



U.S. Public Plan Asset Allocation Report

Benchmarking asset allocations
and uncovering opportunities in
the public DB space

Executive Summary

Asset allocation information affords institutional investors the opportunity to compare their investments to their public fund peers. The data can be used to benchmark strategic targets, review alternative portfolio construction concepts, and understand how public plan peers are viewing certain investments within a portfolio context. To aid in these efforts, we analyze how strategic asset allocations have changed over time and how asset allocations differ between plans of various asset sizes.

For asset managers, asset allocation data can illuminate areas of demand for specific strategies and show whether a product market may be underserved or approaching saturation – what we like to think are early signals for activity. The following report also covers mandate information which highlights how *Market Lens* can show the most immediate needs of allocators and can prove invaluable for investor relations and business development teams.

The information in this report is based on U.S. public plan documents sourced from *Nasdaq eVestment Market Lens*. We used asset allocation disclosures provided by 248 U.S. plans managing assets of \$4.8 trillion as of Q4 2022.

Highlights

- Public plans' public equity exposure averaged 39.9% and were under-weight against their target allocations entering 2023 with the allocation deficit measuring \$115.3 billion. Public equity targets have declined steadily over the years across plans of all sizes, falling by -2.3 percentage points (pp) cumulatively since 2018. Private alternatives allocations have risen commensurately.
- The number of commitments made and dollars committed to private equity and private debt both declined in H1 2023 compared to the first half of the prior year. Public plans were over-allocated to private equity (+1.9%) and modestly under-allocated to private debt (-0.2%) through year-end 2022.
- U.S. public plans were over-allocated to real assets by +110 bps against their target allocations of 14.6% through 2022. Real estate equity and debt and blended real assets allocations represented the bulk of the over-weight. Natural resources allocations were roughly neutral-weight leaving dedicated infrastructure allocations as the only under-allocated real assets sub-category in aggregate.
- Hedge funds were over-allocated by +12 bps and multi-asset strategies under-allocated by -12 bps through 2022. As with public equities these asset classes have seen their target allocations decline over time. New commitments to these asset classes dried up in H1 2023, after showing relatively robust results from Q4 2021 through Q3 2022.

Year End-2022 Asset Allocations

The U.S. public plans in our sample were under-weight public asset classes including equities, fixed income, and multi-asset strategies entering 2023, an unsurprising result given market conditions in 2022. Public equities were the most under-weight asset class at -2.4%, followed by fixed income at -1.3%. Notably, private debt and infrastructure were also slightly under-allocated to end the period. To close the differential between current and target allocations would require net flows measuring +\$115.3 billion to public equities and +\$64.1 billion to fixed income; multi-asset, private debt, and infrastructure products would also require net flows in the +\$5 to +\$10 billion range.

At the other end of the spectrum, private equity, real assets, and hedge fund allocations were broadly over-weight through 2022. Outperformance relative to traditional public markets strategies, delayed valuations, and the denominator effect are all playing a role in these assets being over-weight. While we expect the plans in our sample to slow down allocations or pull capital outright from some of these over-weight asset classes, there still exist individual plans which are positioned inversely to aggregate exposures. Under-allocated plans represent sizeable opportunities which are reflected in the implied gross inflows figures shown below. Implied gross inflows total +\$13.2 billion for real estate, +\$8.2 billion for private equity, and +\$6.6 billion for hedge funds.

U.S. Public Plan Asset Allocations

Asset Class	Year-End 2022 Allocation	Target Allocation	YE'22 Less Target Allocation	Implied Net Flows (US\$ bn)	Implied Gross Inflows (US\$ bn)	Implied Gross Outflows ¹ (US\$ bn)
Public Equity	39.86%	42.28%	-2.42%	\$115.33	\$137.70	\$(22.37)
Fixed Income	20.51%	21.85%	-1.34%	\$64.10	\$92.09	\$(27.99)
Alternatives						
Hedge Funds/Absolute Return	1.99%	1.88%	0.12%	\$(5.52)	\$6.58	\$(12.10)
Private Equity	11.84%	9.90%	1.94%	\$(92.50)	\$8.24	\$(100.73)
Private Debt	1.49%	1.67%	-0.17%	\$8.31	\$17.88	\$(9.57)
Alternatives (Blend) ²	4.10%	3.84%	0.27%	\$(12.64)	\$5.57	\$(18.21)
Real Assets	15.73%	14.63%	1.10%	\$(52.50)	\$29.85	\$(82.35)
Real Estate	8.85%	8.19%	0.66%	\$(31.52)	\$13.17	\$(44.69)
Infrastructure	0.58%	0.69%	-0.11%	\$5.33	\$7.84	\$(2.50)
Natural Resources	0.46%	0.43%	0.03%	\$(1.42)	\$2.34	\$(3.76)
Real Assets (Blend) ³	5.84%	5.32%	0.52%	\$(24.90)	\$6.50	\$(31.40)
Multi-Asset	0.56%	0.68%	-0.12%	\$5.77	\$7.12	\$(1.36)
Blended Allocations						
Growth Strategies ⁴	1.42%	1.49%	-0.07%	\$3.43	\$4.02	\$(0.59)
Risk Mitigation/Diversification ⁵	1.34%	1.41%	-0.07%	\$3.36	\$6.81	\$(3.45)
Other Blended Allocations	1.32%	0.52%	0.80%	\$(38.18)	\$0.06	\$(38.23)
Cash & Overlays	0.23%	-0.12%	0.35%	\$(16.84)	\$23.58	\$(40.42)

1. We note that while we do calculate implied gross outflows for private markets asset classes, we recognize these are largely closed-end vehicles with limited liquidity. In light of this fact, gross outflows should be interpreted as a capital allocation and distribution timing option, a buffer to underperformance, or as potential secondary opportunities in contrast to outflows under the more usual definition retained for public markets asset classes.

2. Mixed alternatives allocation, generally includes private equity and debt, hedge funds, PERE, energy, etc.

3. Mixed real assets allocation, generally includes RE, infrastructure, energy, and agriculture and to a lesser extent TIPS

4. Mixed traditional and alternative asset class allocation, generally includes public equities, private alternatives, credit, and non-core real estate

5. Mixed traditional and alternative asset class allocation, generally includes multi-asset strategies, hedge funds, long duration Treasuries

H1 2023 Market Performance Impact on Asset Allocations

Having looked at the state of asset allocations entering 2023, we attempt to quantify the impact market movement has had through the first half of the year. Based on our understanding of actual allocations for our 248 plan sample, we estimate the aggregate performance impact in H1 2023 was +7.7% or +\$366.6 billion. Our assumptions are outlined in the methodology section on page 33.

The sharp rise in public equity values moves our sample set from a net allocation deficit of -2.4% below target allocations to a shortfall of -68 bps. This change, along with the larger asset base overall, would push implied net flows from +\$115.3 billion to only +\$34.7 billion. Fixed income, despite showing positive returns in H1 2023 under our assumptions, move from being under-weight by -1.3% to under-weight by -2.2%. Private debt and infrastructure also fall into the category of asset classes which began the year under-weight

and trend toward greater allocation deficits. Lastly, we forecast private equity, real assets (excluding infrastructure), and hedge fund allocation surpluses contracted in H1 2023.

We include private markets return assumptions in our model to provide a holistic “real-time” scenario analysis of plan exposures and how they may have changed. We recognize the challenges in valuing private assets during volatile periods and the lagged nature of private asset valuations. Certain plans may be working on the temporary assumption that there were no changes to private asset marks (i.e.: using delayed marks as would be the case during other periods). The literature also suggests the possibility of returns smoothing, which in the current context, would mean dampened valuation gains for 2023. These would have effects on the relative weights of asset classes as a proportion of overall portfolio value.

U.S. Public Plan Asset Allocations (YE'22 Actual vs. H1'23 Est.)

Asset Class	YE 2022 Actual Allocation	H1 2023 Return Assumption	Q2 2023 Allocation Estimate	Target Allocation	YE'22 Actual Less Target Allocation	Q2'23 Est. Less Target Allocation	YE'22 Implied Net Flows (US\$ bn)	Q2'23E Implied Net Flows (US\$ bn)
Public Equity	39.86%	12.40%	41.61%	42.28%	-2.42%	-0.68%	\$115.33	\$34.67
Fixed Income	20.51%	3.19%	19.65%	21.85%	-1.34%	-2.20%	\$64.10	\$113.03
Alternatives								
Hedge Funds/Abs. Return	1.99%	4.13%	1.93%	1.88%	0.12%	0.05%	\$(5.52)	\$(2.56)
Private Equity	11.84%	5.40%	11.59%	9.90%	1.94%	1.69%	\$(92.50)	\$(86.71)
Private Debt	1.49%	5.61%	1.46%	1.67%	-0.17%	-0.20%	\$8.31	\$10.42
Alternatives (Blend) ¹	4.10%	4.08%	3.97%	3.84%	0.27%	0.13%	\$(12.64)	\$(6.55)
Real Assets	15.73%	2.27%	14.94%	14.63%	1.10%	0.31%	\$(52.50)	\$(15.91)
Real Estate	8.85%	2.32%	8.41%	8.19%	0.66%	0.22%	\$(31.52)	\$(11.29)
Infrastructure	0.58%	2.61%	0.55%	0.69%	-0.11%	-0.14%	\$5.33	\$7.14
Natural Resources	0.46%	0.93%	0.43%	0.43%	0.03%	0.00%	\$(1.42)	\$(0.03)
Real Assets (Blend) ²	5.84%	2.27%	5.55%	5.32%	0.52%	0.23%	\$(24.90)	\$(11.73)
Multi-Asset	0.56%	8.72%	0.57%	0.68%	-0.12%	-0.12%	\$5.77	\$5.93
Blended Allocations								
Growth Strategies ³	1.42%	8.46%	1.43%	1.49%	-0.07%	-0.06%	\$3.43	\$3.17
Risk Mitigation/Div. ⁴	1.34%	5.22%	1.31%	1.41%	-0.07%	-0.10%	\$3.36	\$5.19
Other Blended	1.32%	8.72%	1.33%	0.52%	0.80%	0.81%	\$(38.18)	\$(41.76)
Cash & Overlays	0.23%	1.82%	0.22%	-0.12%	0.35%	0.34%	\$(16.84)	\$(17.50)

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Strategic Asset Allocation Changes

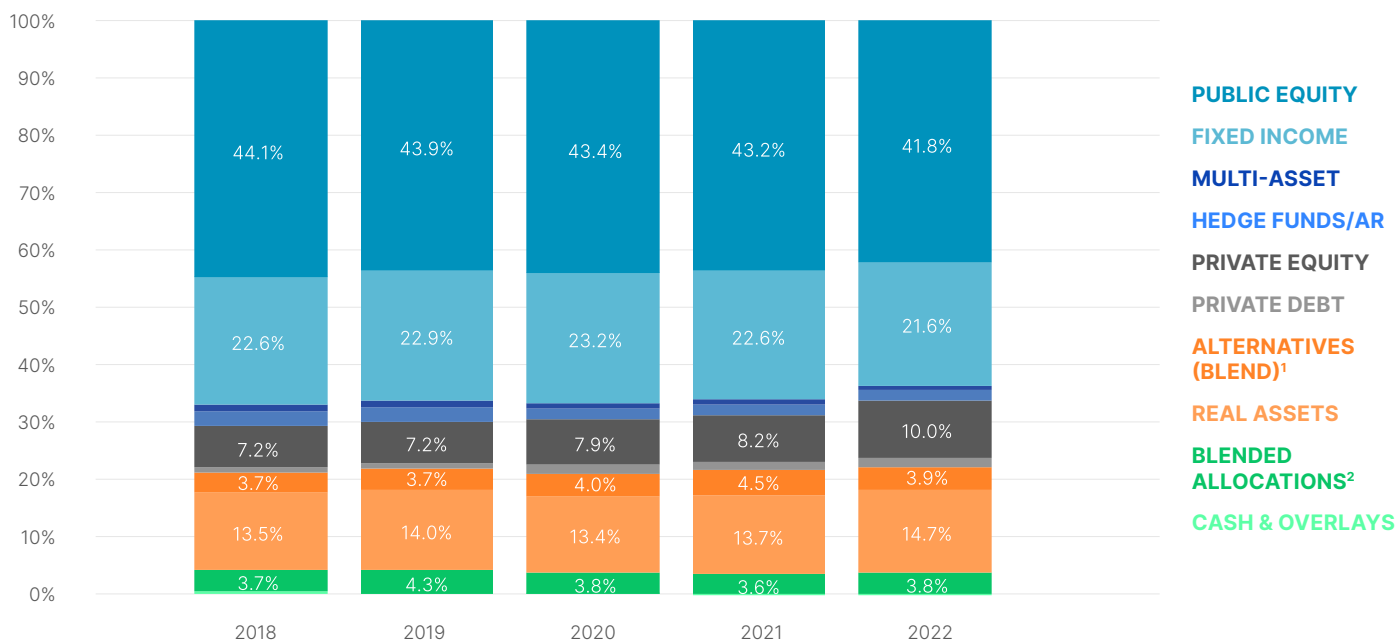
The chart below aggregates strategic asset allocations over time across 181 plans. These plans are a subset of our previously mentioned full sample of 248 plans and their historical asset allocations constitute contiguous series since at least 2018, all of which are available on *Market Lens*. They represent, as of year-end 2022, 87.8% of the AUM of our full sample.

We have seen an increasing preference for private markets assets over public markets exposure. The bulk of the decline in public markets allocations came from public equities, decreasing monotonically from an asset-weighted 44.1% target in YE 2018 to 41.8% in YE 2022 or a -2.3pp decrease. Hedge funds and multi-asset strategies have also seen their target allocations decline; from 2.8% to 1.9% for hedge funds and from 1.0% to 0.7% for multi-asset strategies.

Private equity targets, on the other hand, increased from 7.2% in YE 2018 to 10.0% in YE 2022. Similarly, dedicated private debt targets rose from 0.8% to 1.8% and “Alternatives (Blend)” from 3.7% to 3.9%. This latter category is a “mixed bag” category and is largely comprised of private equity funds, and to a lesser extent real estate, private debt, hedge fund, and energy investments.

Real assets targets increased from 13.5% in YE 2018 to 14.7% in YE 2023. Looking at real assets sub-categories, we find that increases to real estate and dedicated infrastructure target allocations fully accounted for these gains. Real estate targets have risen +101 bps to 8.4% to end 2022 and dedicated infrastructure targets rose +37 bps to 0.7%. Dedicated natural resources targets declined -28 bps to 0.5% and blended real assets targets were roughly flat over the period at 5.0%.

Target Allocations Over Time



¹ Mixed alternatives allocation, generally includes private equity and debt, hedge funds, PERE, energy, etc.

