CalPERS Review of Investment Beliefs – Offsite Workshop (1)
Multi-faceted risk

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TOWERS WATSON

Workshop Outline

The purpose of the session is to explore how some of CalPERS' beliefs can be best mapped to its investment framework and aligned to policies through a strategic dialogue between Board and staff, with reference to global best practice. The focus is on two topic areas:

- First, how should CalPERS' beliefs on liabilities and multi-faceted risk be interpreted, including:
  - Liability risk and mission impairment risk (explicit link to benefit payment mission)
  - Operationalizing these risks through a multiple lenses concept
  - Building a coherent hierarchy of decision-making, incorporating portfolio roles and objectives while considering how factors and asset classes can be aligned
- Second, how should CalPERS' beliefs on long-term time horizon, stakeholder involvement and three forms of capital be interpreted, including dialogue regarding:
  - The successful implementation of global governance principles and policies
  - The long-horizon focus and integration of financial and extra-financial factors
  - Creating clarity around the implementation of these beliefs in order to strengthen the hierarchy of decisions

A key outcome of the session should be settled views between the Board and staff on how CalPERS' beliefs should be implemented.

Summary of this session

- Context of the session – following May 18 IC meeting, it was agreed to explore two areas of beliefs implementation that are unsettled – risk and ESG

- Purpose of the session

  - Unpacking and understanding issues from multi-faceted risk

  - Socializing the debate through strategic dialogue

  - Settling differences where possible

  - Building on Board core values: risk intelligence; ethical and principled leadership

