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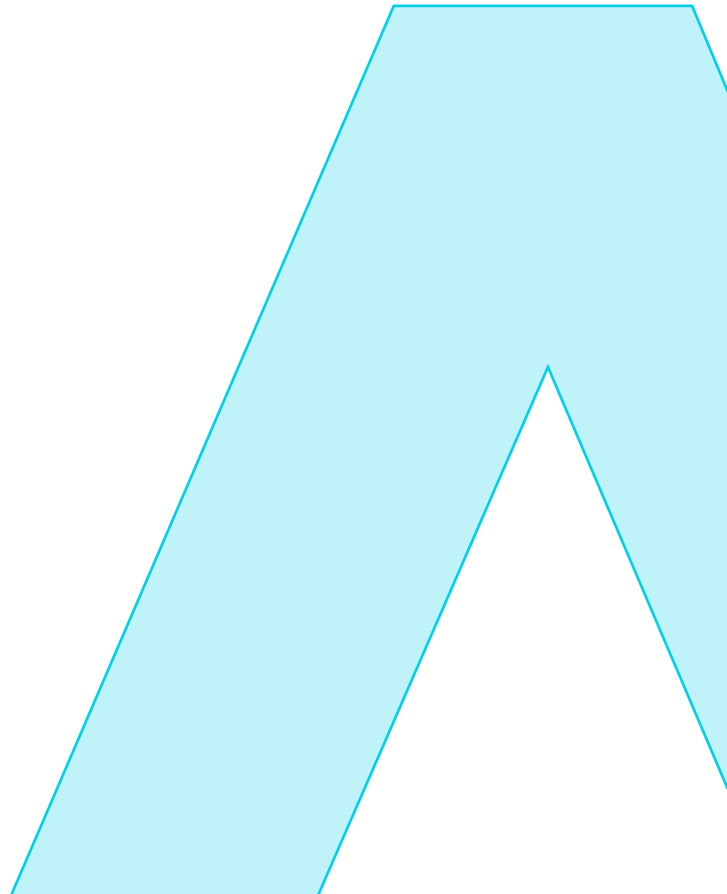
Update on Recent Events Regarding Silicon Valley Bank:

Duration Squeezes in the Alternative Asset Management Industry



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Update on Recent Events Regarding Silicon Valley Bank

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Implications for LPs and GPs of Alternative Assets

Mounting Instances of Breakage from Duration Squeezes in the Alternative Asset Management Industry

In the 1980s, the financial sector suffered through a period of distress that was focused on the nation's savings and loan (S&L) industry. Inflation rates and interest rates both rose dramatically in the late 1970s and early 1980s. This produced two problems for S&Ls. First, the interest rates that they could pay on deposits were set by the federal government and were substantially below what could be earned elsewhere, leading savers to withdraw their funds. Second, S&Ls primarily made long-term fixed-rate mortgages. When interest rates rose, these mortgages lost a considerable amount of value, which essentially wiped out the S&L industry's net worth.

-The Savings & Loan Crisis, Federal Reserve History

Partners, Friends, and Industry Participants –

Over the past few days, we have explored and communicated what exactly happened to Silicon Valley Bank (SVB): Its unique correlation to a declining tech ecosystem, as SVB's clients drew down cash amidst a VC funding contraction (pressuring deposited liabilities) against escalating duration risk from asset price declines (pressuring long-term assets).

The result is what we'll call a "duration squeeze". A duration squeeze is prone to occur in the following set-up:

- Short-term funding sources, prone to margin calls (on leverage) or customer withdrawals (deposit flight)…
- …are used to finance improperly (or expensively) hedged, long-term, fixed rate assets…
- …which face a contractionary monetary policy environment characterized by rising rates and falling asset prices…
- …made worse by an accounting environment where fair market value ("FMV") is not perfectly transparent and regulatory capital requirements are applied unevenly across financial institutions.

The last element – sluggish valuations – is not critical for a duration squeeze, but is often the tinder of contagion, as people begin to doubt the FMV of all levered long portfolios, whether underlying assets are impacted or not.

We don't know what tomorrow brings, nor what actions the regulators may take to arrest the fallout for SVB. However, unlike the regulated banking system, **many sectors of the financial system – particularly in the alternative asset management industry – have no such backstop**, exposing it to potential SVB-like duration risks. That is the subject of this paper.

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Introduction

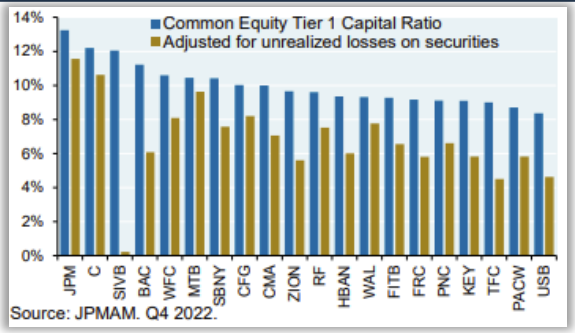
To begin, and unlike 2008, an important feature of a duration squeeze is that liquidity (funding long-dated assets with short-dated liabilities) often matters more than credit quality (declining asset prices relative to fixed liability funding obligations). One can (and often does) lead to another, but for SVB, the immediate issue was outsized exposure to *high quality*, agency-backed, mortgage-linked securities (MBS and CMBS). SVB did not invest a meaningful portion of its clients' savings into the illiquid loans and splashy ventures of prior financial crises. Indeed, more than 90% of SVB's held-to-maturity ("HTM") investment portfolio was invested in government-sponsored mortgage securities. The issue for SVB, rather, was duration: A substantial portfolio of its asset book was trapped in low-yielding securities whose duration was longer than 10 years (Figure 1).

