Private Bank

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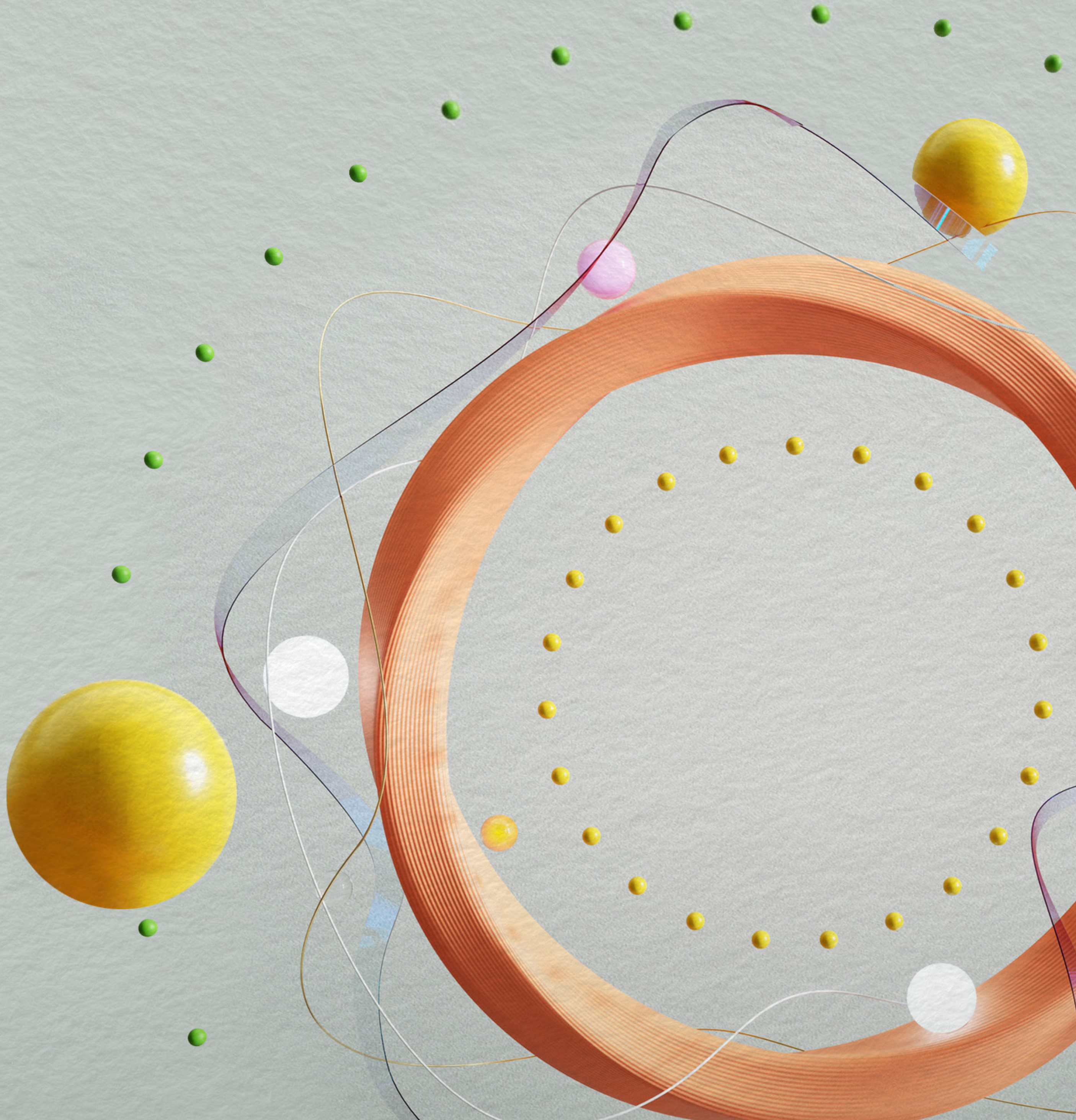
Family Office Investment Report

Q1 2023 CAPITAL FLOWS & INSIGHTS



This analysis is based on investment assets held by single family office clients at Citi Private Bank. Citi Private Bank's Global Family Office Group considers a single family office to have US $250mm+ net worth and one or more dedicated professionals covering i. portfolio of assets/investments & liabilities; ii. legal matters; iii. finance and accounting; iv. trusts & tax planning; and/or v. philanthropy & foundations.

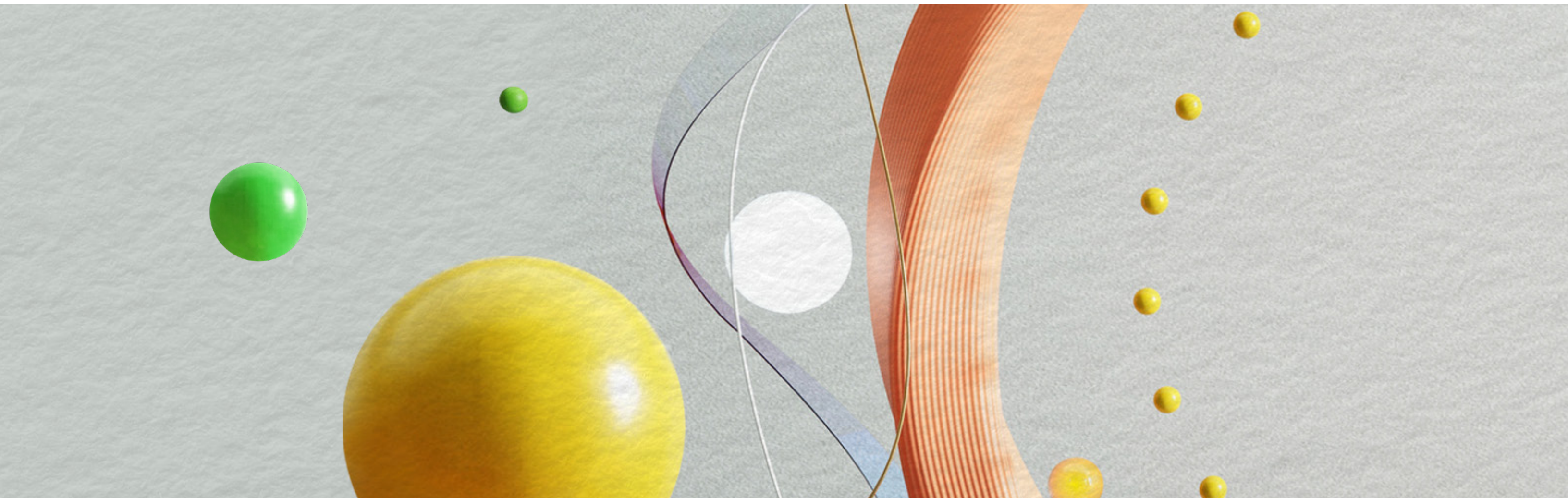
Data is taken from more than 1,200 single family office clients globally and filtered for size and allocation characteristics. This publication presents a general snapshot of how Citi Private Bank's single family office clients are positioned and provides insight into regional flows. The data provided is not representative of and should not be deemed to be attributable to any particular family office client. Please refer to page 23 for methodology information.

Investment assets that single family office clients hold at Citi Private Bank were captured on December 31, 2022 and March 31, 2023. The asset classes included align with Citi Private Bank's Global Investment Committee definitions and nomenclature. Please refer to pages 24-25 for index definitions.

All information presented in this publication are for informational purposes only, are based on past activity, are not intended to represent investment advice, nor any projection of forward-looking performance and are not the product of Citi's Research Department.

You are solely responsible for consulting your own independent advisors as to the legal, tax, accounting and related matters concerning the information herein and nothing in this document or in any communication, whether or not in writing, between you and Citibank/Citigroup or any of their affiliates constitutes legal, tax or accounting advice.

Contents



Foreword

A very warm welcome to the first edition of our **Family Office Investment Report.**

This quarterly publication will offer a perspective into how some of the world's sophisticated investors are positioning their portfolios amid the latest macroeconomic and geopolitical developments. We hope that this will help family offices understand the thinking and actions of their peers in the context of market movements and long-term asset allocation considerations.

We begin this edition by exploring family office investment assets held with Citi Private Bank and look at the equal- and capital-weighted asset allocations as of the end of the first quarter of 2023. We compare these asset allocations to our reference allocation. We also consider them in light of our strategic return estimates for asset classes.

Among the key takeaways is that many family offices continue to maintain a large allocation to investible cash, which includes deposits and money market instruments. These allocations may be attributable to attractive deposit rates, market volatility and fears for the health of certain financial institutions.

Despite such concerns, global equities and bonds managed to rally in the first quarter of 2023. Amid this move, family offices put some cash to work, particularly into fixed income. This "flight to quality" was consistent with our organization's message of seeking yield through higher quality fixed income.

