



Alternative investments

Striking the balance between growth tomorrow and liquidity today

A survey and research on public funds conducted by National Conference on Public Employee Retirement Systems (NCPERS) and J.P. Morgan Asset Management

FOR INSTITUTIONAL/WHOLESALE OR PROFESSIONAL CLIENT USE ONLY | NOT FOR RETAIL DISTRIBUTION



The Voice for Public Pensions

J.P.Morgan
Asset Management

**ABOUT
NCPERS**

The National Conference on Public Employee Retirement Systems (NCPERS) is the largest trade association for public sector pension funds, representing more than 500 funds throughout the United States and Canada. It is a unique non-profit network of trustees, administrators, public officials and investment professionals who collectively manage nearly \$4 trillion in pension assets held in trust for approximately 21 million public employees and retirees—including firefighters, law enforcement officers, teachers and other public servants. Founded in 1941, NCPERS is the principal trade association working to promote and protect pensions by focusing on Advocacy, Research and Education for the benefit of public sector pension stakeholders...It's who we ARE!

**ABOUT
J.P. MORGAN
GLOBAL INSTITUTIONAL
ASSET MANAGEMENT**

J.P. Morgan Global Institutional Asset Management is a global leader in investment management, dedicated to creating a strategic advantage for institutions by connecting clients with J.P. Morgan professionals. With roughly 800 investors on the ground in more than 30 countries, the firm seeks to deliver first-class investment results to some of the world's most sophisticated organizations, including corporate pension plans, endowments, foundations, insurance companies, sovereign wealth funds and government-affiliated institutions.

J.P. Morgan Global Institutional is distinguished by its capital markets knowledge, global investment expertise and the long-term, proactive partnerships it establishes with clients. Our innovative strategies span equity, fixed income, real estate, private equity, hedge funds, infrastructure and asset allocation. J.P. Morgan Global Institutional is part of J.P. Morgan Asset Management, which has assets under supervision of \$2.3 trillion and assets under management of \$1.6 trillion (as of December 31, 2013).

J.P. Morgan Asset Management's Alternative Investments business is a \$120 billion global franchise providing clients with broad solutions across real assets, hedge funds, and private equity. J.P. Morgan Alternative Investments provides world-class investment opportunities to Institutional, Retail, and HNW clients through an array of solutions including separate accounts, commingled funds, mutual funds, and multi-manager solutions.

TABLE OF CONTENTS

1

NCPERS/J.P. Morgan liquidity
survey highlights

3

Alternative investments: striking the
balance between growth tomorrow and
liquidity today

11

Appendix A: Asset return, volatility and
liquidity assumptions

12

Appendix B: Survey questions

SURVEY HIGHLIGHTS

NCPERS/J.P. MORGAN LIQUIDITY SURVEY HIGHLIGHTS

- Liquidity matters to survey respondents, though it isn't their foremost concern. Many, but not most, have formal liquidity requirements written into their investment policy statements.
- The bulk of respondents plan on increasing their allocations to alternatives in the next three years.
- The results of the financial crisis of 2008-09 would seem to support the implied emphasis on returns over liquidity. Only one-third of our respondents reported liquidity concerns arising from that extreme event. Even then, the concerns centered mostly on transient allocation imbalances and otherwise undefined "worries," rather than severe long-term disruptions.
- An effective alternatives allocation requires consistent rebalancing, transitioning assets from high return illiquid strategies to lower return but more liquid investments to ensure that a plan has ready access to the resources it needs to meet current obligations.
- Perhaps as further evidence of the central role of alternative assets in public plan portfolios, most respondents thought they would maintain their allocations even if plans reached fully funded status.
- Finally, we found considerable interest in "liquid alternative" strategies which includes both quantitative as well as fundamental hedge fund strategies with daily liquidity.

ALTERNATIVE INVESTMENTS

Alternative investments: striking the balance between growth tomorrow and liquidity today

In the past ten years, alternative investments have moved from the tactical fringes of public pension investment portfolios to the strategic mainstream. The average public plan has increased the relative weight of alternatives in its portfolio two-and-a-half times over, from 10% to 25%.¹ The strategic role that alternatives have gained forces a trade-off on plan sponsors that they rarely face with conventional investments. Much of alternatives' superior return potential derives from their so-called liquidity premium, the extra return the investments command to compensate for the lengthy holding periods they typically require. Plans have to balance this long-term prospect against the recurring need to pay out benefits, which came to about 8% of the average plan's total assets in 2013.

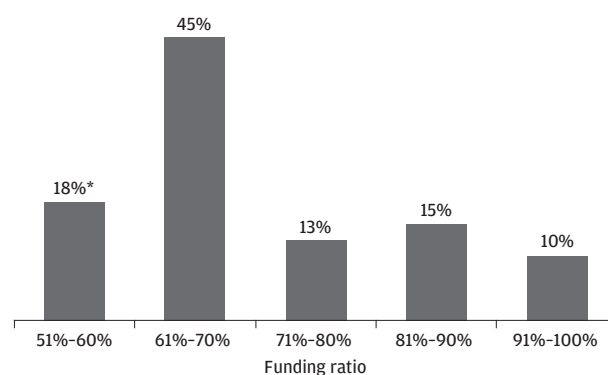
As part of its mission to keep its membership abreast of the latest thinking on issues vital to the public pension community, NCPERS, together with J.P. Morgan, surveyed a cross-section of plans to get an idea of how they are managing the trade-off today. In a second section, we joined with J.P. Morgan strategists to consider a statistical methodology to measure a plan's capacity to hold alternative assets and optimize the balance between the long- and short-term imperatives.

