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CENLAND CORPORATION



The CIO and the Closing of the DB Plan

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The CIO and the Closing of the DB Plan

Dan Woodbridge, 49, father of three, has just returned from a difficult meeting with Denise Liu, CFO of Cenland Corporation. Denise informed Dan that the company has decided to close the corporate defined benefit (DB) plan for all new employees. Dan was crestfallen. As CIO, Dan was responsible for Cenland's in-house asset management organization, managing assets in several pension trusts totaling over \$11b. Dan had built an industry-leading investment team, covering a wide range of asset classes including both public and private assets. Dan often congratulated himself that he was able to create a culture that attracted a talented and dedicated group of investment professionals even though some of them could probably be better rewarded financially elsewhere. Dan felt that this announcement risked all that he had built.

Denise told Dan that performance was not the issue. Dan knew this, too. Cenland's DB plans have performed well, better than an average US corporate DB plan (and much better than an employee probably could have done in public markets with a defined contribution (DC) plan). As a result, the company's pension contributions have been less than expected and very stable, giving Denise and the CEO a lot of flexibility in using capital for future growth initiatives such as making some strategic acquisitions and spending heavily on Research and Development (R&D) for new products.

Denise said that the Board no longer wanted the responsibility and risk of offering a DB plan. Industry peers had long ago started switching over to DC plans and consultants urged Cenland to fall in line. While Cenland's HR department argued strongly that the DB plan was a good talent recruiting and retention tool, the Board felt that a DC plan with a generous company match, along with a discount company share purchase option, would be well-received by employees while reducing Cenland's life-contingent liabilities.

Back at his office, Dan stared at the beautiful early-October red fall leaves outside their corporate HQ campus in New England. Dan wondered what Denise's news might mean for the plan's long-term future: freeze; immunization; and/or a PRT (pension risk transfer).

Denise wanted Dan to come back on the Monday after Thanksgiving with his recommendations for how to manage the Plan's assets going forward. Dan knew this was going to ruin the Thanksgiving holidays for his team. Fortunately, the company has had a good year so he could probably make it up to them with better bonuses than last year. Dan emailed the team calling for a meeting the next morning – he wanted to sleep on it before breaking the news. Dan knew this could be a career moment for him. While the end-state of the DB plan could mean a somewhat diminished CIO role, he knew that if he managed the transition well, Denise would take notice which may help to reposition him for an even greater role within Cenland's Treasury team or one of its operating companies.

Dan spent the afternoon collecting his thoughts and the latest Plan data. He wanted to have all the information up-to-date and organized when the team gathered the next day. It will take thoughtful analysis and careful preparation from all the analysts on the investment team to formulate a forward-looking asset allocation strategy that best fits both Cenland corporation pension plan's objective and overall corporate strategy. Dan pulled together the following information about the pension portfolio to help everyone come up with the best recommendations for the CFO and the Investment Committee.

Breaking the News

The news came as a shock to the team. What was Denise thinking? (Others had less generous comments!) The Plan has performed very well, especially relative to its peers. Adding private assets has nicely boosted portfolio returns. Shifting participants to a DC plan will close off this reliable and good source of income that they would need for retirement. Cenland's pension plan has been an important part of the company's total reward offering that helped attract and retain excellent professionals throughout the organization. The market for talent in Cenland's industry is highly competitive – and everyone is worried about adequate retirement income.

Dan gave the team a few moments to let the news sink in and vent, then it was back to business. Dan told the team to look on the bright side: "Denise's news does not necessarily require immediate changes to the Plan's asset allocation. Closing the DB plan gives us a good opportunity to revisit our asset allocation strategy and to plan for possible changes." He asked the team to think about the short-term and long-term implications for asset allocations and to formulate the best endgame strategy for their nearly fully-funded corporate DB portfolio. Dan needed the team's recommendations with respect to Cenland Corporation's asset allocation strategy for the DB plan going forward. Dan apologized for putting a damper on everyone's holiday plans.

Cenland Corporation Company Overview

Cenland Corporation, founded in 1980 and headquartered outside of Boston, MA, is a telecommunications company engaging in the research, design, development and manufacturing of telecommunication devices and equipment. Even though Cenland has a global customer base, all the employees are US-based, and US markets contribute to over 90% of the company's annual revenue.

Cenland Corporation's Retirement Benefit Plans

Many of Cenland's employees are covered by a qualified defined benefit (DB) pension plan. Cenland will close their DB plan to new entrants in the coming year. New employees who expect to join the firm after December 2019 will not participate in the firm's qualified defined benefit plan but will be eligible to participate in a qualified defined contribution plan.

Cenland's DB plan currently has different populations of participants including ~45% retired, ~15% deferred vested and ~40% active, each with its unique characteristics. For example, the duration of the liabilities for retirees is about half that of the active employees. In addition, these characteristics change over time as the populations age, and they need to be carefully monitored.

As of 31 December 2018, Cenland's PBO (Projected Benefit Obligation) was \$12b based on a weighted average discount rate of 4.25%. Exhibit 1 shows Cenland's estimated annual benefit payment (liability cash flow) schedule as of 31 December 2018. Given the market value of the plan's assets of \$11.4b at the end of calendar year 2018, Cenland's DB plan was 95% funded.

A DB plan's funding ratio (*i.e.*, market value of plan assets \div present value of future benefit payments) changes over time and is affected by many factors. For example, mortality risk may cause actual benefit payments to deviate from current projections and affect the funding ratio. Consultants have expressed concerns here: Cenland's highly-educated, white-collar workforce has enjoyed excellent health benefits over the years, which may raise the risk of participants living longer than their projection based on the current actuarial tables. Another factor that would affect the plan's funding ratio would be falling interest rates which would increase the present value of liabilities (all else equal) and lower the funding ratio. The Plan's fixed income assets have a duration less than the Plan's liabilities. (Dan gives non-fixed income assets a duration of zero.)

