

TITLE:

Evaluating the latest trends in investment management

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Outline

Motivating the trends

- GFC and increased desire to limit and manage tail risks
- Increased focus on understanding risk and return drivers and impact of different environments
- Desire to build more robust portfolios
- View that the traditional static SAA bucketing approach is not up to the task of responding to a rapidly changing world

Overview of the new (and some not so new) investment trends....

- Increased dynamic asset allocation
- Increased allocations to alternatives
- Increased non-market cap allocations.

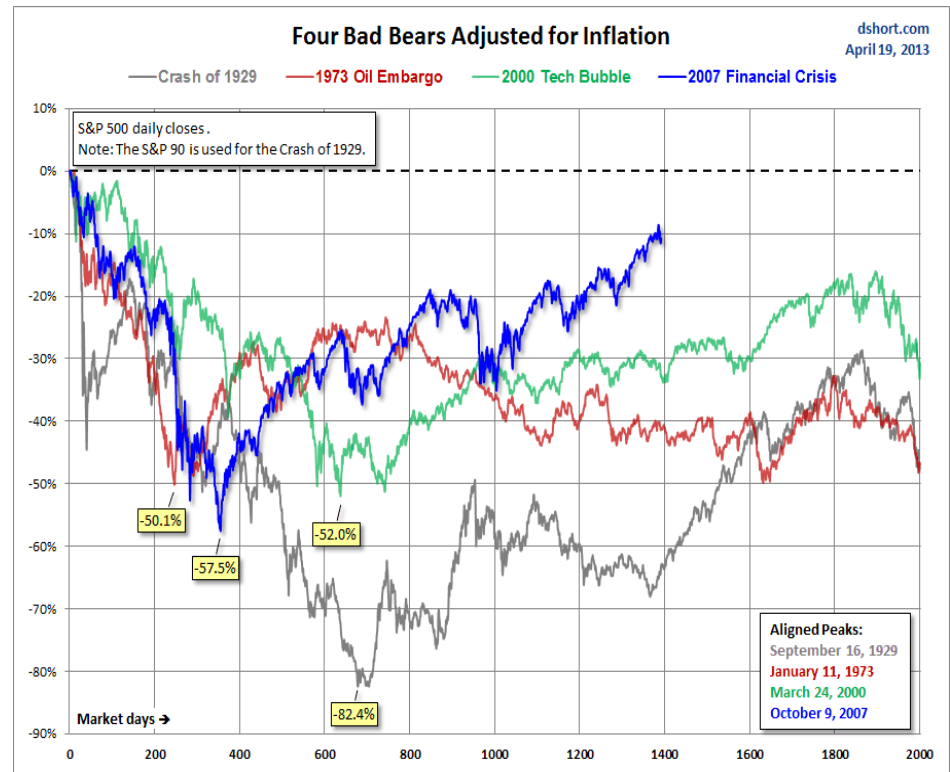
...and asset allocation approaches

- Risk parity in a nutshell
 - Pros and cons
 - Fit with the NZSFs investment beliefs
 - Allocation by risk factors
 - Pros and cons
-

Motivating new approaches

- GFC is seared into memories:
 - View that listed equities can not even be relied upon to provide the *long-run* returns required to meet a Fund's investment objectives
 - View that traditional SAA's over-stated risk diversification benefits and understated draw-down potential
 - View that traditional static SAAs overly constrains a portfolio – e.g. ability to respond to changes in reward for bearing risk (slope of the capital market line); ability to deviate from market-cap benchmarks, *etc*

- GFC blew-away notion of the great moderation – bad bears fact of life



Motivating new approaches

- Asset managers are responding to the challenge via:
 1. increased sophistication of *risk quantification and measurement tools*,
 2. increased willingness to undertake *active management*, and
 3. increased focus on *alternative asset allocation approaches*
- Underlying desire is to build portfolio's more robust to meeting investment purposes
- These broad developments are being re-enforced by sell-side analysis and products, as well as asset consultancy advice
- But many aspects can't be "outsourced"

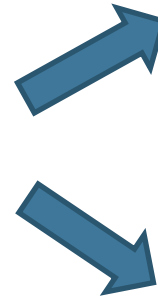


factor behind the increasing in-sourcing of SWF research and investment activities + deeper engagement with external asset managers

Motivating new approaches

Increased focus on better understanding risk and return drivers:

- Increased usage of scenario analyses and stress testing tools
- Increased focus on tail-risk measurement
- Increased focus on trying to understand how investments behave under different environments
- **Reduced reliance on static correlation and variance assumptions to guide risk allocation**



(1) Increased tolerance for taking 'active risk' via:

- Bigger, broader DAA programs
- Increased allocations to "alternative" investments
- Increased allocations to "better beta" strategies
- Increased allocations to non-traditional markets
- etc...