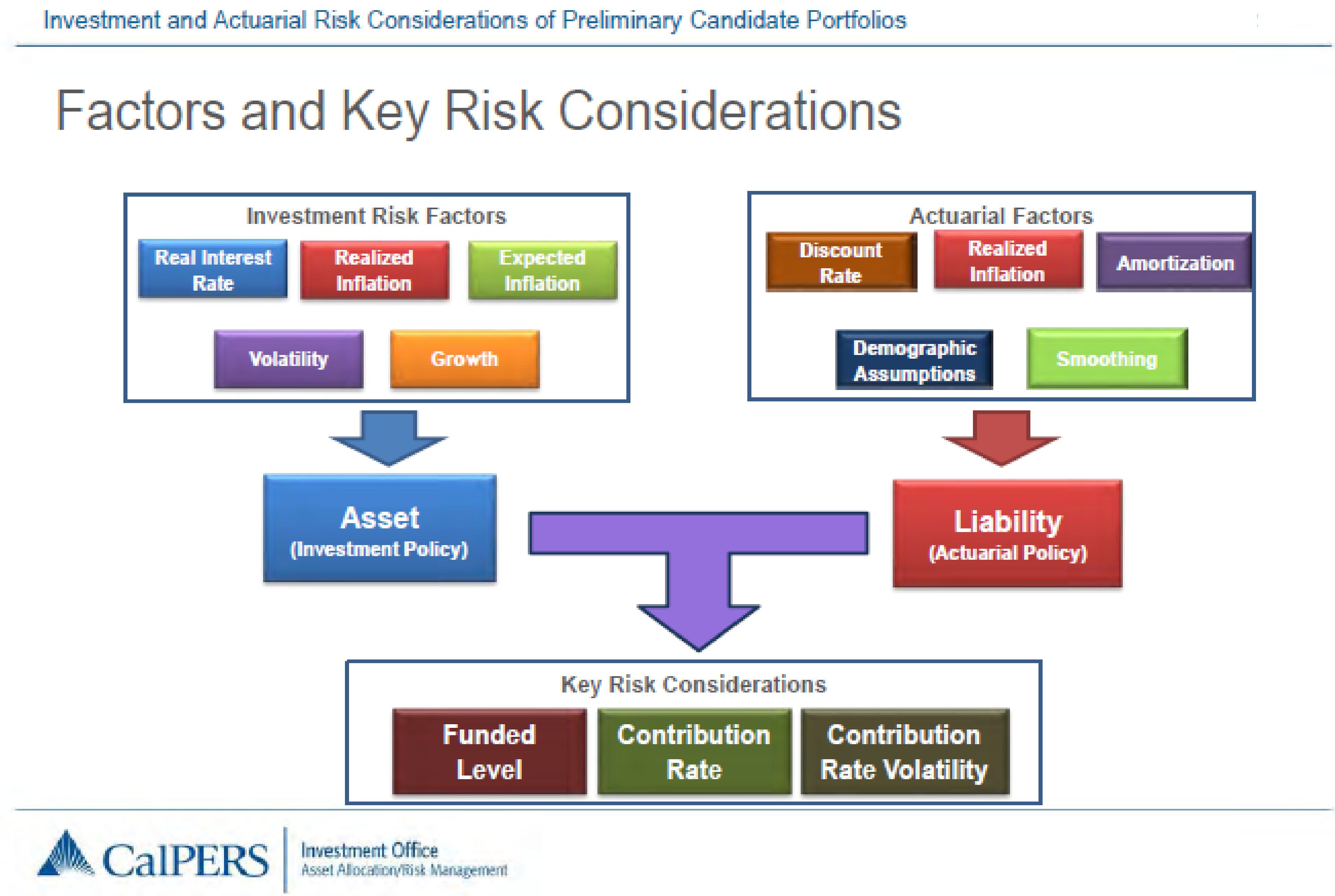
- Structure of the session

  1. Unpacking – Discussion and issue framing – 25 minutes
     A) Brief summary of CalPERS risk and actuarial framework
     B) Investment macro discussion
     C) Stress tests

  2. Survey – Questions and Answers – 25 minutes

  3. Table discussion and reports back – 25 minutes
     Aiming for action-oriented outcomes drawn from 'Straw-men'
     Concluding thoughts including 'new reality' considerations

A) CalPERS ALM framing has approached the facets of their fund risk from a balance sheet stance



The ALM framework has some potential enhancements in the pipeline to 2017-18 (from morning session)

Updated - Step 1 — Conduct Review of CalPERS' Investment Beliefs

ALM Analysis - Assets

Updated - Step 2 — Portfolio Priorities: Review Investment Objectives and Asset Class Roles

Updated - Step 3 — Portfolio Priorities: Review Benchmarks

Step 4 — Determine CMAs[1] and constraints

Step 5 — Create candidate portfolios

Step 6 — Create simulated annual returns for each distinct candidate portfolio

ALM Analysis - Liabilities

Forecast growth in liabilities

Create simulated liabilities, contribution and payroll costs

Updated - Step 7 — Evaluate each candidate portfolio for alignment with portfolio priorities and key risk considerations

Step 8 — Investment Committee chooses a policy portfolio

[1] Capital Market Assumptions (CMAs)

CalPERS ALM framing aligns with Belief 1 – Liabilities Matter

Investment and Actuarial Risk Considerations of Preliminary Candidate Portfolios

Executive Summary

Purpose of Analysis:

- A better understanding of the impact of investment risk on the ***employer contribution rate*** and the ***funded level*** of the Public Employees' Retirement Fund (PERF)

Analysis Revealed:

- A positive relationship between investment risk, the funded level dispersion and the contribution rate dispersion
- The sensitivity of funded level dispersion to investment risk is closely related to the current funded level
- The sensitivity of contribution rate dispersion to investment risk is closely related to the current asset-to-payroll ratio multiplied by the discount rate