In 2018, Cenland made a significant \$1b one-time contribution to the DB plan to take advantage of the recent tax reform bill and further close the funding gap. Therefore, Cenland does not expect to make any significant contributions to the soon-to-be-closed DB plan in the foreseeable future. The corporation would rather use its available capital for other strategic initiatives that will have long-lasting impact to gain a competitive advantage in its rapidly-evolving industry than for making up pension funding gaps. Ideally, they would like to make no more contributions to the DB plan going forward. Denise still vividly reminds her staff how the CEO reacted in 2010 when she needed to ask for a \$500m contribution to keep the funding ratio from falling below 75%.

Cenland Corporation's DB Plan Asset Allocation

Led by the CIO, Cenland's in-house asset management organization has the fiduciary responsibility for making investment decisions related to the assets of Cenland's DB plan. Some key objectives include: (1) to ensure that the plan meets or exceeds its long-term rate of return assumptions; (2) to minimize expected employer funding contributions over time; and (3) to diversify the asset allocation and minimize losses during market downturns.

Cenland's DB plan assets are invested in both public and private markets. They are grouped into three categories: public equity, public fixed income and alternatives. Investment policies require that the allocations of the DB plan assets be maintained within certain ranges, by category. Exhibit 2 shows Cenland's approved ranges of asset allocations for individual asset types. Exhibit 3 shows Cenland's DB plan's asset allocation. Exhibit 3a shows how the asset allocation has evolved over the past 14 years (2005-2018, as of the end of each calendar year) and Exhibit 3b shows the current asset allocation as most recently reported at the end of Q3 2019.

Since the inception of the Plan, the investment team has invested the DB plan's assets strictly following the rules set by the investment policy statements. However, the asset allocation has exhibited noticeable changes in recent years. Some of these changes were driven by the shift in focus of the investment team. For example, at certain point, a private asset investment expert joined the team and started ramping up the private equity exposure in the DB plan asset mix. As another example, as LDI emerged as a popular asset management strategy among corporate DB plans, the asset allocation began moving towards more allocations to public fixed income and less to public equities. Obviously, different assets have different risk-return characteristics in various market scenarios that also affect the valuation of the assets and consequently, the asset allocation in the DB portfolio.

Cenland's Public Asset Investments

Cenland's public fixed income and equity portfolios both have a sizable allocation to active managers, while maintaining enough allocation to passive bonds and equities (invested in stock and bond ETFs) for various immediate liquidity needs including periodic benefit payments. JC Lam, 45, head of Dan's public equity team, and Améile Borrion, 46, head of the fixed income team, both have exhibited excellent manager selection skill producing a good track record of performance, generating relatively strong and stable alphas (net of fees) through various market conditions. JC and Améile have built and maintained good relationships with some of the world's best-performing managers in their respective markets.

Cenland's investment policies allow for using equity derivatives to achieve desired equity exposures such as buying equity futures to increase equity exposure in the overall DB portfolio. However, they do not allow for short derivatives positions (*e.g.*, selling equity futures) when the portfolio managers need to reduce equity exposures (some painful institutional memories from the late 1980s still linger – the sizable margin calls were particularly challenging).

Even though Cenland's current public portfolio has a larger allocation to bonds than equities (public and private), given the news, Dan wonders if they should further reduce their equity exposure and extend fixed income allocation and duration. In the current elongated-expansion economic cycle, reducing equity risk in the overall portfolio may help Cenland be better prepared for the potentially upcoming economic downturn. Extending fixed income duration would also help protect the portfolio.

However, Dan recalls that Améile has expressed concerns about their fixed income strategy. Like all good fixed income asset class heads, Dan knows that Améile worries a lot – maybe too much. But as a distinguished graduate of Sciences Po, and with a strong long-term track record as a Street portfolio

strategist, Amélie has earned Dan’s respect. Dan pays close attention to Amélie’s views. While in recent decades, interest rates have tended to fall during recessions and when the equity market sells off, Amélie believes she is not so sure how robust this relationship will be going forward – “Rates are *vachement* low!” Although the current fixed income portfolio duration is shorter than the liability duration, the fixed income team is not eager to extend duration.

Background on Private Asset Investments

In recent decades, institutional investors including US corporate DB plans allocated increasing amounts of capital into private markets. Cenland was no exception. Private investments are very different from public equities and bonds. A typical private investment starts with LP (limited partner) investors making capital commitment to the GPs (general partner). This capital commitment is the maximum nominal amount of capital an LP investor agrees to contribute to the private investment. Over time, GPs will draw down capital (*i.e.*, make capital calls) from the LPs with a total limit equal to the initial committed amount. GPs gradually return capital gains to LP investors through distributions. GPs may launch private capital funds without having any LP commitments. However, they usually set a target size of the fund being launched which helps set expectations. Capital commitments are not associated with actual flow of capital, only capital calls represent actual capital flows from LPs to GPs.

By nature, private investments are associated with delays and uncertainty in capital calls, and LPs need to decide how they want to invest their committed, but uncalled capital (*e.g.*, in a “default” public portfolio). Also, private asset cash flows over time (capital calls, distributions, NAVs) exhibit unique patterns. Exhibit 4 shows an example of a common US LP buyout aggregate cash flow evolution over a 10y horizon. Exhibit 4a shows the LP buyout net cash flow (NCF) “J-curve” together with the valuation (NAV) curve exhibiting a “hump” shape. Exhibit 4b shows the components of the NCF curve, *i.e.*, contributions (negative numbers representing cash outflows) and distributions (positive numbers representing cash inflows), while NCF is the sum of these two cash flows.

Another important feature of private assets is that they are very illiquid – “lumpy” and costly to liquidate – compared with their public market counterparts. Even though the secondary market for private assets has become more active lately (possibly a reflection of the long bull market?), liquidity is still a major concern of private asset investors, especially during market downturns.

Cenland’s Private Asset Investments

Cenland’s DB plan assets currently have a relatively significant amount (*i.e.*, 25%) of allocation to private assets (*i.e.*, “alternative” investments). Dan knows full well that his team has been investing all alternative assets in private equity buyout *via* limited partnership (LP) vehicles (*i.e.*, LP buyout funds). After all, it was his idea.

