and other natural resources. The organised market for this asset class is dominated by funds as principal financial intermediaries. Private capital has a long history, from an institutional investor perspective starting with the leveraged buyout boom in the 1980s.[2]

Practically, commitment pacing is the most relevant way for managing the exposure to private capital. It is the process by which an investor plans the timing and size of future commitments to funds, and the choice of the funds' strategies to reach and maintain a targeted allocation. Jeet (2020) stated that a 'good commitment pacing plan is often seen as the lynchpin of a private capital program and can account for much of the dispersion in performance across LPs'.

SCOPE OF THE BOOK

A lot has been written about investing in this asset class, particularly private equity, so let us start with clarifying what this book is not about. It is not dealing with the question whether it is now a good time to increase or decrease allocations to private capital. Like in all markets, there are boom and rather depressed periods, limits to growth, etc. This will not be discussed here. Investing in private markets is here to stay.

It is not dealing with financial returns and the attractiveness of private market strategies, like what returns are buyouts delivering, or whether their risk-return ratio is better than that of VC. All data decay over time, and it is dangerous to rely on outdated market trends. We are, therefore, not discussing current market statistics, as results are likely to look different in other periods and economies anyway.

This book will also not deal with the question of how to select funds. Rather, it takes as core assumption that an individual limited partner (LP) has no systematic advantage in selecting funds. This will raise eyebrows, but the famous claim 'we only invest in first-quartile funds' requires the belief that an investor is better than others in selecting funds. Investors need to ask themselves the (uncomfortable) question how much better their selection skills can be than that of the average institutional investor who has experienced professionals and established a proper due diligence process as well?

The focus of this book is the methods for commitment pacing and the reasoning behind them, to demystify this process and to describe a state-of-the-art approach to building up and maintaining allocations to private assets. The book aims to strike a balance between not taking a view that is too broad and not getting bogged down in more detail than is needed.

The figures and examples are for illustrative purposes only. Unless specifically pointed out, all examples are based on expected contributions, distributions, and net asset value (NAV) projections. The examples' assumptions may not be realised, and thus, cash flows and valuations of a real investment programme may significantly differ from the projections presented here.

QUICK GLOSSARY[3]

When referring to 'investors' in this book, we mean institutional investors – like insurers, pension funds, banks, endowments, sovereign wealth funds, and family offices – and the organisational entities they have set up for managing allocations to private capital. These investors either employ professionals as 'investment managers' to directly invest in private assets or invest through funds where professional management is provided by intermediaries.

'Funds' in the private capital context are usually structured as a limited partnership and are investment vehicles for pooling capital. Here, institutional investors mean the fund's 'LPs' who commit a certain amount to the fund and do not take an active role in its management. The term 'general partner' (GP) refers to the firm as an entity that is legally responsible for managing the fund's investments in private assets and has unlimited personal liability for its debts and obligations. Such 'fund management firms' regularly raise funds.

'Fund managers' are the professionals involved in the fund's day-to-day management. They form the fund's management team that includes the carried interest holders, i.e. those employees or directors of the GP who are entitled to share in the carried interest of the super profit made by the fund.

An LP's 'commitments' are drawn down as needed. There is little, if any, opportunity to redeem the investment before the end of the fund's lifetime. A significant part of the capital remains as 'undrawn commitments' in the hands of the LP. This capital waiting to be called is also referred to as 'dry powder' and carries opportunity costs. When and how much of these commitments are called, invested in what private assets, and when these investments are exited and the resulting proceeds returned to the LPs, is decided by the fund managers only.

THE CHALLENGE OF PRIVATE CAPITAL

After unabated 'triumphalist money making' since the 1980s, in the 2020s, private capital firms worldwide were sitting on about $2 trillion worth of dry power committed by their LPs but not invested. With more and more capital being allocated to private assets, returns increasingly have been coming under pressure. The ‘first quartile’ label attached to ‘institutional quality’ firms ceases to make sense.[4] The ability of private equity investors to turn a company they buy and improve its efficiencies is, in the words of one industry observer, largely illusory: ‘This is, after all, the leveraged-buyout industry, and not the operational wizard-genius industry’.[5] This may be exaggerating, but in all industries that are coming of age, successful practices spread and are adopted by companies outside the industry as well. As a consequence, the number of attractive investment opportunities appears to be in decline.