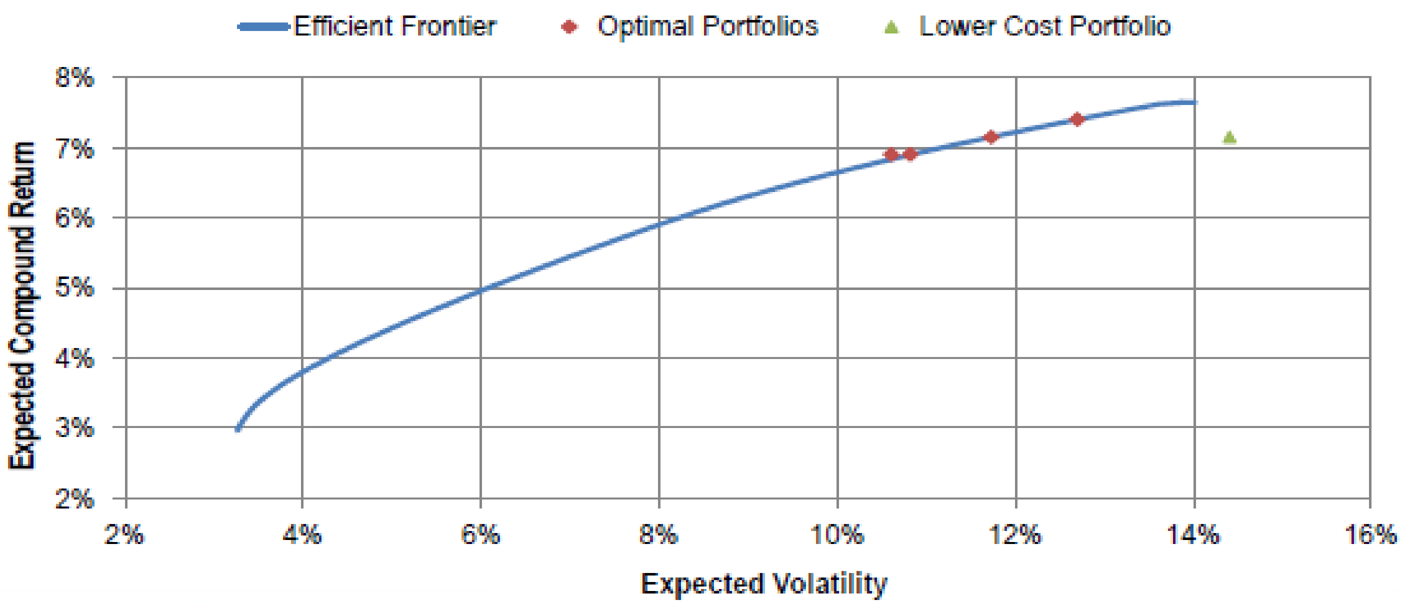
CalPERS | Investment Office
Asset Allocation/Risk Management

The 'low for longer, rates and returns' macro suggests CalPERS may have quite a narrow SAA choice

Investment and Actuarial Risk Considerations of Preliminary Candidate Portfolios

Efficient Frontier

Range of portfolio choice is narrow given the current funded level and the 2013 capital market assumptions (CMAs)



CalPERS | Investment Office
Asset Allocation/Risk Management

Meeting CalPERS liabilities at acceptable risk is extremely hard

Investment and Actuarial Risk Considerations of Preliminary Candidate Portfolios

Higher Expected Return Comes With Higher Volatility

- A portfolio with higher expected return could lead to a lower employer contribution rate
- However, as expected return increases, volatility increases, which also increases the volatilities of the employer contribution rate and funded level
- Margin represents a reduction in the assumed discount rate to account for adverse events that helps protect the long-term security of our members' benefits.

CalPERS | Investment Office
Asset Allocation/Risk Management

B) The Towers Watson central macro is *'Lower for longer, rates and returns'*

Expected cash returns + **Expected asset risk premia** = **Expected asset returns**

To remain low over medium term

Central banks likely to follow a slow monetary policy tightening path similar to what is priced

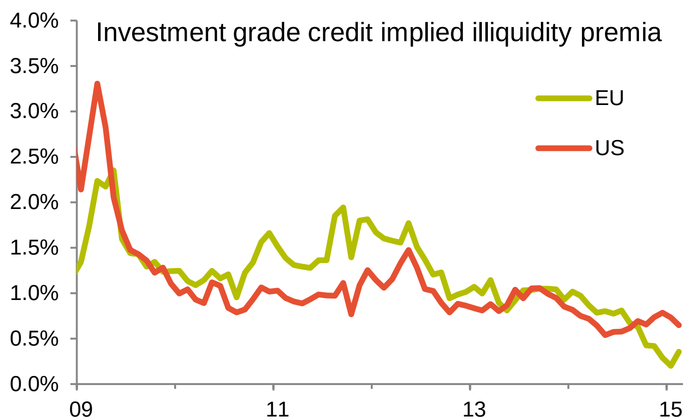
Starting risk premia mediocre

High levels of monetary liquidity, improving growth prospects and investor risk sentiment have driven down risk premia