Dan is eager to get a thorough update about private market conditions and Cenland's private asset investments. He will need to have a long conversation with the head of the private equity investment team, Vinita Mody.

Vinita, 48, has risen rapidly in the CIO's office. A distinguished IIT Mumbai graduate, Stanford MBA, and with 6-year post-MBA experience of sourcing buyout deals at a US private equity firm, Vinita brought considerable analytical and market experience to the team. Wishing to spend less time on the road and more time with her children and stay-at-home-aspiring-musician husband, Vinita left Manhattan for the suburbs. Under Dan's tutelage, Vinita was given the freedom to consider new portfolio strategies. The company has grown rapidly, with a very promising future. Vinita has never regretted her decision to join Cenland. Given the news, she is not so sure anymore.

Vinita began their conversation by discussing some observations in the private markets. The overall private market has experienced rapid growth in the past decades and "there is a lot of 'dry powder' out there!" (Exhibit 5). The global alternative asset AUM has grown from \$3.1t in 2008 to \$8.8t in 2017. According to Preqin's projections, global alternative assets are expected to continue to grow to \$14t AUM in 2023.¹ Even though investors have a variety of options in private investments, such as private equity, private credit, real estate and hedge funds, private equity buyout investments have been maintaining a leading position in the overall private market. Cenland's private equity investment team has been actively investing in LP buyout funds in the US. Vinita showed Dan the 5y aggregate US buyout fund cash flow data (Exhibit 6) that they gathered and use to monitor the overall US buyout market.

In line with the development of the private markets, Cenland hired Vinita in 2006 to build a private equity team and right away started committing capital to private equity buyout funds with the help of a leading alternatives consultant. Vinita and her team quickly geared up to get Cenland's private equity exposure to a target level. Presently, the Plan has a stable NAV% ("dollars in the ground") of 25% of the overall portfolio and the intention is to keep it at this level. Exhibit 7 shows Cenland's historical commitments in private equity and their expected 5y commitment amounts starting from vintage 2019. Their current uncalled committed capital to LP investment (NAV) ratio is 2:3 (as of most recent quarter end, *i.e.*, Q3 2019). Cenland has been following a policy of investing uncalled commitments in the equity market under JC's direction.

Vinita also mentioned that they have been pacing their private commitments well. Most of the time, their uncalled capital reserve is enough to meet GP capital calls. In cases where calls exceed distributions, they use passive public stocks and bonds to meet certain capital calls, which does not give JC nor Amélie any headaches, nor cause major concerns. Problems arise when distributions fall well short of calls. Although it is allowed, the team tries to avoid using any actively managed public assets to meet capital calls, as by doing so, they would sacrifice expected alpha from the public asset strategies just to meet their private investment obligations. Vinita know it is also unpleasant and disruptive to ask JC and Amélie to call their managers and tell them they are reducing allocations.

¹"Alternatives in 2019," Preqin.

Dan asked, “These private equity investments are very illiquid, so the publicly available information does not necessarily give me a good sense of how to understand their roles in our portfolio. How can I better evaluate these assets?”

“That’s why you brought me into the game!”, Vinita immediately replied with her broad smile.

Vinita reminded Dan of the challenge of measuring private asset performance. Due to their unique characteristics, private asset performance may not be correctly measured by performance metrics typically reported by GPs, such as IRR.² Despite these issues, Vinita told Dan that Cenland’s alternative portfolio has been “*Babut Shaanadaar!*”

Vinita and her team have been using a popular PME (public-market-equivalent) ratio metric to measure the relative performance of private assets to public assets. PME is essentially a market-adjusted cash multiple. Mathematically, it is the ratio of the horizon value of cash received (distributions) to the horizon value of cash paid (capital calls), assuming they are each invested in a benchmark public portfolio (*e.g.*, S&P 500 Index).³ Exhibit 8 shows an example of US LP buyout pooled 10y PME, by vintage, in comparison with pooled 10y PME, by vintage, of two other common LP types: US mezzanine debt and US value-added real estate (using S&P 500 as the benchmark public portfolio). For the same investment horizon (*e.g.*, 10y), the PME varies from vintage to vintage. Even investing in the same vintage, the PME shows noticeable cross-sectional dispersion across different funds (Exhibit 9).⁴

Finally, Vinita mentioned that the private equity investment team has focused on building long-term relationships with a limited number of carefully selected GPs. This has paid off. Cenland enjoys excellent access to the private capital community. Recently, Vinita was able to get a leading private equity firm, Lochhead Capital Partners, to invite Cenland’s CEO to join its sponsored table at Washington’s most influential annual philanthropy event. Afterwards, the CEO sent Vinita a warm note of thanks along with a copy of a photo of him with the President. Vinita thought “Cenland’s PR group couldn’t pull that off in a million years!”.

Cenland’s long successful history as a reliable and aggressive LP in the private equity market makes them a preferred client for some of the best performing GPs, giving Cenland the opportunity to invest in high-performing LP buyout funds and re-up – access not offered to the average LP investor. Vinita is looking forward to her first co-investment!

Cenland’s Potential Pension De-Risking Activities

Thinking about asset allocation for Cenland’s soon-to-be-closed DB portfolio, Dan believes he cannot afford overlooking possible pension de-risking activities and their potential impact on their asset allocation decisions.⁵ He recently read in the news that General Electric Company (GE) has announced they are freezing pensions for about 20,000 US employees with salaried benefits as part of the firm’s plan to reduce

² V. Jeet, “A Fair Comparison Framework: Risk and Reward in Private & Public Investments,” PGIM IAS, November 2019.

³ S. Kaplan and A. Schoar, “Private Equity Performance: Returns, Persistence, and Capital Flows,” *Journal of Finance*, Vol. LX, No.4, August 2005.

⁴ J. Shen, F. Farazmand and Y. Teng “The Tradeoff between Liquidity and Performance: Private Assets in Institutional Portfolios,” PGIM IAS, January 2019.