Institutional investors fear – not the first time in the industry’s history – that future returns on private capital will be mediocre and again some LPs accept high discounts when selling to the secondary market.[6] Crises like COVID-19 and the wars in Ukraine and the Middle East look like Black Swans,[7] events of the highest improbability but with large consequences in the financial markets, that look as if they would change the industry’s dynamics forever.

However, over the past decades, private capital regularly has survived Black Swans and thrived despite or maybe even because of them. There are no indicators why the real economy’s core dynamics that drive private market – entrepreneurship, innovation, technological obsolescence, industrial restructuring, and societal change – should not continue to be of relevance in the future. Private capital will continue its long-term outperformance compared to public markets.

Risk and uncertainty

Since private capital, by definition, does not regularly trade on an open market and is held over several years, there is typically no recent third-party-determined quotation by which to calculate a fund’s market value and that of the private asset it holds. When talking about ‘risk’ in this context, we are mainly looking at situations of ‘uncertainty’ in the definition of University of Chicago economist, Frank Knight, where there is no valid basis for quantifying the probabilities of outcomes.[8]

Volatility, therefore, is a controversial indicator for private equity risks. In the (relatively) early days of private equity, *The Economist* once quipped ‘to say that private equity is less volatile and thus less risky is a bit like saying that the weather does not change much when you stay inside and rarely look out of the window’.[9]

For private capital, the fund managers’ reaction to an adverse market environment will be different than in the case of hedge funds or traditional assets. Funds structured as limited partnerships essentially protect companies from adverse market developments by giving them a lifetime in the form of the funds’ dry powder.

All transactions in private markets are negotiated, and any reaction to short-term market developments cannot be instantaneous. When the market is in crisis, funds hold on to their portfolio companies as long as possible until it has recovered. There are no early redemptions, and rather than selling at lower price, exits are delayed, often significantly for years.

To keep with *The Economist*’s witty analogy, fund managers are looking out of the window, see the rain, and decide to stay inside. In fact, the funds’ limited partnership structure can be viewed as the response to uncertainty rather than risk.[10] For forecasting and measuring risks, uncertainty is an undesirable characteristic of the process to be assessed, but in the real economy, the domain within which private capital investing is taking place, it is considered a necessary condition for profit, and here, the assumption that the absence of data means higher financial risk is wrong.

Why do we need commitment pacing?

For private assets, a target allocation cannot be bought like in the case of public equity or bonds. Rather, LPs commit to funds, and then, these commitments are called over time by the fund managers and gradually turned into investments in private asset. Commitment pacing is primarily applicable to allocations to limited partnership funds as these are cash-flow assets – which we would describe, in the absence of a common definition, as assets that during some market periods cannot be traded at fair prices, need to be sustained through a timely provision of liquidity, and are characterised by their cash-flow streams of uncertain amounts and at unpredictable times.

Commitment pacing is not needed for liquid assets or hedge funds that operate in public markets.[11] Here, investors can increase and decrease allocations quickly through trading at prices that are close to valuations – where essentially, value is synonymous to cash flows.

Illiquidity

The commitment is waiting to be called and invested by the fund managers, but the LP's financial exposure is also limited to the amount. Controlling exposure is difficult, as it is driven by a number of factors, such as the timing and the amount of commitments, the number of years during which the commitments will take place, and the growth rate of the different assets.

If the LP commits too little, the real investment in private assets will not be sufficient for generating returns commensurate with this asset class. On the other hand, committing too much lead to liquidity shortfalls and can, therefore, result in the need to liquidate valuable positions or forgo attractive opportunities. This is complicated by the fund's J-curve, their tendency to post negative returns in the initial years and only turn into positive return territory in later years (see **Box 1.1**).

In contrast to asset classes available in public markets that may become illiquid during periods of financial turmoil and heightened risk aversion, private capital is structurally illiquid and its LPs are aware ex ante of the risk they are taking. It is precisely this risk, and more specifically the associated risk premium, that attracts investors to these asset classes. As a matter of principle, only long-term investors, whose liability profile allows them to lock capital in for a prolonged period of time, can harvest this risk premium.[12]

The siren song of the secondary market

Secondary markets are often viewed as a panacea for the illiquidity related to primary fund commitments and suggested as a means to accelerate the build-up of portfolios with an acceptable vintage year spread and to mitigate the portfolio's J-curve. Should opportunities appear, secondaries have a real-option character and as such can create

Box 1.1 J-Curve

Typical reasons why LPs pursue secondaries are as faster route to liquidity and for reducing the impact of the so-called 'J-curve'.[14] The J-curve refers to the pattern of interim returns between the inception and the termination of a fund. This pattern – also referred to as the 'hockey stick' – is explained by the funds' structure with set-up costs and management fees that depress early returns.