Our Family Office Investment Report looks at movements in family office portfolio positioning, a different perspective from our annual Family Office Survey. For the latter, our family office clients self-report their total portfolio holdings across all their providers, among other topics. Along with the annual survey and our topical white papers, this report is one of the ways in which we illuminate key trends and insights for this sophisticated investor base.

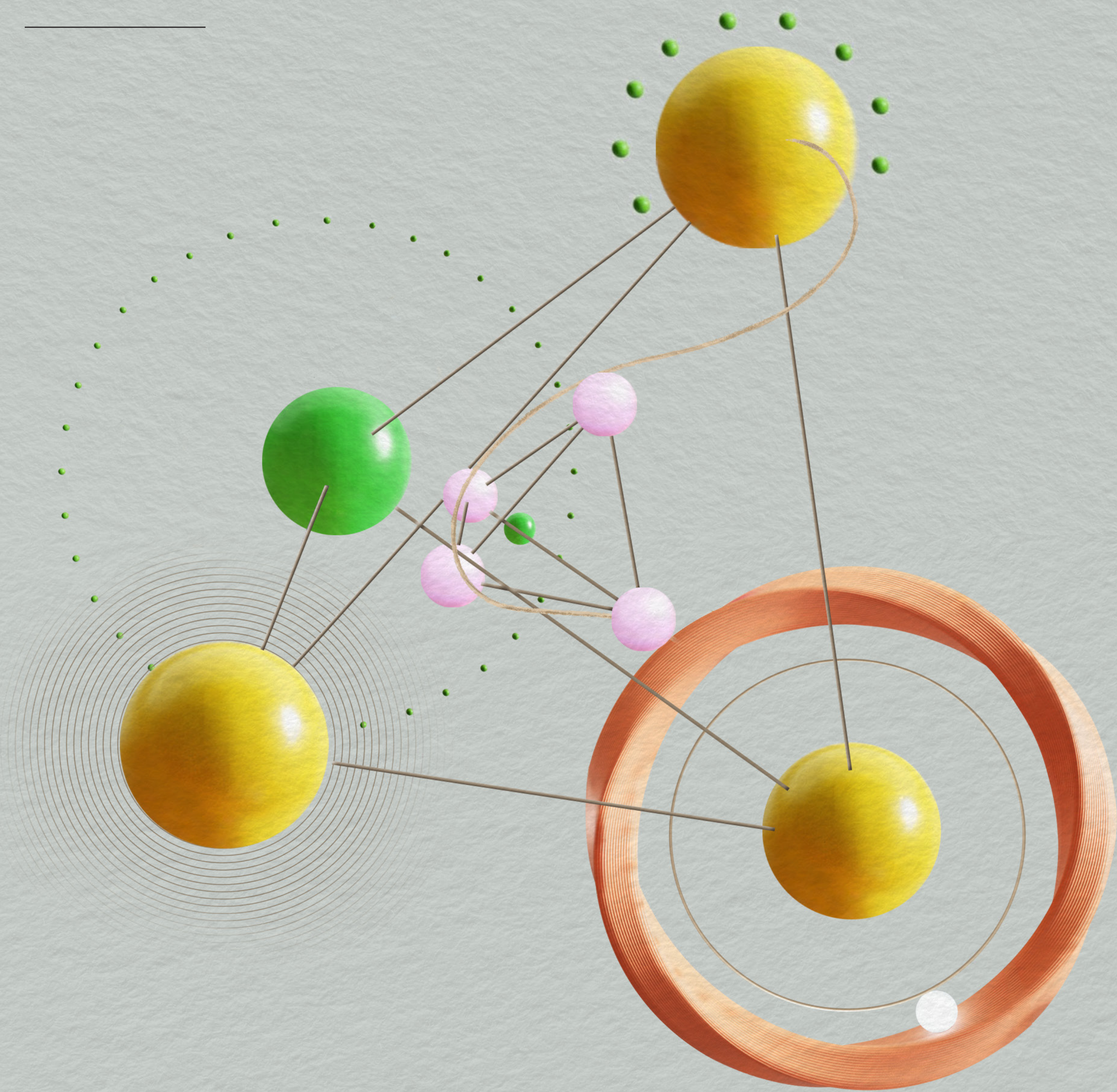
We look forward to evolving Family Office Investment Report over the quarters ahead. Your feedback remains vital: if there is an aspect that you would like us to explore, please let us know.

It is our privilege to serve you.

Hannes Hofmann
Global Head
Global Family Office Group

Shu Zhang
Global Head
Global Investment Lab

Asset allocation



ASSET ALLOCATION

On average, family offices in all regions had a high allocation to cash at the end of the first quarter of 2023.

FIGURE 1: ASSET ALLOCATIONS (EQUAL-WEIGHTED)*

	GLOBAL	APAC	EMEA	LATAM	NAM
CASH	30.9%	25.1%	34.1%	28.5%	32.8%
FIXED INCOME	21.0%	21.2%	20.0%	23.7%	20.3%
EQUITY	34.9%	42.0%	30.2%	34.2%	35.1%
HEDGE FUNDS	2.8%	4.2%	2.9%	3.6%	1.6%
PRIVATE EQUITY	5.9%	4.2%	6.0%	4.7%	7.3%
REAL ESTATE	3.5%	2.6%	5.1%	4.6%	2.2%
COMMODITIES	0.9%	0.7%	1.7%	0.7%	0.6%

An equal–weighted average of family office client allocations as of Mar 31, 2023.
In the `equal–weighted' methodology, each account included in the analysis is given the same weight (1/Number of Accounts).

FIGURE 2: ASSET ALLOCATIONS (CAPITAL-WEIGHTED)*

	GLOBAL	APAC	EMEA	LATAM	NAM
CASH	23.5%	17.8%	25.5%	19.8%	25.5%
FIXED INCOME	14.7%	19.7%	14.5%	15.9%	12.5%
EQUITY	55.9%	58.2%	48.2%	59.0%	59.0%
HEDGE FUNDS	1.8%	1.5%	3.1%	2.2%	0.9%
PRIVATE EQUITY	2.3%	1.6%	4.1%	2.0%	1.5%
REAL ESTATE	1.3%	0.8%	2.9%	0.9%	0.5%
COMMODITIES	0.6%	0.4%	1.7%	0.3%	0.1%

A capital–weighted average of family office client allocations as of Mar 31, 2023.
In the `capital–weighted' methodology, each account's weight is proportional to its market value (Weight of Account A = Market Value of Account A / Market Value of Family Office Client Universe Holdings).

Source: Citi Private Bank, March 2023.

* This analysis takes holdings data from over 1,200 relationships globally and requires a minimum of 50 relationships in each region (APAC, EMEA, LATAM or NAM) to conduct this analysis.

Cash

Family office clients worldwide had large allocations to cash as of 31 March 2023. On a global, equal-weighted basis, the average holding was 31.0% - figure 1. On a capital-weighted basis, the figure was 23.5%, implying that family offices with larger asset holdings at Citi Private Bank held somewhat less cash - figure 2.

These allocations are well above those in our benchmark strategic asset allocations. For example, on the following page, we show our Global Allocation in US Dollars with Hedge Funds and 15% Illiquids (Private Equity & Real Estate) at Risk Level 3 (''Reference Allocation''), which has a 2.0% weighting in cash.*

At the regional level, there was some variation. Family offices in Asia Pacific and Latin America had less cash-heavy portfolios than their Europe, Middle East & Africa and North America counterparts. This was true both on an equal-weighted and capital-weighted view.

Citi Global Wealth's investment philosophy stresses building fully invested core portfolios for the long term and advises against holding excess cash. Particularly over longer periods, large cash holdings have exerted a drag on portfolio performance, albeit while also dampening volatility. Our strategic asset allocation methodology forecasts an annualized return of 3.4% for this asset class over the next decade, lower than for any other asset class except commodities - figure 3.

*Risk Level 3 is designed for investors with a blended objective who require a mix of assets and seek a balance between investments that offer income and those positioned for a potentially higher return on investment. Risk Level 3 may be appropriate for investors willing to subject their portfolio to additional risk for potential growth in addition to a level of income reflective of his/her stated risk tolerance. Adaptive Valuation Strategies (AVS) is Citi Global Wealth Investments' own strategic asset allocation methodology. It is used to determine a suitable long–term mix of investments — or strategic asset allocation — for each client, based upon the outlook for returns and risks, as well as upon each client's individual preferences. Its aim is to maximize returns for a particular amount of risk.