⁵ Y. Teng and J. Shen “Asset Allocation for ‘End-State’ Portfolios,” PGIM IAS, September 2019.

its pension deficit.⁶ Once a corporate DB plan is frozen, in addition to not admitting any new participants, it also stops accruing benefits for any existing participants. Maybe Cenland should follow a glidepath strategy many other corporations implemented following the freezing of their DB plans and transitioning to a DC plan.

Dan also learned that the head of the PRT distribution team at Sensible, Inc., a major insurance company, met with Denise last week to show her how a PRT buyout transaction could help Cenland de-risk their pension plan. A PRT buyout transaction involves transferring the assets and liabilities of a pension plan to an insurance company who guarantees benefit payments to participants for life.⁷ In such PRT transactions, insurance companies usually have a very limited appetite of accepting any private assets from the corporate DB portfolio, preferring to take investment-grade corporate bonds in-kind.

PRT has been gaining attention among corporate DB plan sponsors as it provides a way of divesting pension obligations from corporate DB plans and corporate balance sheets. During 2018, four of the Milliman 100 companies executed large-scale (above \$1.5b) PRT buyout transactions, including International Paper, Entergy Corporation, Lockheed Martin Corporation and FedEx.⁸ Dan would not be surprised if Cenland executes a PRT buyout deal in the next several years.

Other Considerations

Finally, Dan realized there might be other potential issues with ramifications for his asset allocation recommendation. For example, what if Cenland decides to acquire another company as part of the Board's corporate strategy? As part of any acquisition, Cenland may take over a legacy DB plan that has a worse funded status than current Cenland's DB plan. Moreover, what if the DB portfolio performs unexpectedly well, and after fulfilling all benefit payments in 5 years, Cenland finds itself with a well-over-funded plan (*e.g.*, 120% funding ratio). What can they do with the pension surplus? Is there a good strategy for Cenland to efficiently manage such a surplus in their DB portfolio?

Dan set out to write up his recommendations for Denise.

⁶ <https://www.marketwatch.com/story/ge-freezing-pensions-for-20000-employees-2019-10-07>

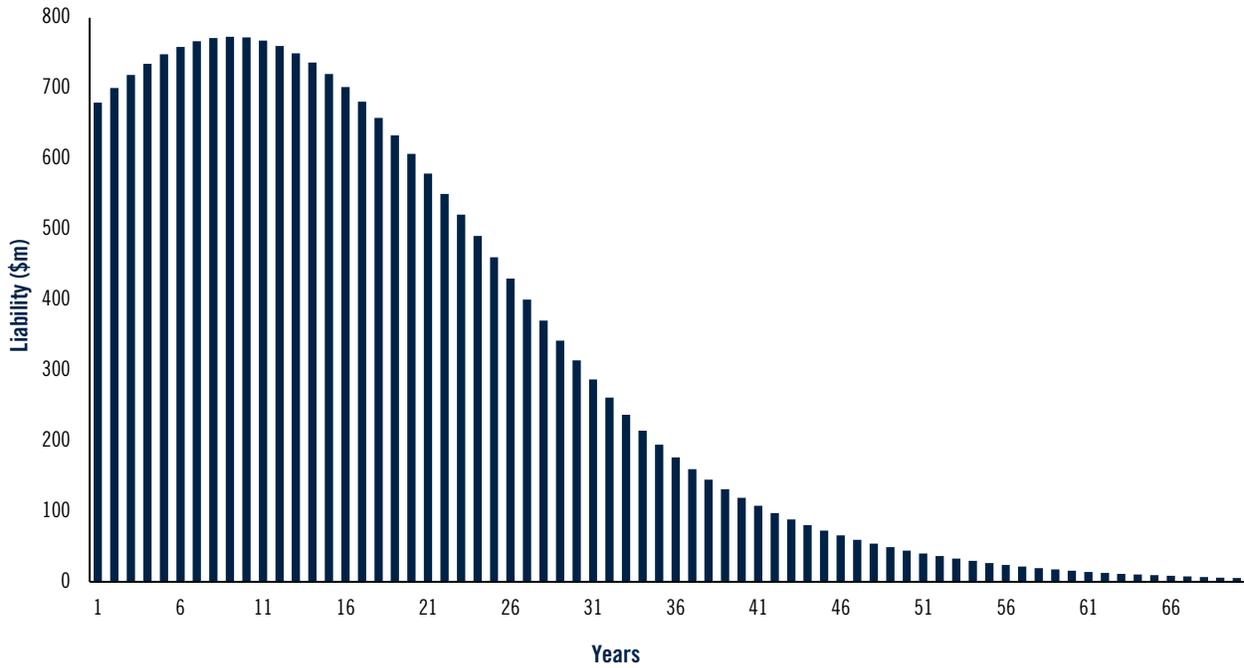
⁷ See "Longevity and Liabilities: Bridging the Gap," PGIM, October 2016.

⁸ "2019 Pension Funding Study", Milliman, April 2019.

Some Issues for Consideration

1. What role does each asset play in the overall pension portfolio? What is the optimal asset mix within public equity and within public fixed income portfolio?
2. How should Dan think about the asset allocation methodology considering their relatively large amount of private assets in the portfolio?
3. How are the DB plan's assets going to perform in various market scenarios, especially during a recession?
4. Apart from the asset allocation ranges defined by the investment policies, what constraints should Dan consider when deciding Cenland's asset allocation strategies?
5. The private equity exposure has been ramping up over time. Is this a coincidence or was it driven by a private capital commitment strategy put in place by the private equity team? How should they commit to new private equity investments going forward?
6. What should Dan do with the remaining private assets in the portfolio (both NAVs and capital commitments)?
7. If, in two-year's time, Cenland is going to freeze the plan, how is that going to affect the liability profile, pension portfolio's risk exposure and asset allocation?
8. How might a PRT (Pension Risk Transfer) buyout transaction affect Dan's asset allocation decision? How does the team best manage the pre- and post-PRT implementation?

Exhibit 1
Cenland's Annual Liability Schedule
(As of 12/31/2018)



Source: PGIM IAS. Provided for illustrative purposes only.