Figure 1: SVB Asset Book Duration

	December 31, 2022									
	Total		One Year or Less		After One Year to Five Years		After Five Years to Ten Years		After Ten Years	
(Dollars in millions)	Net Carry Value	Weighted Average Yield	Net Carry Value	Weighted Average Yield	Net Carry Value	Weighted Average Yield	Net Carry Value	Weighted Average Yield	Net Carry Value	Weighted Average Yield
U.S. agency debentures	$ 486	1.91 %	$ 1	2.39 %	$ 118	2.50 %	$ 367	1.72 %	$ —	— %
Residential MBS:										
Agency-issued MBS	57,705	1.56	—	1.65	25	2.38	1,066	2.32	56,614	1.54
Agency-issued CMO - fixed rate	10,461	1.48	—	—	90	1.47	129	1.71	10,242	1.48
Agency-issued CMO - variable rate	79	0.74	—	—	—	—	—	—	79	0.74
Agency-issued CMBS	14,471	1.63	39	0.45	153	0.86	966	1.93	13,313	1.62
Municipal bonds and notes	7,416	2.82	29	2.26	235	2.48	1,362	2.74	5,790	2.85
Corporate bonds	703	1.86	—	—	115	1.72	588	1.88	—	—
Total	$ 91,321	1.66	$ 69	1.25	$ 736	1.90	$ 4,478	2.43	$ 86,038	1.63

In a sense, this mismatch is what banks *do*. They borrow short and lend (or invest) long. Is it true that there is accordingly some susceptibility to "duration squeezes" for any bank doing what banks do during a rising interest rate environment or anything else that causes those long assets to be sold before maturity? Yes. Is it true that SVB was just the unlucky winner of a which-bank-gets-run-on-first competition? No, as shown in Figure 2.

Figure 2: Unrealized Losses Impact on Cap Ratios



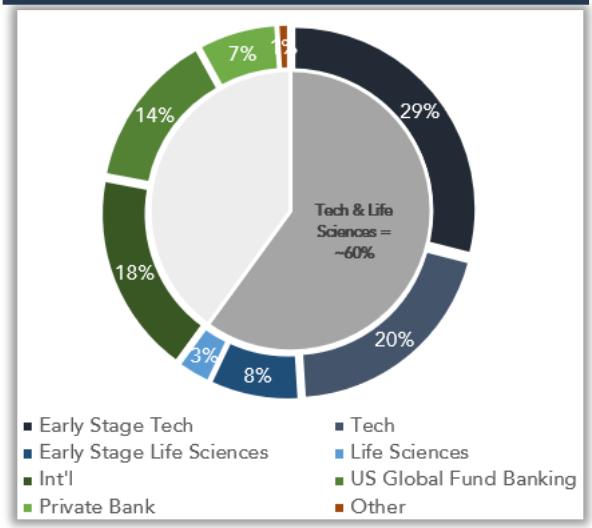
We have seen features of this set-up before: But it was decades ago, and likely before the start of most of our readers' careers. This was the savings and loan crisis of the 1980s and 1990s, when over 30% of middle market ("thrift") banks failed in the United States. At its core, the S&L crisis arose for similar reasons to those we're seeing today: Inflation-catalyzed, Fed-driven external pressure on short-term funding, combined with long-duration asset exposure (mortgages, for both SVB and S&Ls). **SVB and S&L's both mismanaged the duration of their mortgage-linked assets:**

- For S&L's, they warehoused long-dated, fixed-rate mortgages with short-dated, variable rate deposits. Put differently, **they *did not offload* their long-duration loan books to match their short-duration liability books**.

- For SVB, they actually *acquired* long-dated, fixed-rate mortgages, using short-dated, variable rate deposits. Put differently, **they onloaded their long-duration loan books, despite their short-duration liability books**. And in the

case of SVB, these deposits were primarily held by (what turned out to be) interest-rate sensitive start-up clients who had seen their own funding dry up, accelerating demand for deposit withdrawals (Figure 3).

Figure 3: SVB Deposit Sources



More interesting in our minds is that **SVB is not the only recent example of a duration squeeze breaking parts of the global financial system tied to private equity and venture capital.** In our more detailed discussion to follow, we share some parallels of how SVB's troubles rhyme with the recent UK pension system crisis (December 2022) and the ongoing BREIT saga (July 2022-present).

Where those duration squeeze examples differ from SVB, it is perhaps in the co-lead role played by the mismanagement of liabilities rather than the understandably large emphasis placed on assets in the case of a bank. Both the UK pension crisis and BREIT liquidity crunch were cases in which explicit choices were made to shorten the duration of those liabilities relative to other options, typically because doing so either produced more attractive-looking results (UK pensions) or a more marketable product (BREIT). More specifically, the entire retail private equity model is premised on substituting long-duration institutional capital for short-duration retail capital, while still acquiring long-dated alternative assets.