² Mixed traditional and alternative asset class allocation, summation of “Growth Strategies,” “Risk Mitigation/Diversification,” and “Other Blended Allocations” categories in the table on page 3

³ We note that the figures above are subject to changes in the granularity of asset allocation data, i.e.: a change in the granularity of disclosures can affect how we sum up the relevant target allocations. For instance, private debt may be broken out as its own line item in one year and subsumed within fixed income the next, affecting how the data changes over time

Strategic Asset Allocations by Plan Size

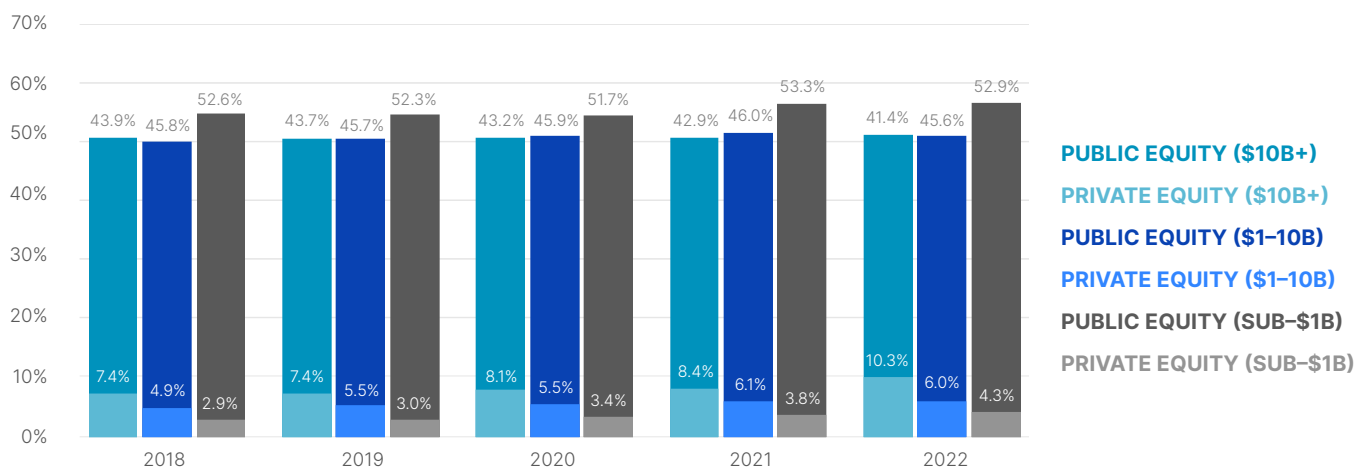
We continue our time series analysis by segregating the 181 aforementioned plans into three buckets based on plan size at the end of 2018 – those with under \$1 billion in assets, those with between \$1 billion and \$10 billion in assets, and lastly those with over \$10 billion in assets. The constituent plans are kept constant for our three asset buckets, even if they outgrow their initial size threshold to maintain our understanding of how asset allocations have evolved.

Corporate equity risk, as opposed to real estate and other forms of equity, has been fairly constant for all three segments with the smallest plans holding marginally more exposure throughout. However, larger plans have been quicker to adopt private equity at scale and to subsequently raise their PE target allocations, increasing from 7.4% in YE 2018 to 10.3% by YE 2022 (+295 bps). By contrast, mid-size plans started with average allocations of 4.9% in YE 2018 and increased their targets by only +115 bps. Smaller plans have

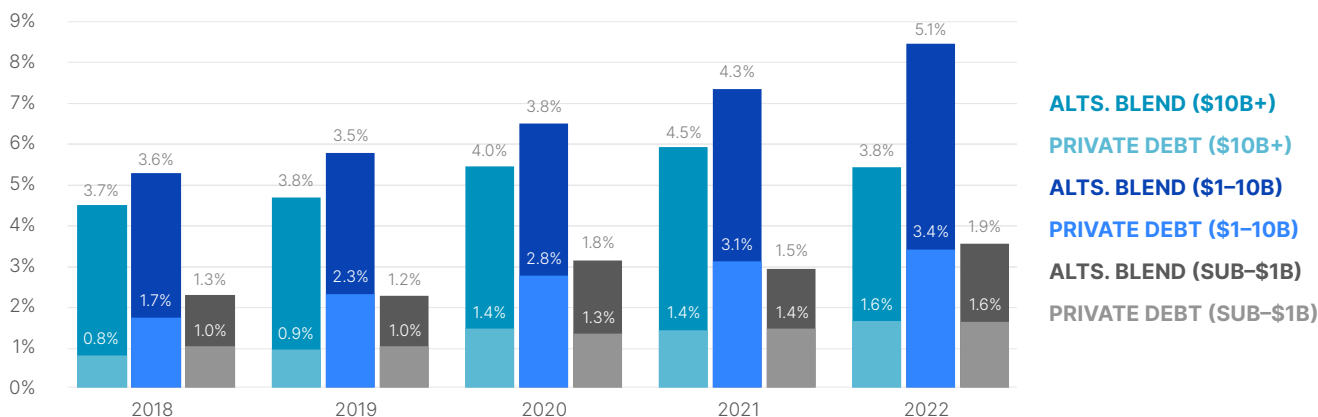
shown the least adoption to date, but their target allocations have increased +138 bps since YE 2018. As of YE 2022, 74.7% of the large plans in our sample had disclosed dedicated private equity allocations compared to 60.2% for mid-size plans and 48.9% for small plans.

Interestingly, mid-size plans have been quicker to incorporate dedicated private debt allocations than both large and small plans. Mid-size plans' dedicated private debt targets rose from 1.7% in YE 2018 to 3.4% by YE 2022; large plans' targets rose from 0.8% to 1.6% and small plans' targets from 1.0% to 1.6%. It is conceivable that this is due to large plans integrating their private debt commitments within their broader fixed income or blended alternatives allocations, the latter of which are largely comprised of private equity funds, but may include private debt, PERE, hedge funds, and energy.

Public & Private Equity Target Allocations



Private Debt & Blended Alternatives Target Allocations

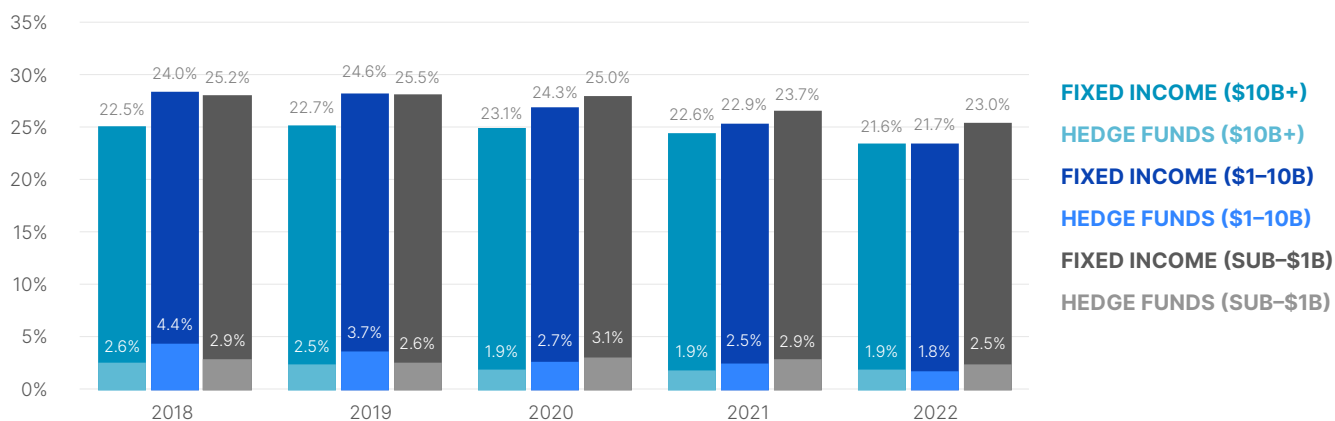


Strategic Asset Allocations by Plan Size

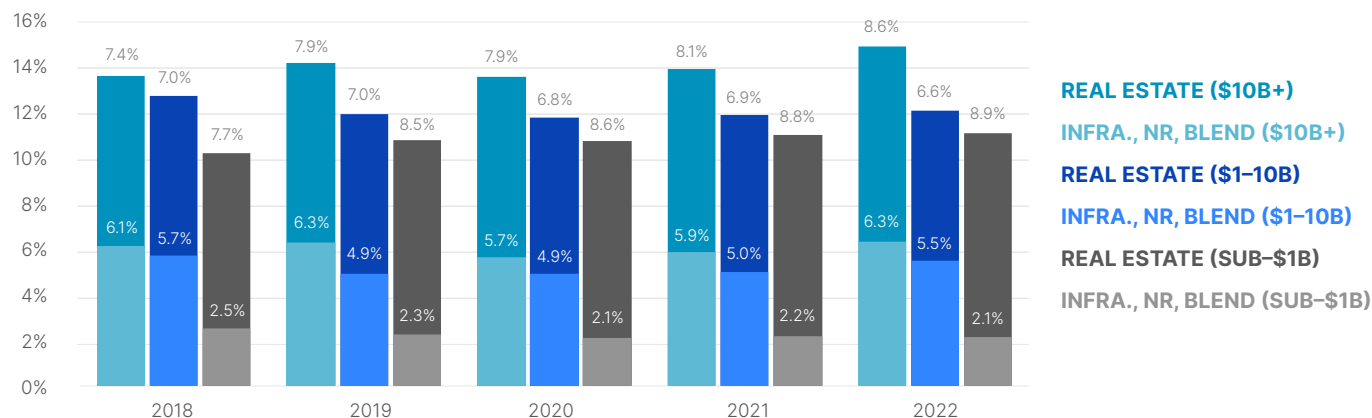
Large plans, in aggregate, have consistently had lower fixed income and hedge fund exposure than their mid-size and small counterparts over the past 5 years. Target fixed income exposure decreased moderately from 2018 through 2022 within each size category. Allocations dedicated to hedge funds, however, have declined across plans of all asset sizes. We mark a decline of -71 bps in dedicated hedge fund target allocations for large plans from YE 2018 to YE 2022, -256 bps for mid-size plans, and -42 bps for small plans. With that being said, mid-size and large plans have raised targets for allocations designed to mitigate risk and to diversify portfolios (not shown in the charts below), +253 bps for mid-size plans from YE 2018 to YE 2022 and +10 bps for large plans over the same period. Asset owners can explore how large plans are incorporating these “Risk Mitigation/Diversification” allocations on *Market Lens*.

Large plans’ target allocation to real estate and other real assets totaled 13.6% in YE 2018, increasing to 14.9% by YE 2022. Dedicated real estate allocations were the primary driver as shown in the chart below, rising +112 bps. Dedicated infrastructure, dedicated natural resources, and blended real assets targets on a combined basis have only increased by +19 bps over the period. Mid-size plans, interestingly, have decreased their real assets targets with dedicated natural resources accounting for -68 bps and real estate -43 bps. Smaller plans continue to lag mid-size and large plans in real assets exposure, but have increased their target allocations since YE 2018. Small plans’ target real estate allocations rose +126 bps and infrastructure allocations +29 bps.

Fixed Income & Hedge Fund Target Allocations



Real Assets Target Allocations



Implied Flows,
Allocations & Mandates
Public Equity

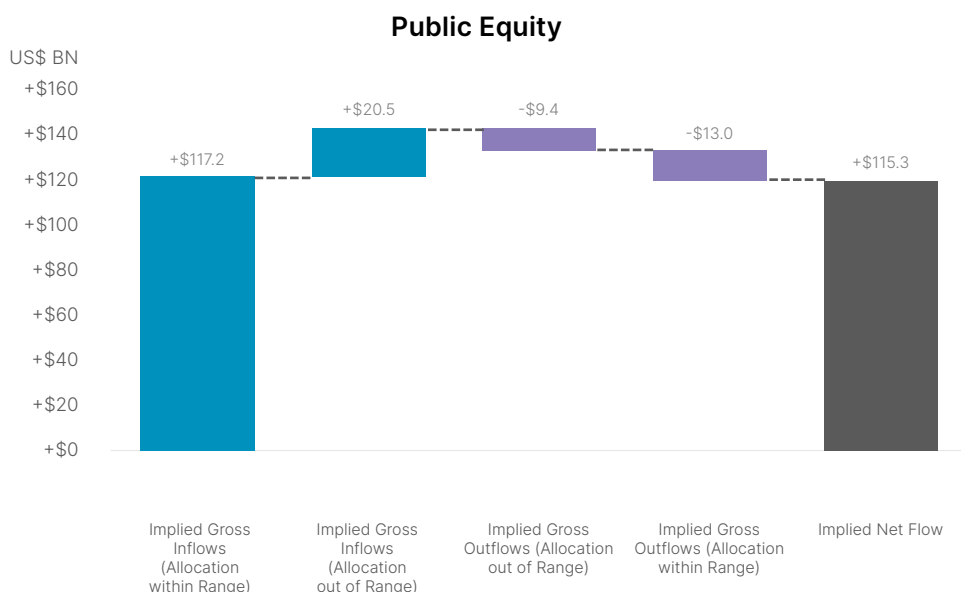
Implied Flows

Public equity remained the single largest asset class allocation for U.S. public plans with a target allocation of 39.9% in aggregate. Entering 2023, plans were under-weight public equity strategies versus their target allocations by -2.4%. We find that plans which disclose regional equity allocation breakouts were, in aggregate, under-weight U.S. equities by -54 bps, global equities by -29 bps, international equities by -25 bps, and EM equities by -16 bps. We use target and 2022 actual allocations to determine the amount of capital required to close allocation gaps, whether it be inflows for allocation shortfalls or outflows for allocation surpluses. This amount calculated across our sample is the implied net flows for each allocation. Public equities, with a net under-allocation of -2.4%, implies a net inflow of +\$115.3 billion.

In addition to implied net flows for the 248 plans as a whole, we calculate two additional measures. Firstly, we calculate implied gross flows, both in and out, by segregating plans based on whether they are over- or under-allocated to a given asset class. This ensures we are capturing the total volume of potential capital movement, as allowed by these asset allocation disclosures. Secondly, we calculate implied gross flows adjusted for allowable allocation ranges. In many instances, a minor deviation from strategic target allocations will not generate flows as asset owners allow performance and other factors to impact their overall portfolios. While this might be useful information for managers with pre-existing relationships, this information is less constructive for those not already on the roster. Therefore, we also aggregate plan-level mismatches where current allocations exceed their targets, or vice versa, in excess of their allowable allocation ranges, labeled “implied gross inflows/outflows (allocation out of range)” in the chart below.

Allowable variance implied flows include the entirety of the difference between current and target allocations, i.e.: we assume that the amount of capital will be enough to bring the allocation in-line against targets and not just to the boundary of the allowable allocation range.