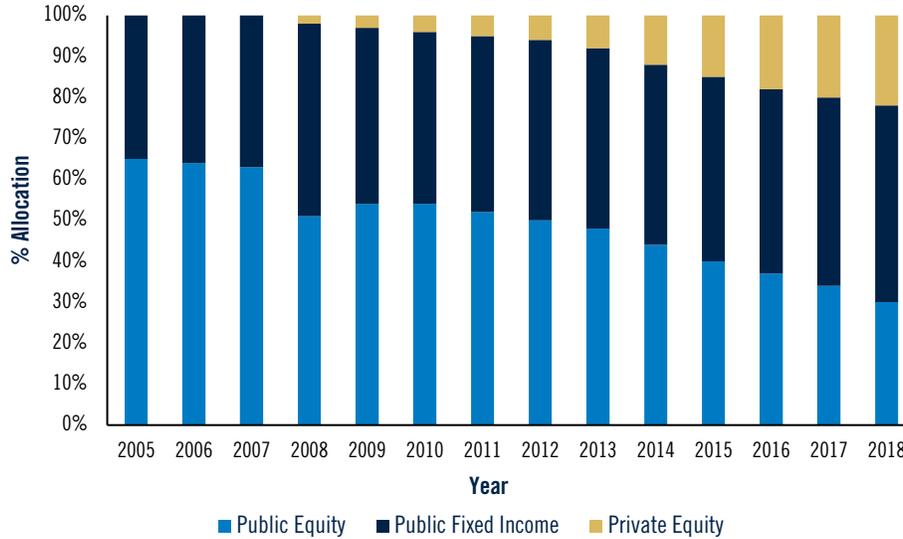
Exhibit 2
Cenland's Approved Pension Asset Allocation Range
(As Allowed by Current Investment Policies)

Asset Class	Asset Allocation Range
Public Equity	15-65%
Public Fixed Income	10-80%
Alternative Investments	0-30%

Source: PGIM IAS. Provided for illustrative purposes only.

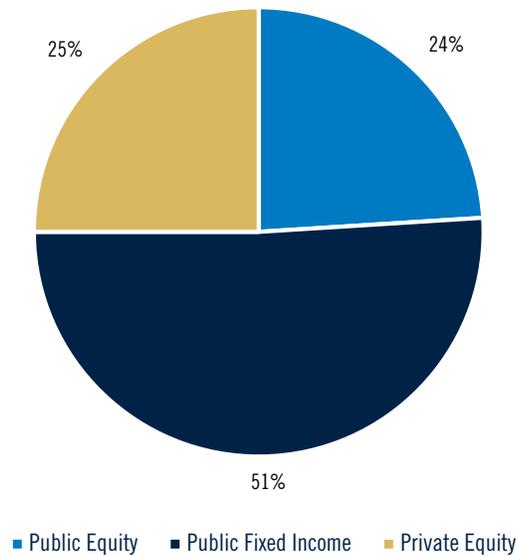
**Exhibit 3
Asset Allocation of Cenland Pension Fund**

**3a. Cenland's Asset Allocation Over Time
(2005-2018)**



Source: PGIM IAS. Provided for illustrative purposes only.

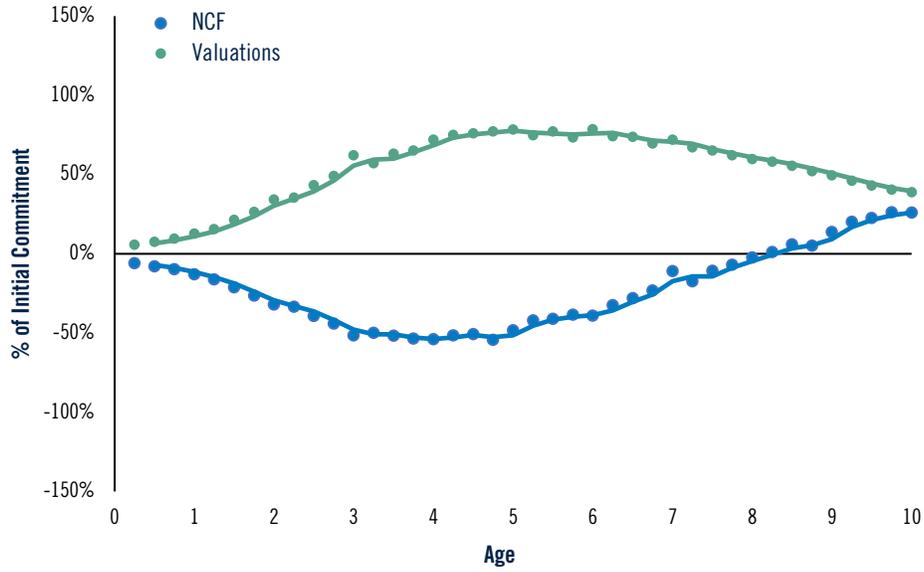
**3b. Cenland's Current Asset Allocation
(Q3 2019)**



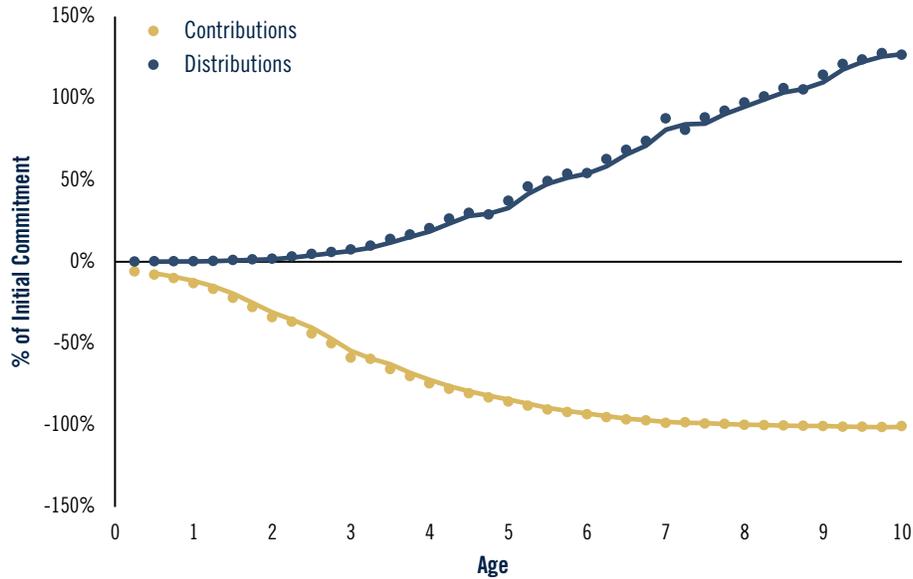
Source: PGIM IAS. Provided for illustrative purposes only.