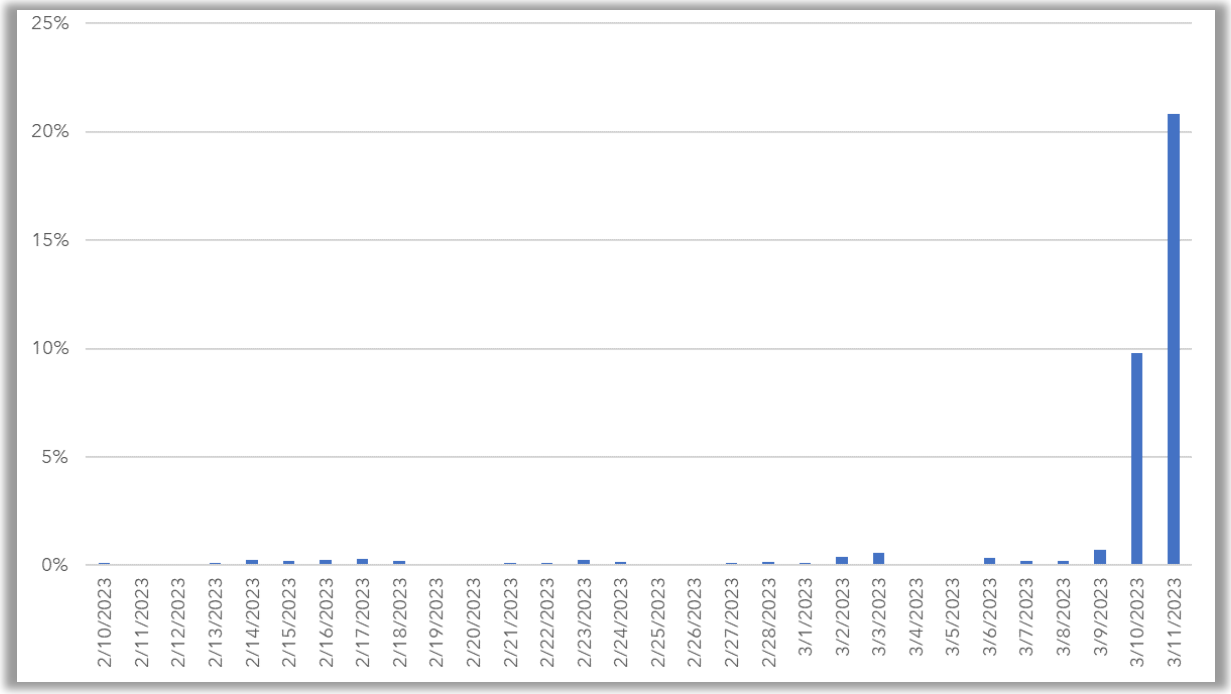
Where these modern duration squeezes most differ from the S&L crisis is in the speed and scale with which they took place. Both then and now, literal and figurative runs-on-banks are typified by a collective belief about what other depositors / investors / pension managers are likely to be thinking and doing. That is no less true for duration squeezes. **At some point, unless it is contained by action and messaging, the tinder of contagion that is dubious fair market value gives way to the contagion itself**.

As we will discuss in detail below, Blackstone pursued a widely publicized fundraising gambit with a large, stable institution as part of precisely such an action and messaging plan. The Bank of England did so as well by intervening directly, aggressively, and publicly in long-dated gilts markets.

Yet for all their power to stem contagion, **action and messaging can drive its spread as well**. Unlike the 1980s, we think that the centralization of action, specifically the decision-making with respect to large asset pools and influencers of large asset pools, has created an environment wherein single parties (e.g., in the case of SVB, Founders Fund and those whose decisions it influences) may in some cases be enough to trigger a de facto contagion. Perhaps more importantly, the mechanisms for wider spread of literal and figurative bank run behaviors are much more powerful. Social media and always-on financial media provide true and rumored lists of redeeming, withdrawing, and selling parties within a matter of seconds.

While discussion of the set-up of the duration squeeze felt by SVB took place over weeks, the spread of common knowledge about how other depositors and investors were responding took place over a far shorter horizon. It took one day to build up to the single highest concentration of financial news with language about bank crises, bank runs and contagion in the last fifteen years (just edging out the day Washington Mutual went belly-up).

Figure 4: Share of Financial News with Bank Crisis, Bank Run or Contagion Language



We believe **the quick, highly coordinated rise in long-term interest rates around the globe has now caused three major financial system breakages directly affecting alternative assets,** that the risk of continued shocks to the financial system is high, and that the speed and scale with which these shocks could manifest may be higher than it has in past analogs. We end by reviewing – admittedly, with some humility in that we do not have perfect information – where we are monitoring possible future susceptibility of these risks in the financial system, especially as they impact the private markets ecosystem.

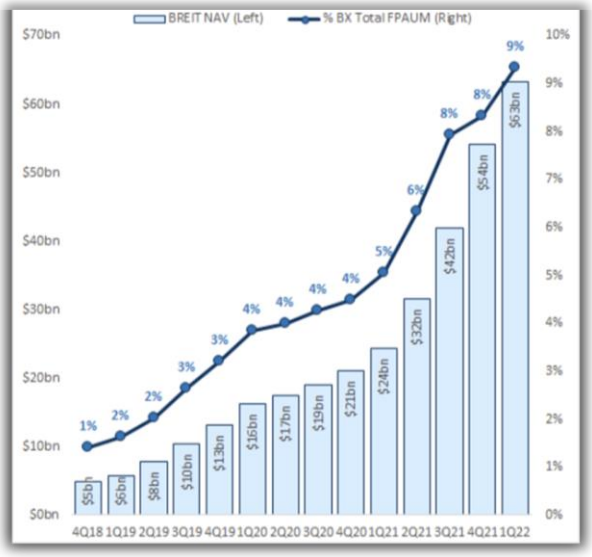
Case 1: BREIT Redemption Struggles (July 2022 – present)

Synopsis: In June 2022, Arctos began following pressure on BREIT, Blackstone's largest retail real estate offering, as investor redemption requests began exceeding withdrawal gates. As withdrawal requests persisted, Blackstone sourced a $4Bn liquidity infusion from UC Investments as a "validation" of the strategy and to help cover redemptions and shore up an important part of Blackstone's fee base, which was then ~9% of all fee-paying AUM (Figure 5). This evidenced the risk of using retail liabilities (a BREIT funding source) to acquire long-dated, rate sensitive assets (private real estate).

Background: Launched in 2017, BREIT is Blackstone's premier real estate product, with $126Bn of gross asset value. It is invested predominantly in rental housing and industrial properties across the southwest United States.

Established with retail investors in mind, BREIT allows affluent individuals to access private real estate through a semi-liquid investment structure. Investors may buy-in and sell-out of BREIT at its net asset value every month, making it a fairly liquid alternatives product, at least on the surface. And unless redemption requests exceed ~2% of BREIT's NAV, then investors can usually withdraw all their capital in any given month.