FIGURE 3: AVS' LONG-TERM OUTLOOK FOR ASSET CLASSES

ASSET CLASS	STRATEGIC RETURN ESTIMATE
CASH	3.4%
GLOBAL DEVELOPED INVESTMENT GRADE FIXED INCOME	4.6%
GLOBAL HIGH YIELD FIXED INCOME	7.4%
GLOBAL EMERGING FIXED INCOME	7.8%
GLOBAL DEVELOPED MARKET EQUITY	7.0%
GLOBAL EMERGING MARKET EQUITY	12.9%
HEDGE FUNDS	9.1%
PRIVATE EQUITY	17.6%
REAL ESTATE	10.6%
COMMODITIES	2.4%

Source: Citi Global Wealth Investments Quant Research & Global Asset Allocation team. SREs for 2023; Based on data as of October 31, 2022; Returns estimated in US Dollars. All estimates are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events. Strategic Return Estimates are no guarantee of future performance. Past performance is no guarantee of future returns. Please refer to pages 26–27 for the index composites for each asset class.

Strategic Return Estimates based on indices are Citi Global Wealth Investments' forecast of returns for specific asset classes (to which the index belongs) over a 10–year time horizon. Indexes are used to proxy for each asset class. The forecast for each specific asset class is made using a proprietary methodology that is appropriate for that asset class. Equity asset classes utilize a proprietary forecasting methodology based on the assumption that equity valuations revert to their long–term trend over time. The methodology is built around specific valuation measures that require several stages of calculation. Assumptions on the projected growth of earnings and dividends are additionally applied to calculate the SRE of the equity asset class. Fixed Income asset class forecasts use a proprietary forecasting methodology that is based on current yield levels. Other asset classes utilize other specific forecasting methodologies.

SRE do not reflect the deduction of client fees and expenses. Past performance is not indicative of future results. Future rates of return cannot be predicted with certainty. Investments that pay higher rates of return are often subject to higher risk and greater potential loss in an extreme scenario. The actual rate of return on investments can vary widely. This includes the potential loss of principal on your investment. It is not possible to invest directly in an index.

All SRE information shown above is hypothetical not the actual performance of any client account. Hypothetical information reflects the application of a model methodology and selection of securities in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. Adaptive Valuation Strategies (AVS) provides SREs and asset allocations profiles for multiple currencies. Please refer to page 26 for the definition of Strategic Return Estimates.

Fixed income

Family office clients hold less fixed income than our Reference Allocation - **figure 4**. However, family office clients have continued to build their allocation to this asset class due to the attractive yields on offer. On an equal-weighted view, the global average was 21.0%.

Family offices with larger asset holdings at Citi Private Bank have smaller allocations still, as shown by the capital-weighted figure of 14.7%. For comparison, our Reference Allocation has a 39.0% weighting in fixed income - **figure 4**.

The low allocations to fixed income may partly be a result of this asset class's low returns of the past decade. In the ten years to 31 October 2022, Global Developed Investment Grade Fixed Income, Global High Yield Fixed Income and Global Emerging Fixed Income saw annualized returns of 1.2%, 4.3% and 0.8% respectively. However, our strategic asset allocation methodology estimates rather higher returns in the coming decade - **figure 3**.

Equity

Equity allocations among family office clients are broadly in line with our Reference Allocation - **figure 4**. Globally, the average on an equal-weighted basis was 34.9%. Our Reference Allocation has a 32.0% weighting in this asset class.

Family offices with larger asset holdings at Citi Private Bank are notably more exposed to equities than smaller ones. The capital-weighted average exposure globally was 55.9%, versus 34.9% on an equal-weighted basis. Regionally, there were disparities. On an equal-weighted basis, family offices in Asia Pacific had the highest weighting at 42.0% and family offices in Europe, the Middle East & Africa had the lowest at 30.2%

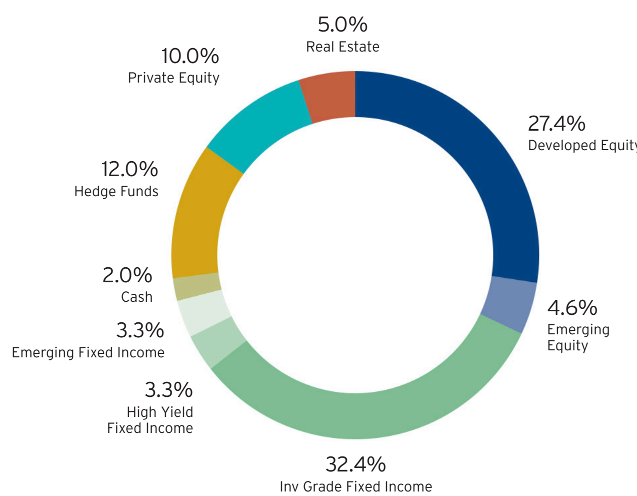
Whereas low fixed income allocations may partly result from the poor returns of the last decade, the fuller allocations to equity may reflect their stronger performance over the same period. However, it is worth noting that our methodology points to a moderation in Developed Market Equity returns over the ten years ahead, but higher returns in Emerging Market Equity - **figure 3**.

Alternative asset classes

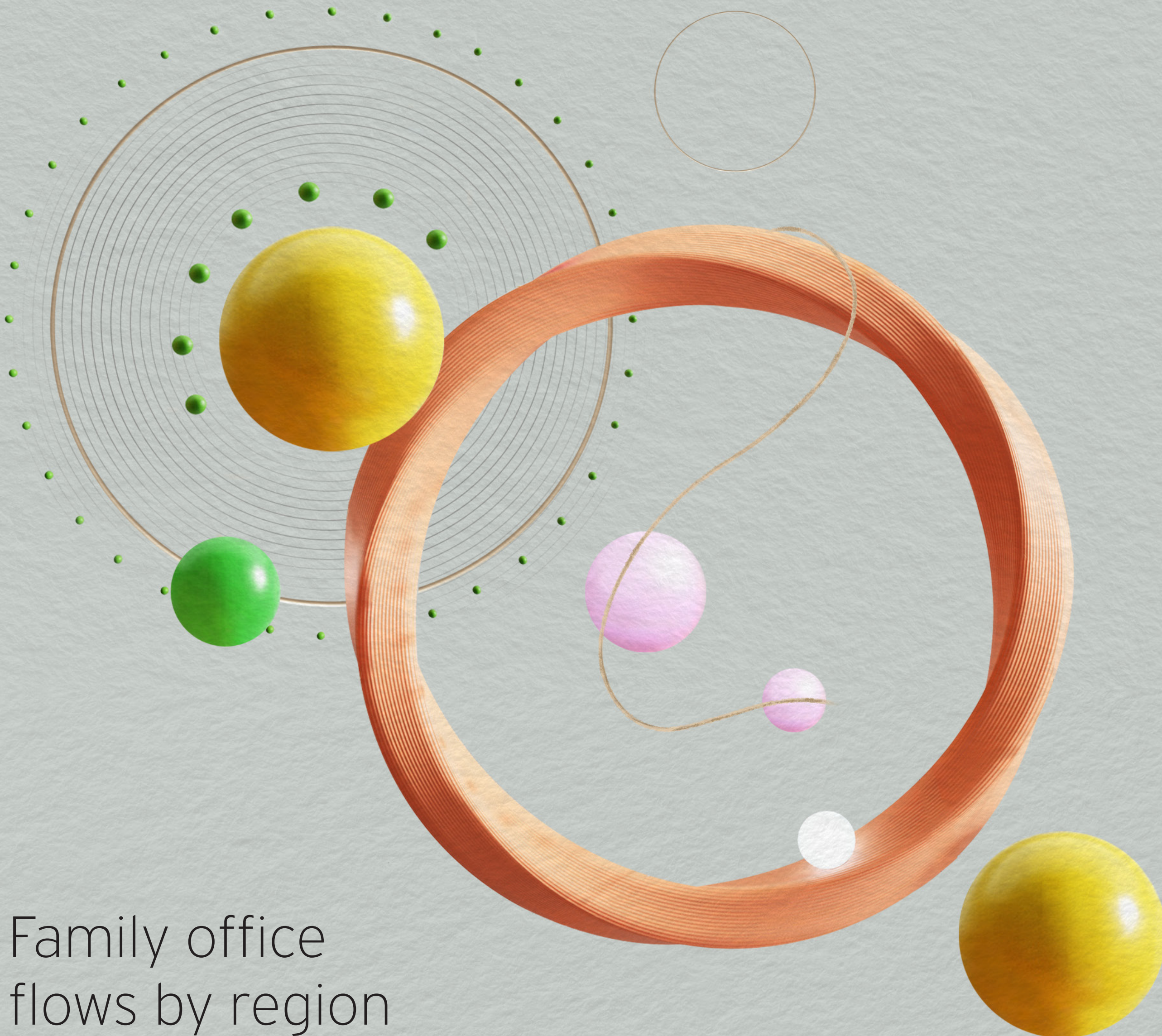
On average, family offices allocations were under-allocated compared to the Reference Allocation to the alternative asset classes of Private Equity, Real Estate and Hedge Funds. On a global equal-weighted view, Private Equity had the highest weighting of 5.9%, followed by Real Estate (3.5%) and Hedge Funds (2.8%).