The 'classical' fund performance J-curve is mainly caused by the fact that valuation policies followed by the industry and the uncertainty inherent in private assets lead to promising investments being revaluated upwards quite late in a fund's lifetime. As a result, private capital funds tend to apparently decline in value during the early years of existence – the so-called 'valley of tears' – before beginning to show the expected positive returns in later years of the fund's life. This period is generally shorter for buyout than for VC funds, where many early-stage investments fail before eventually the few winners emerge.

value, but they are impractical for swiftly rebalancing a portfolio of funds or as a reliable route to liquidity. LPs are faced with severe limitations to managing their exposure to private capital in this way.

The size of the secondary market is a fraction of the amounts committed to primary stakes in funds, and therefore, it will be difficult to significantly accelerate the build-up of a portfolio.[13] To manage exposure through acquisitions, the secondary market often is unable to provide the targeted stakes with the desired strategy, vintage year, and remaining exposure.

Reducing the exposure through secondary market sales is possible but, particularly when trying to sell under time pressure, difficult to execute on advantageous terms. Liquidity tends to dry up precisely when LPs would prefer to sell and, even under normal circumstances, LPs will find it difficult to dispose of or acquire stakes in funds that match their desired portfolio composition, at least for an attractive price.

How does commitment pacing work?

According to the Chartered Financial Analyst Institute (CFA), commitment pacing enables investors in private alternatives to better manage their portfolio liquidity and set realistic annual commitment targets to reach the desired asset allocation.[15] How does commitment pacing work?

We take as a simple example a fictitious small insurer who wants to build up an allocation to private capital over the coming years and plans to make an amount of not more than €100 million available for this purpose. The timing and the amounts of the fund's cash flows are highly uncertain, but the total called capital is not supposed to exceed the committed amount. Risk is an important consideration, so the portfolio should be spread over several funds and, importantly, over several vintages.

The insurer's pacing plan quantifies the amount and timing of capital commitments to achieve and maintain a targeted exposure to private assets over a specified period of time. The cause of exposure (the commitment to a fund at one time) and the resulting effect (the amounts actually invested in private assets and then their performance on maturity) are separated by years.

Let us look at three different pacing plans (see **Figure 1.1**) for committing the €100 million of available resources to a portfolio of funds. **Pacing plan 1** foresees accelerating commitments over three years to quickly achieve a targeted exposure. Here, the peak exposure to private assets in NAV terms of around €58 million is already achieved after six years. Compared to liquid assets, this looks ‘glacial’ but underlines that private capital is only for very long-term-oriented investors. The other two pacing plans are even less aggressive. **Pacing plan 2** foresees equal commitments spread over five years, and **plan 3** slows down commitments and stretches them over seven years, with the expected maximum NAV exposure not exceeding €50 million.

With any of these pacing plans, it looks as if the insurer does not even need €100 million and, in fact, we therefore can expect that she will have put much less capital aside for this purpose. But how much capital is really needed? All three plans foresee a total of €100 million in commitments, but the resulting peak NAV exposures are reached later, and these maxima vary in size. Which pacing plan would we prefer? **Plan 1** looks obvious, but this overlooks an important constraint: the liquidity needed to honour the funds’ capital calls in time (see **Figure 1.2**).