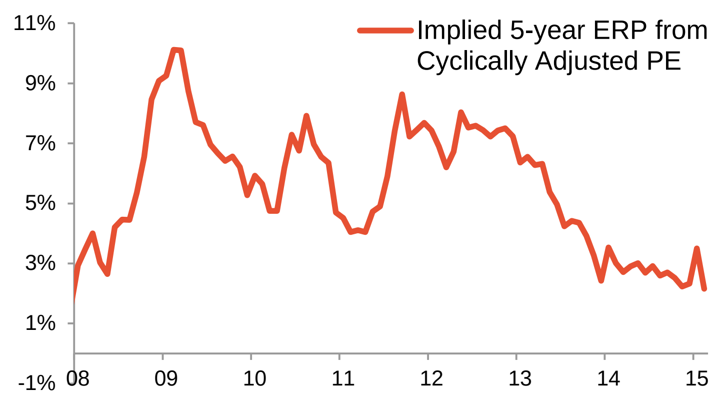
Low relative to history

TW 10yr outlook is very skinny

Risk premia are low in corporate credit markets



US equity risk premia are compressed



Towers Watson markets outlook

Monetary conditions still critical

- QE and monetary conditions are highly influential to the pathways of world bond prices and indirectly for other assets too; central banks have become a far larger driver of markets than in the past.
- The more liquidity the central banks have added, the more they have disrupted the natural heterogeneity (two-wayness) of the market

Problems of herding and procyclicality

- Some procyclical directional movement of pension funds and insurance company in response to regulation has added to herding
- With nominal rates at, or close to, the zero lower bound, lower inflation produces tightening through real rates - another factor in the tension between shrinking the balance sheet weighed with avoiding inappropriate tightening

Systemic fragility

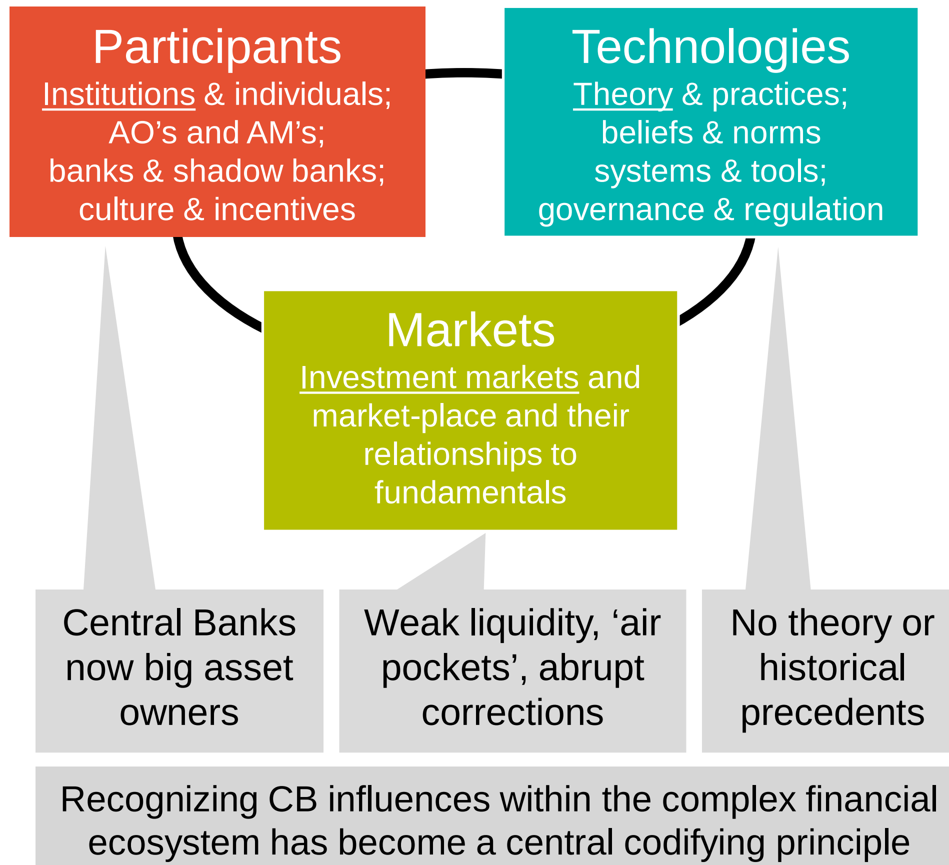
- The limited response to respond effectively in a business cycle downturn or shock to investor confidence is a significant macro-economic concern
- Given continuing low risk premia there are dangers of excessive risk taking in the reach for yield

The investment industry needs to be defined as a complex ecosystem

1. **Multiplicity:** multiple strands – participants, technologies, markets. To understand the system and its inter-connections, multi-disciplinary theory needed

2. **Reflexivity:** markets affect and are affected by participants and technologies; fundamentals affect and are affected by behaviours