Our strategic asset allocation methodology estimates that potential returns from alternative asset classes will be above those of Developed Market Equity - **figure 3** - over the coming decade.

FIGURE 4: GLOBAL ALLOCATION IN US DOLLARS WITH HEDGE FUNDS AND 15% ILLIQUIDS (PRIVATE EQUITY & REAL ESTATE) AT RISK LEVEL 3



Source: Citi Global Wealth Investments Quant Research & Global Asset Allocation teams, data as of October 31, 2022



Family office flows by region

What changed in family office client portfolios in the first quarter of 2023?

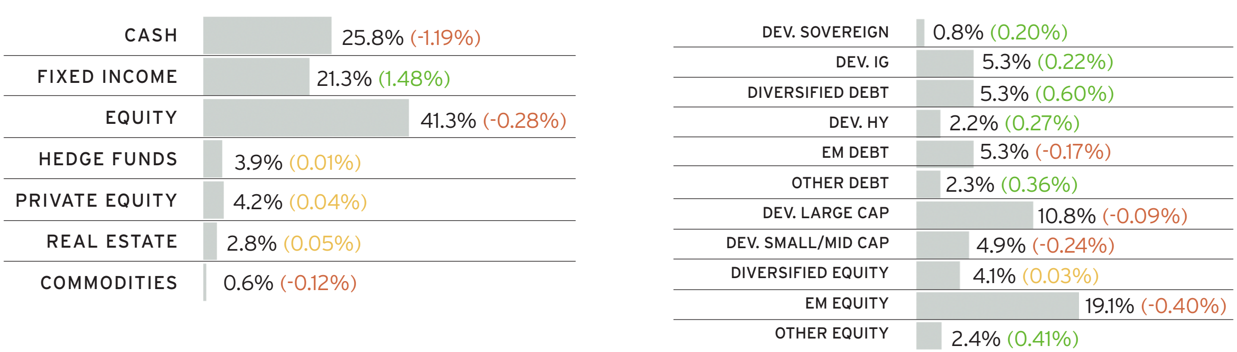
In this section, we examine portfolio flows by region. Among the broad trends we observed were:

- Putting cash to work
- A shift into fixed income
- A mixed picture in equities
- A retreat from commodities

ASIA PACIFIC

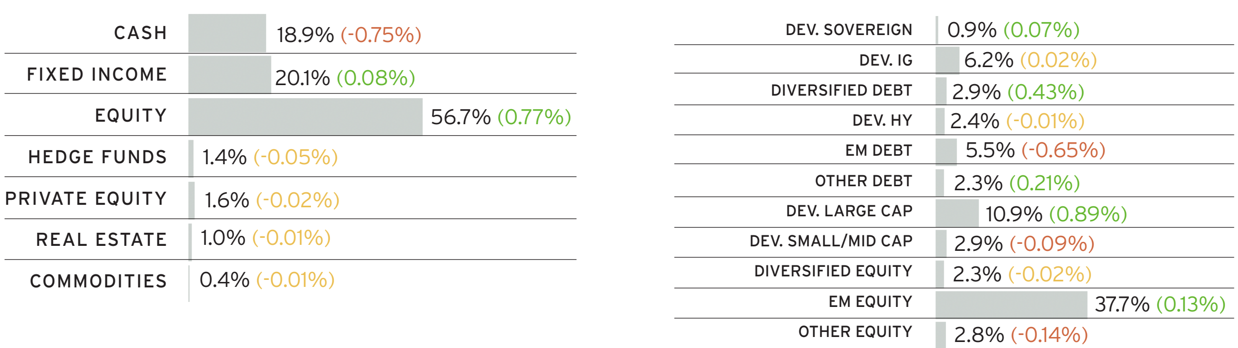
In Asia Pacific, family offices' cash holdings fell in the first quarter of 2023, as they deployed cash into fixed income investments. While most of the family offices on average reduced equity allocations, we have noticed family offices with larger asset holdings at Citi Private Bank put more cash to work in equities.

FIGURE 8: ASSET ALLOCATIONS (EQUAL-WEIGHTED)*



An equal–weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

FIGURE 9: ASSET ALLOCATIONS (CAPITAL-WEIGHTED)*



An equal–weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

DECREASED ALLOCATION AS COMPARED TO PRIOR PERIOD

NO CHANGE TO ALLOCATION AS COMPARED TO PREVIOUS PERIOD

INCREASE IN ALLOCATION AS COMPARED TO PREVIOUS PERIOD

Source: Citi Private Bank, March 2023. The changes in asset allocation are based on trading activity. Holdings are normalized to Dec 31, 2022 valuations for consistency and, as such, are not impacted by price action. Detailed methodology is available on page 22.

* Two weighting methodologies are used in this analysis: equal–weighted and capital–weighted. In the 'equal–weighted' methodology, each account included in the analysis is given the same weight (1/Number of Accounts). In the 'capital–weighted' methodology, each account's weight is proportional to its market value (Weight of Account A = Market Value of Account A / Market Value of Family Office Client Universe Holdings). This analysis takes holdings data from over 1,200 relationships globally and requires a minimum of 50 relationships in each region (APAC, EMEA, LATAM or NAM) to conduct this analysis.

Fixed income

- Fixed income allocations rose on both an equal-weighted and capital-weighted basis. The increase was broad-based across most sub-asset classes. Emerging market fixed income was an exception, with net dollar outflow.

- Developed investment grade & developed sovereign also saw moderate net dollar inflows. The increase in exposure represented a continuation of the trend we observed in December 2022. Most buying and selling centered on financials, specifically large European and US banks' credits.

- Net dollar flow within developed corporate high yield was positive, albeit less so than in diversified fixed income and developed investment grade. Trading was dominated by financial credits.

- Emerging market debt saw net dollar outflow. And there was broad reduction in exposure to real estate credits.

Equities

- Equities saw a net dollar inflow. On an equal-weighted basis, however, family office clients reduced allocation to equities.

- Developed large-cap equities accounted for the bulk of the net dollar inflow. On an equal-weighted basis, allocations fell. Select technology and financial names saw buying interest, while selling occurred broadly across sectors.

- Emerging Market Equity was the second largest contributor to equities' positive net dollar flow, predominantly focused on China and Taiwan and likely driven by the China reopening in late 2022 and early 2023. Buying was focused on consumer discretionary, technology and communication services sectors. There was a broad reduction across cyclical sectors, e.g., technology, industrials and materials.

Alternatives and commodities

- We observed interest in multi-strategy global macro and relative value strategies.

- Trading within commodities was muted.

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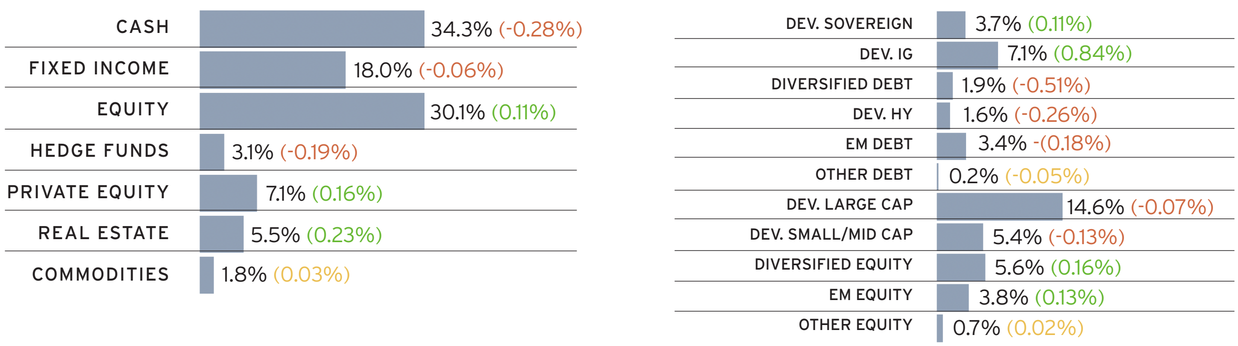
EUROPE, THE MIDDLE EAST & AFRICA

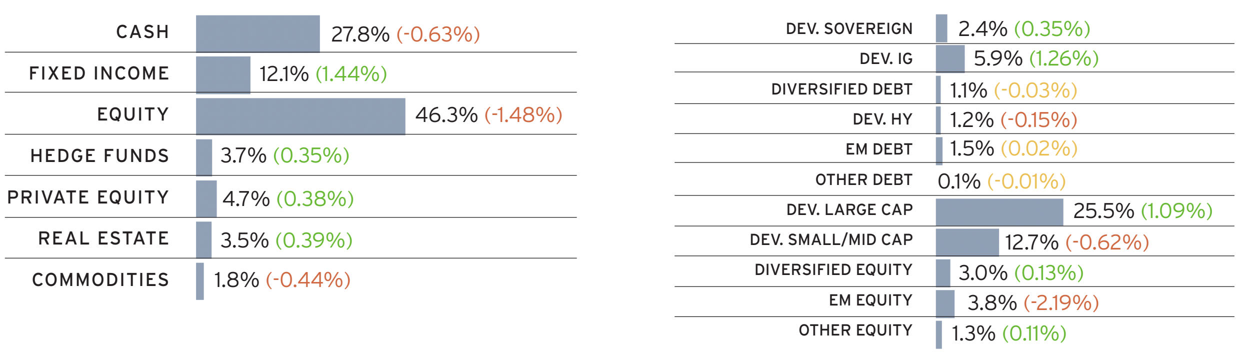
In Europe, the Middle East & Africa, family offices moved slightly away from cash to investment grade bonds. There was a shift into Private Equity, Real Estate and, to a lesser extent, into public market equity.