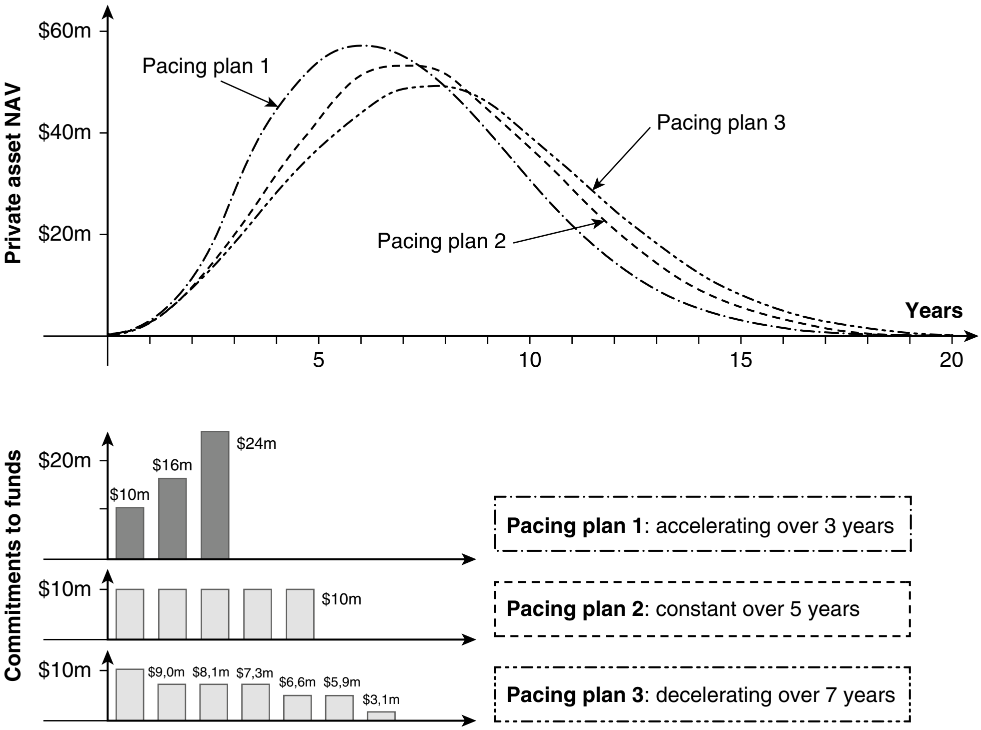

FIGURE 1.1 Examples for commitment pacing strategies

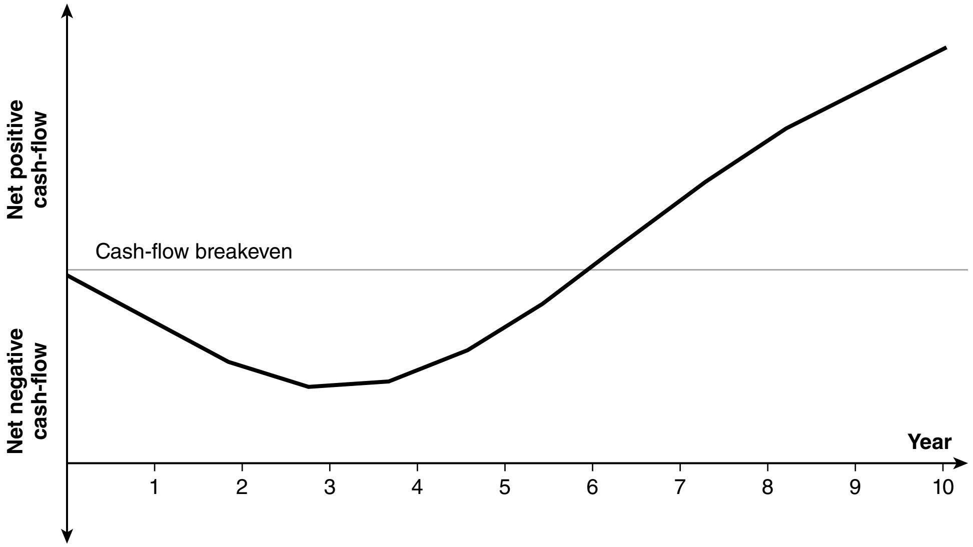

FIGURE 1.2 Cash-flow J-curve

The cash-flow J-curve depicted in **Figure 1.2** represents the evolution of the net cash flows from the LP to the funds. During the early years of a fund's existence, these cash flows are negative before making a U-turn to become positive in later years of the fund's life. The pacing model needs to reflect the liquidity constraints this J-curve implies to determine the appropriate timing and weighting of future commitments to new funds to keep the portfolio at or near its target allocation.

To phrase the commitment pacing problem differently, how could the insurer engineer reaching a target exposure as quickly as possible and minimise opportunity costs while respecting constraints? What makes this a complex undertaking is that not all resources allocated to private capital can be committed to funds right away, that not everything that is committed to funds is also invested in private assets, and that older funds have begun to return capital to the LP.