3. **Subjectivity:** no universal 'truths', only 'beliefs'; VUCA conditions – volatile, uncertain, complex, ambiguous



Pension funds in a state of change on risk management

- Funds have taken on more diversification with alternative assets, drawn from both equities and bonds
- For most funds with deficits to fill, the goal is getting returns in excess of the liquid market bulk beta using private market reach, increasing allocations to smart betas and continuing commitments to alpha
- For some funds de-risking is a planned journey towards a more matched position but sovereign bond hedging capacity is limited – so even legacy DB funds will run risk when the quality of covenant 'air cover' may be quite poor
- Stronger pension funds (good solvency, covenant and governance) have the best chance to turn downturns to their advantage
- Governance is significantly about the quality of risk intelligence

Risk governance principles

- The whole organisation sharing certain beliefs, values and responsibilities in dealing with risk
- Risk budget focus: dealing with risks and returns on an integrated basis
- Recognition of ‘soft’ factors: uncertainty, reflexivity, inter-connectedness
- Risk as mission impairment and employs ‘adaptive capital’ – financial and human – to align the fund with its mission following stressed conditions
- Management of risk is emphasized over measurement
- Soft power preferred to get things done: mutual trust, understanding and effective collaboration (strategic dialogue)
- In this model a strong and effective risk management (INVO) function does three things:
  - Oversight of risk
  - Expert advisor to the Board
  - Leadership on strategic decisions

Source: Clark and Urwin | Best-practice investment management

C) Stress tests: DB pension pressures

Likely state
Benefits under growing pressure

- Persistent low bond yields put pressure on balance sheets
- Sponsors response should be via increased contributions but deferred recovery and higher risk also used and in extremis pension rights re-negotiated
- Potential loss of trust

Desired state
Secure pension delivery

- Rising bond yields + strong investment returns → *not controllable*
- Improved pension governance (including smart use of LDI and insurance) → *controllable*

Actions

- Improve governance
- Shift focus regarding managing balance sheet from mark-to-market values to cash flows

Source: Towers Watson Thinking Ahead Institute

Stress tests - Next financial crisis

	Likely state **Fragile condition continues**	**Desired state** **Better culture and practice**	**Actions**
Financial system	• Possibility of policy errors • Misaligned incentive structures/poor ethics • Systemic complexities and regulatory grip • Tight coupling /herding	▪ More professional culture ▪ Stronger investment practice ▪ Improved effectiveness of regulation	• Policy improvement • Strengthen culture • Improve meta-understanding • Central Bank role clarity and with disclosure tools
Pension funds	• Pension funds not ‘SIFIs’ • In crises some pension funds may herd but some are contra-cyclical	• Pension funds can supply long-term capital in stressed conditions if governance is strong and there is pre-planning	• Pension funds strengthening governance
	Risk in next 10 yrs **25-50%**	Risk in next 10 yrs **< 25%**	Risk in next 10 years ???

Source: Towers Watson Thinking Ahead Institute

Stress tests – A natural resources stranded assets crunch

Likely state **Increasing limits to growth**	**Desired state** **Evolving sustainable practice**	**Actions**

▪ The pursuit of exponential growth of financial capital by drawing down natural capital is unsustainable
▪ The aggregate stock of financial capital will reach an inflection point with declining rates of growth, producing more stranding:
  ▪ a declining aggregate rate of return on invested capital
  ▪ a systematic financial asset devaluation
▪ This raises issues of intergenerational equity
	▪ Large-scale technological replacement and innovation
	▪ Voluntary or policy-induced reinvestment of profits by the corporate sector into natural and social capital
	▪ Influences through the asset owners and asset managers to adopt strategies that manage natural and social capital outputs
	▪ Increased private philanthropy to recycle financial capital back into social and natural capital
		▪ Actions by governments, corporations and asset owners (universal owners) to address these risks at the appropriate time
		▪ Appropriate management of inter-generational risks

Source: Towers Watson Thinking Ahead Institute

Part 2 - Key questions

Clicker Survey Method

- While accepting its obvious limitations, the clicker survey method can be effective in surfacing where there are difference within and between the Board and staff
- It is important for reflection on others point of view and gaining the widest perspectives
- The method should be used to select the issues that might be designated as ‘unsettled’ and warrant further discussion in part 3
- These questions are not presented as Towers Watson views or attempting to lead or bias respondents in one direction