Figure 5: BREIT NAV

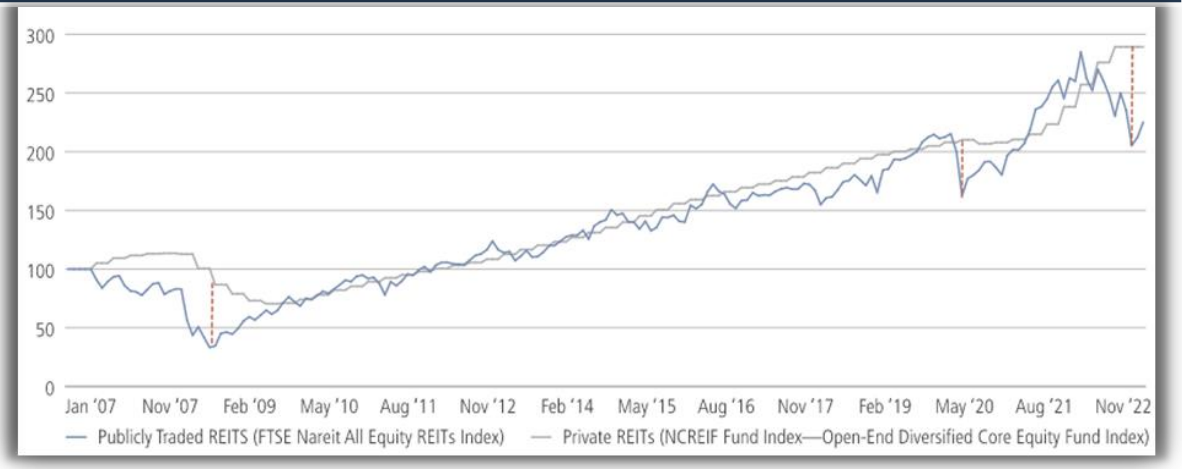


What Happened: BREIT and Starwood Real Estate Income Trust began seeing an uptick in investor redemption requests in mid-2022, with elevated requests coming from Asia-based investors in particular. Two factors were at play: *(**A**) A relative decline in US public-vs.-private REIT values, and (**B**) A rapid decline in Chinese real estate values.*

(A) Relative US Real Estate Value Decline

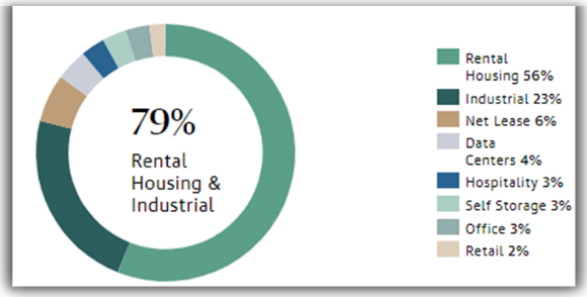
By mid-2022, a rising rates environment presented an increasing challenge to the value of the US real estate market, particularly housing, driven by the rapidly rising cost of a 30-year mortgage from under 3% in 2021 to over 7% as of this writing. Amidst this rates environment, the value of public REITs began to diverge from private REITs (Figure 6).

Figure 6: Public vs. Private Real Estate



Despite Blackstone's protests that BREIT was protected by favorable sectoral and geographic allocations (Figure 7), it was reported that investor redemption requests began to exceed the 2% monthly gate beginning in mid-2022.