Significant allocations needed

A significant allocation is necessary for private capital to have an impact on the overall portfolio's returns. Assuming simplistically that private capital can outperform the public markets by about 500 basis points, at least 5% of the entire portfolio needs to be allocated to the asset class. Auerbach and Shivananda (2017) found that portfolios with higher shares of private investments – at least 15% – have outperformed portfolios with lower allocations. In fact, the late David Swensen suggested less than about 15% be difficult to justify.[16] 20% is consistent with average allocations for large US public pension funds.[17]

With such sizeable allocations, LPs are reaching the limits of rule-of-thumb-based portfolio management techniques. The practices that institutional investors have relied on up until now have been reflecting a less competitive past. Since then, LPs have been continuously improving their fund manager selection, due diligence, and structuring techniques; these skills are necessary but not sufficient for a sustainable and profitable investment programme. Structurally, private capital has become a much harder business, where the low-hanging fruits have been picked and investors cannot leave money on the table.

Allocation has two aspects: how does private capital fit within an overall asset allocation and how to build an intra-asset class diversification, i.e. a portfolio spread across funds? Private capital gives exposure to the real economy that usually shows little correlation with the traditional liquid public market assets. Traditionally, thinking about portfolio construction is anchored in the Efficient Market Hypothesis and Nobel laureate Harry Markowitz's Modern Portfolio Theory (MPT). But MPT makes assumptions that typically do not hold in private capital fund investing and provides no solutions for constructing portfolios of private capital funds.

Multi-asset-class allocations

The best-known allocation approach that is said to have embraced the principles of MPT, albeit in simplistic but robust way, is the 'Yale model', also known as the 'endowment model' of a multi-asset-class investment strategy.

It was pioneered by the Yale endowment's Dean Takahashi (whom we will meet again in the context of forecasting models) and David Swensen and is based on diversification across asset classes with dissimilar correlations to maximise risk-adjusted investment returns. This endowment model divides a portfolio into five or six roughly equal parts and invests each in a different asset class. The novelty of this approach was that liquidity is to be avoided rather than sought out, since it comes at a heavy price through lower returns and that it has a relatively high exposure to alternative asset classes, private equity, real estate, hedge funds, and natural resources, compared to more traditional portfolios.

Intra-asset-class diversification

According to MPT, risk-averse investors can construct an optimum portfolio that maximises expected returns for a given level of market risk. As markets are continuously in flux, what is an optimum portfolio is also changing. Therefore, investors need to periodically buy and sell assets to bring the portfolio's allocations back to the optimum. Updating the optimisation and rebalancing is a constant and ongoing process.

For portfolios of funds, under simplifying assumptions, it may be possible to define an optimum, but the instant criticism is that such a plan will be impossible to implement: the deals foreseen are not accessible at the time, the quality of available opportunities is not right, or funds raised by firms with whom relationships are to be maintained do not come to the market at the right time.

Therefore, commitments to funds tend to be suboptimal from a portfolio management perspective, and once they had been taken, they are practically irreversible. Due to the illiquidity of private assets, LPs cannot rebalance their portfolios. Decisions that may have been optimal in a stable and predictable environment can be detrimental in the changing environment of private markets characterised by uncertainty.

ENGINEERING A RESILIENT PORTFOLIO

For illiquid private assets, a portfolio needs to be resilient, to meet objectives without having to rebalance, and to be able to recover and bounce back after shocks in the economy. LPs need to find a balance between resilience and efficiency. If a system, in our case a portfolio, is not resilient, it could collapse rapidly; if it is inefficient, it will with certainty die gradually. To build a resilient portfolio, LPs need to forecast and assess how it will behave under the typical market conditions and how it responds to various stress scenarios.

Here, actions chosen cannot be guaranteed to lead to the intended results. Instead, risks are addressed through applying experience in the form of engineering principles as accepted basic truths that explain how private markets work. Examples for such principles are giving funds a time-proven structure, i.e. the limited partnership, selecting competent and trusted fund managers, to be flexible in identifying opportunities and assure quick reaction to changing market conditions, and provide them proper incentives and align their interests with those of their LPs. Another important engineering principle is that LPs need to build efficiently diversified portfolios of funds where ‘big hits’ compensate for the unavoidable underperformers.