The NCPERS/J.P. Morgan survey covered 40 state and local government pension funds with more than 2.3 million active and retired members and assets exceeding \$400 billion. Half

of the participants had more than \$1 billion in assets. The majority—72%—were local pension funds. State pension funds made up the balance. The median funded status of the plans was 66%. It ranged from just above 50% to over 90%, with the greatest concentration of plans clustered between 61% and 70%. Six plans fell below 60%, and four had attained a funded status above 90% (Exhibit 1).

Median funded status of survey respondents was 66%, with nearly half the plans in the 60%+ range

EXHIBIT 1: FRACTION OF RESPONDENTS BASED ON FUNDED STATUS



Source: 2014 NCPERS/J.P. Morgan Liquidity Survey.

*of total respondents

¹ *Pensions & Investments* database, September 30, 2013.

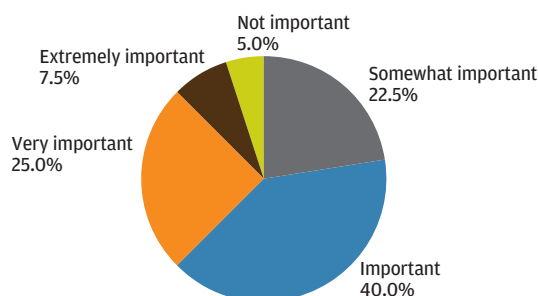
Survey findings in detail

Liquidity matters...

Liquidity enters into public plans' alternative investment decision, but it isn't the paramount consideration, according to the survey (**Exhibit 2**). On a one-to-five scale, only 5% of our respondents said they didn't take it into account at all, and 7.5% considered it a primary factor. The largest number ranked liquidity right down the middle, rating it a three on the one-to-five scale. The plans' written investment policy statements reflect the same level of moderate concern. Not quite half the survey participants reported that their statements prescribed an explicit liquidity requirement, most often a set level of government-issued fixed income.

Liquidity: an important factor but not a paramount consideration

EXHIBIT 2: PERCENTAGE OF RESPONSES ON A 1-5 SCALE ON LIQUIDITY IN SELECTING ASSET ALLOCATION STRATEGY



Source: 2014 NCPERS/J.P. Morgan Liquidity Survey.

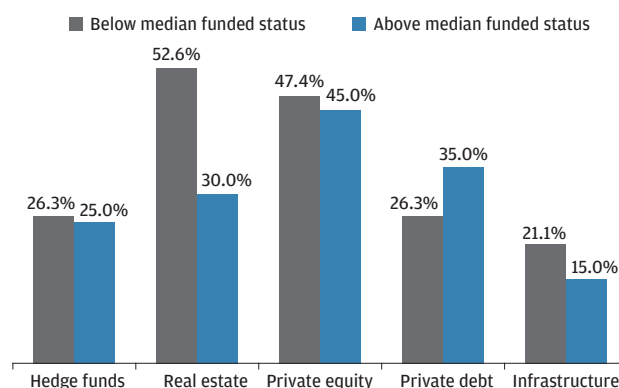
... but return potential matters more

Public plans' expressed intentions reinforce the impression of a relatively moderate level of concern over alternatives' liquidity. The overwhelming majority—72%—reported that they are considering an increase in their alternatives' allocation sometime in the next three years. Close to half the respondents, regardless of plan size or funded status, were thinking of increasing their exposure to the most illiquid and arguably riskiest alternative investment, private equity.

Analyzing the responses further produced a marked, and surprising, divergence: More than half the plans below median funded status indicated they would increase their real estate exposure, compared with 30% of plans above the median (**Exhibit 3**). We hypothesize that the below-median plans, with a greater need to increase their overall alternatives allocation, are seeking to build the allocation on a base of the alternative

Underfunded plans favor real estate's steadier returns

EXHIBIT 3: FRACTION OF RESPONDENTS CONSIDERING HIGHER ALLOCATION OF ILLIQUID ASSET IN THE NEXT 1-3 YEARS*



Source: 2014 NCPERS/J.P. Morgan Liquidity Survey.

* Respondents could cite more than one investment strategy, so total exceeds 100%.

asset class with historically the most reliable return: real estate. In contrast, the better funded plans, with correspondingly higher risk budgets, seem to focus more on the higher but more uncertain return potential in private equity and infrastructure.

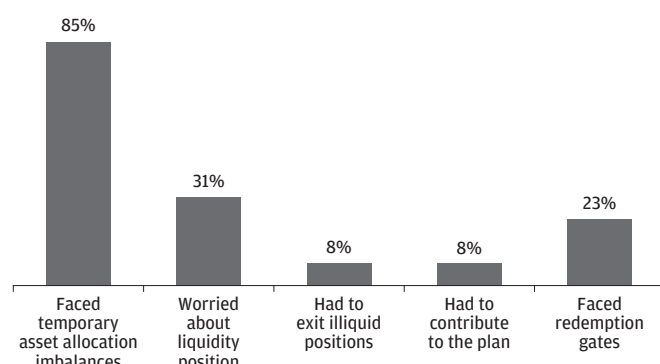
In fact, liquidity shortages were not a critical concern even during 2008-09

Plans' experience during the financial crisis of 2008-09 suggests a provocative conclusion about the importance of liquidity in alternatives investing: It doesn't matter that much. Somewhat less than one-third of our respondents said they had liquidity concerns during the period (**Exhibit 4**, next page). The bulk of their problems related to rebalancing, a serious issue but also an addressable one. The second leading worry was worry itself, an understandable and unavoidable consequence of any massive tail event. The redemption gates characteristic of alternative investments amounted to the third-ranking liquidity stress, which the subsequent recovery presumably relieved. Only a small number of responses cited forced liquidations or increased contributions—problems that imply threats to fundamental solvency.