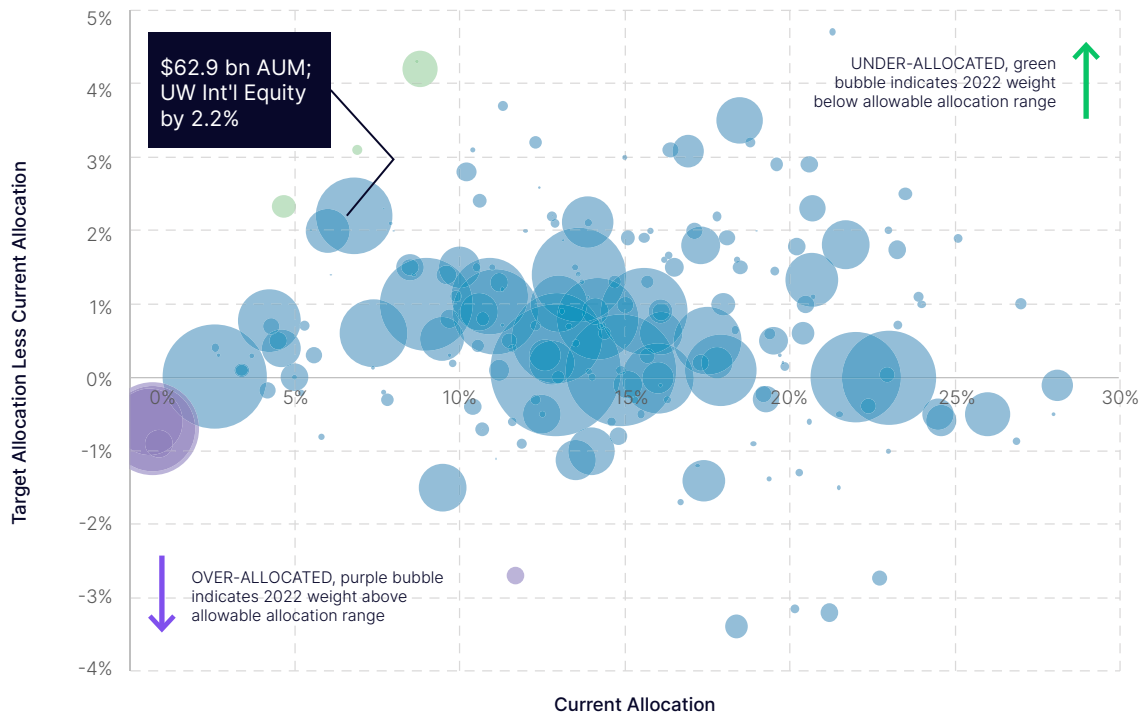
Across U.S. public plans, we see significant opportunities to raise capital for long-only equity managers. We calculate roughly +\$20.5 billion needs to be deployed in public equities across plans with allocations below their allowable allocation ranges. This total represents the most pressing needs and are therefore the most likely to result in a new mandate if one is not already ongoing. These will also generally capture asset classes which have been newly included due to changes in investment policy statements or strategic asset allocations. For plans in compliance with their public equity allocation ranges, an additional +\$117.2 billion can be deployed to immediately bring these plans into compliance with their public equity targets. Our implied flows estimates do not encompass manager replacements within an asset class – these would produce additional flows atop those modeled here. On the following page we show a currently ongoing mandate generated from a shift from passive to active, one example which would contribute to additional inflows. At the opposite end of the spectrum, we see -\$9.4 billion in capital as being at high risk of being withdrawn from long-only equity managers. Lastly, an additional -\$13.0 billion in gross outflows need to occur for all plans that are overweight public equities to bring their allocations up to target levels.



Note: Due to certain plans' lack of disclosure regarding allowable allocation ranges, we stylize allocation limits for all plans as follows. Allocation limits are calculated as the target allocation plus or minus the allowable variance. The allowable variance is calculated as 0.25 times the target allocation level. However, the minimum allowable variance is +/-2%, the maximum allowable variance is +/-10%. For instance, a 50% target allocation will have an allowable variance of +/-10%, given that 0.25 times 50% is 12.5% which exceeds the maximum allowable variance of +/-10%. Lastly, a target allocation level of exactly 0% will have no allowable variance.

Plan-Level Allocations

International Equity



DATE: July 13, 2023
 TO: Board of Trustees
 FROM: Investment Staff
 SUBJECT: Investment Manager Search Request: International Small Cap Active

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is governed by a nine-member Board of Trustees (the "Board"). As of June 30, 2023, the total fund was valued at \$9.4 billion. The asset allocation is summarized below. Currently, all public equities are passively managed. New active managers will be funded from current passive allocation.

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About the Search

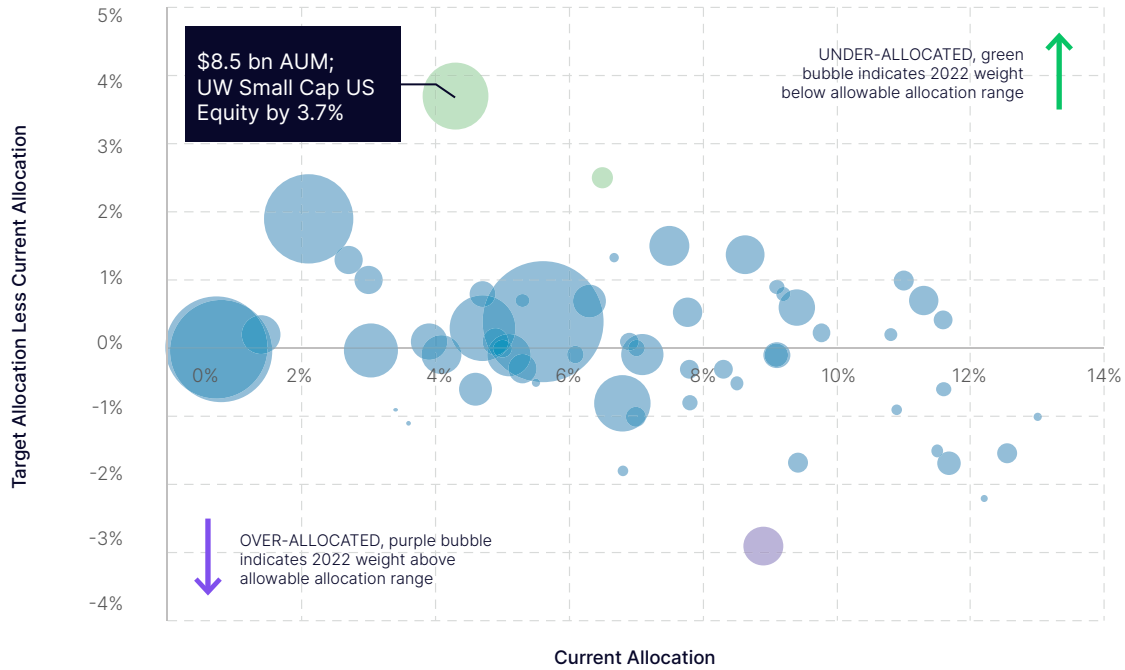
has a 5% allocation (approximately \$450 million) to international small cap, which is currently invested in a passive commingled trust. seeks to increase investment returns for this allocation through active investment management. The search will include both international (ex USA) and global (including USA) products.

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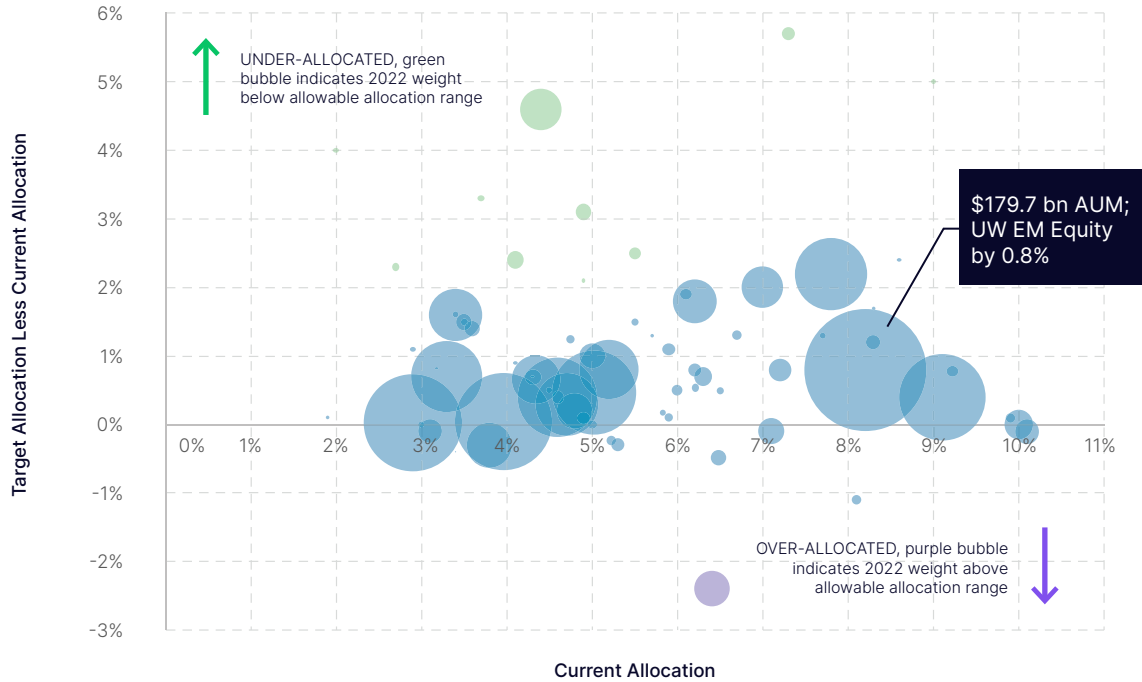
The will not use any criteria to exclude an otherwise qualified Emerging or MWDBE, SDVOSB, or VOSB investment manager Candidate, such as a minimum number of years in business or minimum assets under management. The goal is to improve investment performance by identifying highly qualified and potentially successful Emerging and MWDBE investment managers that can be awarded allocations or, if the investment manager is participating in a "fund of funds", to be graduated into a separate account portfolio when openings occur or a need is identified.

Plan-Level Allocations

U.S. Small, SMID & Mid Cap Equity



Emerging Markets Equity



Market Lens contains information on public plans and other allocators that are under-weight public equities. To learn how to find these allocators, contact solutions@evestment.com

Commitments & Ongoing Mandates

Alongside portfolio reviews, Market Lens provides details on specific mandates. We use this information to put current allocations into historical context and to obtain a better understanding of forward demand. The number of public equity mandates placed in H1 2023 (64) was below that of H1 2022 levels (175) and H1 2021 levels (162). Total dollar commitments for public equities measured +\$7.8 billion in H1 2023 versus +\$16.4 billion in H1 2022 and +\$27.7 billion in H1 2021.

Using the +\$7.8 billion figure from H1 2023 commitments, or a quarterly average of +\$3.9 billion, it would take 29 quarters to work through the +\$115.3 billion YE 2022 implied net flows figure

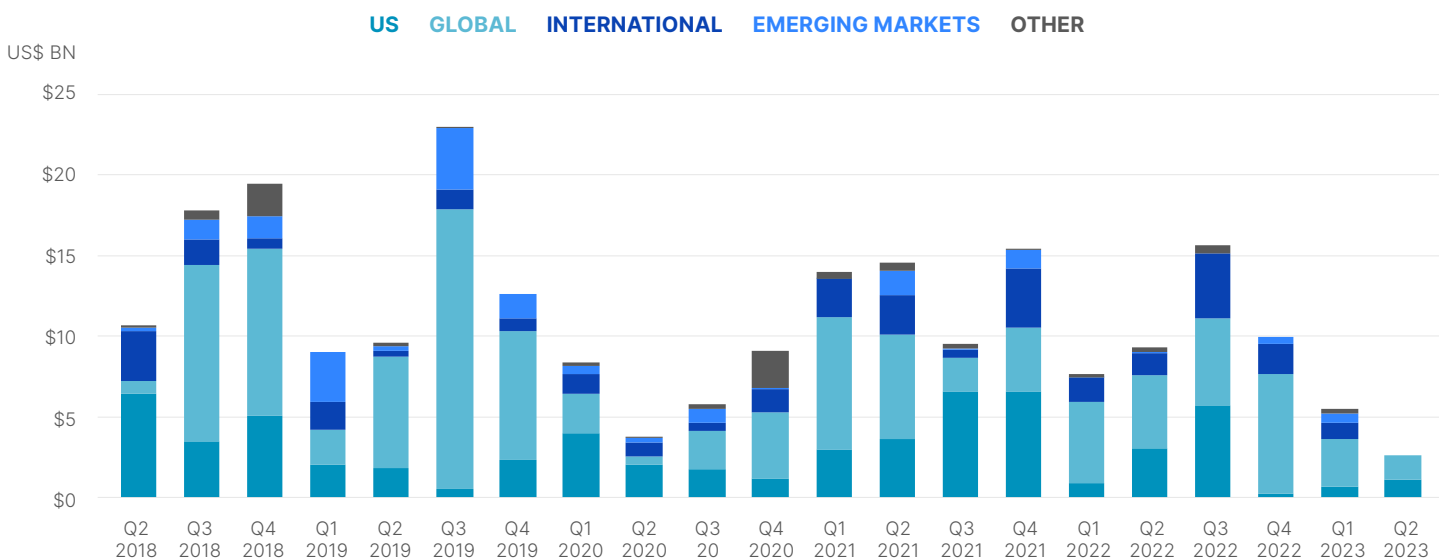
calculated earlier and just under 9 quarters to work through the estimated H1 2023 implied net flows figure. Therefore, barring significant performance-related gains, we expect public equity commitments to pick up substantially from first half levels.

Looking ahead, we see a healthy pipeline for most public equity managers. The total number of ongoing and potential public equity mandates are equal to 1.2x the number of public equity commitments made on average over 2021 and 2022. The coverage ratio is 0.8x for global equities, 1.3x for U.S. equities, 1.4x for international equities, and 1.9x for EM equities.

Asset Class	Number of Commitments Made			Ongoing & Potential Mandates
	CY 2021	CY 2022	H1 2023	
Equity	379	335	64	417
U.S.	144	102	21	155
Active All/Large Cap	19	21	7	46
Active Mid/SMID Cap	24	12	8	21
Active Small/Micro Cap	37	25	3	24
Passive	54	40	2	23
Emerging Markets	22	9	3	30
International	68	75	19	97
Global	130	139	15	107

Note: Certain sub-strategies are not shown in table and they will not sum to the asset class totals.