Key questions on risk – (Strongly agree to Strongly disagree 5 point Likert scale)

1. A future global financial crisis a significant risk to the fund
2. Resource constraints/ limits to growth are significant risks to the fund
3. Extreme risks and unknown risks are important considerations for the fund
4. CalPERS SAA will struggle to attain the actuarially required rate of return on its PERF assets in the next decade or so
5. CalPERS will find it difficult to attain the actuarially required rate of return on its PERF assets in the next decade or so
6. The Board receives an appropriate and effective feed of risk information on CalPERS funds

Part 2 - Key questions (2)

7. The probability of mission impairment is a more helpful risk for the fund to focus upon than other measures of risk
8. Risk factors and return drivers provide a better investment framework for the fund than do asset class divisions
9. The long-term is materially different to the sum of multiple short-term periods, and therefore long-term risk management requires a different focus and set of measures
10. Short-termism becomes a problem when it places undue pressures on the organizational and individual commitment to agreed long-term strategy

Part 3 – Table discussion and report

1. On the questions that have been assessed in this Clicker Survey as 'unsettled':
   - what are the factors involved?
   - what are the actions needed to unblock these differences?
   A …… B……. C ……..

2. On creating a forward plan for risk management, what items in this 'straw-man' list would you give emphasis to and why? (Note that these are not intended as Towers Watson's preferred list or recommendations)
   1. Evolve the risk governance, by reference to the checklist
   2. Evolve more measures of investment/ solvency risk for Board and INVO leadership consideration
   3. Evolve the use of risk factors and an integrated approach to portfolio construction
   4. Evolve the enterprise risk – impairment to mission risk framework
   5. Evolve the complexity framing of risk
   6. Evolve the strategic dialogue on stress tests – like discussions on global financial crisis, pension solvency crisis, natural resources crunch

Enterprise risk and risk buffers

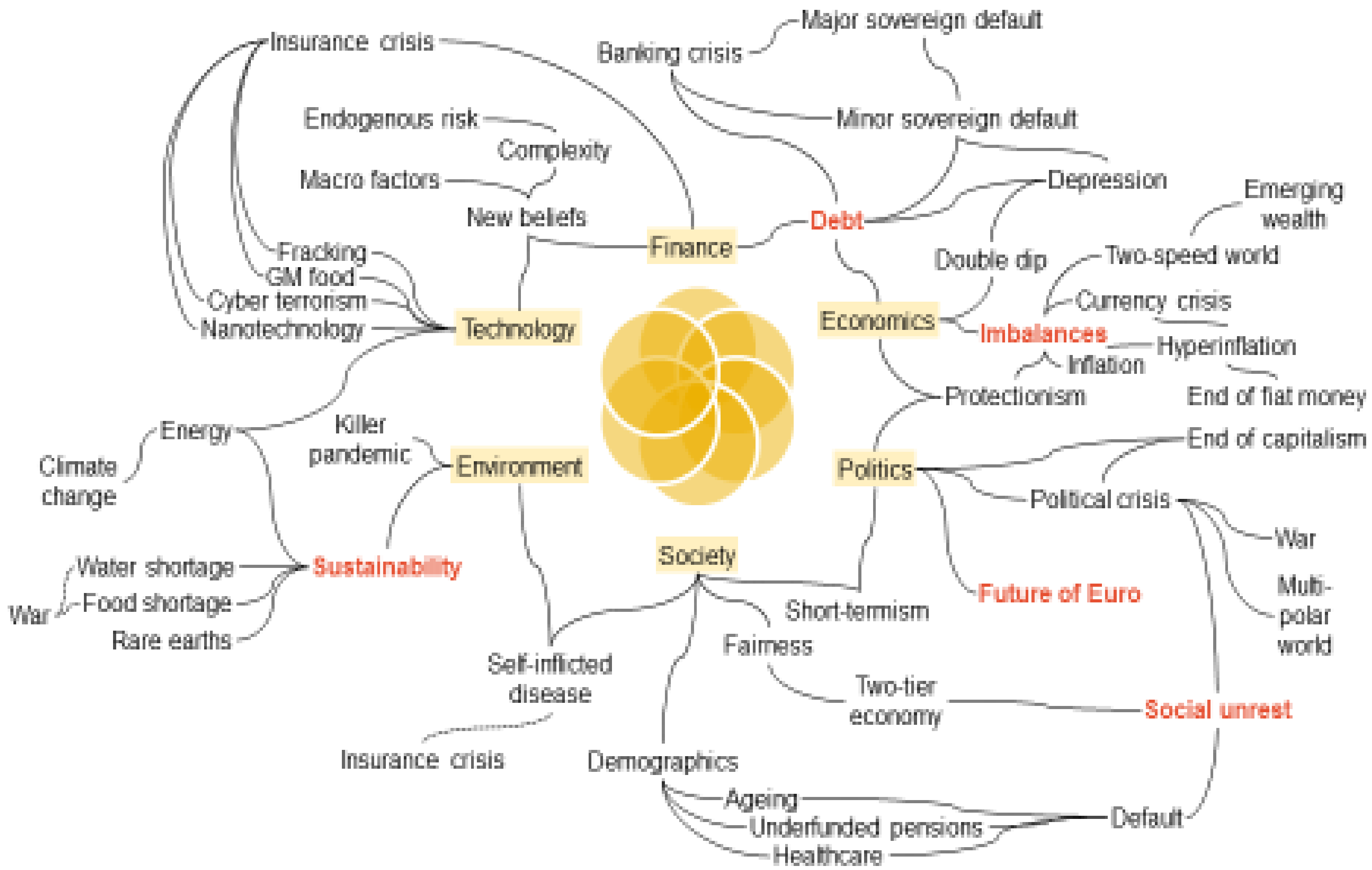
- ***Multiple sources of risk:*** Investment is one particular risk among many in the enterprise risk framework