Although liquidity risks arising from the financial crisis appear relatively mild, the survey underscored the fact that the plans that held large alternatives positions were more likely to encounter them. A detailed analysis of the data indicates that 43% of the plans that have 20% or more allocated to alternatives reported liquidity problems, a ratio that dropped to 27% of the plans with less than 20% allocated to alternatives.

Liquidity was a relatively minor concern during the financial crisis of 2008-09

EXHIBIT 4: LIQUIDITY DISCOMFORT FACED BY PLANS*



Source: 2014 NCPERS/J.P. Morgan Liquidity Survey.

*Respondents could cite more than one source of discomfort, so total exceeds 100%.

Alternatives allocations may require more rigorous rebalancing than current practice

If alternatives' liquidity proved less challenging to plan solvency during the fiscal crisis, it still poses an ongoing cash flow hurdle. Since alternative assets tend to outperform traditional assets, portfolios with strategic alternative allocations should be rebalanced regularly, shifting assets from alternatives to more-liquid holdings to avoid asset accumulation in holdings with higher liquidity risk. Our findings indicate room for improvement on this count (**Exhibit 5**). Nearly three-quarters of the plans surveyed rebalance "a couple of times a year" or even less.

Funded status should factor more heavily into alternatives allocation decisions

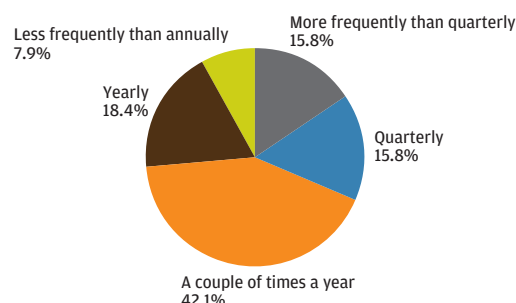
More than half of our survey believed that a plan's allocation to alternatives should not be affected by its funded status. This response contrasts with the view of many professional asset managers, including J.P. Morgan. We believe funded status should be an important factor in determining allocation, as is the case with under funded plans. In other words, just as under funded plans require higher asset returns to close deficits, fully funded plans should aim for more stable portfolios to lock in their funded status.

Interest in 'Liquid Alternatives' is rising

Finally, the survey sought to gauge interest in an emerging class of investments: liquid alternatives, which seek to combine

A significant portion of plans rebalance a couple of times a year or less

EXHIBIT 5: FRACTION OF RESPONDENTS INDICATING FREQUENCY OF REBALANCING

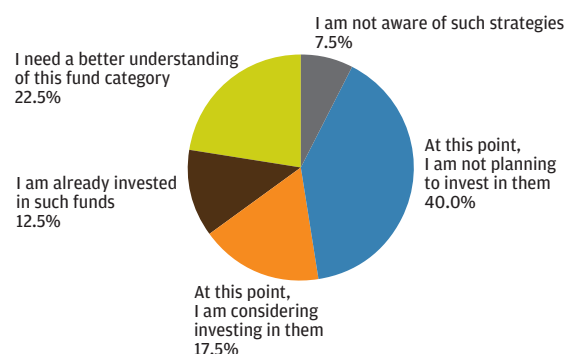


Source: 2014 NCPERS/J.P. Morgan Liquidity Survey.

some of the risk-return attributes of alternative investments with daily liquidity. The term liquid alternatives (liquid alts) refers to an expanding category of investment approaches, including alternative beta, hedge fund replication strategies and daily liquidity versions of active alternative managers' funds. By some definitions, less-benchmark-constrained strategies not confined to long-only investing in equity, fixed income and commodity markets are also considered liquid alts. We found that interest is high, with 40% of our respondents expressing a desire to learn more, but that adoption is at early stages with 12.5% of our sample currently having exposure to these strategies. With the emergence of these strategies, plans have additional investment tools to leverage while liquidity budgeting (**Exhibit 6**).

Plans' interest in Liquid Alternatives is rising

EXHIBIT 6: FRACTION OF RESPONDENTS INDICATING INTEREST IN LIQUID ALTERNATIVES



Source: 2014 NCPERS/J.P. Morgan Liquidity Survey.

Modeling the liquidity/growth trade-off

As our survey responses and the intentions of our survey participants indicate, public pension plans probably have enough liquidity to afford the potentially higher growth offered by a greater allocation to alternatives. To help guide thinking on this issue, NCPERS asked J.P. Morgan's strategy group to investigate modeling techniques that could quantify just how much more alternative exposures public pension portfolios could accommodate and still maintain the liquidity necessary to meet their quarterly benefit obligations.

Model construction

The example below considers a model plan, summarized in **Exhibit 7**, drawn primarily from the 2013 NCPERS Public Retirement System Study of 241 state, local and provincial government pension funds with a total membership, active and retired, of more than 12.4 million and assets exceeding \$1.4 trillion. The study assumes that each quarter the plan needs cash to make benefit payments and fulfill capital calls. It can raise cash from different sources, including contributions, investment distributions and assets withdrawn from investments.