Public Equity Commitment Totals



Implied Flows,
Allocations & Mandates
Fixed Income

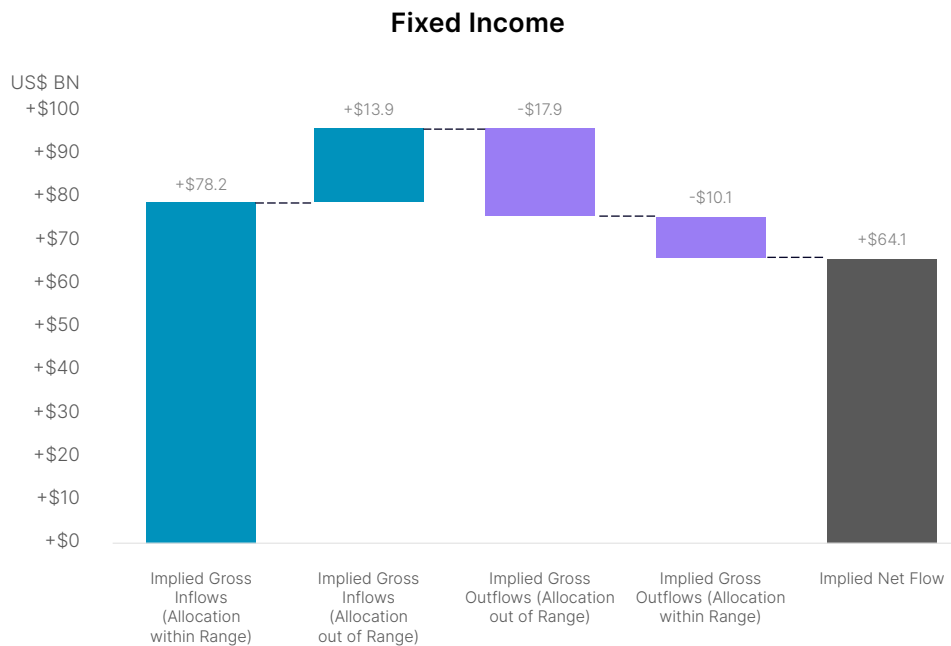
Implied Flows

Fixed income allocations were under-weight by -1.3% against target allocations. The U.S. public plans in our sample will need to allocate, on net, +\$64.1 billion to fixed income managers to eliminate this shortfall. Compared to other asset classes, public plans generally provided the least detail for their fixed income allocations and this is reflected in our aggregated table on page 3. Fixed income includes core public fixed income, more niche strategies such as bank loans, and for certain plans also encapsulates private debt. Where allocations for private debt are clearly delineated from public fixed income allocations, we capture each as a separate line item. Standalone private debt allocation analysis can be seen starting with page 21.

As with public equities, the relative size of fixed income allocations means there are ample flows to consider in both directions, regardless of the net positioning across our sample. Across allocations where actuals undershot targets beyond our stylized allowable allocation ranges, we calculate allowable variance implied gross inflows of +\$13.9 billion. An additional +\$78.2 billion in capital

is required to close allocation gaps for plans in compliance with their fixed income allocation ranges. We note that all flows data is captured at the allocation-level, i.e.: a single plan can contribute to both gross inflows and gross outflows for a broader asset class. 2022 asset allocation data imply total fixed income outflows of -\$28.0 billion, -\$10.1 billion for allocations which exceed their allowable ranges and another -\$17.9 billion for those that are over-allocated, but still within their allowable ranges. Given market performance in the first half of 2023, we expect implied gross inflows to have increased and implied gross outflows to have decreased.

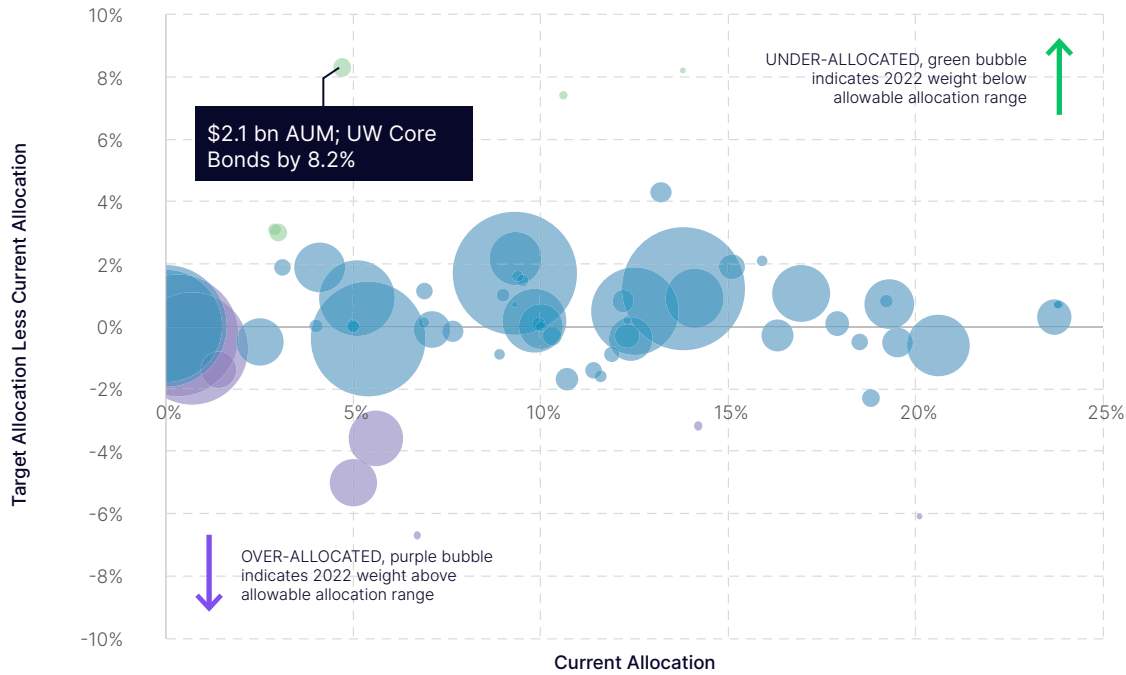
For those plans which provided enough granularity, core and core plus allocations were under-allocated by -4 bps. At the opposite end of the spectrum, we find EM debt, high yield, and bank loans to be modestly over-allocated. We reiterate these are not sample-wide figures, but across those which disclosed both actual and target allocations specifically for these fixed income strategies. The following page shows these graphically for core/core plus fixed income and high yield bond/bank loan allocations.



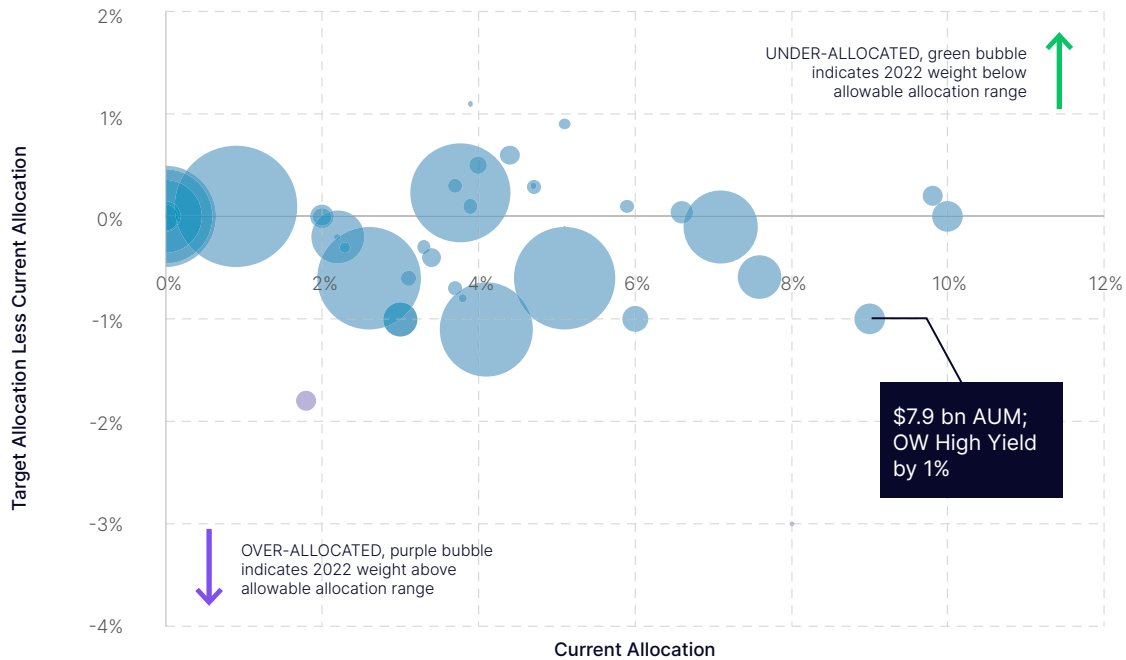
Note: Due to certain plans' lack of disclosure regarding allowable allocation ranges, we stylize allocation limits for all plans as follows. Allocation limits are calculated as the target allocation plus or minus the allowable variance. The allowable variance is calculated as 0.25 times the target allocation level. However, the minimum allowable variance is +/-2%, the maximum allowable variance is +/-10%. For instance, a 50% target allocation will have an allowable variance of +/-10%, given that 0.25 times 50% is 12.5% which exceeds the maximum allowable variance of +/-10%. Lastly, a target allocation level of exactly 0% will have no allowable variance.

Plan-Level Allocations

Core & Core Plus Fixed Income



High Yield & Bank Loans



Market Lens contains information on public plans and other allocators that are under-weight fixed income. To learn how to find these allocators, contact solutions@evestment.com

Commitments & Ongoing Mandates

We saw 69 commitments made to public fixed income managers in H1 2023, well below the pacing over the first halves of the prior two years. In the most recent half we saw sizeable interest in multi-asset credit and unconstrained bond strategies, followed by U.S. core and core plus fixed income, and global aggregate bond products. There remains a substantial mandate pipeline for most fixed income strategies. Forward demand for global fixed income, EM debt, and U.S. high yield and bank loan strategies are particularly elevated relative to the number of commitments made over the past two years.

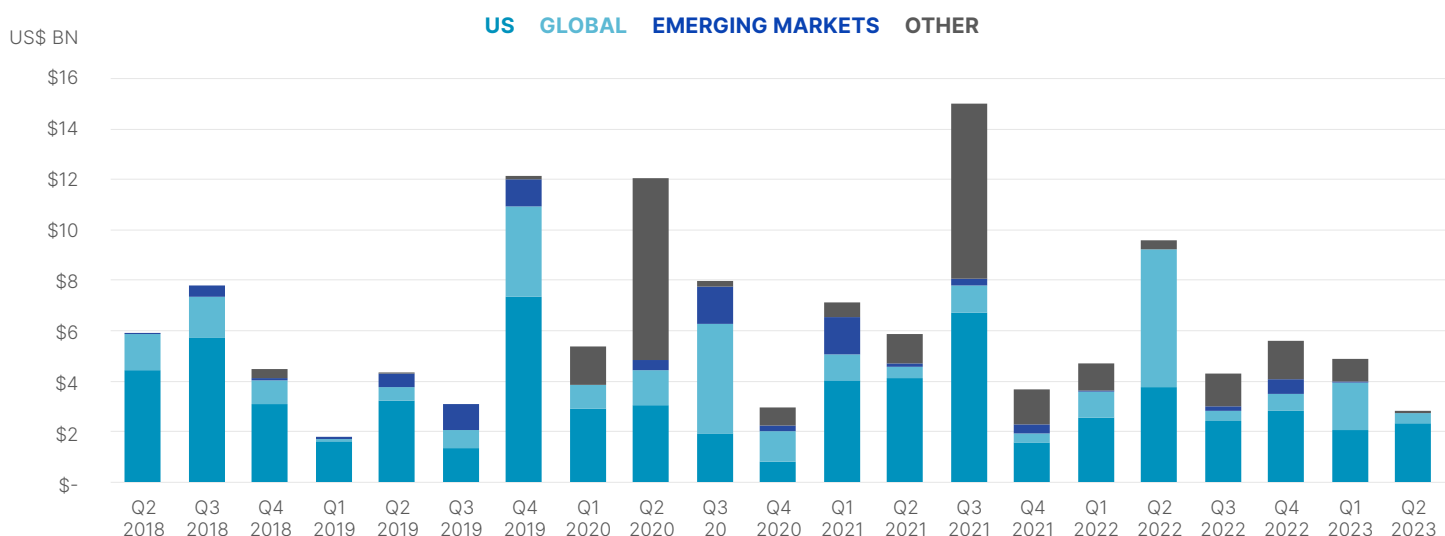
In terms of dollars committed, H1 2023 was a lackluster quarter for fixed income managers. We recorded commitments of +\$7.7 billion

during the half versus +\$14.3 billion in H1 2022, +\$13.0 billion in H1 2021, and +\$17.4 billion in H1 2020. Given implied net flows for fixed income in our sample of +\$64.1 billion entering 2023, and an average quarterly commitment total of +\$3.9 billion over the first half of the year, it would take almost 17 quarters at this rate for allocation shortfalls to be eliminated (over 29 quarters using our H1 2023 estimated implied flows of +\$113.0 billion). In contrast to the information on page 3, which we noted may include private debt for plans with a blended allocation, the data below are strictly for public fixed income mandates.

Asset Class	Number of Commitments Made			Ongoing & Potential Mandates
	CY 2020	CY 2021	Q1 2022	
Fixed Income	282	269	48	398
U.S.	142	146	12	200
Active Core & Core Plus	28	55	6	54
Active High Yield & Bank Loans	26	17	1	31
Active TIPS	0	5	1	26
Passive	15	36	1	8
Emerging Markets	45	21	2	30
Global	45	36	11	109
Multi-Sector/Unconstrained	34	43	15	34

Note: Certain sub-strategies are not shown in the table and they will not sum to the asset class totals. Multi-sector and unconstrained bond strategies excluded from regional categories.