- ***Adaptive risk capital buffers* are capital which is scarce**, needs to be bargained for and should have an explicit or (more likely) implicit required rate of return. They can be financial and non-financial

Multi-sources of risk:
Investment
Mortality
Inflation and interest rate
Covenant
Counterparty
Reputational
Liquidity
Implementation

Financial buffers	**Non-financial buffers**
Sponsor/member contributions **Benefit reductions** **Increased time horizon**	**Governance capital** **Human capital** **Political capital** **Emotional capital**

Risk is everywhere, multi-sourced and multi-faceted



Background reading

- **Towers Watson:** *Wrong Type of Snow – Risk Revisited (2011)*

CalPERS Investment Beliefs (A)

1. Liabilities must influence the asset structure.
A. Ensuring the ability to pay promised benefits by maintaining an adequate funding status is the primary measure of success for CalPERS.
B. CalPERS has a large and growing cash requirement and inflation-sensitive liabilities; assets that generate cash and hedge inflation should be an important part of the CalPERS investment strategy.
C. CalPERS cares about both income and appreciation components of total return.
D. Concentrations of illiquid assets must be managed to ensure sufficient availability of cash to meet obligations to beneficiaries.

2. A long time investment horizon is a responsibility and an advantage.
Long time horizon **requires** that CalPERS:
A. Consider the impact of its actions on future generations of members and taxpayers.
B. Encourage investee companies and external managers to consider the long-term impact of their actions.
C. Favor investment strategies that create long-term, sustainable value and recognize the critical importance of a strong and durable economy in the attainment of funding objectives.
D. Advocate for public policies that promote fair, orderly and effectively regulated capital markets.

Long time horizon **enables** CalPERS to:
A. Invest in illiquid assets, provided an appropriate premium is earned for illiquidity risk.
B. Invest in opportunistic strategies, providing liquidity when the market is short of it.
C. Take advantage of factors that materialize slowly such as demographic trends.
D. Tolerate some volatility in asset values and returns, as long as sufficient liquidity is available.

3. CalPERS investment decisions may reflect wider stakeholder views, provided they are consistent with its fiduciary duty to members and beneficiaries.
A. As a public agency, CalPERS has many stakeholders who express opinions on investment strategy or ask CalPERS to engage on an issue. CalPERS preferred means of responding to issues raised by stakeholders is engagement.
B. CalPERS primary stakeholders are members / beneficiaries, employers and California taxpayers as these stakeholders bear the economic consequences of CalPERS investment decisions.
C. In considering whether to engage on issues raised by stakeholders, CalPERS will use the following prioritization framework:
1. Principles and Policy – to what extent is the issue supported by CalPERS Investment Beliefs, Principles of Accountable Corporate Governance or other Investment Policy?
2. Materiality – does the issue have the potential for an impact on portfolio risk or return?
3. Definition and Likelihood of Success – is success likely, in that CalPERS action will influence an outcome which can be measured? Can we partner with others to achieve success or would someone else be more suited to carry the issue?
4. Capacity – does CalPERS have the expertise, resources and standing to influence an outcome?