(2) Broadening of SAA benchmarks and increased interest in alternative risk allocation approaches:

- Risk parity and variants such as "all weather"
- Allocation on risk factors
- Reference Portfolio + value-add approach (e.g. NZSF, CPP)

(1) Increased use of DAA strategies

- DAA strategies can be roughly split into (i) TAA strategies that allocate risk according to macro views and other short term 'signals' and (ii) more medium-term oriented strategies that primarily respond to valuation gaps/risk premiums, e.g. NZSF strategic tilting program
- The slope of the CML increased massively during the GFC and is still marginally steeper than what would be obtained with the NZSFs 'equilibrium' assumptions
- In addition, there has been considerable volatility around the general reduction in risk premiums (risk-on, risk-off environment)
- Fund's with medium-term DAA programs have been able to add significant value by responding to these changing risk premiums
- On the other hand, Fund's that have been much more concerned with potential downside risks would have been much more cautious responding to the apparent valuation gaps
- Reasonable differences in judgement on these risks by key decision makers have clearly have played a part.
- But more importantly is whether or not Fund's has clearly articulated *investment beliefs*; e.g. NZSF belief in *mean reversion* makes the default decision one of responding to changes in our assessment of valuations. We need to have a very high conviction in a downside scenario to depart from this.

(1) Increased allocation to “alternatives”

- Alternative asset classes are usually defined as assets that have not traditionally been a part of institutional investor portfolios
- The usual claim is that they offer portfolio diversification benefits
- Often alternatives will also be less liquid and/or more complex than traditional public markets asset classes
- Like any asset class, most alternative assets can be fairly easily expressed as a discounted stream of cash flows. Given this, we can only be confident bringing an alternative asset into a ‘traditional’ listed portfolio will improve its expected performance when:
 - I. We are confident that the underlying drivers of its cash flows significantly differ from broader public market exposures, the *nearest public market equivalents*, and other assets held in the portfolio
 - II. In relation, we are confident that the asset will perform differently than public market asset classes in times of stress and/or specific scenarios
 - III. The entry price is at a significant discount to public market equivalents to compensate for the often higher levels of illiquidity and operational and legal complexity such assets entail.
- In short, the search for alternatives needs to get underneath the asset class labels

(1) Increased allocation to non market cap active strategies and benchmarks

- Post-GFC there has been a trend movement away from market cap weighted public market exposures; e.g via:
 - increasing allocations to emerging and frontier markets
 - increasing adoption of “smart beta” strategies
 - increasing adoption of concentrated equity portfolios
 - increasing allocation to risk factors (an application of a risk factor approach to view the portfolio)
- Underlying assumption of all of these approaches is that the market cap benchmarks are not optimal → risk-adjusted returns can be improved by moving away from it.
- Empirical evidence is often strong (e.g. low beta and low volatility strategies)
- Challenge is to clearly articulate the mis-pricing and/or diversification opportunity and have the confidence that it will persist going forward.

(2) Risk Parity asset allocation in a nutshell

Defined as Equal Contribution to Portfolio Volatility

- No single definition
- Requires only volatilities and correlations estimates

Claim: Higher Sharpe Ratio

- Better diversification

Usually has much higher loading on fixed income assets

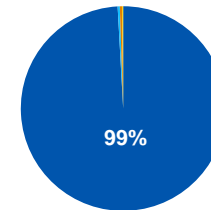
- Fixed Income overweight ?
- Lower expected returns ?

Usually requires leverage of the fixed income piece

Leverage to adjust desired expected return or risk

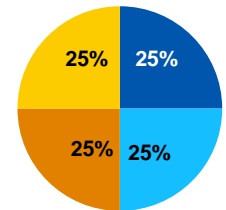
- Is this feasible for all Funds?
- Does it even make sense?