Public Fixed Income Commitment Totals

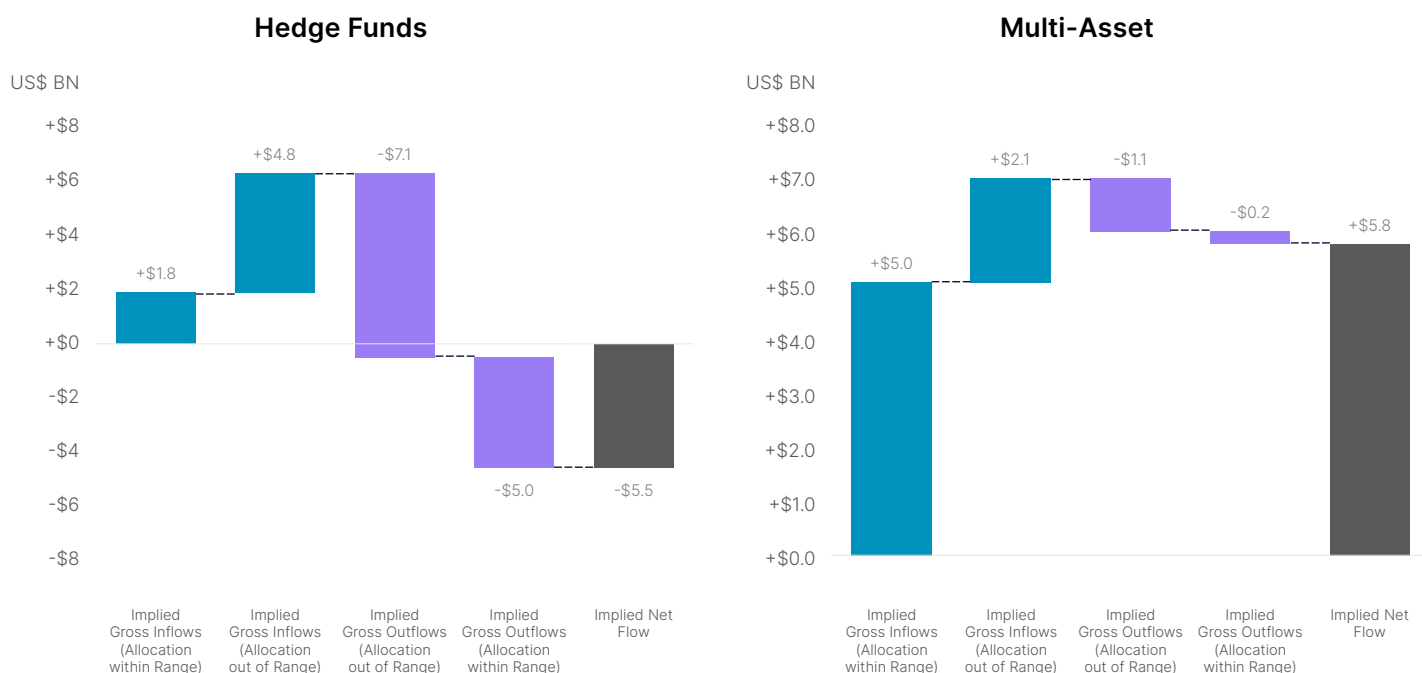


Implied Flows,
Allocations & Mandates
Multi-Asset Strategies
& Hedge Funds

Implied Flows

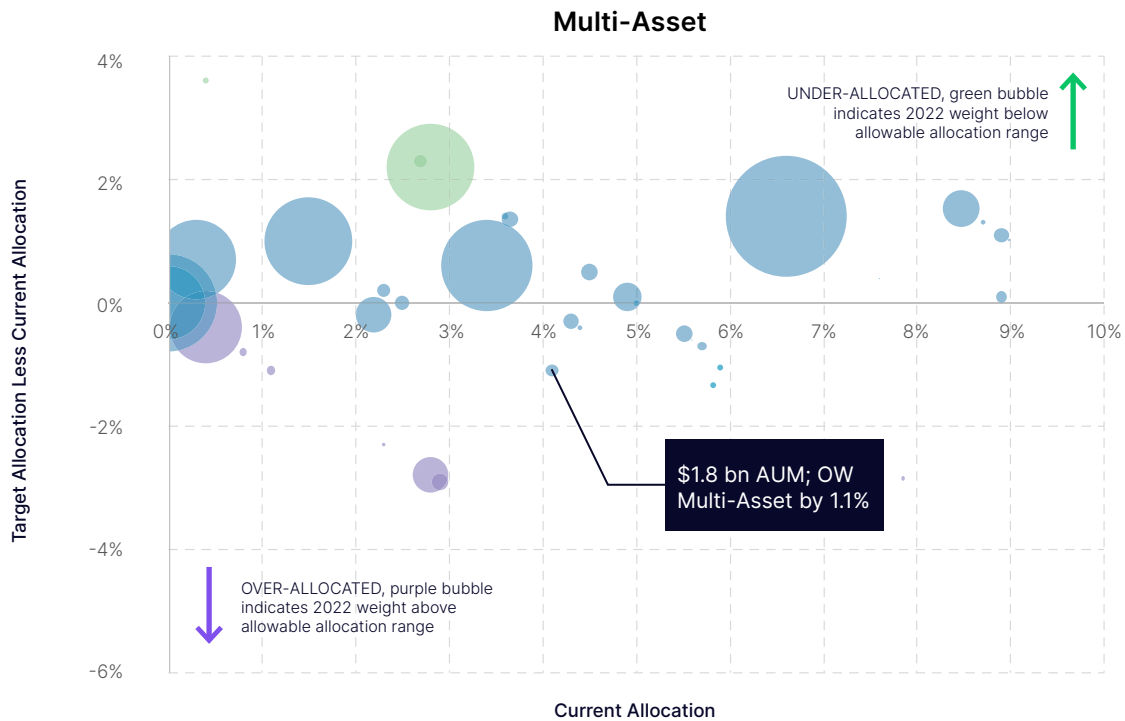
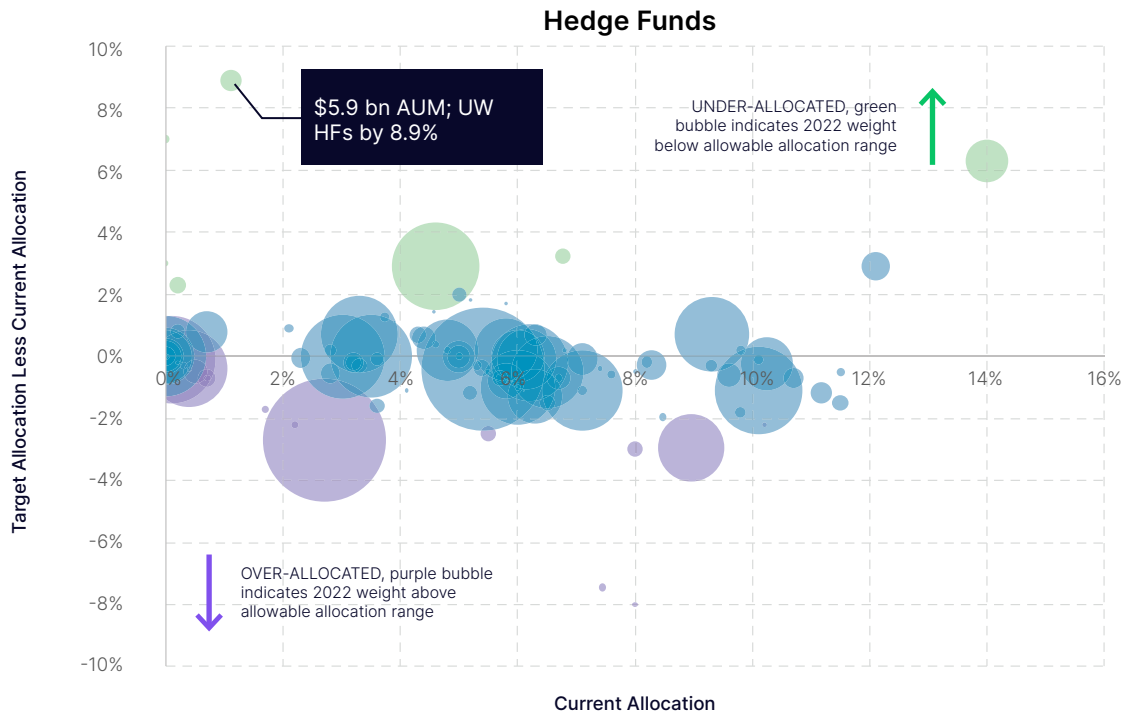
Hedge fund allocations were over-weight by +12 bps against targets heading into 2023, while multi-asset allocations were under-weight by -12 bps. Among the 107 plans with dedicated hedge fund allocations, 22 have taken their targets down to zero. 14 out of these 22 plans have already reduced their hedge fund exposure to less than 50 bps, while the remaining 8 represent -\$5.4 billion in implied gross outflows. However, we also find 7 plans which have hedge fund allocations below their stylized allowable variance accounting for implied gross inflows of +\$4.8 billion. Hedge funds allocations mentioned throughout this report also include funds of hedge funds.

Across our sample of 248 plans, only 43 had a dedicated allocation to multi-asset strategies through 2022. As a group, we estimate they require a capital influx of +\$5.8 billion to eliminate their H1 2023 estimated allocation deficits. However, among the 43 plans with dedicated multi-asset strategy allocations, 8 now have a target allocation of 0.0%. In other words, they have either eliminated their allocation to multi-asset strategies or subsumed them under other, broader allocation buckets and are driving the outsized implied outflows figure of -\$1.4 billion. The aforementioned 8 plans represent -\$1.1 billion in implied gross outflows.



Note: Due to certain plans' lack of disclosure regarding allowable allocation ranges, we stylize allocation limits for all plans as follows. Allocation limits are calculated as the target allocation plus or minus the allowable variance. The allowable variance is calculated as 0.25 times the target allocation level. However, the minimum allowable variance is +/-2%, the maximum allowable variance is +/-10%. For instance, a 50% target allocation will have an allowable variance of +/-10%, given that 0.25 times 50% is 12.5% which exceeds the maximum allowable variance of +/-10%. Lastly, a target allocation level of exactly 0% will have no allowable variance.

Plan-Level Allocations



Market Lens contains information on public plans and other allocators that are under-weight hedge funds and multi-asset strategies. To learn how to find these allocators, contact solutions@evestment.com

Commitments & Ongoing Mandates

Hedge funds saw 30 commitments in H1 2023 versus 60 in H1 2022 and 41 in H1 2021. On a dollar basis we recorded commitments worth +\$4.3 billion in H1 2023, a decline from +\$8.9 billion in H1 2022, but an increase from +\$3.7 billion in H1 2021. While we do not want to extrapolate too much from our low sample count, hedge fund commitments spanned multiple strategies including multi-manager, long/short equity, credit, macro, event driven, volatility trading, and tail risk products.

The results for multi-asset products were even worse with just 1 manager hired in H1 2023 versus 12 in H1 2022 and 10 in H1 2021. Total dollars committed to multi-asset strategies measured \$50 million over the past 12 months. Within our sample of U.S. public

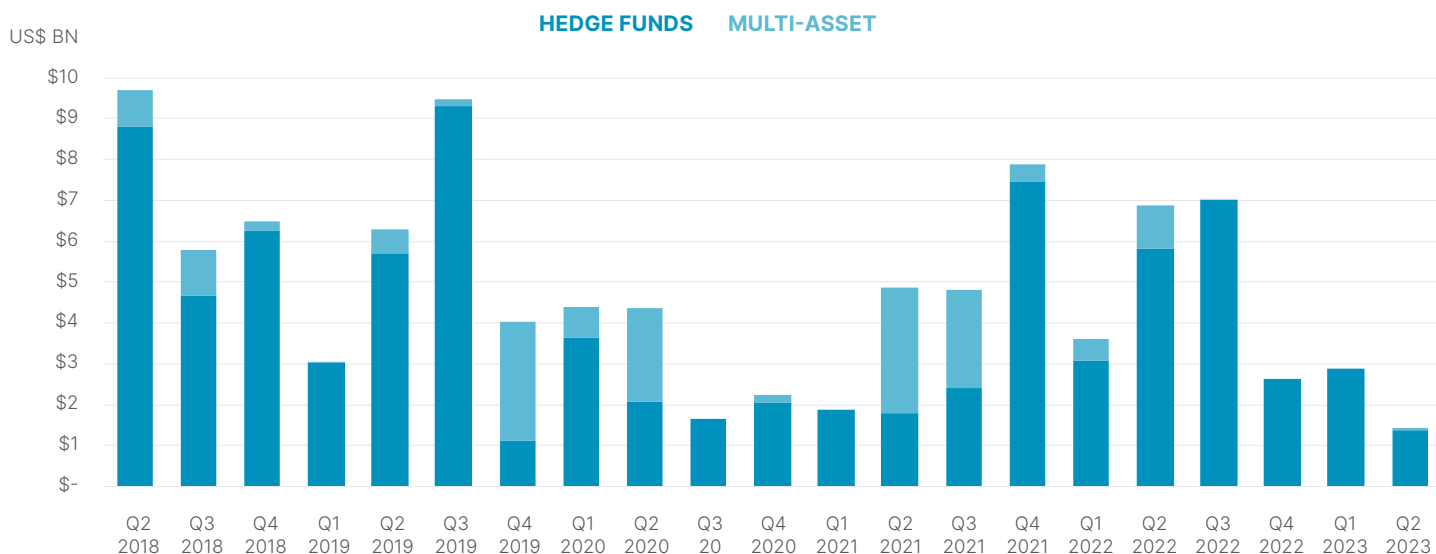
plans there is simply a dearth of demand for these products – at least on the defined benefit side of the house.

Looking ahead, we find the number of ongoing and potential mandates for both hedge fund and multi-asset strategies uninspiring relative to other public markets asset classes. Assuming an average of 1.63 hedge fund managers are hired per current ongoing and potential mandate (the rate for completed mandates in 2021 and 2022), we would need 65.3% of these mandates to close and produce commitments at this historical hire rate, alongside the 30 commitments already made during H1 2023, for the total number of commitments to remain unchanged from 2022 to 2023.

Asset Class	Number of Commitments Made			Ongoing & Potential Mandates
	CY 2021	CY 2022	H1 2023	
Hedge Funds	98	111	30	76
Multi-Asset Strategies	27	16	1	32

Note: Certain sub-strategies are not shown in table and they will not sum to the asset class totals.

Multi-Asset & Hedge Fund Commitment Totals



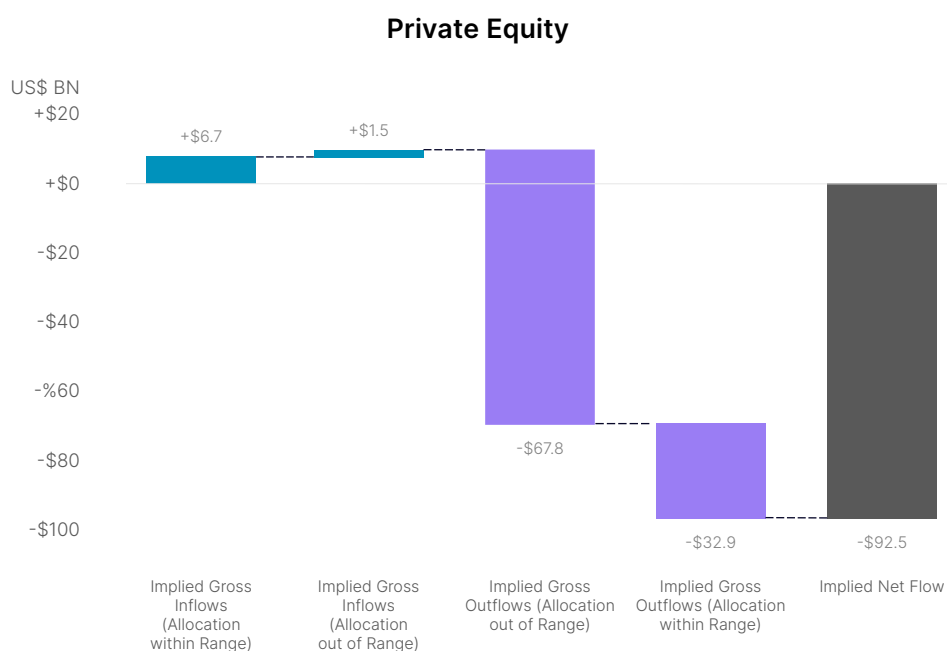
Implied Flows,
Allocations & Mandates
Private Alternatives

Implied Flows

The public plans in our sample were under-allocated to private debt by -17 bps, but over-allocated to private equity by +194 bps against targets through year-end 2022. Certain plans utilize a broader alternatives allocation, which we label “Alternatives (Blend),” that in aggregate exceeded targets by +27 bps. The “Alternatives (Blend)” category is generally composed of private markets funds, but a number of plans also include hedge funds and real assets into a combined allocation.