FIGURE 10: ASSET ALLOCATIONS (EQUAL-WEIGHTED)*



An equal–weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

FIGURE 11: ASSET ALLOCATIONS (CAPITAL-WEIGHTED)*



An equal–weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

DECREASED ALLOCATION AS COMPARED TO PRIOR PERIOD

NO CHANGE TO ALLOCATION AS COMPARED TO PREVIOUS PERIOD

INCREASE IN ALLOCATION AS COMPARED TO PREVIOUS PERIOD

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Fixed income

- A "flight to quality" was in evidence, with Developed Investment Grade and Developed Sovereign Debt seeing net dollar inflows. Most trading activity centered on financial bonds, family offices being net buyers, while selling financial equities.

- Emerging market debt saw a net outflow, with sell trades outnumbering buy trades by almost double.

Equities

- Emerging market equities on average saw net dollar inflows during the quarter.

- At the sector level, allocations reduced to cyclical stocks and financials.

- Developed small- and mid-cap equities saw a net outflow.

Alternatives and commodities

- Allocations to private equity and real estate increased though this may be largely due to shifts in allocation across other asset classes.*

- Commodities stayed flat.

*Allocations to an asset class could change due to shifts in allocations to other asset classes. For example, an inflow of funds to one asset class while all others saw zero flows would register as negative flows for the latter.

Private Equity & Real Estate do not record flows unless it is the first capital call of a new fund or retirement of an existing fund.

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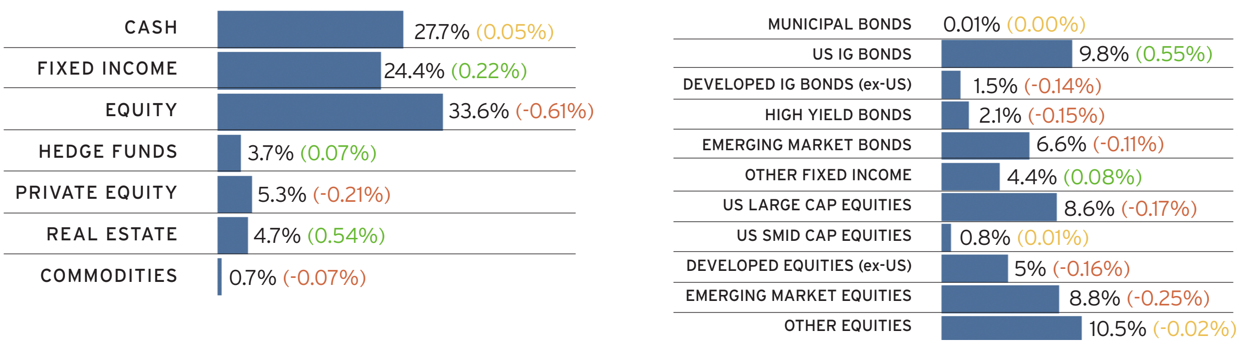
LATIN AMERICA

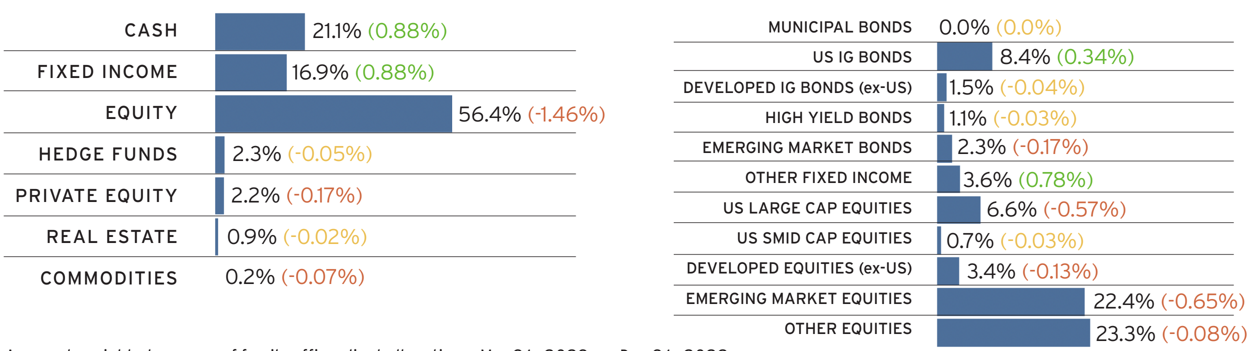
Allocations to cash rose in Latin America, as did fixed income holdings. A retreat from public equity was in evidence, as well as from commodities. This "flight to quality" was against a backdrop of heightened volatility and increased uncertainty in financial markets.

FIGURE 12: ASSET ALLOCATIONS (EQUAL-WEIGHTED)*



An equal-weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

FIGURE 13: ASSET ALLOCATIONS (CAPITAL-WEIGHTED)*



An equal-weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

DECREASED ALLOCATION AS COMPARED TO PRIOR PERIOD

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Fixed income

- The increase in fixed income was more pronounced in family offices with larger asset holdings at Citi Private Bank.

- Flows primarily went into US Investment Grade Fixed Income as investors positioned themselves to de-risk their portfolios amid high volatility and to take advantage of the higher interest rates environment.

- Clients actively reduced exposure to High Yield and Emerging Market Fixed Income.

Equities

- The decrease in equities was more pronounced in family offices with larger asset holdings at Citi Private Bank.

- This shift out of equities happened across all sub-asset classes.

Alternatives and commodities

- Half of all family office clients have an allocation to Private Equity and Real Estate held with Citi Private Bank.*

- Overall, family offices in Latin America continue to invest in private debt and special opportunities funds.

*Allocations to an asset class could change due to shifts in allocations to other asset classes. For example, an inflow of funds to one asset class while all others saw zero flows would register as negative flows for the latter.

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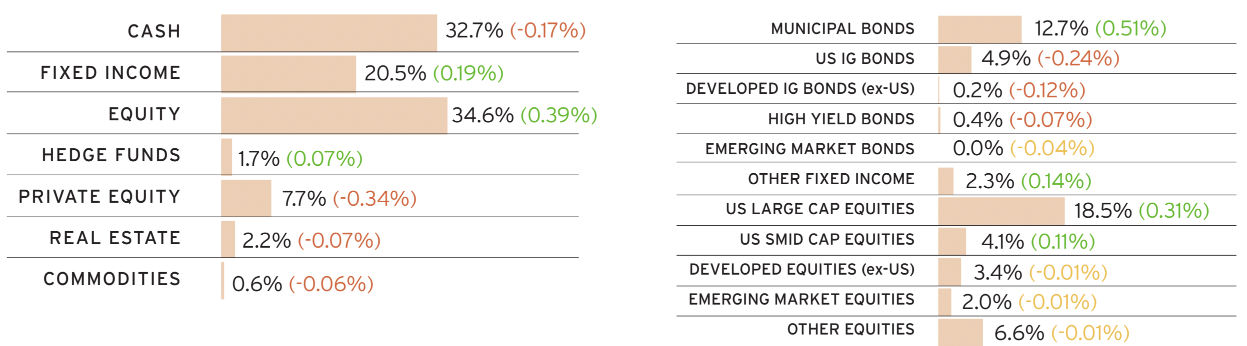
NORTH AMERICA