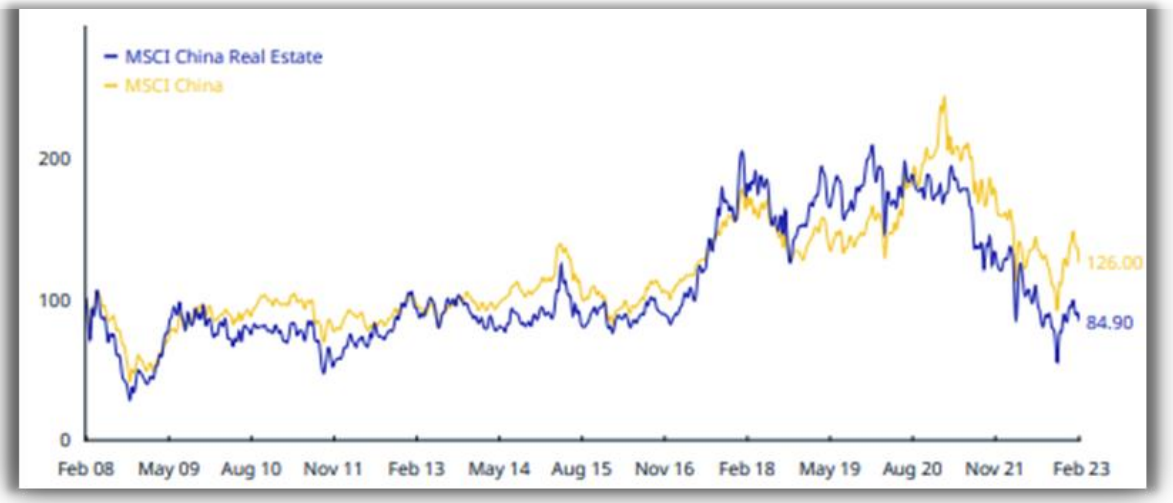
Figure 7: BREIT Property Sector



(B) *Rapid Chinese Real Estate Decline*

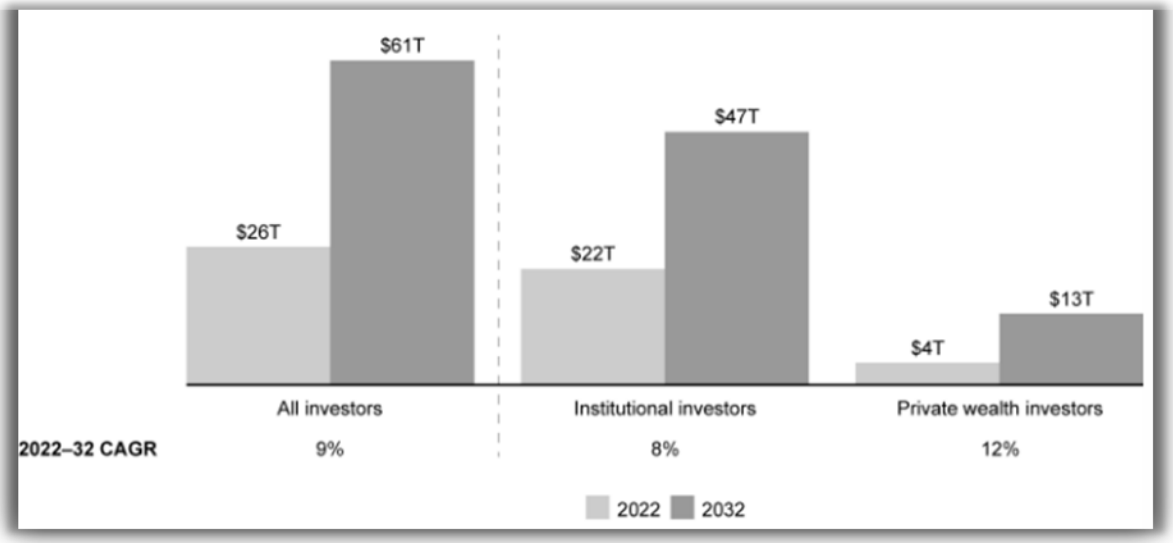
Compounding this issue was BREIT's growing global retail customer base, particularly in China. There, real estate prices had declined precipitously since late 2020. BREIT's relatively steady NAV and relatively liquid offering made it an attractive source of capital for Asia-based investors suffering from the wealth effect of declining real estate values at home (Figure 8).

Figure 8: MSCI China vs. China RE Cumulative Index Performance – Gross Returns (USD)



Impact on Private Markets: Just as SVB saw a tech-sensitive client base drive deposit withdrawals from a rates-sensitive bank, BREIT saw property-sensitive Asia-based client base drive capital redemptions from a rates-sensitive private real estate portfolio. BREIT is particularly important because retail capital is a thematic driver of most theses behind long-term private markets allocations growth: Retail is expected to grow quickly relative to institutional investors, effectively "picking up the slack" needed to maintain industry momentum (Figure 9).

Figure 9: Estimated Global Alts AUM by Investor Type



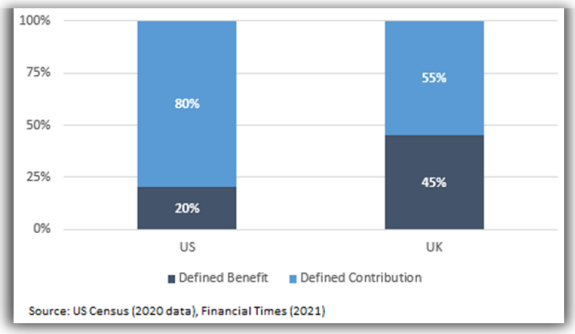
Given BREIT's prominence, any problems at BREIT could itself challenge the value proposition of the broader retail offering trend in private markets.

Case 2: UK Pension Crisis (October - December 2022)

Synopsis: In October 2022, Arctos began closely following an unfolding situation in the United Kingdom pension fund space. It was reported at the time that several investors were seeking to buy "cut-price" alternative assets from UK pensions, which were said to be rushing to raise cash after a recent crisis in the UK government bond market. This crunch came as UK pension funds faced liquidity pressure from collateral triggers on fixed income derivative positions.

Background: U.K. corporate pensions discount their liabilities using variable, market-based rates. UK retirement accounts also have a much larger share of defined benefit obligations than their US counterparts (Figure 10).

Figure 10: US vs. UK Retirement Accounts



With a large proportion of defined benefit obligations and levered liabilities, U.K. pensions turned to a hedging strategy called liability driven investing ("LDI"). LDI essentially involves using interest rate derivatives to provide synthetic long exposure to U.K. government bonds (gilts), hedging the risk of further interest rate declines, without tying up significant capital – the net effect of which is levered long duration exposure. LDI-driven leverage made UK pensions particularly sensitive to quick changes in rates and bond prices.

What Happened: LDI derivatives already faced price pressure as gilt yields increased on the back of the Bank of England's interest rates increases starting in December 2021. Then, in September 2022, the UK government announced a "mini-budget" that was poorly received by the bond market. This led to a sharp decline in gilt prices, pressuring the notional value of LDI derivatives (Figure 11).

Figure 11: Gilts vs. UST Yields

Given the embedded leverage in the UK pension system, the gilt sell-off triggered collateral calls, leading to rapid asset sales. As pensions sold their most liquid assets first, including gilts themselves, this further pressured the value of their collateral. Compounding this feedback loop, the UK pension share of the gilt market is larger than in the US, given the much deeper Treasuries market. This was only arrested when the UK government stepped in with an emergency bond-buying intervention that eventually totaled £65 billion.

Impact on Private Markets: As the UK pension crisis unfolded, the companies backing those pensions began to worry they would have to use their own balance sheets to support the unwinding collateral backing the LDI trade. It was widely reported that many of these funds began looking to sell their illiquid holdings, including property, private credit and stakes in buyout funds, at 20 – 30% discounts. And while the magnitude of these sales is still unclear, they certainly would have contributed to 2022's near-record secondary volume of $111B and a constrained ability to allocate to private markets strategies among these LPs.

Other Possible Sources of Risk Within Private and Alternative Assets

Duration squeezes do not automatically happen when interest rates rise. In fact, the financial system as a whole is always prone to a squeeze based solely on duration mismatches between assets and liabilities. Imagine a hypothetical banking system with $100 of liquid, risk-free government-sponsored bonds, $90 of demand deposits, and $10 of equity. Assume the government debt has a weighted average duration of 10 years. Demand deposits have a duration of zero, as they can be redeemed at par on demand.

Now, imagine interest rates rise 1%. This would, in theory, wipe out this hypothetical economy's entire equity base if those bonds *had to be liquidated today*. However, if those bonds can be held to maturity, they can still produce $100 (plus interest) of total future proceeds, enough to backstop all the deposits with plenty of equity left over. The duration mismatch is only a problem if **depositors redeem cash *en masse*, forcing liquidations today.** Without deposit flight or redemption pressure, the banking system remains solvent as interest rates rise.