Profile of a "typical" plan

EXHIBIT 7: 2013 NCPERS STUDY AVERAGES

	Average	Source
Asset size	\$6.2 billion	2013 NCPERS study
Annual combined participant/ sponsor contribution	\$3,726	2013 NCPERS study (based on respondents' payroll contributions) ²
Benefit payments	\$500 million	2013 NCPERS study

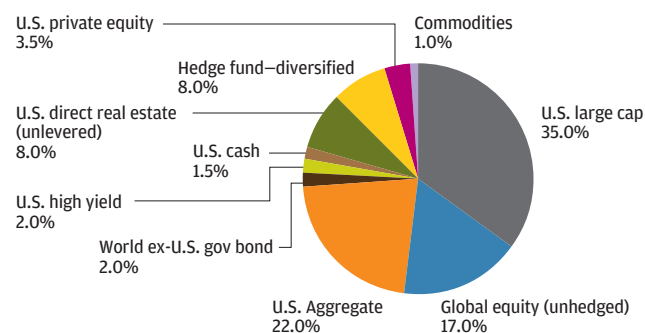
Source: J.P. Morgan. For illustrative purposes only.

The majority of our average plan's assets consists of equities, with 35% invested domestically and 17% internationally. The fixed income allocation represents 27.5% of the portfolio, with U.S. government and investment-grade bonds amounting to 22%, international bonds 2%, high yield bonds 2% and cash equivalents 1.5%. The remaining 20.5% of assets are allocated

² Also affecting cash flows will be the capital distributions the plan receives and the capital calls it invests from the real estate and private equity holdings in its alternative allocation. The J.P. Morgan model takes these into account.

Averages indicate alternatives' potential is widely recognized

EXHIBIT 8: ASSET ALLOCATION OF THE AVERAGE PLAN



Expected arithmetic return (%)	7.1
Expected compound return (%)	6.6
Asset volatility (%)	9.8
Asset Sharpe ratio	0.52

Source: 2014 NCPERS/J.P. Morgan Liquidity Survey.

to alternatives: 8% to hedge funds, 8% to real estate, 3.5% to private equity and 1% to commodities. **Exhibit 8** shows the average plan's allocation, which is expected to return 6.6% compounded yearly, with an annualized volatility of 9.8%, according to J.P. Morgan's assumptions.³

Model methodology

Along with the projected return and volatility of each of the asset classes in the average public fund portfolio, the J.P. Morgan model estimates its liquidity in both normal and stressed markets. It defines stressed markets as markets in which asset prices drop two standard deviations or more below their norm in a single quarter. And it defines asset class liquidity as the amount of an asset's starting value that can be redeemed in a given quarter.⁴

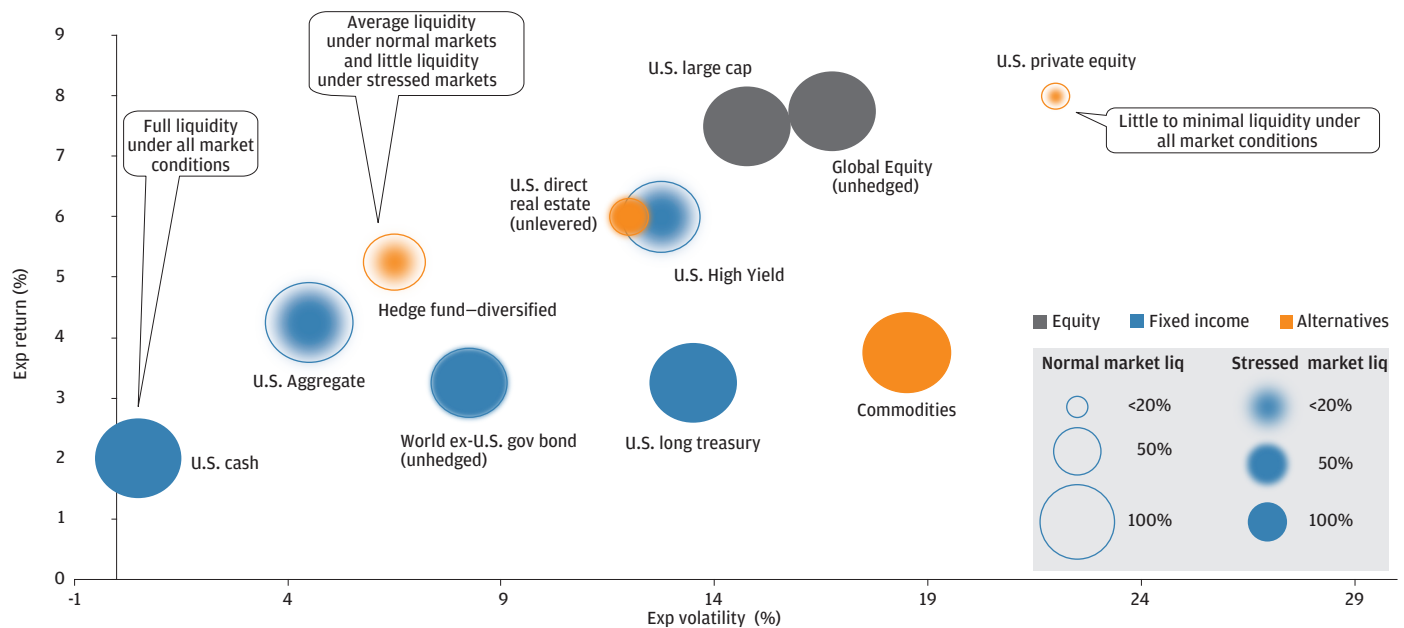
To illustrate with an example drawn from the average plan's 20.5% alternatives exposure, in a normal quarter, based on the experience of the firm's senior portfolio managers, a plan

³ We mapped survey participants' responses to the closest asset class proxy found in J.P. Morgan's 2014 Long-term Capital Market Return Assumptions.