We calculate that plans which were under-allocated to private equity beyond their allowable allocation ranges will need to commit +\$1.5 billion to eliminate this shortfall. Implied gross inflows for plans within their stylized allocation ranges will need to contribute +\$6.7 billion to meet targets, putting total implied inflows at +\$8.2 billion. Some portion of the under-allocations mentioned above, and therefore implied inflows, may already have capital committed behind it waiting to be drawn down. With that being said, we believe this is a good directional barometer making an implicit assumption that distributions will cover the difference. At the other end of the spectrum, plans that were overweight private equity would need to divest -\$100.7 billion from the asset class to get back to their target allocation levels.

Before continuing, we reiterate the difference in interpretation for implied gross outflows across private alternatives, and real assets to follow, given the illiquidity context. This stands in contrast to the straightforward interpretation of “outflows” for an asset class like public equities. We take implied outflows for illiquid asset classes as an indication of plans’ ability to absorb underperformance within the allocation and as an embedded option in terms of timing future commitments versus distributions; on this last point we do want to mention limitations due to vintage, strategy, and other forms of diversification, as well as the possibility of overrunning the desired allocation target. There are certain instances where we can reconcile with the more traditional implications of outflows. Namely, interacting with the secondaries market within private markets, or in the case of real assets outright divesting more liquid components of the allocation such as publicly-traded REITs and MLPs. Lastly, we also provide these figures as a means to tie our gross inflow figures to net exposure.



Note: Due to certain plans’ lack of disclosure regarding allowable allocation ranges, we stylize allocation limits for all plans as follows. Allocation limits are calculated as the target allocation plus or minus the allowable variance. The allowable variance is calculated as 0.25 times the target allocation level. However, the minimum allowable variance is +/-2%, the maximum allowable variance is +/-10%. For instance, a 50% target allocation will have an allowable variance of +/-10%, given that 0.25 times 50% is 12.5% which exceeds the maximum allowable variance of +/-10%. Lastly, a target allocation level of exactly 0% will have no allowable variance.

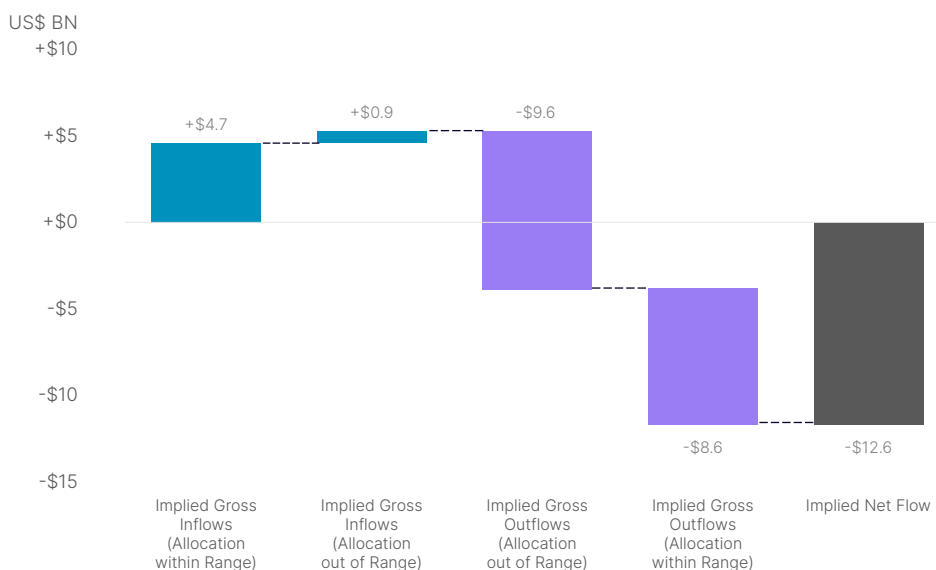
Implied Flows

Allocations which fall into our “Alternatives (Blend)” category show implied flows results which are similar to those calculated for private equity. This is not surprising given that the bulk of these allocations are composed of private equity funds. Implied gross inflows total +\$5.6 billion for blended alternatives versus implied gross outflows of -\$18.2 billion. Private debt, which U.S. plans have adopted more recently, were still largely under-allocated against targets; implied net flows measure +\$8.3 billion through 2022. Allocation deficits that fell within stylized allocation ranges imply inflows of +\$7.7 billion, while those falling outside of their ranges imply an additional +\$10.2 billion.

Private Debt



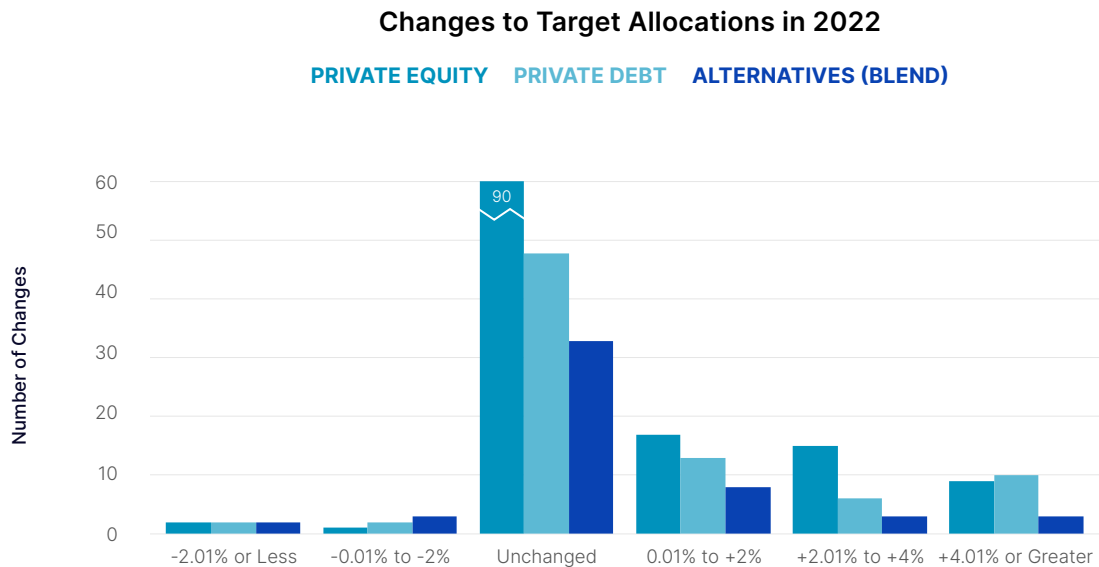
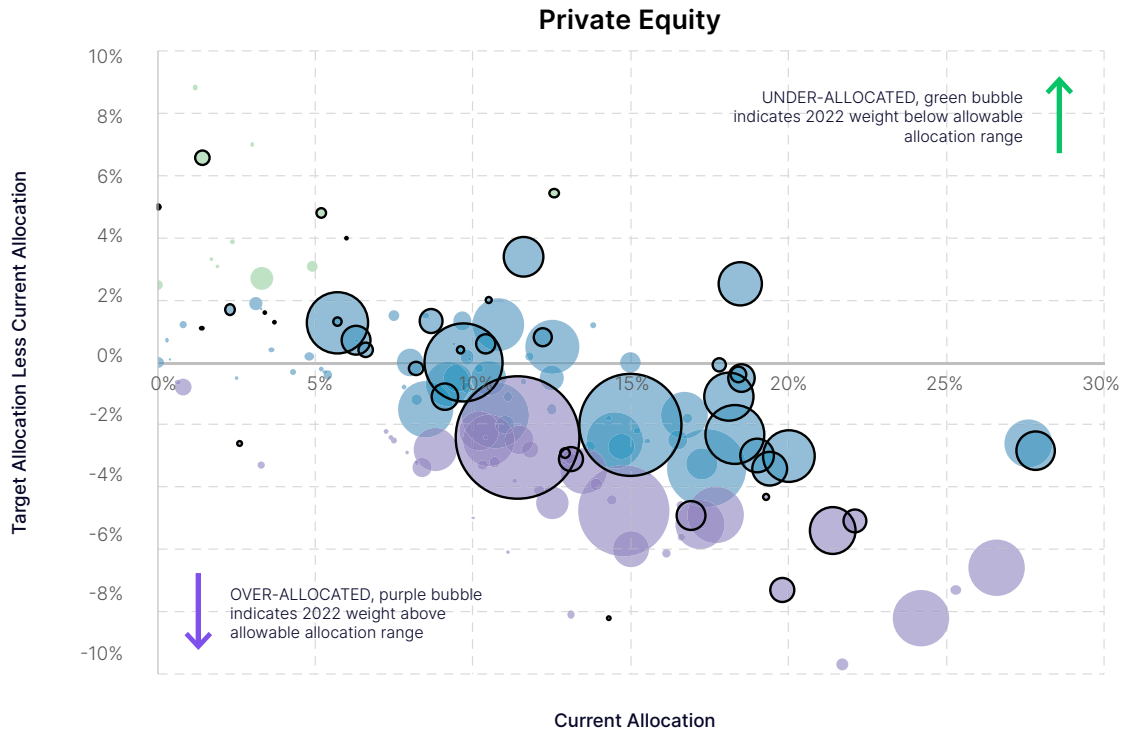
Alternatives (Blend)



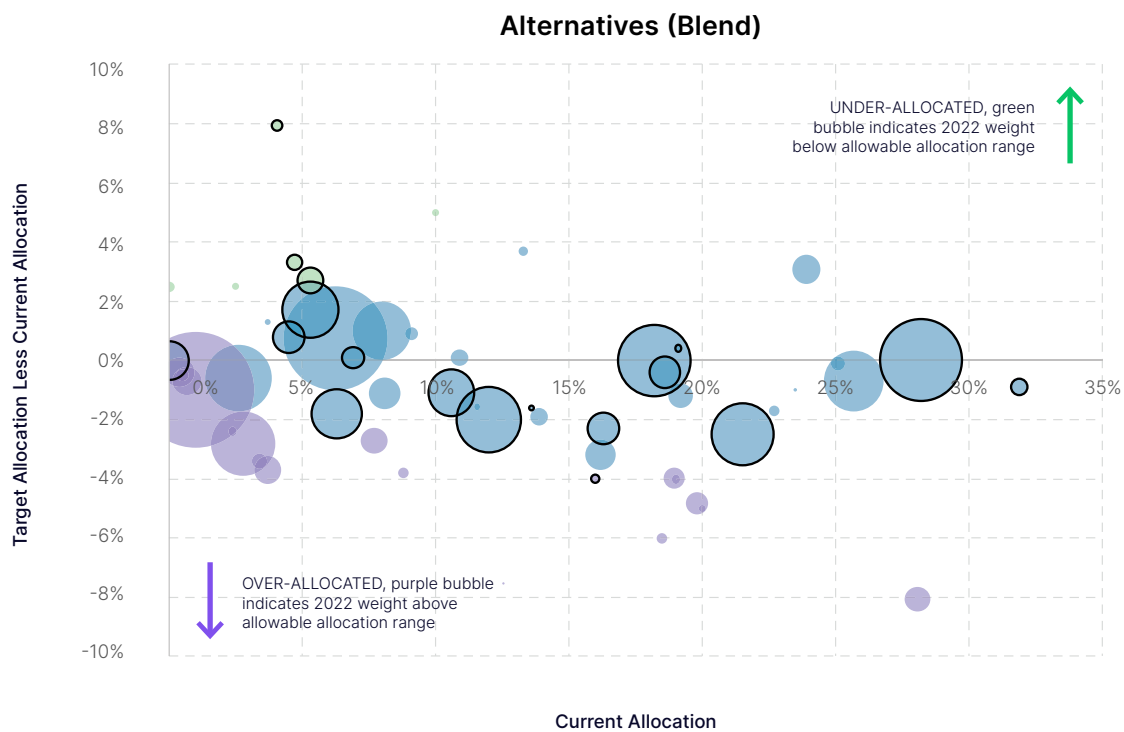
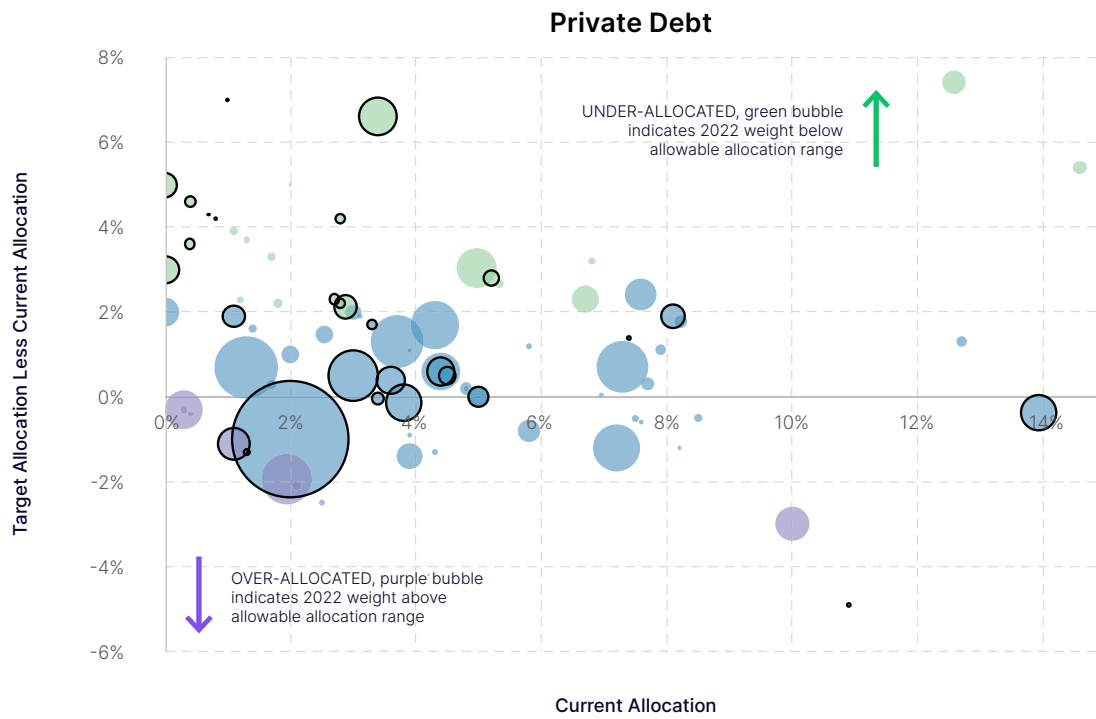
Note: Due to certain plans' lack of disclosure regarding allowable allocation ranges, we stylize allocation limits for all plans as follows. Allocation limits are calculated as the target allocation plus or minus the allowable variance. The allowable variance is calculated as 0.25 times the target allocation level. However, the minimum allowable variance is +/-2%, the maximum allowable variance is +/-10%. For instance, a 50% target allocation will have an allowable variance of +/-10%, given that 0.25 times 50% is 12.5% which exceeds the maximum allowable variance of +/-10%. Lastly, a target allocation level of exactly 0% will have no allowable variance.