The source of redemption pressure could be different each time:

- **Silicon Valley Bank**: Drawdown pressure on customer deposits from shock to the VC ecosystem and rising rates;

- **Non-Traded REITs** (e.g., BREIT): Redemptions sparked by concern over property valuation downturn, rising interest rates, and a Asia-specific redemption wave;

- **UK Pensions**: Margin calls on derivative security agreements implementing LDI strategies that were levered long duration risk.

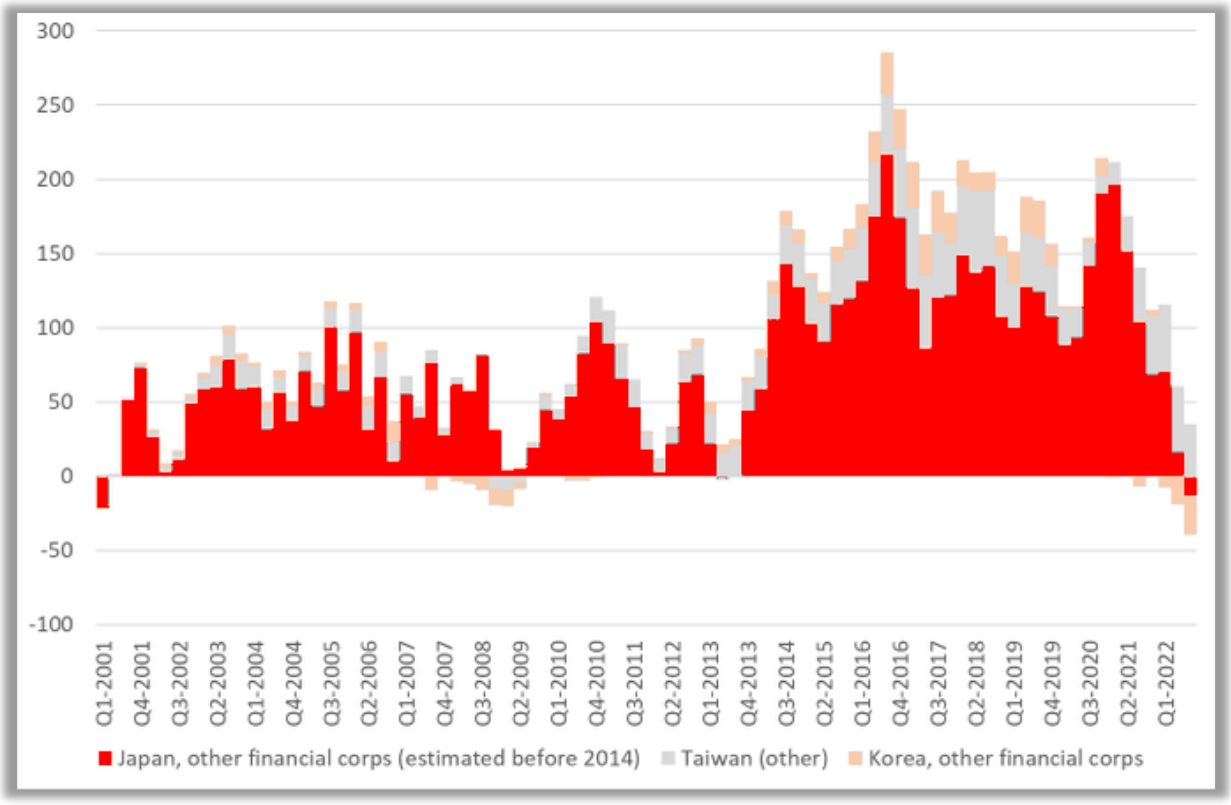
So, the question is two-fold: **first, where else could there be margin calls, redemption pressure, or customer cash deposit flight? Second, where is this pressure more likely to result in a rapid escalation of common knowledge of actual, or potential, contagion?**

As we said at the start, we will end by reviewing – with some humility in that we do not have perfect information – where we are monitoring possible future susceptibility of these risks.

Asian Insurers and Other Large Asian LPs

- As Brad Setser has detailed for years, east Asian life insurers were a major source of funds flow into U.S. fixed income markets from roughly 2014 to 2020. Taiwan's entire life insurance industry in 2019 held an estimated $550 billion of foreign assets, approaching 100% of Taiwan's GDP. As Raghuram G. Rajan outlined in his notable book on regulation and excess liquidity, this represents typical search-for-yield investing, as these areas of the world (Taiwan, Korea, Japan) all faced extremely low domestic interest rates (Figure 12).

Figure 12: Purchases of Foreign Debt (Mostly Insurers; Trailing 4Q Sums)



- While insurance is not a classic instance of "lending long, borrowing short", insurers in Asia have generally purchased foreign debt and hedged their currency risk using short-term FX contracts. These cross-currency

swaps allow insurers to borrow dollars short-term by swapping domestic currency. The proceeds are then invested in long-term dollar bonds. The result is a form of maturity transformation that could be a source of strain as the value of long duration bonds has declined and the value of the dollar as gone up.