⁴ As mentioned above, the model assumes that private equity and real estate have call and distribution features. On a quarterly basis under normal markets, private equity funds distribute 3% of assets and only 1.5% of assets under stressful markets. Similarly, real estate funds distribute 7.5% of assets under normal markets and only 0.75% under stressful markets. Private equity calls amount to 2.5% of total investments in the fund whether the market is under stress or not. Real estate calls amount to 6.25% of investments in the fund.

J.P. Morgan's long-term capital market return assumptions estimate liquidity risk along with return and volatility

EXHIBIT 9: RETURN, VOLATILITY AND LIQUIDITY ASSUMPTIONS



Source: J.P. Morgan. For illustrative purposes only.

Return and volatility assumptions come from J.P. Morgan's 2014 Long-term Capital Market Return Assumptions. The relative size of each bubble represents our estimate of the portion of assets that can be cashed out under normal scenarios. The shaded portion of each bubble represents the portion of assets that can be cashed out under stress scenarios—the closer the shading comes to a circle's outline, the more liquid the asset class is under stress scenarios. To illustrate, in a normal quarter, based on the experience of the firm's senior portfolio managers, a plan could redeem 20% of its investment in the typical real estate fund. In the two-deviation event, the redemption value could fall to 10%.

could redeem 20% of its investment in the typical real estate fund. In the two-deviation event, the redemption value could fall to 10%. **Exhibit 9** graphs J.P. Morgan's return, volatility and liquidity assumptions in both normal and stressed markets. **Appendix A** details the return, volatility and liquidity assumptions for each asset class employed in the analysis.

J.P. Morgan's proposed framework differs from standard approaches in one crucial respect: It is forward looking. It can project the likelihood of tail events by projecting the change in a pension plan's assets over the next 20 years, from the beginning of 2015 through 2034. It relies on Monte Carlo simulations across 10,000 scenarios based on the firm's 2014 Long-term Capital Market Return Assumptions (LTCMRA) for asset class performance.⁵

Model output

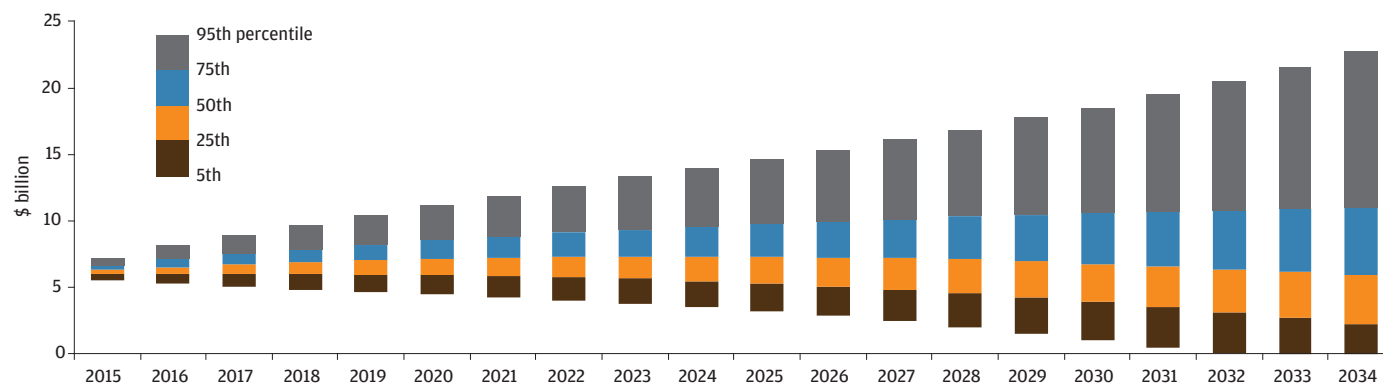
Among the most significant findings to come out of the J.P. Morgan simulations is that the threat of insolvency, contrary to reports predicting the doom of public pensions, does not seem to apply to the typical public plan in the next few decades. The Monte Carlo simulations show that, in the median case, the model plan's assets end up essentially flat at \$5.9 billion over 20 years, after paying all benefits and expenses.⁶ This makes arithmetical sense. The J.P. Morgan LTCMRA projects the portfolio's annual investment return at 6.6%, assuming the plan holds its starting allocation constant through regular rebalancing. Adding a steady flow of annual contributions equal to 6% of the plan's total asset value, portfolio growth would exceed outflows for benefits and expenses, a figure that came to 8% in the survey, but which we anticipate could rise to 12%, based on current actuarial schedules.

⁵ See J.P. Morgan, *Long-term Capital Market Return Assumptions: 2014 estimates and the thinking behind the numbers*.

⁶ The median outcome is the value of the scenario that ranks exactly in the middle of all the other scenarios.