Exhibit 4 US LP Buyout Aggregate Cash Flow Patterns over 10y Horizon

4a. Net Cash Flows (NCFs), Valuations



4b. Contributions, Distributions

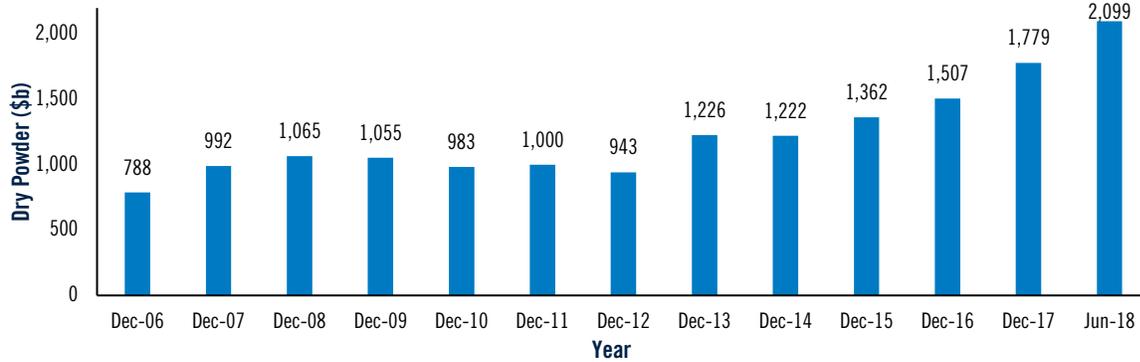


Note: Cash flows (as a % of initial capital commitments) are averaged across vintages over the 10y investment horizon using aggregate vintage level cash flow data (vintage1992-2009)

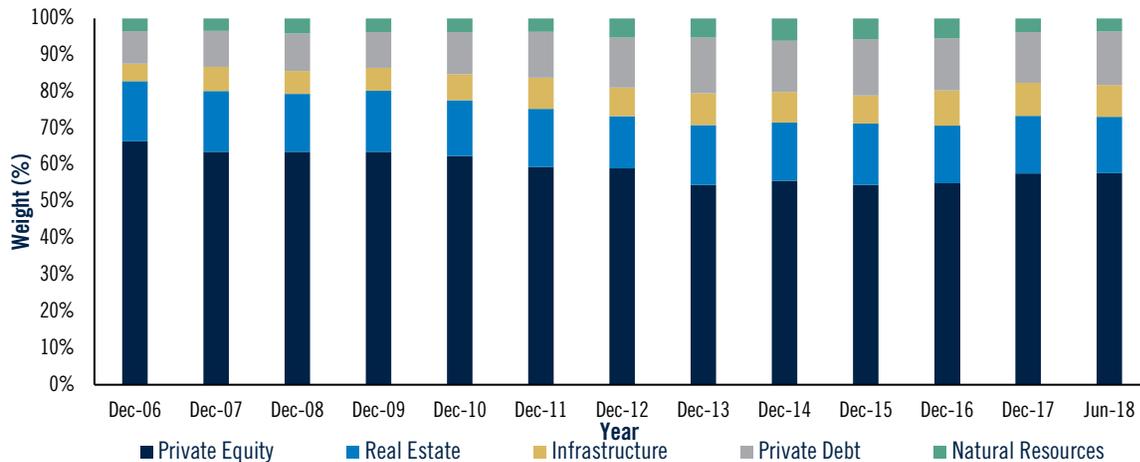
Source: Burgiss, PGIM IAS. Provided for illustrative purposes only.

Exhibit 5 Global Private Capital Dry Powder (2006-2018)