Reference Portfolio
Risk share



■ Global Equity
■ Global Property

Risk Parity
Risk share



■ Domestic Equity
■ Global Bonds

(2) Some Pros And Cons Of The Risk Parity Approach c/f traditional SAA

Pros	Cons
Pays attention to risk	Structural error – do we believe in this model?
Has performed well in backtests	Weights sensitive to risk estimates
More diversified portfolios	Sample-dependent performance
Lower drawdowns	Possibly overexposed to other types of risks (e.g. interest rates)
Exploits volatility puzzle (potentially)	Ignores returns
	No theoretical reason to outperform
	Performance unlikely to persist
	No consideration for investor's unique situation
	<i>Inconsistent with NZSF's investment beliefs</i>

(2) No Empirical Evidence In Favor Of Risk Parity Optimality

Theory: All Asset Classes have

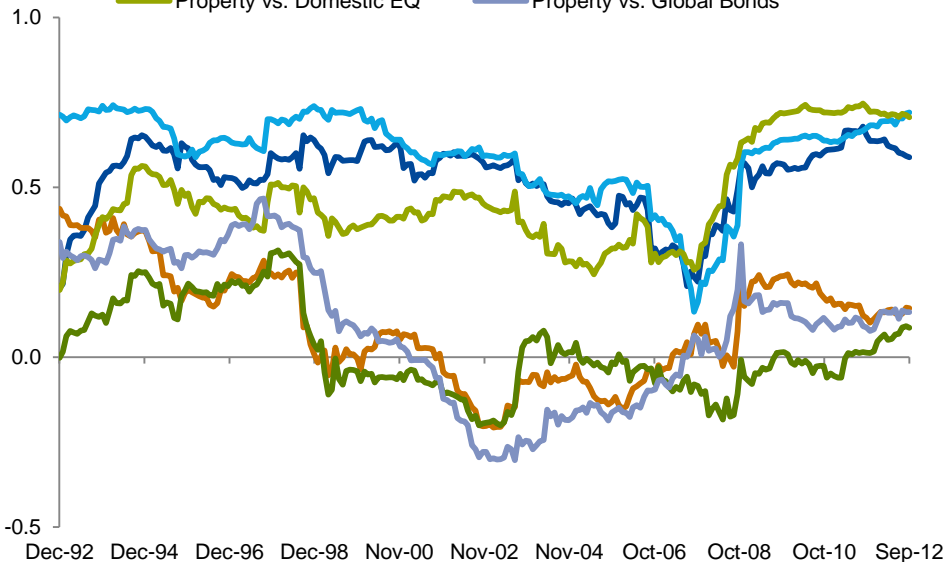
- Same Sharpe Ratio
- Same Correlation



Risk Parity Portfolio is Mean-Variance Efficient

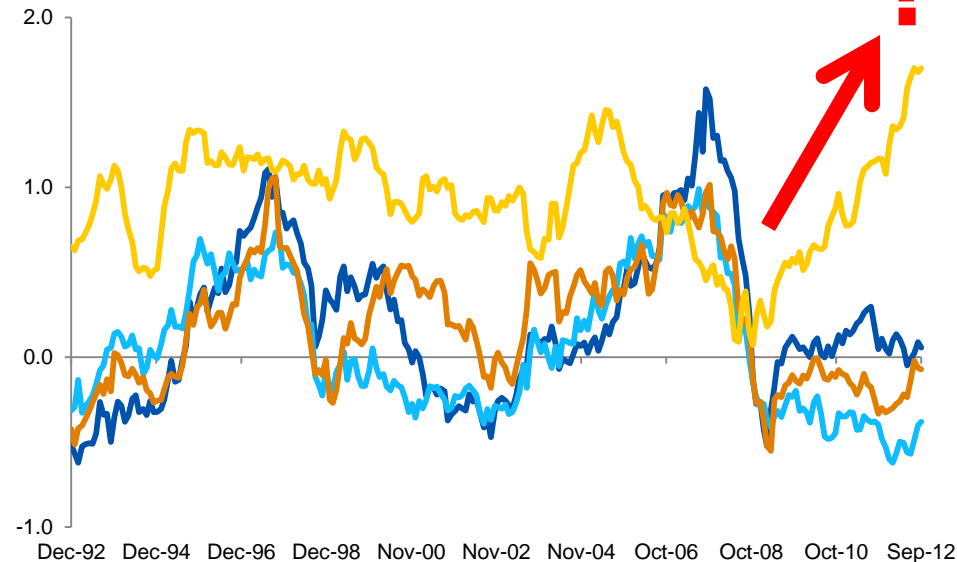
Correlation (5-yr Rolling)