The academic literature on building portfolio of private capital funds remains sparse. Most work on this subject is still done by practitioners at various specialist asset managers. Also, the modelling of securitisations of private equity fund portfolios through the so-called ‘collateralised fund obligations’ (CFOs) is highly relevant to this subject. These securitisations are probably the most practical route to liquidity, to overcome the limitations of secondary markets, and to address risk measurement. CFOs are regularly analysed by rating agencies, but they are complex to model.

LPs manage the efficiency of their portfolios through various levers. Traditionally, the ability to pick top funds is perceived to have the strongest impact. A lot has been written on this subject already; however, with no silver bullet found. Relevant for this book are tools like building portfolios where diversification offers protection for the lowest cost, i.e. a minimum number of funds, a cash management that minimises opportunity costs for uncalled and uncommitted capital, and over-commitments to leverage the resources available for commitments.

The private capital industry is to a large degree organised around decentralised decision-making. Decentralisation uses funds as intermediaries, to allow faster growth of portfolios and wider diversification, also in regard to decision-making. Here, LPs balance between resilience and efficiency, whereas GPs can focus on efficiency and are incentivised accordingly. The often-surprising resilience of private capital fund investment programmes even during economic downturns may also come from LPs being forced to cling on to their commitments. Fund managers are committed to their portfolios of private assets by virtue of being repeat players in the market and the need to preserve their reputation.

ORGANISATION OF THE BOOK

So far little has been written on commitment pacing, and this process is not very well known outside the institutional investment world.[18] It is mainly practitioners coming up with techniques, but simplistic approaches are still the norm.[19] Pacing tools are typically in-house built applications and comprise the following main components:

- A forecast model for the funds' cash flows;
- A portfolio model that describes how the funds interact;
- A market model that provides realistic and specific assumptions for the funds' expected performance;
- An investor model that captures the LP's fund-selection skills.

Depending on the use case, commitment pacing relates to a short-term (monthly or quarterly), medium-term (semi-annually or one year), or long-term (annual or spanning several years) time horizon. The major use case is the 'glide path' describing how the portfolio of existing funds will develop over the medium term. A long-term-oriented use case is to set the 'flight path' for maintaining exposure by adding new commitments. The main use case over the short term is to determine the probability density function for the portfolio's cash flows as basis for the management of treasury assets.

Exposure

LPs commit to funds that are 'blind pools', i.e. the fund initially holds no portfolio of private assets. In the case of traditional asset classes, capital is put to work immediately, but in the case of commitments to funds, the 'true' investments into private assets follow, usually with a significant delay. During the fund's early years, this portfolio is insignificant compared to the undrawn commitments. What is then the LP's 'exposure'?

One view is to only consider the investments into private assets as exposure. On the other hand, the committed capital is what the LP puts at stake over the fund's lifetime. Therefore, an alternative perspective is to consider the undrawn commitments as a significant liability for the LP to cover when called and thus part of an exposure to manage.

Forecast modelling

The basis for commitment pacing and for assessing the impact of potential new deals in the pipeline on an existing and planned portfolio is a model that forecasts how much and when capital is called by the funds and when and how much they will be repaying it.

Aalberts et al. (2020) expressed surprise when observing that after decades of booming private equity markets, the literature on cash-flow modelling for funds has 'remained sparse'. To this day, LPs interested in forecasting their exposure to private assets and their liquidity needs mainly revert to the model proposed by the Yale Investments Office's Dean Takahashi and Seth Alexander.[20] It is also often called the 'Yale model' but in the following will be referred to as the Takahashi–Alexander model (TAM).[21]

Models are built by looking for and identifying variables that offered some predictive value. The major predictive value is the lifecycle characteristics of the fund. With the TAM, we can model the stylised pattern of capital calls, value creation, and distributions for primary, secondaries, and co-investments. This model has been tried and tested over many years, in various economic environments and geographical settings. It was found to stack up well against more complex approaches. The TAM's main advantage is that its logic is simple to understand, so that analysts and decision-makers intuitively trust its results.