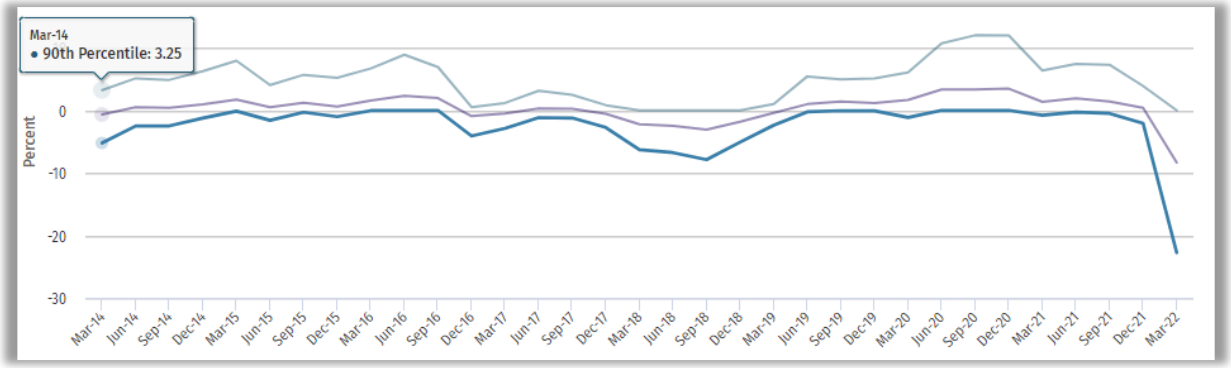
- In addition, Japanese banks hold over $1 trillion USD of U.S. Treasuries against predominantly demand deposit liabilities. Like SVB, these institutions may be holding a lot of mark-to-market losses in held-to-maturity (HTM) books, and so are effectively warehousing risk for the global economy, though no acute stress has emerged to-date.

- **Impact on private markets:** Potential stress in the Asian financial system could bleed into capital flows for private markets products – and it already has. An apparently meaningful source of BREIT's outflows in 2022 were from Asian investors dealing with domestic funding needs driven by the swings in interest rates, currencies, and likely domestic property market stress. GPs should assess the funding risk their business faces from overseas investors who may be dealing with versions of the financial stress that SVB just experienced.

Traditional and Alternative Credit

- Following SVB's collapse, the government regulators and / or broader banking sector may continue to tighten lending requirements to protect financial institutions' balance sheets and increase the level of required regulatory capital that banks must maintain. Rates increases and lengthening duration of bank assets during the pandemic are already causing unrealized AFS losses to increases (Figure 13).

Figure 13: Unrealized Gains (Losses) in AFS Securities as Percent of Tier 1 Capital



- However, the above chart only shows losses in the AFS portfolio. If bank capitalization levels were adjusted for longer-hold investments that are not marked-to-market – similar to some of SVB's HTM exposures – regulatory capital ratios would be meaningfully lower for several lenders (Figure 14).

- **Impact on private markets:** Amidst this high rates, low liquidity environment, where banks continue to retrench, there should be an opportunity for private debt and tactical secondary funds to deploy capital where traditional financing sources (bank balance sheets, venture- and growth-equity firms) face constraints. This is already evidenced by bank's shrinking share of LBOs (Figure 15) and of corporate loans.

Figure 14: Unrealized Losses Impact on Cap Ratios

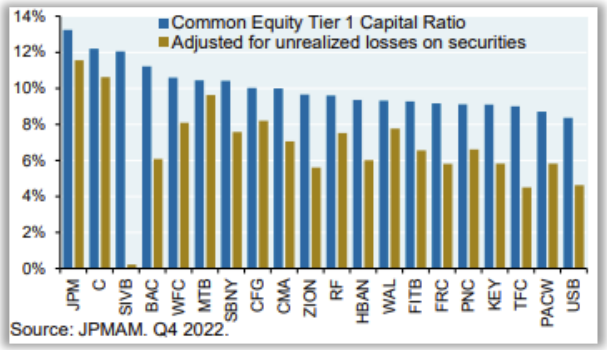
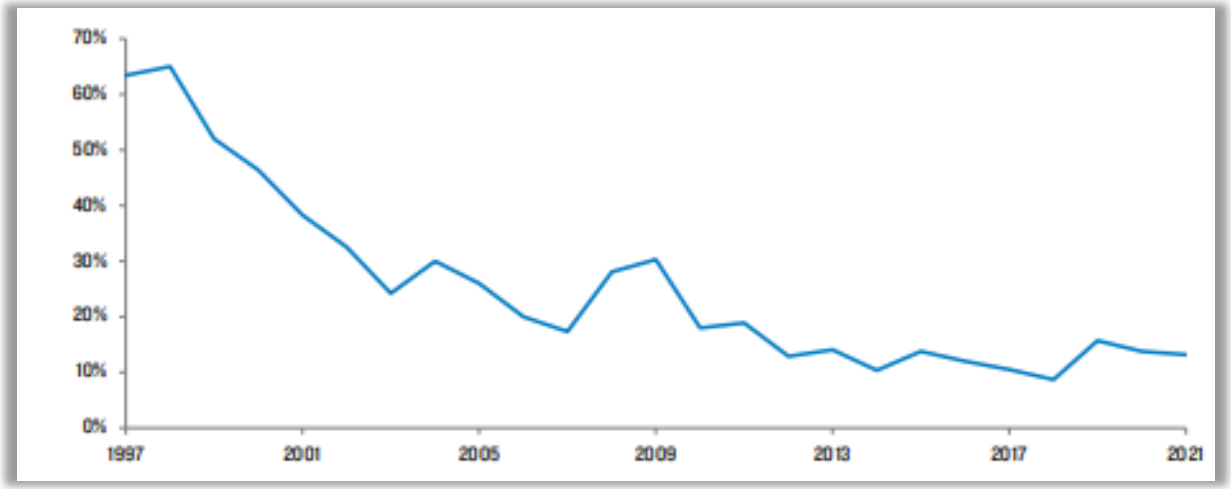


Figure 15: Banks Share of US LBO Market



Democratization in Private Markets: The End of Cheap Deposits

- As the BREIT situation illustrates, retail investors are an increasingly important part of the alternative asset management industry's investor base. Retail alternatives bellwether iCapital now has over $152Bn platform assets, up from ~$47Bn in 2019. And, as Bain Consulting reported recently, "individual investors hold roughly 50% of the estimated $275 trillion to $295 trillion of global assets under management... Yet those same investors represent just 16% of AUM held by alternative investment funds."

- Meanwhile, there's been a proliferation of retail products designed specifically for the periodic liquidity needs of the mass affluent (Figure 16). **Unlike institutional capital in traditional, long-duration fund structures, asset managers are actively sourcing short-duration retail funding to acquire long-duration alternative assets.** GPs are increasingly banking on growth from this channel: As Arctos noted recently in another white paper, ~95% of the industry's AUM comes from non-retail investors who have largely met their alternative allocation targets, with much of the remaining whitespace in retail.