Actual plan insolvency is a remote statistical possibility

EXHIBIT 10: PROJECTIONS FOR AVERAGE PLAN ASSET VALUES OVER THE NEXT 20 YEARS



Source: J.P. Morgan. For illustrative purposes only.

A look at tail risk

The fundamentally positive outlook does not mean, of course, that plan sponsors can afford to overlook tail risks. Public plans could lack the liquidity to meet immediate—or medium-term obligations either out of a lack of resources or because they cannot readily convert their resources to cash. The second scenario—public plans facing a liquidity shortfall resulting from stringent redemption gates—is extremely improbable, since the model plan has close to 80% of its portfolio allocated to assets that trade in deep, liquid public markets.

As time goes by, however, negative returns could conceivably pile up for a number of scenarios and threaten plan solvency. In extreme circumstances, the lowest 5% of scenario returns, the model plan could become insolvent by 2033 (Exhibit 10). In fact, the annual insolvency risk in the first 10 years of the analysis is negligible for all intents and purposes, after which it becomes 1%. Such low yearly probabilities accumulate to a total risk of 11% over the entire 20-year horizon.⁷ Bear in mind, however, that the theoretical probability is a highly unlikely possibility. Plans can almost always take action to cover the shortfall well in advance of the crisis point.

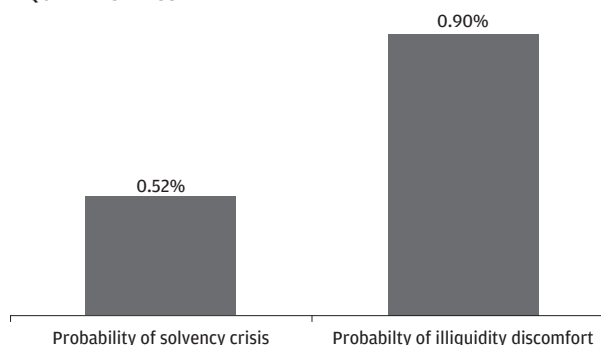
A more plausible, though not much more likely, possibility than insolvency is liquidity stress—the plan, while still technically solvent, faces an increased likelihood of insufficient liquidity to meet its quarterly obligations. Circumstances

might require intervention and support—for example, in the form of extraordinary contributions.

How much liquidity a particular plan needs is obviously a matter for its sponsor to decide. For its study, J.P. Morgan adapted a framework similar to the Basel III standard, a set of global financial regulations that, among other things, imposes medium-term liquidity requirements on commercial banks. Applying the requirements to public pensions, J.P. Morgan reckoned the possibility that its typical plan would find itself in any one quarter without enough cash to meet the next two years' worth of benefit obligations. The model indicates that the average yearly likelihood of a liquidity stress is about 1% over the projected horizon. Although the yearly probabilities appear relatively trivial, they add up, accumulating over 20 years to a total risk of 18% (Exhibit 11).⁸

The possibility of liquidity stress is a risk to take into account

EXHIBIT 11: YEARLY PROBABILITY OF A SOLVENCY CRISIS AND LIQUIDITY STRESS



Source: J.P. Morgan. For illustrative purposes only.

⁷ The average annualized return for the liquidity stress scenarios is 2.6%, barely more than one-third of the average annualized return of the unstressed scenarios. (The stressed annualized returns reflect the cumulative return of each stress scenario only up to the period when the liquidity crisis occurs, not for the entire 20-year period.)

⁸ Similar to insolvency risk, liquidity stress risk is also concentrated in years 11 to 20, when the average risk is 1.8% per year. From years one to 10, the average probability is minimal.

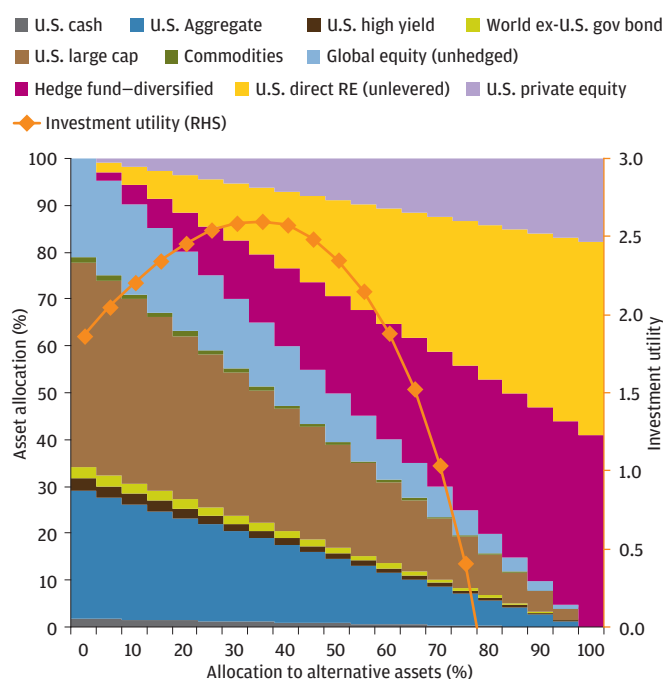
Room for improvement?

If the outlook for this portfolio modeling exercise is positive, a further question suggests itself. Can we do better still? Is there a more efficient alternative allocation for our average portfolio, one that enhances projected returns and moderates liquidity risk over the long run? The answer would seem to lie in adding to the portfolio's allocation to alternatives. A more precise estimate of how much more to allocate requires striking a balance in three dimensions. Along with return and volatility, the model has to account for tail liquidity risk.