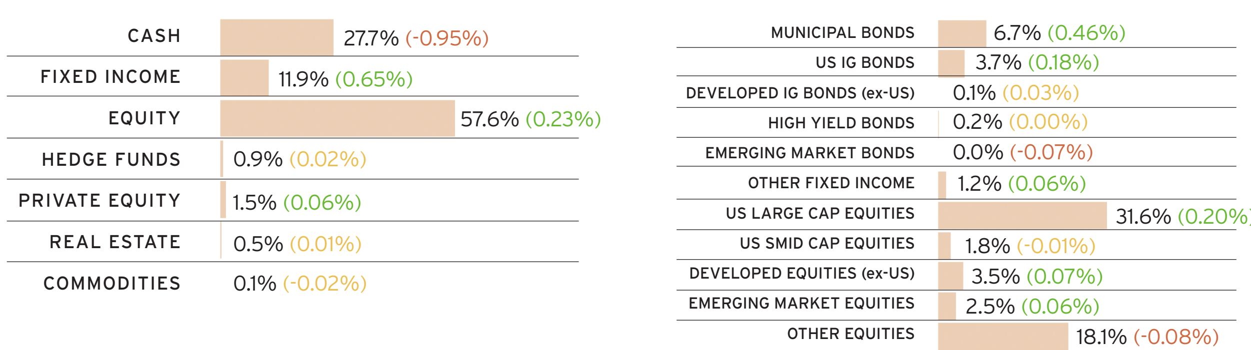
Against the backdrop of a volatile first quarter in 2023, we saw a "flight-to-quality" trend among our family office clients. The majority of the flows went into US Treasuries and Municipal Bonds as clients repositioned their portfolios to account for the perceived weakness in the banking sector and to take advantage of higher yields on offer. We also saw a modest increase in US Large Cap Equity, with a preference toward cyclical sectors such as materials as a potential sign that renewed global growth could be on the horizon.

FIGURE 14: ASSET ALLOCATIONS (EQUAL-WEIGHTED)*



An equal–weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

FIGURE 15: ASSET ALLOCATIONS (CAPITAL-WEIGHTED)*



A capital–weighted average of family office client allocations; Mar 31, 2023 vs. Dec 31, 2022.

DECREASED ALLOCATION AS COMPARED TO PRIOR PERIOD

NO CHANGE TO ALLOCATION AS COMPARED TO PREVIOUS PERIOD

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Fixed income

- Allocation to fixed income went up as clients looked to de-risk their investment portfolios by increasing exposure to high-quality fixed income. Family office clients invested in Municipal Bonds (“munis”) and US Treasuries.

- Looking at flows in dollar terms, we saw that the increase in allocation to munis was roughly 2.5 times the increase in US Investment Grade Fixed Income, which may make sense given the tax advantage munis can provide to US investors.

- Changes in allocation to High Yield and Non-US Developed Investment Grade Fixed Income were marginal, whereas family office clients reduced exposure to Emerging Market Fixed Income.

Equity

- US Large Cap was the primary driver for increased exposure to equities. Clients actively retained or built positions to take advantage of discounted valuations.

- From a sector positioning perspective, clients reduced their exposure to financials against a backdrop of perceived weakness in the banking sector. Clients added to their exposure in materials.

- We saw that the exposure to non-US equities across developed and emerging markets) was marginally up during the quarter on a dollar-weight basis. Clients primarily used broad-based ETFs for trading within these sub-asset classes.

Alternatives

- Activity in Private Equity and Real Estate was muted during the first quarter of 2023.*

- Clients marginally reduced their exposure to gold. This may potentially be due to profit-taking as gold hit all-time high during the first quarter of 2023.

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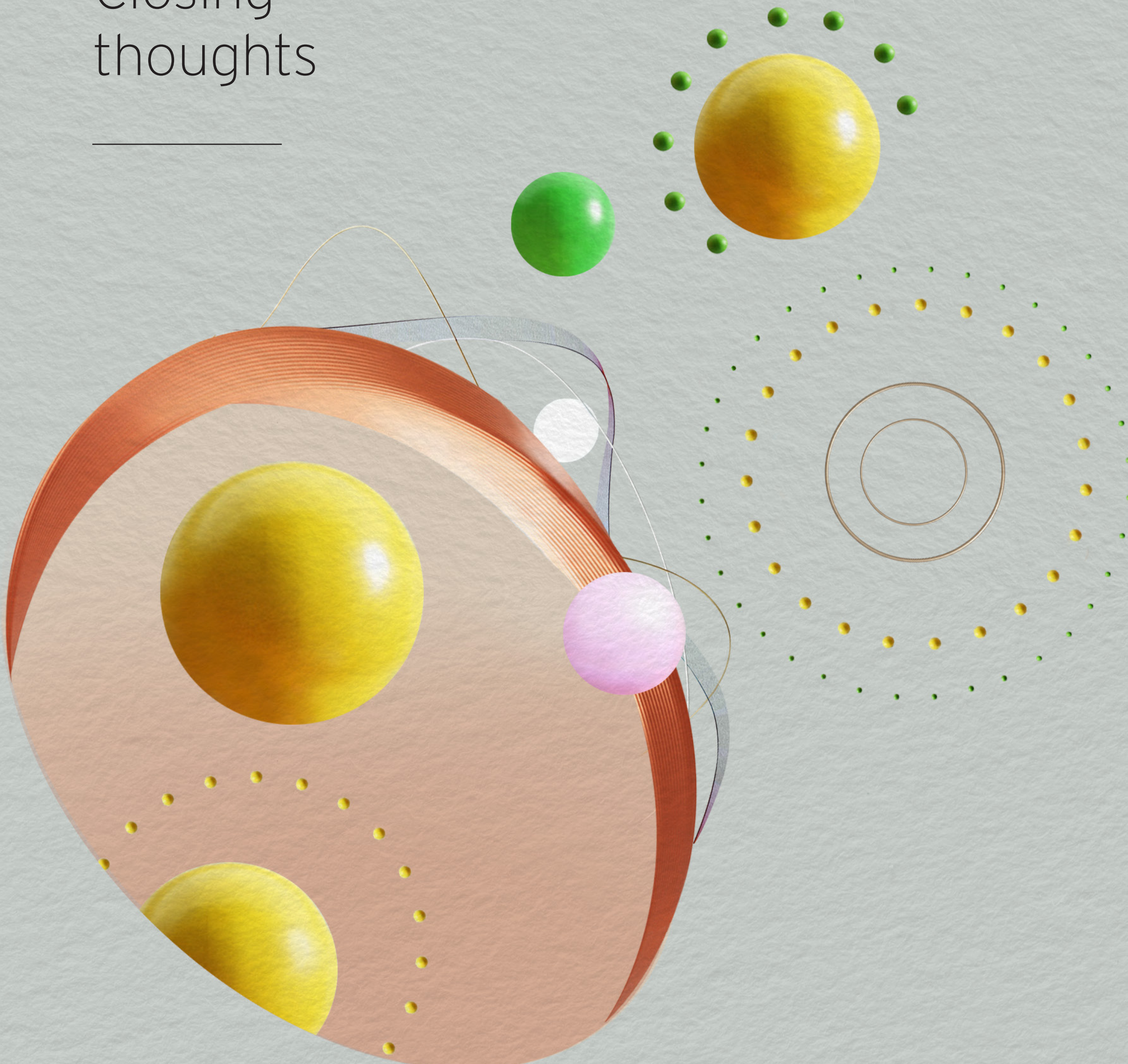
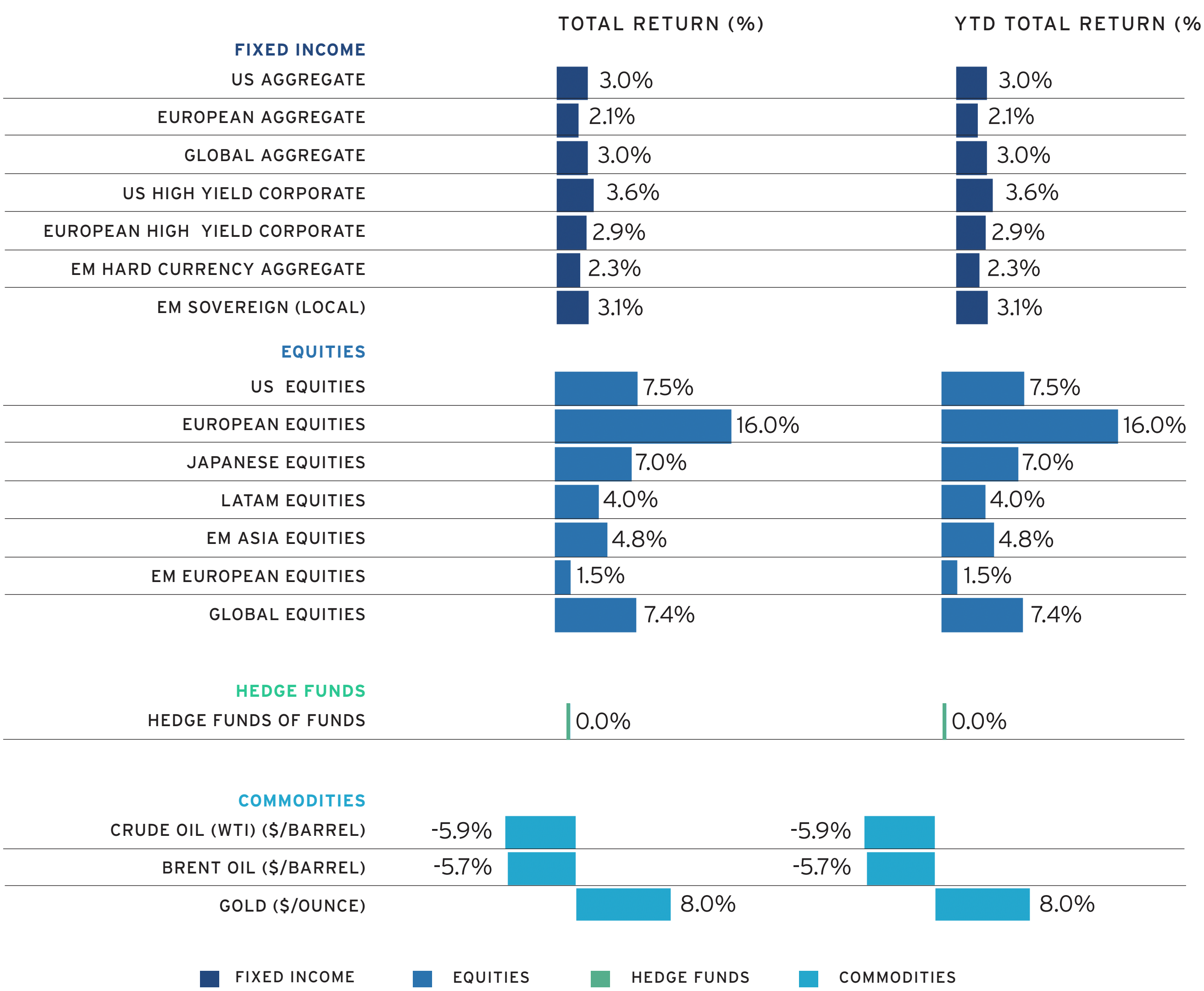
Closing thoughts