Figure 16: Select Retail Alts Products

	Examples	Valuation frequency	Repurchase frequency	Early repurchase fee	Repurchase limit
Real estate	BREIT (Blackstone Real Estate Income Trust)	Monthly	Monthly	✓	2% of net asset value monthly 5% of NAV quarterly
	SREIT (Starwood Real Estate Income Trust)	Monthly	Monthly	✓	2% of NAV monthly 5% of NAV quarterly
Alternative credit	BCRED (Blackstone Private Credit Fund)	Monthly	Quarterly	✓	5% of shares or quarterly NAV
	KCOP (KKR Credit Opportunities Portfolio)	Daily	Quarterly	✗	10% of NAV quarterly (up to 25%)
Private equity	CCAF (Constitution Capital Access Fund)	Monthly	Quarterly	✓	5% of NAV quarterly
	Global Value SICAV (Partners Group Global Value SICAV)	Monthly	Monthly	✓	5% of NAV quarterly
Infrastructure	BEP (Brookfield Renewable Partners)	Daily		Daily liquidity (traded on NYSE and TSX)	

- Private markets growth has benefited from several secular trends in recent years, but an era of low rates is among the most prominent. Just as the reversal of an excess of cheap deposits contributed to SVB's collapse, retail investors will see higher yielding alternatives and less liquidity.

- **Impact on private markets**: If retail investors begin to believe that alternatives products are (1) more illiquid than anticipated (e.g., BREIT's monthly gates); (2) over valued (e.g., public vs. private REIT valuations); (3) or too expensive (Vanguard's average expense ratio is 0.09% vs. an Owl Rock private credit BDC product, which is over 8x this), then growth may suffer. While these retail headwinds are likely insufficient to reverse the industry's long-term growth, **higher rates, and the accompanying potential for retail-duration squeezes, may dampen retail enthusiasm**.

US Pensions

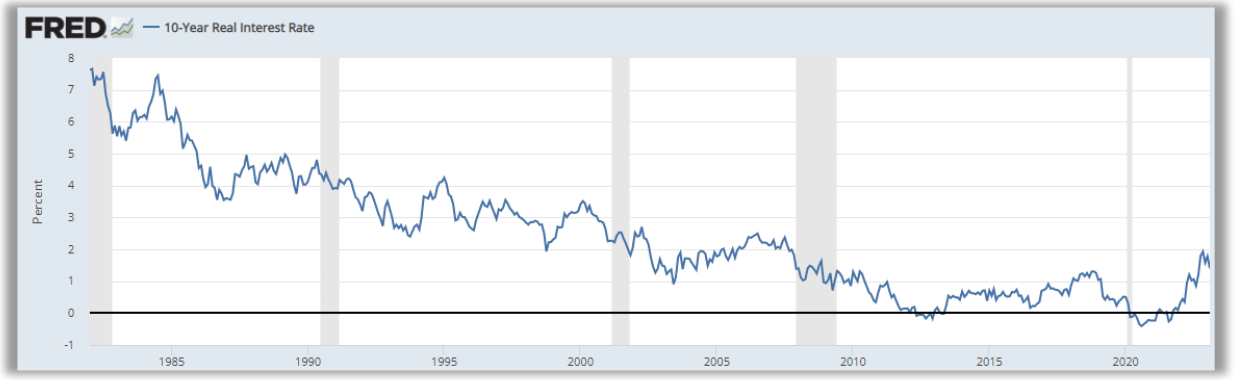
- Several factors limited the direct 'contagion' of the UK gilts duration squeeze, including the substantially deeper market in 30-year US Treasury bills and the availability of a robust market in Treasury strips that sharply reduces the need for US pension investors to enter into interest rate swaps (and the associated daily variation margin of those swaps) as found in a typical LDI construct.

- But the fundamental susceptibility of large asset owners like US pension funds or insurers to a duration squeeze is found less in the characteristics of a specific market failure than in the general embrace of strategies that intentionally shorten liability duration and apply leverage to longer-dated assets. The risk is not that a US pension fund will adopt an LDI strategy that copies a troubled UK pension fund, but that they will adopt some other Wall Street product that 'proves' the efficacy of their offering by using the data of the past thirty years even as we are experiencing a financial regime change not found in the past thirty years.

- With bonds paying real interest (Figure 17), leverage becoming feasible for many public plans, and the siren call of "infinite time horizon" is as in place as ever, it is not hard to envision a new range of leveraged structures

being proposed as an alternative to the multi-year cycle which extended asset duration through a transition of public markets equity, fixed income and credit allocations to private markets.

Figure 17: 10Y Real Interest Rates



- **Impact on private markets**: While such mismatches by their nature are more likely to be localized to individual plans rather than become a systemic contagion, allocators, GPs, and LPs should remain aware that the multi-year cycle for private equity fund-raising and investment was positively influenced by the low-rate environment.

Hedge Funds

- While much of the opportunity for Non-Bank Financial Institutions ("NBFIs") described in the Traditional and Alternative credit section is likely to fall to private debt and secondaries funds, as has happened many times before, there are a range of multi-strategy and credit long/short hedge funds stretching mandates into less liquid instruments like private credit and equity positions.

- While some of those funds for which the strategy has been a core of their process for years have appropriate liability profiles, at the margin there are still funds with more traditional monthly or quarterly investor liquidity participating in less liquid markets.

- **Impact on private markets**: While not directly an interest rate-driven phenomenon, duration squeezes and resulting asset liquidations and opportunities will not only be from traditional financial institutions to NBFIs, but within the ranks of NBFI's that themselves have relied on short liability durations to market their funds more successfully.

Again, we would emphasize that we don't know what tomorrow brings, nor what actions the regulators may take to arrest the fallout for SVB. And as always, we are happy to help you consider immediate next steps, review strategic alternatives, and formulate a long-term plan around these unfolding events.

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