To arrive at that balance, we ran portfolios with alternatives allocations ranging from none to 100% through Monte Carlo simulations, deriving return, volatility (the standard deviation around that return) and liquidity risk for each calendar quarter over the next 20 years.⁹ After normalizing and averaging the quarterly results, we derived a measure of investment utility for each portfolio: its return minus volatility and liquidity risk.¹⁰ By that utility measure, a 35% allocation to alternatives would optimize our average plan portfolio, the higher expected long-term return balancing out the reduced short-term liquidity (Exhibit 12).

Increasing exposure to alternatives could increase investment “efficiency”

EXHIBIT 12: ASSET ALLOCATION AND UTILITY OF INVESTING



Source: J.P. Morgan. For illustrative purposes only.

The optimal 35% allocation reduces the risk of the liquidity stress scenario by 9% in the Monte Carlo simulations. Compared with the original portfolio, the improved allocation also reduces volatility, the range between the best and worst statistically possible returns, while maintaining roughly the same median asset value. Exhibit 13 compares the statistics for the typical and optimal portfolios. Despite the optimal portfolio's lower allocation to more liquid conventional investments, the higher risk-adjusted returns offered by alternative investments result in enhanced long-run liquidity and efficiency.

We further tested the model's sensitivity by adjusting the weights of the return, volatility and liquidity risk factors, which highlight one of the main points we are raising. When we doubled the model's sensitivity to liquidity and solvency risk, the optimal allocation to alternatives dropped to 30%. Conversely, when we cut the liquidity and solvency sensitivity in half, the optimal allocation to alternatives rose from 35% to 40%. The results underscore the trade-off between long-term solvency and short-term liquidity. If the risk of short-term liquidity is the primary consideration, a plan should allocate less to alternatives, despite increasing long-term solvency risk. On the other hand, if a plan is less concerned with short-term liquidity risk, more alternative investments can be held, which reduces long-term solvency risk.

A shift to the “optimal portfolio” would likely bolster the long-run liquidity hedge

EXHIBIT 13: KEY PENSION PLAN METRICS

Pension plan metric	Typical portfolio	Optimal portfolio	Change (%)
Yearly liquidity stress risk (bps)	90	82	8.9
Standard deviation of asset values (\$mm, 20-year average)	3,738	3,539	5.3
Median asset value (\$mm, by year 2034)	6,170	6,184	23bps

Source: J.P. Morgan. For illustrative purposes only.

⁹ We maintained the proportions constant within each asset class, so as we grew the alternatives allocation of the portfolio, we shrank the conventional allocations proportionately. Similarly, as we shrank the alternatives in the portfolio, we grew the conventional allocations proportionately.

¹⁰ Following the spirit of the original mean-variance optimization suggested by Harry Markowitz (Portfolio Selection, *Journal of Finance*, 1952), we maintain a linear functional form and extended it by introducing the liquidity risk factor. For simplicity we decided to have equal weights on each factor. These parameters can obviously vary given a plan sponsor's preferences or views.

Conclusion: Handle alternatives' potential with care

The commitment to alternatives among public pension plans, which our survey underscores, appears both prudent and justified. It is prudent because the long-term nature of alternative investments matches the long-term nature of pension liabilities. And it's justified because, as the J.P. Morgan model demonstrates, alternatives' superior return potential, resulting in large part from their inherent liquidity premium, can with time and a rigorous rebalancing discipline become a source of liquidity.

Indeed, J.P. Morgan's modeling exercise has shown that the "average" public pension investment portfolio may well benefit from a higher commitment to alternatives. Three qualifications hedge this positive assessment. First, effective alternative investing may demand more vigilant rebalancing than the current standard practice, according to our survey. The favorable projections from the J.P. Morgan model assume frequent rebalancing, staying as close to the strategic

allocation as available liquidity permits. If a portfolio drifts too far from its strategic allocation, it risks becoming an illiquidity victim of its own investment success, and not just the market's liquidity failures. Second, plan sponsors must recognize that J.P. Morgan modeled the hypothetical investment performance of the median fund manager. Actual investment experience could vary widely from this norm. Performance distribution, especially among alternative managers, embraces a wide dispersion of returns. Finally, the J.P. Morgan long-term return assumptions reflect annual returns over a lengthy time horizon. Results in any one year, or over a series of years, can differ substantially before mean reversion asserts itself.

Appendices

APPENDIX A: ASSET RETURN, VOLATILITY AND LIQUIDITY ASSUMPTIONS

Asset	Expected Arithmetic Return (%)	Expected Compound Return (%)	Vol (%)	% Available as immediate liquidity in regular period	% Available as immediate liquidity in stressed periods
U.S. cash	2.0	2.0	0.5	100	100
U.S. long treasury	4.1	3.3	13.5	100	100
U.S. Aggregate	4.4	4.3	4.5	100	50
U.S. high yield	6.8	6.0	12.8	75	40
World ex-U.S. gov bond (unhedged)	3.6	3.3	8.3	75	50
U.S. large cap	8.5	7.5	14.8	100	100
Commodities	5.3	3.8	18.5	100	100
Global equity (unhedged)	9.0	7.8	16.8	100	100
Hedge fund-diversified	5.5	5.3	6.5	50	5
U.S. direct real estate (unlevered)	6.7	6.0	12.0	20	10
U.S. private equity	10.1	8.0	22.0	10	1

Source: J.P. Morgan. For illustrative purposes only.