UPSIDE AMID UNCERTAINTY

The first quarter of 2023 saw broad-based upside across fixed income and equity sub-categories – **figure 3.** This was despite turmoil in parts of the global banking system, ongoing geopolitical tensions and recession fears. In our view, this performance emphasizes the importance of building globally diversified portfolios and keeping them invested throughout market cycles.

FIGURE 16: MARKET PERFORMANCE



As of March 31, 2023

Source: Bloomberg, data as of March 31, 2023, OCIS March 2023. Q1 Total Return Analysis Period: Jan 2023 – Mar 2023. Note: Return is in USD terms and is total returns. Past performance is not indicative of future returns. The indices are unmanaged and are not investable. Index data is provided for comparative purposes only. Please refer to page 24 for index definitions. Diversification does not ensure profit or protection against loss.

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ANNUAL FAMILY OFFICE SURVEY REPORT

Initiated during the seventh annual Family Office Leadership Program last June, the 2022 Family Office Survey collected responses from over 125 family office clients over a month-long period.

The findings and analysis in the resulting report offer exclusive insights into the thinking of some of the world's most sophisticated family offices.

VIEW THE 2022 REPORT

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Executive reward and retention strategies for family offices

Family learning and education initiatives: building a foundation for the future

When hope is not a strategy: preparing children for significant wealth

Investment management best practices for family offices

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We offer clients comprehensive private banking and family office advisory services, institutional access to global opportunities and connections to a community of like-minded peers.

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REGIONAL CONTACTS

Alessandro Parise
Latin America Head
Global Family Office Group
alessandro.parise@citi.com

Alessandro Amicucci
Europe, Middle East & Africa Head
Global Family Office Group
alessandro.amicucci@citi.com

Bernard Wai
Asia Pacific Head
Global Family Office Group
bernard.wai@citi.com

About the Global Investment Lab

The Global Investment Lab is a dedicated, institutional-calibre analytical team within Citi Global Wealth that is focused on customized portfolio construction, risk management and investment strategy.

We understand the complex needs of family offices and are committed to helping clients identify opportunities and make well-informed investment decisions. From liquidity events to direct investment to strategic portfolio realignment, we put our analytical minds and deep experience with portfolio construction to work identifying the appropriate investment portfolio opportunities for your family office.

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REGIONAL CONTACTS

Sneha Jose
North America Head
Global Investment Lab
sneha.jose@citi.com

Juan Francisco Clemenza
Latin America Head
Global Investment Lab
juan.clemenza@citi.com

Sukhavasi Venkata Vamsi
Europe, Middle East & Africa Head
Global Investment Lab
sukhavasi.venkata.vamsi@citi.com

Rajesh Adwalpalker
Asia Pacific Head
Global Investment Lab
rajesh.adwalpalker@citi.com

Methodology

We use equal-weighted and capital-weighted methodologies in this analysis.

In the equal-weighted methodology, each account included in the analysis is given the same weight in the calculation of averages.

Equal-weighted calculation = 1/number of family office accounts.

In the capital-weighted methodology, each account's weight is proportional to its asset value, such that larger family office accounts have a greater bearing on the average calculations.

Capital-weighted calculation = Account A's asset value / total value of family office client assets.

This analysis takes asset data from over 1,200 relationships globally, requiring a minimum of 50 relationships in each region (APAC, EMEA, LATAM or NAM) for that region to be included.

The analysis is only inclusive of assets for which Citi holds information (e.g., direct client investments are not captured).

Asset allocation (pg. 6)

Snapshot of asset allocation on a capital-weighted and equal-weighted basis, excluding:

a. Liabilities;

b. Client accounts valued at <USD 1MM; and

c. Clients who hold 90% (or more) of their assets in Cash & Cash Equivalents

Regional flows (pgs. 9-17)

Changes in the value of assets held, and the resultant impact on aggregate asset class weights, are entirely based on changing quantities and do not incorporate any price effects. Products with multiple asset classes and holdings traded within managed portfolios are excluded from this analysis, along with:

a. Negative positions and liabilities;

b. Unfunded derivatives positions;

c. Client accounts valued at <USD 1MM;

d. Client accounts opened or closed during the analysis period;

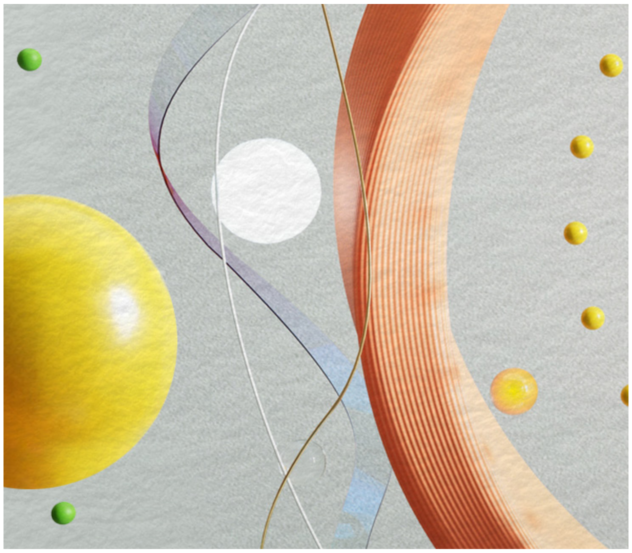
e. Clients who hold 90% (or more) of their assets in Cash & Cash Equivalents at both observation points; and

f. Client accounts whose total asset value has changed by >100%.

Allocations to an asset class could change due to shifts in allocations to other asset classes. For example, an inflow of funds to one asset class while all others saw zero flows would register as negative flows for the latter.

Private Equity & Real Estate do not record flows unless it is the first capital call of a new fund or retirement of an existing fund.

Past performance is not indicative of future results.



Index Definitions

US Aggregate - Bloomberg Barclays U.S. Aggregate Bond Index
The Bloomberg Barclays U.S. Aggregate Bond Index is a broad-based benchmark that measures the investment grade, U.S. dollar-denominated, fixed-rate taxable bond market. This includes Treasuries, government-related and corporate securities, mortgage backed securities, asset-backed securities and collateralized mortgage-backed securities.

European Aggregate - Bloomberg Barclays Euro Agg Total Return Index
The Bloomberg Barclays Euro Aggregate Bond Index includes fixed-rate, investment grade Euro denominated bonds. Inclusion is based on the currency of the issue, and not the domicile of the issuer. The principal sectors in the index are the Treasury, corporate, government-related and securitized.