Plan-Level Allocations

Individual plans' allocations to private equity and how far these exposures are from their targets are shown in the top chart with bubbles bordered in black to highlight the plans which have changed their target allocation in 2022 (private debt and blended alternatives versions are shown on the following page). The bottom chart shows changes to dedicated asset class targets with most plans in our sample showing either unchanged or increasing targets to private alternatives during the past full calendar year. For private equity and blended alternatives allocations, we see most plans are over-allocated even after adjustments to targets. For private debt however, we find more under-allocated plans with many having exposure near zero, i.e.: they have just spun up their investment programs to the asset class.



Plan-Level Allocations



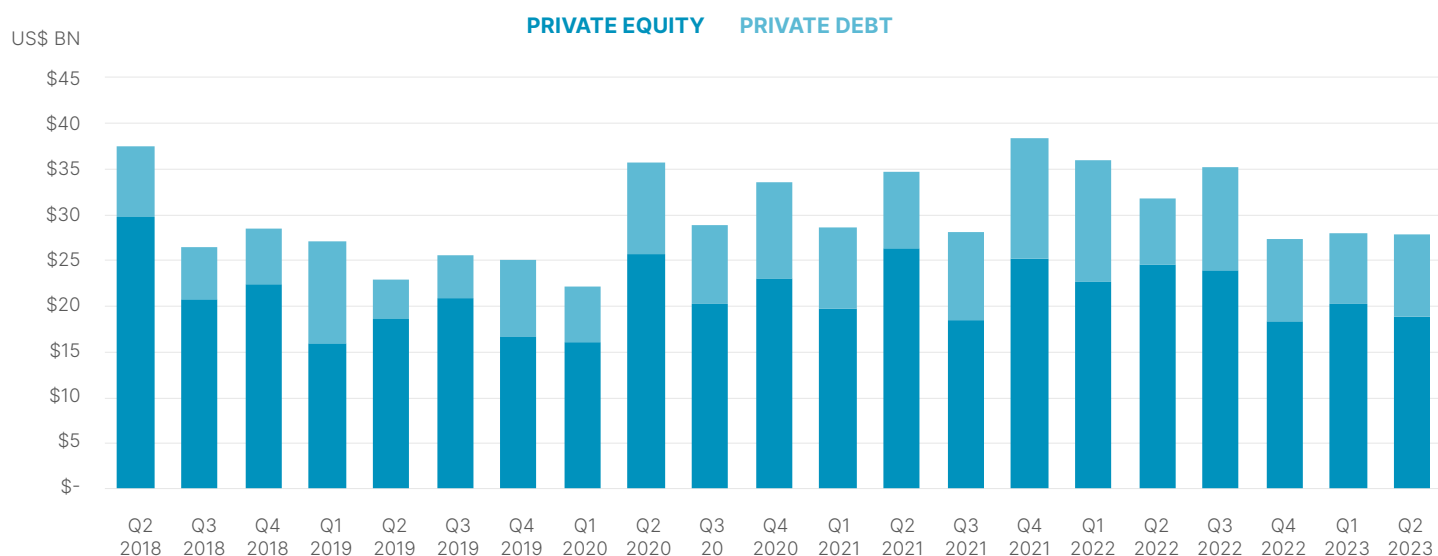
Commitments & Ongoing Mandates

The number of private equity commitments fell to 441 in H1 2023 from 738 in H1 2022 and 636 in H1 2021. Similarly, committed dollar amounts declined to +\$38.9 billion in H1 2023 from +\$47.0 billion in H1 2022 and +\$45.8 billion in H1 2021. Given our sample's over-allocation to private alternatives and recent market conditions, it is not a complete shock that commitments have declined from the heights seen in the past two years. Private debt commitments also declined, albeit to a lesser extent than private equity commitments. We counted 141 private debt commitments in H1 2023 from 167 in H1 2022 and 163 in H1 2021. Private debt commitment dollar totals measured +\$16.7 billion in H1 2023 from +\$20.5 billion in H1 2022 and +\$17.3 billion in H1 2021. In terms of strategy, buyout and direct lending commitments held up best compared to the prior year while PE funds of funds and mezzanine debt strategies fared worst.

We count 235 ongoing and potential mandates in private equity and 158 in private debt. We note that due to the nature of closed-end funds, these figures are not directly comparable to those provided for public markets asset classes. While there exist cases where private alternative commitments are made through the "traditional" mandate and RFP channel, our ongoing and potential mandate counts are not fully reflective of the fundraising pipeline.

Asset Class	Number of Commitments Made			Ongoing & Potential Mandates
	CY 2021	CY 2022	H1 2023	
Private Equity	1283	1307	441	235
Buyout	266	367	139	16
Growth Equity	81	52	27	8
Venture Capital	103	138	36	15
Fund of Funds	52	47	11	15
Private Debt	381	342	141	158
Direct Lending	94	79	38	15
Distressed/Special Situations	71	60	21	19
Mezzanine	25	10	4	2

Private Alternatives Commitment Totals



Implied Flows,
Allocations & Mandates
Real Assets

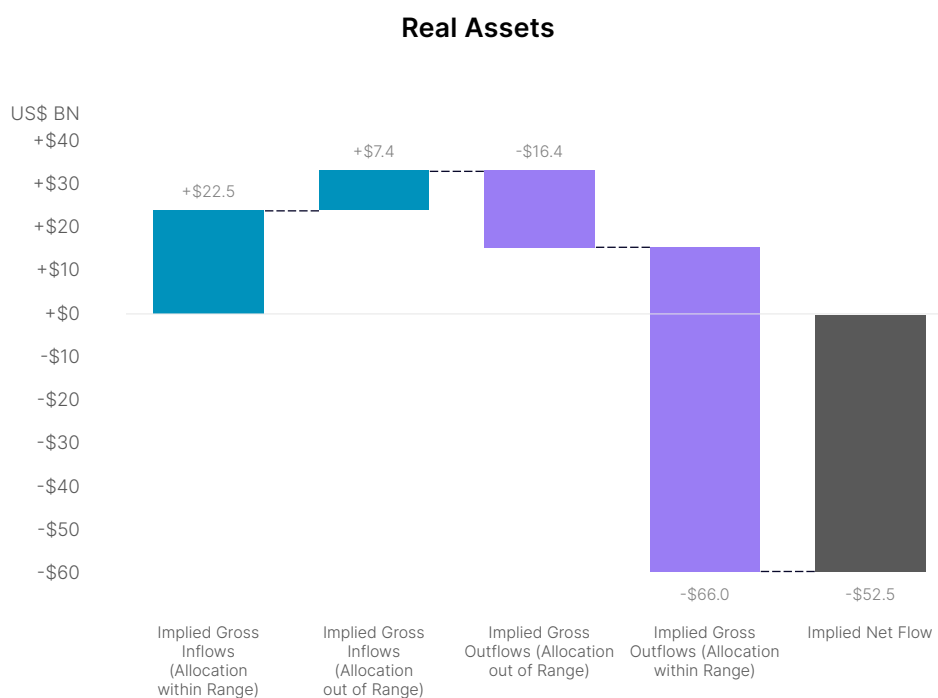
Implied Flows

Real assets, including real estate, were over-allocated to by +1.1% with aggregate year-end 2022 allocations measuring 15.7% versus a target of 14.6% and implied net flows totaling -\$52.5 billion. We divide real assets into four major categories, real estate, infrastructure, natural resources which includes energy, MLPs, agriculture, farmland, and timber, and a “Real Assets (Blend)” label for plans which have an allocation target to a combination of the first three groupings and inflation-linked bonds in certain cases.

The 248 plans in our sample were over-allocated to three out of four of these categories in aggregate. Dedicated real estate allocations, the largest of the four, were over-weight by +66 bps against targets. “Real Assets (Blend),” the second largest, were over-weight by

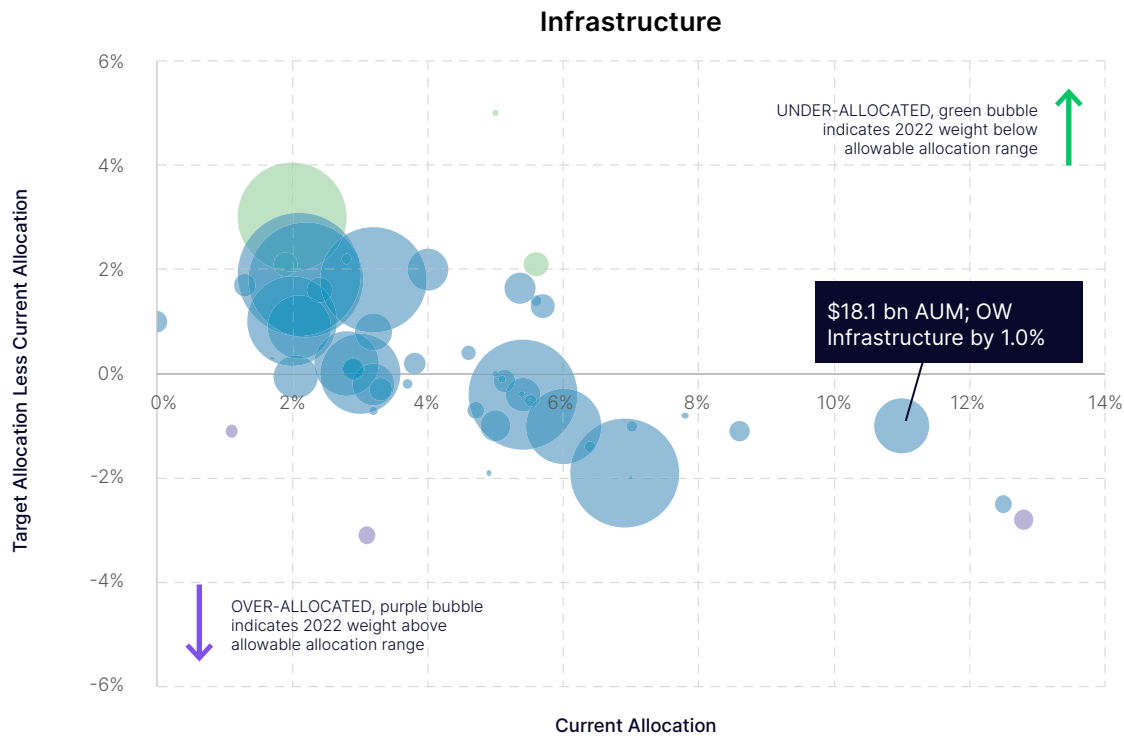
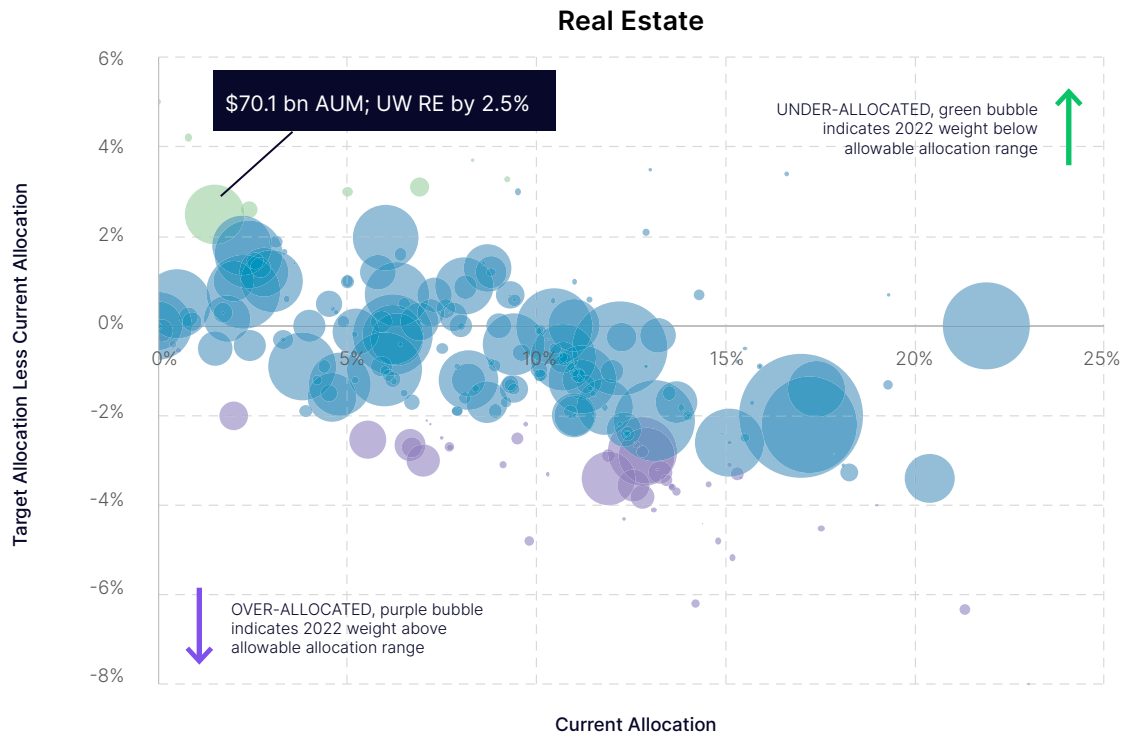
+52 bps, and dedicated natural resources by +3 bps. Dedicated infrastructure was the only under-allocated sub-category within real assets, measuring -11 bps against targets.

Implied gross outflows to real assets total -\$82.4 billion, comprised of -\$44.7 billion for real estate, -\$2.5 billion for infrastructure, -\$3.8 billion for natural resources, and -\$31.4 billion for blended real assets. Implied gross inflows total +\$29.9 billion across real assets. Real estate accounts for the bulk of the total at +\$13.2 billion followed by +\$7.4 billion for dedicated infrastructure. As mentioned in the private alternatives section, implied outflows for real assets should, to a considerable degree, be interpreted differently from public markets outflows.



Note: Due to certain plans' lack of disclosure regarding allowable allocation ranges, we stylize allocation limits for all plans as follows. Allocation limits are calculated as the target allocation plus or minus the allowable variance. The allowable variance is calculated as 0.25 times the target allocation level. However, the minimum allowable variance is +/-2%, the maximum allowable variance is +/-10%. For instance, a 50% target allocation will have an allowable variance of +/-10%, given that 0.25 times 50% is 12.5% which exceeds the maximum allowable variance of +/-10%. Lastly, a target allocation level of exactly 0% will have no allowable variance.

Plan-Level Allocations



Market Lens contains information on public plans and other allocators that are under-weight real assets. To learn how to find these allocators, contact solutions@evestment.com

Commitments & Ongoing Mandates

The number of real estate commitments made decreased to 138 in H1 2023 from 294 in H1 2022 and 243 in H1 2021. Commitments in dollar terms also declined to +\$16.0 billion in H1 2023 from +\$26.9 billion and +\$19.1 billion from the first halves of 2022 and 2021, respectively. Looking under the hood, real estate debt and value-added real estate equity held up best compared to the prior two years whereas opportunistic strategies saw the sharpest decline.