APPENDIX B: SURVEY QUESTIONS

2014 NCPERS/J.P. Morgan Liquidity Survey, a jointly sponsored research study on public pension investments and liquidity

1) Did the 2008–2009 market stress create any liquidity challenges for your plan?

- ☐ Yes
- ☐ No

2) If yes, how would you describe them?

Please select as many options as apply.

- ☐ Caused minor temporary asset allocation imbalances
- ☐ We were worried about our liquidity position
- ☐ We had to forcefully exit investments
- ☐ We contributed into the plan
- ☐ We issued bonds
- ☐ We faced redemption gates

3) On a scale of 1 to 5 (with 5 being the highest importance), how important is liquidity in selecting strategies and managers?

Rating:

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5

4) Do you have investment policy statement requirements for liquidity?

- ☐ Yes
- ☐ No
- ☐ Not sure

5) Currently, which of the following are you considering?

- ☐ Increasing your allocation to less liquid assets and alternatives
- ☐ Keeping the same allocation to less liquid assets and alternatives
- ☐ Reducing your allocation to less liquid assets and alternatives
- ☐ Not sure

6) In which illiquid asset class would you consider increasing your allocation in the short-term (one to three years)? *Please select as many options as apply.*

- ☐ Hedge funds
- ☐ Real estate
- ☐ Private equity
- ☐ Private debt
- ☐ Infrastructure
- ☐ None

7) What rebalancing rules do you use?

- ☐ Regular time interval rebalancing
- ☐ Rebalance only when allocations breach strategic limits
- ☐ Both
- ☐ Other

8) How often do you rebalance (this question is applicable to all rebalancing rules covered in question 9)?

- ☐ More frequently than quarterly
- ☐ Quarterly
- ☐ A couple times a year
- ☐ Yearly
- ☐ Less frequently than annually

9) As a fund becomes overfunded, do you believe the growth portfolio should have more or less allocated to alternative assets?

- ☐ More
- ☐ Less
- ☐ Should not be affected by funded status
- ☐ Not sure

10) Do you currently invest in hedge fund replication strategies with more readily available liquidity (liquid alts)?

- ☐ Yes
- ☐ No

11) Do you plan on investing in such funds?

- ☐ I am not aware of such strategies
- ☐ At this point, I am not planning to invest in them
- ☐ At this point, I am considering investing in them
- ☐ I am already invested in such funds
- ☐ I need a better understanding of this fund category

AUTHOR



Rafael Silveira
Portfolio Strategist
Global Strategy Group

CONTRIBUTORS

Winnie Budiman
Analyst
Global Strategy Group

Gang Chen
Analyst
Global Strategy Group

NOT FOR RETAIL DISTRIBUTION: THIS COMMUNICATION HAS BEEN PREPARED EXCLUSIVELY FOR INSTITUTIONAL/WHOLESALE INVESTORS AS WELL AS PROFESSIONAL CLIENTS AS DEFINED BY LOCAL LAWS AND REGULATION.

The opinions, estimates, forecasts, and statements of financial markets expressed are those held by J.P. Morgan Asset Management at the time of going to print and are subject to change. Reliance upon information in this material is at the sole discretion of the recipient. Any research in this document has been obtained and may have been acted upon by J.P. Morgan Asset Management for its own purpose. References to specific securities, asset classes and financial markets are for illustrative purposes only and are not intended to be, and should not be interpreted as advice or a recommendation relating to the buying or selling of investments. Furthermore, this material does not contain sufficient information to support an investment decision and the recipient should ensure that all relevant information is obtained before making any investment. Forecasts contained herein are for illustrative purposes, may be based upon proprietary research and are developed through analysis of historical public data.

J.P. Morgan Asset Management is the brand for the asset management business of JPMorgan Chase & Co. and its affiliates worldwide. This communication may be issued by the following entities: in the United Kingdom by JPMorgan Asset Management (UK) Limited; in other EU jurisdictions by JPMorgan Asset Management (Europe) Sea rill.; in Switzerland by J.P. Morgan (Suisse) SA; in Hong Kong by JF Asset Management Limited, or JPMorgan Funds (Asia) Limited, or JPMorgan Asset Management Real Assets (Asia) Limited; in India by JPMorgan Asset Management India Private Limited; in Singapore by JPMorgan Asset Management (Singapore) Limited or JPMorgan Asset Management Real Assets (Singapore) Pet Ltd; in Australia by JPMorgan Asset Management (Australia) Limited; in Taiwan by JPMorgan Asset Management (Taiwan) Limited or JPMorgan Funds (Taiwan) Limited; in Brazil by Bunco J.P. Morgan S.A.; in Canada by JPMorgan Asset Management (Canada) Inc., and in the United States by J.P. Morgan Investment Management Inc., JPMorgan Distribution Services Inc., and J.P. Morgan Institutional Investments, Inc. member FINRA/SIPC.

270 Park Avenue, New York, NY 10017

© 2014 JPMorgan Chase & Co.

WP-Striking the balance | October 2014

J.P. MORGAN ASSET MANAGEMENT
270 Park Avenue | New York, NY 10017

FOR INSTITUTIONAL/WHOLESALE OR PROFESSIONAL CLIENT USE ONLY | NOT FOR RETAIL DISTRIBUTION

© JPMorgan Chase & Co., October 2014

J.P.Morgan
Asset Management