Private market data

Commitment pacing requires meaningful assumptions regarding performance expectations. Data that reflect a risk profile similar to the funds to be modelled are provided by a number of commercial private market data providers. However, model outputs can only be as good as its inputs; in other words, it is 'Garbage-In-Garbage-Out'. While private market data suffer from a range of deficiencies they are all we have. Models are, therefore, rather constructed as 'Uncertainty-In-Stress-Out', with stresses applied to the model outcomes and the lack of complete and reliable data being mitigated through judgement in the form of qualitative parameters.

Augmentations of the TAM

The forecasting models presented in this book, the A1*TAM and A2*TAM, are augmentations of the TAM for producing stochastic cash-flow scenarios for funds that are, however, reconcilable with the expected cash flows and NAVs forecasted by the simple original TAM.

The precise timing and amount of cash flows is unpredictable, but their stochastic properties, such as expectations, frequency, and volatility, can be modelled through the A2*TAM. This model provides more granularity, i.e. it does not just consider annual cash flows but quarterly and monthly, as needed, as well as offering more differentiation between the various types of cash flows.

Avenues into private capital

There are various avenues into private market relevant for institutional investors. Cash-flow models need to differentiate between primary fund investments, secondaries, and co-investments – all of these have highly idiosyncratic cash-flow patterns. We assume that institutional investors will delegate secondaries and other more complex strategies like co-investments to specialist fund managers. The TAM and its augmentations can capture these dynamics, and a portfolio model is super-positioning such funds' cash-flow patterns.

Diversification

Diversification is the LP's main control for resilience and efficiency, and therefore, this will be looked at in detail. Most LPs do not look beyond the number of funds to commit to in each vintage year when looking at their intra-asset-class diversification.[22] However, this is just giving an incomplete picture.

Apart from the vintage year spread, geographies and sectors are viewed as key to a well-balanced portfolio. A portfolio model, therefore, needs to capture similarities of funds across these dimensions and the resulting dependencies in their behaviour. A high degree of diversification also smooths the cash flows and, thus, can mitigate the risk that the LP's funding needs overshoot.

However, diversification in private capital is expensive. Due diligence, legal expenses for structuring, fees, and incentive compensation are typically substantially higher than in portfolios of publicly traded assets. Back-office operations also require additional systems and resources because reporting and data collection is not standardised in the same manner as for public securities. The impact of these costs put limits on efficient diversification for smaller allocations to private capital. This is of course not the full story as larger LPs need to commit more than a theoretical optimum number of funds could possibly absorb.

Model input data

Diversification for managing risk is mainly a protection against lack of knowledge. The near perfect data we are used to from public markets do not exist for private markets. We need to work with the data we have, but we should not be discouraged by their absence. A lack of widely available data in private markets is an advantage to those who can merge information from various sources and apply judgement to their interpretation. Judgement in the form of a qualitative scoring plays a strong role in a fund rating methodology.

Fund rating/grading

Many research findings suggest that, unlike many other asset classes, the performance of a superior private equity manager dominates all other criteria. Outcomes materialise only over the long term and are highly uncertain. Therefore, the link between risk and return ex ante is unclear and controversial, with deal makers being most vocal in the discussion and convinced that their latest proposal is 'top quartile'. Within an appraised asset class valuations are highly subjective, and the ability to pick winners, i.e. funds that outperform their peer group, depends on judgement and experience as well.

Moving away from a general assumption of 'institutional quality' of GPs, fund ratings can refine forecasts based on what is known on the fund, its managers, and the private assets it holds. This fund rating, here referred to as 'fund grading', evaluates the compliance with engineering principles that based on experience should be respected. It additionally measures deviations of the individual fund's development against the average development of its aggregated peer group of funds with similar characteristics.

This grading technique uses qualitative as well as quantitative inputs to categorise funds according to their expected performance and their risk. A scoring can be forward looking and is particularly important if no reliable data are available. With increasing fund age and information on the fund's investments becoming available, quantification becomes more relevant compared to the qualitative scoring.

For LPs that are convinced of their selection skills, it is rational to forgo diversification and aim for a highly concentrated portfolio. The question is how much better in selection have LPs to be to justify ignoring diversification. The impact of the LP's assumed selection skills can be assessed through the grading technique as well.

Bottom-up forecasting models

The forecasting models introduced are top-down and could arguably ignore inside information on the fund. Pure bottom-up forecasting models that can capture such details, on the other hand, cannot be maintained as the regular data collection is too cumbersome to do this often enough. The way out of this dilemma is to improve top-down models in those exceptional situations where superior insights are available through so-called 'overrides'.