Global Aggregate - Bloomberg Barclays Global Aggregate Bond
The Index measures the performance of the global investment grade, fixed-rate bond markets. The benchmark includes government, government-related and corporate bonds, as well as asset-backed, mortgage-backed and commercial mortgage-backed securities from both developed and emerging markets issuers.

US High Yield Corporate - Bloomberg Barclays US Corporate High Yield Total Return Index
The Bloomberg Barclays US Corporate High Yield Bond Index measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on Barclays EM country definition, are excluded.

European High Yield Corporate - Bloomberg Barclays Pan-European High Yield Total Return Index
The Bloomberg Barclays Pan-European High Yield Index measures the market of non-investment grade, fixed-rate corporate bonds denominated in the following currencies: euro, pounds sterling, Danish krone, Norwegian krone, Swedish krona and Swiss franc. Inclusion is based on the currency of issue, and not the domicile of the issuer.

EM Hard Currency Aggregate - Bloomberg Barclays EM Local Currency Government TR Index
The Bloomberg Barclays Emerging Markets Local Currency Government Index is a flagship index that measures the performance of local currency Emerging Markets (EM) debt. Classification as an EM is rules-based and reviewed annually using World Bank income group, International Monetary Fund (IMF) country classification and additional considerations such as market size and investability.

US Equities - S&P 500 Index
The S&P 500® is widely regarded as the best single gauge of large-cap U.S. equities. There is over USD 9.9 trillion indexed or benchmarked to the index, with indexed assets comprising approximately USD 3.4 trillion of this total. The index includes 500 leading companies and covers approximately 80% of available market capitalization.

European Equities - EURO STOXX 50
The EURO STOXX 50 Index, Europe's leading blue-chip index for the Eurozone, provides a blue-chip representation of supersector leaders in the region. The index covers 50 stocks from 11 Eurozone countries. The index is licensed to financial institutions to serve as an underlying for a wide range of investment products such as exchange-traded funds (ETFs), futures, options and structured products.

Japanese Equities - Nikkei 225
The Nikkei-225 Stock Average is a price-weighted average of 225 top-rated Japanese companies listed in the First Section of the Tokyo Stock Exchange. The Nikkei Stock Average was first published on May 16, 1949, where the average price was ¥176.21 with a divisor of 225.

LatAm Equities - MSCI Emerging Markets Latin America Index
Latin America Index captures large- and mid-cap representation across 6 Emerging Markets (EM) countries* in Latin America. With 118 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

EM Asia Equities - MSCI Emerging Markets Asia Index
The MSCI Emerging Markets (EM) Asia Index captures large- and mid-cap representation across 9 Emerging Markets countries. With 903 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

EM European Equities - MSCI EMERGING MARKETS EUROPE INDEX
The MSCI Emerging Markets Europe Index captures large- and mid-cap representation across 6 Emerging Markets (EM) countries in Europe. With 72 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

Global Equities - MSCI All Country World Index (ACWI)
The MSCI ACWI is a market capitalization weighted index designed to provide a broad measure of equity-market performance throughout the world. The MSCI ACWI is maintained by Morgan Stanley Capital International (MSCI) and is comprised of stocks from 23 developed countries and 24 emerging markets.

Hedge Fund Research - HFRX Global Hedge Fund Index
The HFRX Global Hedge Fund Index is designed to be representative of the overall composition of the hedge fund universe. It is comprised of all eligible hedge fund strategies falling within four principal strategies: equity hedge, event driven, macro/CTA, and relative value arbitrage.

Asset class and other definitions

Strategic Return Estimate (SRE): Citi Global Wealth Investments' forecast of returns for specific asset classes over a 10-year time horizon. The forecast for each specific asset class is made using a proprietary methodology that we believe is appropriate for that asset class. Equity asset classes are forecast using a proprietary methodology based on the calculation of valuation levels with the assumption these valuation levels revert to their long-term trends over time. The methodology is built around specific valuation measures that require several stages of calculation. Assumptions on the projected growth of earnings and dividends are additionally applied to calculate the SRE of the equity asset class. Fixed Income asset classes are forecast using a proprietary methodology based on current yield levels. Other asset classes have other specific forecasting methodologies.

Asset class SREs are made up from each individual country's SREs in each asset class. AVS weights each country's SRE by that country's market capitalization to calculate an overall asset class SRE. But for home-bias allocations, the home-bias country is given much larger weightings than its market capitalization would suggest, while other countries get a proportionately lower weighting.

Each SRE is gross of actual client fees and expenses. Components of the methodology used to create the SREs include the rate of return for various asset classes based on indices. Future rates of return cannot be predicted with certainty. Investments that pay higher rates of return are often subject to higher risk and greater potential loss in an extreme scenario. It is not possible to invest directly in an index.

Global Developed Market Equity
The asset class is composed of MSCI indices capturing large-, mid- and small-cap representation across 18 individual developed markets countries, as weighted by the market capitalization of these countries. The composite covers approximately 95% of the free float-adjusted market capitalization in each country.

Global Emerging Market Equity
The asset class is composed of MSCI indices capturing large- and mid-cap representation across 20 individual emerging-market countries. The composite covers approximately 85% of the free float-adjusted market capitalization in each country. For the purposes of supplemental long-term historical data, local-market country indices are used, wherever applicable.

Diversified Equities refer to holdings that have broad investment mandates spanning multiple geographies and/or categories, e.g. developed large-cap, developed small- and mid-cap and emerging equities.

Other Equities include other areas within equities which cannot be categorized using the standard sub-asset classes methodology, e.g. funded structured products.

Global Developed Investment Grade Fixed Income
The asset class is composed of Bloomberg Barclays indices capturing investment grade debt from twenty different local currency markets. The composite includes fixed-rate treasury, government-related, and investment grade rated corporate and securitized bonds, and mortgage-backed securities from the developed-market issuers. Local market indices for US, UK and Japan are used for supplemental historical data.

Global High Yield Fixed Income
The asset class is composed of Bloomberg Barclays indices measuring the non-investment grade, fixed rate corporate bonds denominated in USD, GBP and EUR. Securities are classified as high yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below, excluding emerging market debt. Ibbotson High Yield Index, a broad high yield index including bonds across the maturity spectrum, within the BB-B rated credit quality spectrum, included in the below-investment-grade universe, is used for supplemental historical data.

Global Emerging Fixed Income
The asset class is composed of Bloomberg Barclays indices measuring performance of fixed and floating rate US dollar denominated emerging markets sovereign debt for 3 different regions including Latin America, EMEA and Asia.

Diversified Fixed Income includes holdings that combine distinct global and credit spectrum categories, e.g. Developed Investment Grade, Developed High Yield and Emerging Markets Fixed Income.

Other Debt includes any other sub-segments within Fixed Income that cannot be categorized using the standard sub-asset classes methodology, e.g. rates-linked structured products.

Cash
The asset class is represented by US 3-Month Government Bond TR, measuring the USD denominated active 3-month fixed-rate nominal debt issues by the US Treasury.

Hedge Funds
The asset class is composed of investment managers employing different investment styles as characterized by different sub categories — HFRI Equity Long/Short: Positions both long and short in primarily equity and equity derivative securities; HFRI Credit: Positions in corporate fixed income securities; HFRI Event Driven: Positions in companies currently or prospectively involved in wide variety of corporate transactions; HFRI Relative Value: Positions based on a valuation discrepancy between multiple securities; HFRI Multi Strategy: Positions based on realization of a spread between related yield instruments; HFRI Macro: Positions based on movements in underlying economic variables and their impact on different markets; Barclays Trader CTA Index: The composite performance of established programs (Commodity Trading Advisors) with more than four years of performance history.

Private Equity
The asset class characteristics are driven by those for Developed Market Small-Cap Equities, adjusted for illiquidity, sector concentration and greater leverage.

Real Estate
The asset class contains index contains all Equity REITs (US REITs and publicly-traded real estate companies) not designated as Timber REITs or Infrastructure REITs: NAREIT US REIT Index, NAREIT Canada REIT Index, NAREIT UK REIT Index, NAREIT Switzerland REIT Index, NAREIT Euro zone REIT Index, NAREIT Japan REIT Index, NAREIT Hong Kong REIT Index, NAREIT Singapore REIT Index, NAREIT Australia REIT Index.

Commodities
The asset class contains the index composites — GSCI Precious Metals Index, GSCI Energy Index, GSCI Industrial Metals Index, and GSCI Agricultural Index — measuring investment performance in different markets, namely precious metals (e.g. gold, silver), energy commodity (e.g. oil, coal), industrial metals (e.g. copper, iron ore) and agricultural commodity (e.g. soy, coffee) respectively. Reuters/Jeffries CRB Spot Price Index, the TR/CC CRB Excess Return Index, an arithmetic average of commodity futures prices with monthly rebalancing, is used for supplemental historical data.

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