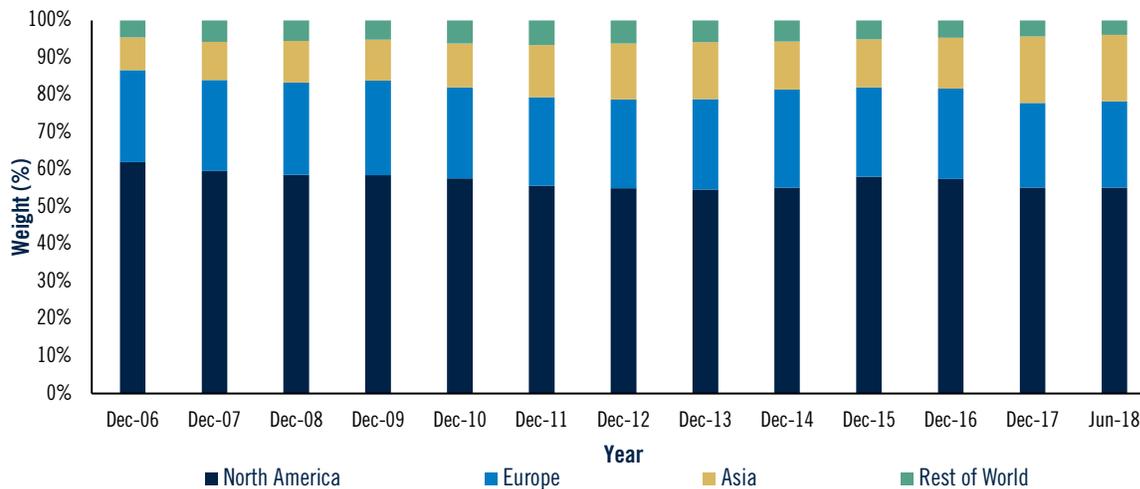
5a. Global Private Capital Dry Powder



5b. Global Private Capital Dry Powder by Asset Class

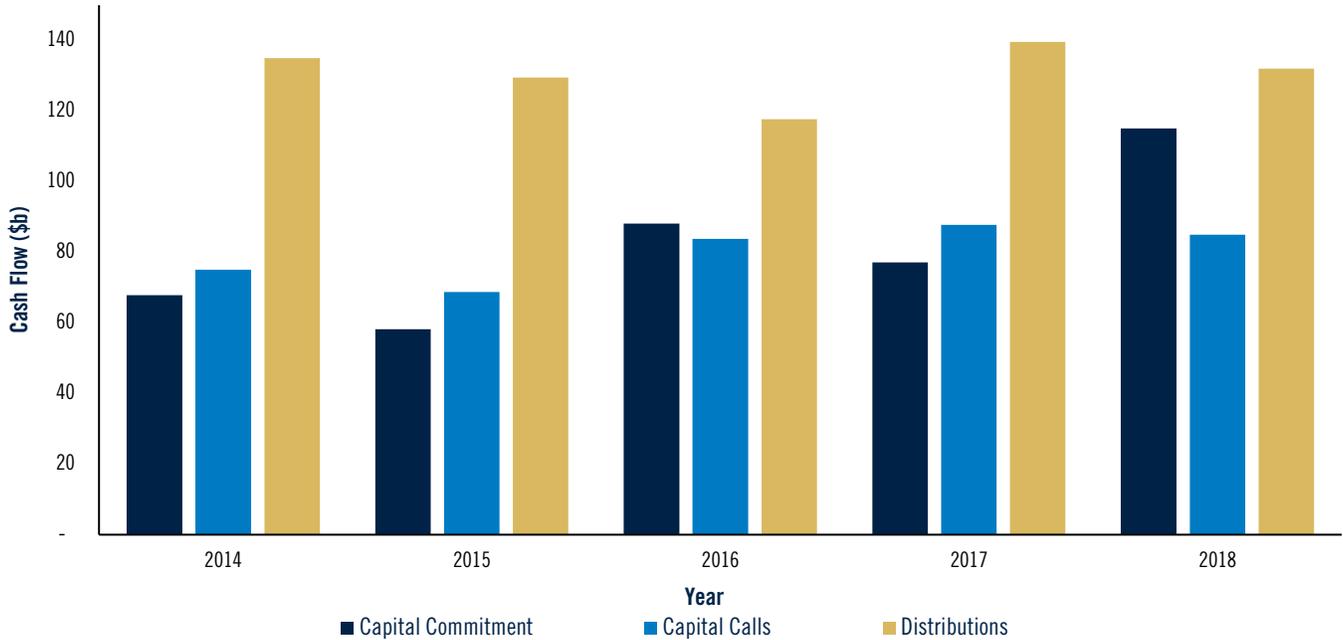


5c. Global Private Capital Dry Powder by Geographic Focus



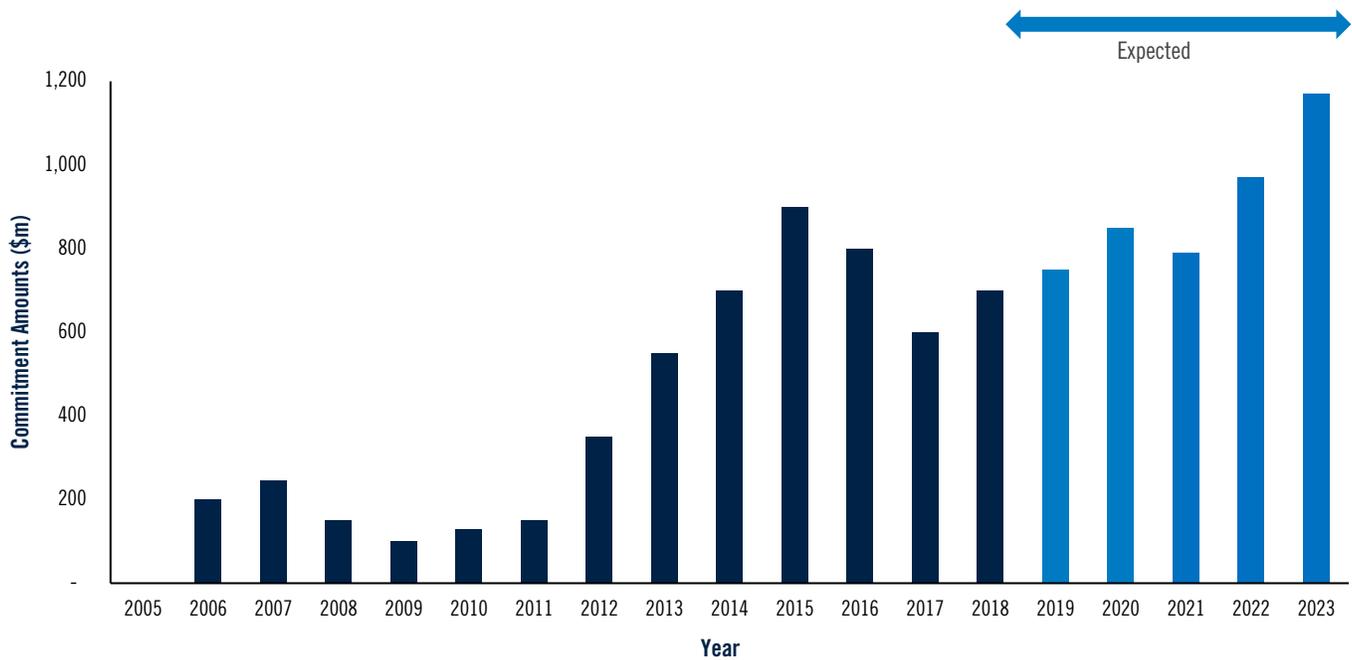
Source: Preqin Pro, PGIM IAS. Provided for illustrative purposes only.

