PGIM

IAS EXECUTIVE SUMMARY

COLLECTIVE DEFINED CONTRIBUTION (CDC) SCHEMES

Assessing Capacity for Alternative Investments

Aili Chen
aili.chen@pgim.com

There is growing interest in collective defined contribution schemes as pension systems adapt to changing economics and demographics. CDCs offer a different approach to retirement savings from defined benefit (DB) schemes: Instead of providing a guaranteed pension payment, a CDC scheme provides workers with a pot of money to use for retirement, alleviating sponsors of the responsibility and uncertain cost associated with providing a lifetime guaranteed benefit payment. Also, the potential relaxation of certain regulatory constraints enables CDCs to explore alternative asset mixes previously unattainable under DB schemes, potentially improving financial resilience and pension outcomes.

For pension funds, a shift from a DB to a CDC scheme introduces new challenges and opportunities. Plan managers must reconsider investment strategies not only to improve pension outcomes but also to address potential variability in pension payments. This may involve increases in allocations to illiquid assets, which may not only offer higher returns and portfolio diversification but may also, for some investors, align with ESG goals.

However, increased allocations to illiquid assets in a CDC scheme can pose problems: *e.g.*, capital calls arising from the investment commitments can be unexpected and lumpy; forced liquidation of assets at unfavorable prices to raise liquidity can incur significant transaction costs and permanent losses; and during periods of divergent private and public asset performance, the scheme may be unable to rebalance back to target allocations specified in investment guidelines.

We analyze and measure the capacity of CDC schemes to allocate to less liquid assets (*e.g.,* some long-duration investment grade corporate bonds, infrastructure and private equity) in terms of how these assets may affect a scheme's liquidity properties and, importantly, their potential impact on **retirement outcomes** (*e.g.,* level and volatility of benefit payments).

We conduct a case study on the Dutch CDC solidarity contribution scheme whose key features include: 1) A single collective investment policy that covers all participants; 2) No defined pension obligation, instead participants acquire a personal "share" in a collective asset that can fluctuate in value; 3) The pension benefit amount can vary over time, *even after retirement*; and 4) A solidarity reserve that allows for risk sharing among different generations and risk smoothing over time.

We study the consequences of a solidarity scheme's allocation shift from public equity to illiquid infrastructure. We model the scheme's periodic performance, including its cash inflows and outflows, under many potential future market environments. The framework used in this analysis allows evaluation of the portfolio's liquidity risk – under different asset allocations – and identifies circumstances where a CIO might consider portfolio adjustments.

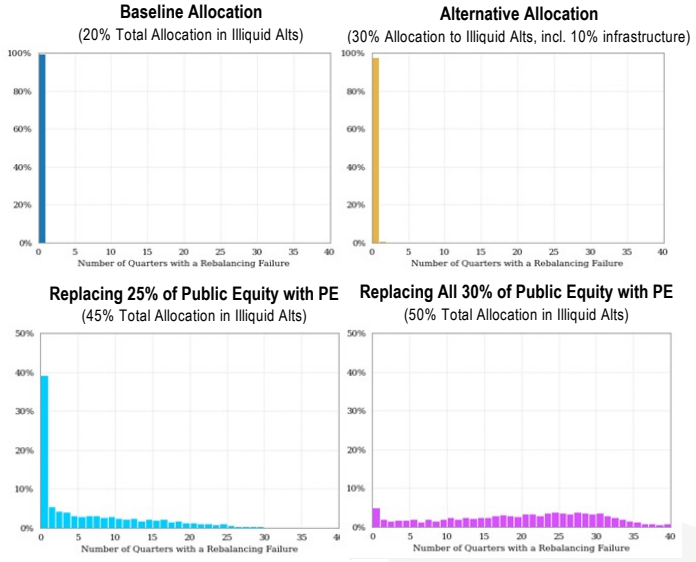
Specifically, we measure a solidarity scheme's capacity to allocate to illiquid alternatives in terms of how this allocation shift affects the scheme's:

1) **probability of rebalancing failures** – CIOs may face a critical liquidity demand to maintain a target portfolio allocation between asset classes (*e.g.*, equity *vs*. bonds) as promised to plan participants and;

2) **probability of the solidarity reserve falling to zero** – CIOs may also wish to monitor the solidarity reserve balance to help ensure that risk sharing is functioning effectively and to meet regulatory guidelines. CIOs may wish to avoid events where the solidarity reserve falls to zero and is, therefore, not available to buffer decreases in payments to retired workers.

The figures below show, for different portfolio allocation shifts to illiquid infrastructure from public equity, the probability of experiencing rebalancing failures and the solidarity reserve falling to €0. For example, with a baseline scenario of 20% illiquid assets there are zero rebalancing failure quarters across the economic scenarios. Higher allocations to illiquid assets significantly increase rebalancing failures, highlighting the non-linear risks and inflection points where liquidity risk spikes. The probability of the solidarity reserve balance falling to €0 is not as affected by higher allocations to illiquid assets.

Impact of Increasing Private Assets: Probability of n Rebalancing Failures



Source: PGIM IAS. For illustrative purposes only. Data as of 30 September 2023

Impact of Increasing Private Assets: Probability of Solidarity Reserve Falling to €0 n times

# of Quarters / Probab.	Baseline Allocation (20% Total Allocation in Illiquid Alts)	Alternative Allocation (30% Allocation in Illiquid Alts, incl. 10% infrastructure)	Replacing 25% of Stocks w. PE (45% Allocation in Illiquid Alts)	Replacing 30% of Stocks w. PE (50% Allocation in Illiquid Alts)
0	99.64%	99.84%	99.88%	99.84%
1	0.08%	0.02%	0.02%	0.06%
2	0.08%	0.08%	0.04%	0.08%
3	0.12%	0.04%	0.06%	0.00%
4	0.04%	0.02%	0.00%	0.02%
5	0.02%	0.00%	0.00%	0.00%
6	0.02%	0.00%	0.00%	0.00%

Source: PGIM IAS. For illustrative purposes only. Data as of 30 September 2023

Overall, in the context of our examples, the findings indicate that solidarity schemes have substantial capacity to handle additional liquidity risk – they maintain ample liquidity even after increases in allocations to illiquid assets. More generally, however, this analysis illustrates how CIOs can better measure liquidity risk and make more informed asset allocation decisions while navigating this complex and evolving terrain.

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July 2024

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