Commitment pacing

Funds are self-liquidating, so LPs must actively build and maintain a desired level of their exposure. Commitment pacing needs to consider various factors: the composition of the existing portfolio, the current allocation in a multi-asset context, the allocations and compositions to be targeted going forward, the current deals identified and under evaluation, the LP's risk appetite, and the assessment of scenarios for potential for market downturns.

A pacing plan needs to meet several other objectives and constraints: it should not lead to liquidity shortfalls caused by capital calls that exceed what the LP has reserved for this purpose, and the plan should assure diversification, notably over vintage years, strategies, and fund management firms, in line with the portfolio's target risk profile.

Stress scenarios

Stress scenarios address potential model failure, uncertainty in data, and prudence. The burst of the dot-com bubble, the Great Financial Crisis from 2007 to 2009, and COVID-19 created the fear that 'this time it is different'. Essentially, we are forecasting the past; in other words, we are basing our assessment of what will happen in the future on what has happened before. A market model answers the question which historic vintage years are most representative for the situation to be assessed?

Models can provide useful insights but will be sensitive to the underlying assumptions that may create a false sense of certainty. Institutional investors will be concerned and ask what will happen if we have another global economic crisis? What if there is another pandemic? It is good practice to model uncertainty by adding stresses to the commitment pacing model.

Let us start

Most of commitment pacing's technical complexity is caused by the fact that institutional investing in private capital is intermediated through funds structured as limited partnerships, which have been criticised as 'archaic' and 'spectacularly ill-suited' for long-term investing.[23] As we will discuss in the following chapter, nothing could be further from the truth, and limited partnership funds are the time-proven structure of choice for long-term investing under extreme uncertainty.

NOTES

1. See https://www.preqin.com/academy/lesson-2-private-capital/what-is-private-capital, [accessed 13 March 2023]
2. For more details, particularly on limited partnership funds, see Meyer (2014).
3. See also **Glossary** and **Abbreviations** for additional definitions.
4. See Gottschalg (2021).
5. See Teitelbaum (2018).
6. See Plender (2023).
7. See Taleb (2007).
8. See Knight (1921).
9. The Economist ‘Once burnt, still hopeful’. 25 November 2004.
10. See Meyer (2014).
11. ‘Hedge funds are typically open-ended investment funds with no restrictions on transferability. Private equity funds, on the other hand, are typically closed-ended investment funds with restrictions on transferability for a certain time period.’ See https://corporatefinanceinstitute.com/resources/equities/private-equity-vs-hedge-fund/, [accessed 14 March 2023]
12. See Cornelius et al. (2013).
13. Mende et al. (2016) estimated that merely 1.5–2.0% of commitments made to funds in 2001–2005 had translated into secondary transactions. By 2015, this conversion rate had reached approximately 6.2%. According to Auerbach and Shivananda (2017), between 2002 and 2016, the secondary transaction volume averaged between 1.6% and 8.4% of primary fund commitments.
14. ‘Simulations by BlackRock showed that a co-investment allocation of 20% to 30% can shorten the J-curve by 12–18 months.’ See https://www.tfoco.com/en/insights/articles/coinvesting-in-private-equity#, [accessed 10 March 2023]
15. See https://www.cfainstitute.org/en/membership/professional-development/refresher-readings/asset-allocation-alternative-investments, [accessed 31 December 2023]
16. See Swensen (2009).
17. See Brown et al. (2021).
18. See https://analystprep.com/blog/financial-models/, [accessed 23 June 2022]
19. See Jeet (2020), Pangburn and Green (2021), PitchBook (2020), Pazzula (2021), and Saket (2022).
20. See, for example, Burgiss blog, ‘Best Practices: Creating Scenarios and Analyzing the Takahashi–Alexander Forecast Model Results’. July 2021. https://www.burgiss.com/best-practices-using-takahashi-alexander, [accessed 3 August 2022], Lenz et al. (2018), Jeet (2020), and Karatas et al. (2021)
21. See Takahashi and Alexander (2002). Note that several authors, for example Fraser-Sampson (2006), mean the multi-asset-class investment strategy pioneered by the Yale endowment’s David Swensen (see Swensen, 2000) when they confusingly also refer to the ‘Yale model’.
22. See Brown et al. (2021).
23. See Love (2009).