Exhibit 6
US LP Buyout Annual Cash Flows
(New Capital Commitment, Capital Calls, Distributions; 2014-2018)



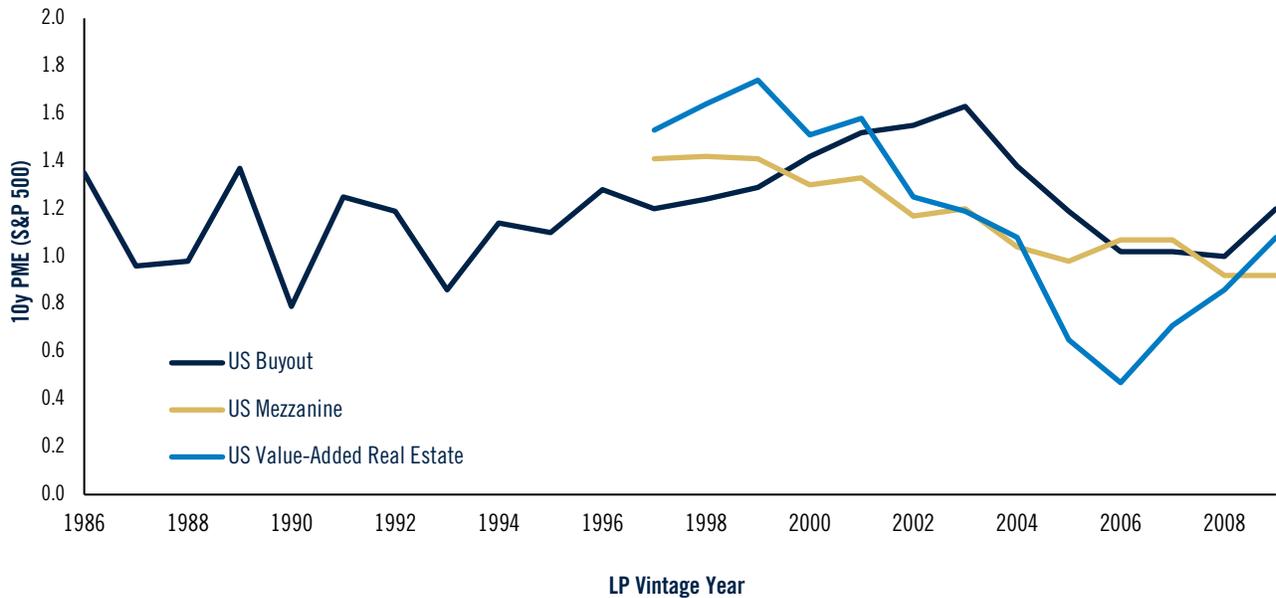
Source: Burgiss, PGIM IAS. Provided for illustrative purposes only.

Exhibit 7
Cenland's Private Equity Commitments
(Historical Commitments 2006-20018; Expected Commitments 2019-2023)



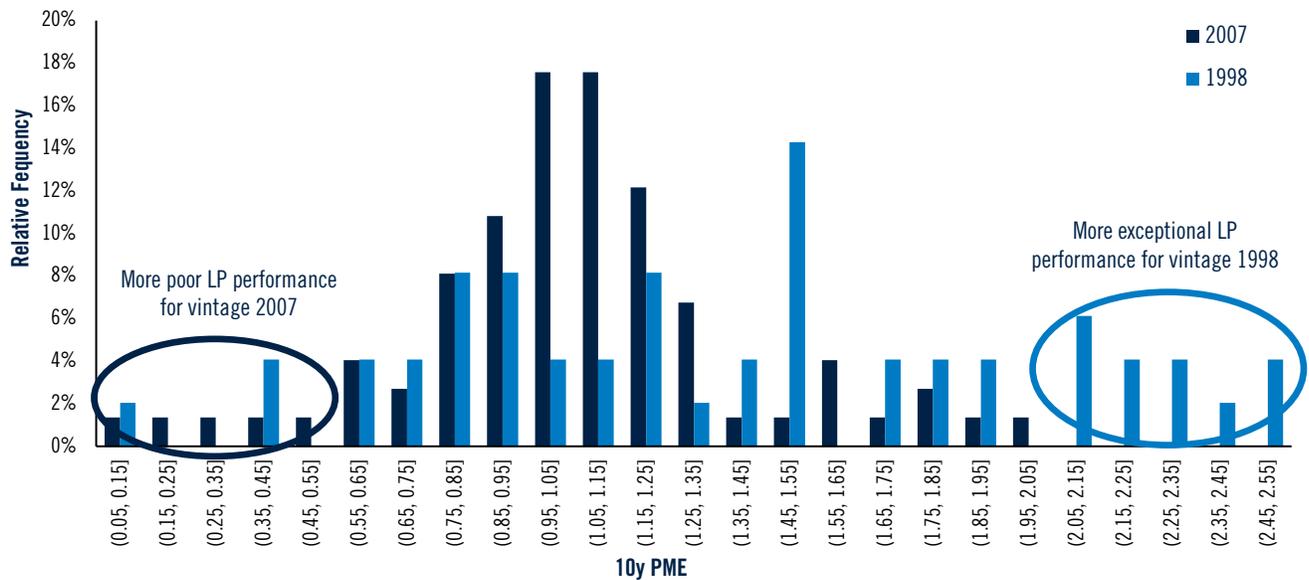
Source: PGIM IAS. Provided for illustrative purposes only.

Exhibit 8 Select US LP Pooled 10y PME, by Vintage (Benchmark – S&P 500)



Note: Burgiss Mezzanine and Value-Added Real Estate vintage level pooled PME data are only available starting from vintage 1997.
Source: Burgiss, PGIM IAS. Provided for illustrative purposes only.

Exhibit 9 Fund-Level PME Dispersion (1998 vs. 2007 Vintage)



Source: Burgiss, PGIM IAS. Provided for illustrative purposes only.

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