4. Long-term value creation requires effective management of three forms of capital: financial, physical and human.
A. Governance is the primary tool to align interests between CalPERS and managers of its capital, including investee companies and external managers.
B. Strong governance, along with effective management of environmental and human capital factors, increases the likelihood that companies will perform over the long-term and manage risk effectively.
C. CalPERS may engage investee companies and external managers on their governance and sustainability issues, including:
1. Governance practices, including but not limited to alignment of interests.
2. Risk management practices.
3. Human capital practices, including but not limited to fair labor practices, health and safety, responsible contracting and diversity.
4. Environmental practices, including but not limited to climate change and natural resource availability

CalPERS Investment Beliefs (B)

5. CalPERS must articulate its investment goals and performance measures and ensure clear accountability for their execution.
A. A key success measure for the CalPERS investment program is delivery of the long-term target return for the fund.
B. The long time horizon of the fund poses challenges in aligning interests of the fund with Staff and external managers.
C. Staff can be measured on returns relative to an appropriate benchmark, but Staff performance plans should include additional objectives or key performance indicators to align Staff with the fund's long-term goals.
D. Each asset class should have explicit alignment of interest principles for its external managers.

6. Strategic asset allocation is the dominant determinant of portfolio risk and return.
A. CalPERS strategic asset allocation process transforms the fund's targeted rate of return to the market exposures that Staff will manage.
B. CalPERS will aim to diversify its overall portfolio across distinct risk factors / return drivers.
C. CalPERS will seek to add value with disciplined, dynamic asset allocation processes, such as mean reversion. The processes must reflect CalPERS characteristics, such as time horizon and size of assets.
D. CalPERS will consider investment strategies if they have the potential to have a material impact on portfolio risk and return.

7. CalPERS will take risk only where we have a strong belief we will be rewarded for it.
A. An expectation of a return premium is required to take risk; CalPERS aims to maximize return for the risk taken.
B. Markets are not perfectly efficient, but inefficiencies are difficult to exploit after costs.
C. CalPERS will use index tracking strategies where we lack conviction or demonstrable evidence that we can add value through active management.
D. CalPERS should measure its investment performance relative to a reference portfolio of public, passively managed assets to ensure that active risk is being compensated at the Total Fund level over the long-term.

8. Costs matter and need to be effectively managed.
A. CalPERS will balance risk, return and cost when choosing and evaluating investment managers and investment strategies.
B. Transparency of the total cost to manage the CalPERS portfolio is required of CalPERS business partners and itself.
C. Performance fee arrangements and incentive compensation plans should align the interests of the fund, Staff and external managers.
D. CalPERS will seek to capture a larger share of economic returns by using our size to maximize our negotiating leverage. We will also seek to reduce cost, risk and complexity related to manager selection and oversight.
E. When deciding how to implement an investment strategy, CalPERS will implement in the most cost effective manner.

9. Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error.
A. CalPERS shall develop a broad set of investment and actuarial risk measures and clear processes for managing risk.
B. The path of returns matters, because highly volatile returns can have unexpected impacts on contribution rates and funding status.
C. As a long-term investor, CalPERS must consider risk factors, for example climate change and natural resource availability, that emerge slowly over long time periods, but could have a material impact on company or portfolio returns.

10. Strong processes and teamwork and deep resources are needed to achieve CalPERS goals and objectives.
A. Diversity of talent (including a broad range of education, experience, perspectives and skills) at all levels (Board, Staff, external managers, corporate boards) is important.
B. CalPERS must consider the government agency constraints under which it operates (e.g., compensation, civil service rules, contracting, transparency) when choosing its strategic asset allocation and investment strategies.
C. CalPERS will be best positioned for success if it:
1. Has strong governance.
2. Operates with effective, clear processes.
3. Focuses resources on highest value activities.
4. Aligns interests through well designed compensation structures.
5. Employs professionals who have intellectual rigor, deep domain knowledge, a broad range of experience and a commitment to implement CalPERS Investment Belief.

Contact details and limitations of reliance

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