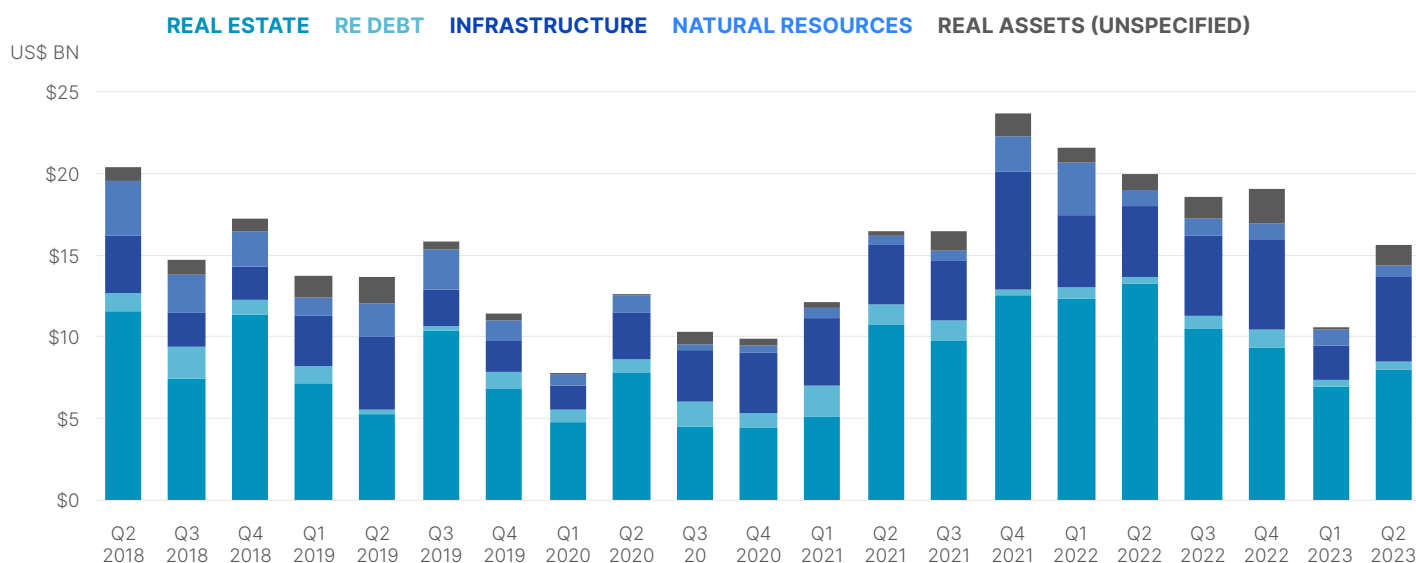
We logged 138 real assets commitments in H1 2023, down from 172 in H1 2022, but up from 121 in H1 2021. This pattern was also reflected

in dollars invested across these periods, measuring +\$10.5 billion in H1 2023, +\$15.0 billion in H1 2022, and +\$9.7 billion in H1 2021. At the sub-asset class level, we continue to see the most demand for infrastructure exposure with dollar commitments totaling +\$7.3 billion in the first half of 2023. Given our sample's continued underweight to dedicated infrastructure, we expect allocations to this asset class to continue apace. The pipeline for infrastructure products, as measured by ongoing and potential mandates, also looks healthy relative to other real assets categories.

Number of Commitments Made

Asset Class	CY 2021	CY 2022	H1 2023	Ongoing & Potential Mandates
Real Estate	536	536	138	212
Core & Core Plus	52	60	13	44
Value Added	97	78	24	22
Opportunistic	50	24	5	10
REITs	7	11	2	7
Real Estate Debt	50	36	13	3
Real Assets	262	337	115	167
Infrastructure	187	237	72	75
Natural Resources	47	58	23	46
Agri., Forestland & Timber	3	6	5	11
Energy & MLPs	14	27	10	10

Real Assets Commitment Totals



Consultant Investment Recommendations

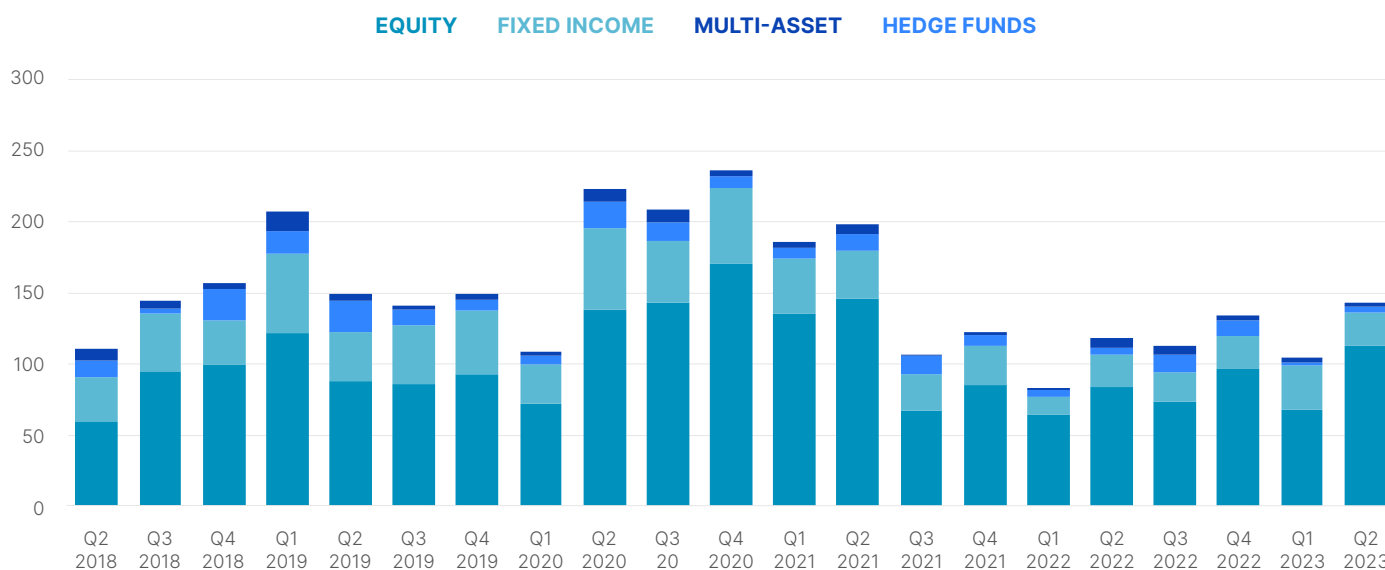
Before concluding, we show consultant recommendations for the public markets-focused asset classes, culled from consultants' ongoing assessments of existing manager rosters within Market Lens. While asset allocations are the focus of this report, and can serve as bellwethers for future activity, there exist other circumstance which may cause flows to occur or commitments to be placed. The chart below tallies only consultants' negative recommendations, those proposing managers be added or left on watchlists, replaced, reduced, or terminated.

We find negative recommendations rose steadily for equity and fixed income strategies from lows in Q1 2022 through Q2 2023. Consultants issued 183 negative recommendations for equity managers in H1 2023 compared to 150 in H1 2022. 35 were for active U.S. large cap strategies, 15 were for EAFE small cap value, and 13 for U.S. small cap value. Global strategies held up better overall with only 4 negative recommendations. Across fixed income we registered 38 negative recommendations in H1 2023 versus 36 in the first half

of the prior year. Multi-asset credit, (9), U.S. bank loan (8), U.S. high yield (7), and EM debt (4) were among the strategies to see the most negative recommendations in 2023 thus far.

Negative recommendations for hedge funds declined from 10 in H1 2022 to 6 in H1 2023 and for multi-asset strategies from 8 in H1 2022 to 7 in H1 2023. While these also mark significant reductions from levels seen over the prior year, and indeed from the first half of every year for the past 4 years, we note that the diminishing role of both asset classes in public plan asset allocations may be playing a part. These recommendations, along with their positive counterparts, can inform asset managers about opportunities to establish new relationships or to take wallet share from other firms. Consultants' product ratings, which are not client-specific, can also help managers understand their standing against peers. An understanding of manager-level details, like the aforementioned recommendations and ratings, and high-level details such as asset allocation decisions can assist managers in finding the right opportunities at the right time.

Negative Recommendations



This list includes the following investment recommendations from consultants to asset owners: Potential Replacement, Terminate/Reduce/Replace, Watchlist, Added to Watchlist, Remain on Watchlist



An understanding of manager-level details like consultant issued recommendations and ratings, and high-level details such as asset allocation decisions, can assist managers in finding the right opportunities at the right time. Click [here](#) to learn more about how Market Lens can help you identify these situations.

Methodology & Sample Characteristics

Methodology

The information contained in this report is based on U.S. public plan documents contained on Market Lens. We used asset allocation disclosures provided by 248 U.S. plans managing assets of \$4.8 trillion through 2022. Plan disclosures vary in a number of ways including, inter alia, portfolio-level granularity, asset classification, and publication dates. We collected then standardized data from documents which contained sufficient portfolio detail from December 31, 2018 to December 31, 2022.

Due to such restrictions our sample is not exhaustive and certain disclosures are more detailed than what we offer in this report. This report focuses solely on U.S. public plans and excludes Market Lens intelligence from other investor types and plans based in other regions. Mandate, recommendations, and ratings analysis offered in this report are calculated using mandates across all public plans, not just those which contribute to our asset allocation analysis unless indicated otherwise.

H1 2023 Performance Assumptions

We estimate H1 2023 returns for each asset class based on public market returns through June-30 using various ETFs and by looking at asset class correlations. H1 2023 weightings and other assumptions utilized are outlined below. Cash flow modeling is not utilized in this exercise. We stress that these are hypothetical returns and actual results will differ based on strategy exposure, allocations and redemptions made during the period, manager alpha, geographic and factor tilts, etc.

- **Public Equity:** 50% IWB, 20% IWM, 20% ACWX, and 10% EMM
- **Fixed Income:** 40% AGG, 5% TLT, 5% MBB, 10% TIP, 20% LQD, 10% HYG, and 10% EMB
- **Hedge Funds/Absolute Return:** 0.33 beta to public equity return assumption
- **Private Equity:** 0.67 beta to public small cap equity (IWM) returns
- **Private Debt:** 50% HYG and 50% BKLN
- **Alternatives (Blend):** 45/10/25/10/10 composite of our private equity, private debt, real estate, natural resources, and hedge fund return assumptions, respectively
- **Real Estate:** 0.67 beta to U.S. REIT (VNQ) returns
- **Infrastructure:** 0.67 beta to global infrastructure equity (IGF) returns
- **Natural Resources:** 35% AMLP, 25% GSG, 5% GLD, and 35% WOOD
- **Real Assets (Blend):** Composite of real estate, infrastructure, and natural resources return assumptions using a pro-rata weighting of year-end 2022 dedicated allocations to each of the aforementioned asset classes
- **Multi-Asset:** 60/40 composite of our public equity and fixed income return assumptions
- **Growth Strategies:** 50/25/15/10 composite of our public equity, private equity, real estate, and private debt return assumptions, respectively
- **Risk Mitigation/Diversification:** 50% hedge fund return assumption, 30% TLT, 20% multi-asset return assumption
- **Other Blended Allocations:** 60/40 composite of our public equity and fixed income return assumptions
- **Cash & Overlays:** 100% JPST

Allowable Variance Implied Inflows (Outflows)

The sum of positive (negative) allocation-level implied flows, where the allocation shortfall (surplus) exceeds the allocation lower (upper) limit. The allocation lower (upper) limit is calculated as the target allocation minus (plus) the allowable variance. The allowable variance is calculated as at least +/-2%, at most +/-10%, and 0.25 times the strategic target otherwise. Target allocations of 0% have no allowable variance. Allocation limit flows include the entirety of the shortfall or surplus, not just the amount exceeding the allowable range.

Completed Mandates

The number of managers hired in completed mandates as found on Market Lens. These include mandates from institutional allocators outside of our U.S. public plan sample and are gross figures, i.e.: we do not net out managers replacements. In instances where the mandate does not specify who the hired manager(s) were, we assume only 1 commitment was made.

Ongoing & Potential Mandates

The number of explicitly ongoing searches plus the number of potential searches based on documents dated from 31-Jul-2022 to the present. Potential searches are based on plans', or their consultants', documents approving asset allocation changes, recommending new searches, or initiating action on the existing manager roster. These are not counted on a commitment basis as "Completed Mandates" are.

Commitment Totals

The sum of dollar commitments made as found on Market Lens; as with completed mandates these figures include mandates from institutional investors outside of our U.S. public plan sample. Foreign currency commitment amounts are translated to US Dollars using the prevailing spot exchange rate at the time the commitment was made.

Current Allocation vs. Allocation Surplus/Shortfall Charts

Plan-level 2022 allocations and allocation surpluses/deficits are shown on the axes with bubble sizes scaled to current total AUM. Bubble sizes are not unitized across charts. All U.S. plans are included in each chart provided they have either current or target exposure to the asset class. An individual plan may be represented multiples times in one chart if they have more than one allocation to the specified asset class, e.g.: a plan which has disclosed separate allocations for core real estate and non-core real estate would show up twice in the real estate version of this chart.

Consultant Recommendations

"Negative" recommendations include investment recommendations made by consultants, tailored for specific clients, to put or keep a manager on a watchlist, to reduce their allocation to a manager, or to terminate or replace a manager entirely. For more information on how we produce these details please consult our Ratings & Recommendations Methodology.

About the Data

The information in this report is based on U.S. public plan documents sourced from eVestment Market Lens. Plan disclosures vary in a number of ways including, inter alia, portfolio-level granularity, asset classification, and publication dates. We collected then standardized data from documents which contained sufficient portfolio detail from December 31, 2018 to December 31, 2022. The public plans chosen for this report are not exhaustive of the information available on Market Lens, but chosen based on portfolio review dates, asset allocation disclosure granularity, and geographic base, among other traits.

We highlight key sample characteristics for the full data set below.

Total number of plans (2022): 248

Total 2022 AUM: \$4.8 trillion

Median 2022 AUM: \$2.5 billion

Average 2022 AUM: \$19.2 billion

Analyses of historical changes in asset allocations rely on a subset of our full sample, namely those which provide a contiguous series of serviceable disclosures. This subset comprises 87.8% of our full sample on an AUM basis.

Characteristics for our contiguous series sample are shown below.

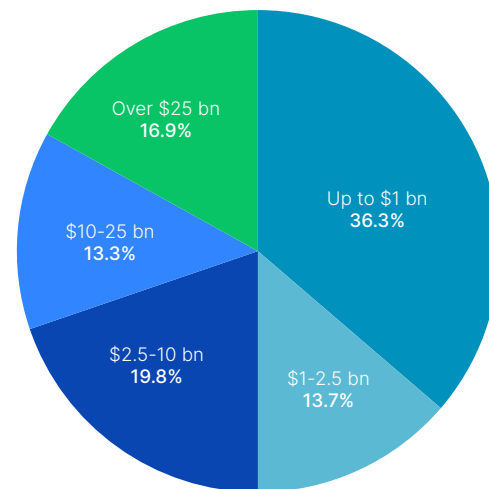
Total number of plans (2022): 181

Total 2022 AUM: \$4.2 trillion

Median 2022 AUM: \$3.1 billion

Average 2022 AUM: \$23.1 billion

YE-2022 AUM Distribution (All Plans)



YE-2022 AUM Distribution (US\$ bn)