Global EQ vs. Domestic EQ Global EQ vs. Property
 Global Bonds vs. Global EQ Global Bonds vs. Domestic EQ
 Property vs. Domestic EQ Property vs. Global Bonds



Sharpe Ratio (5-yr Rolling)

Global EQ Domestic EQ Property Global Bonds



(2) Falling Interest Rates have favored risk parity...but are we at a turning point?

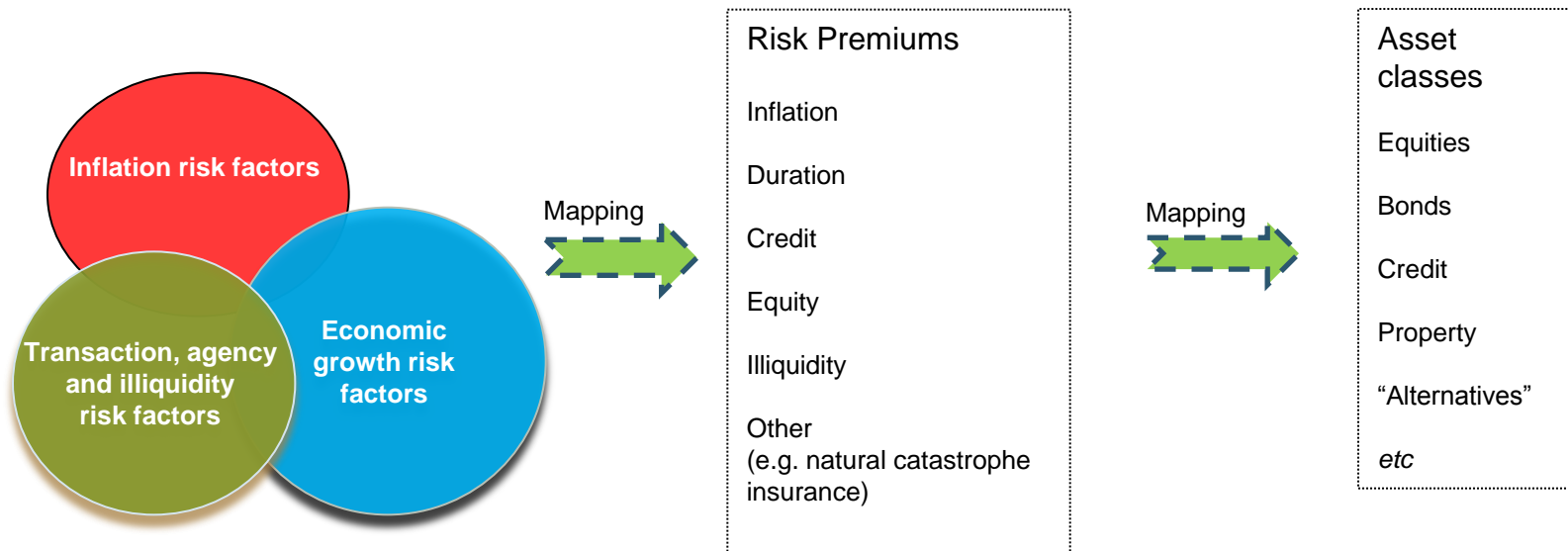


(2) Does Risk Parity Fit NZSF's Investment Beliefs?

	Risk Parity Strategy Principles	NZSF's Investment Beliefs*
Governance and Objective	<ul style="list-style-type: none"> • Ignores risk tolerance • Great performance, but • Ad-hoc and sample specific 	<ul style="list-style-type: none"> • Promoting decisiveness, efficiency, and accountability ➔ effective and value add
Asset Allocation	<ul style="list-style-type: none"> • All Asset Classes contribute equally • No explicit time horizon consideration 	<ul style="list-style-type: none"> • Asset Allocation is a key investment decision • Long Term focus outperforms Short Term strategies
Investment Focus and Manager Selection	<ul style="list-style-type: none"> • Expected returns are totally irrelevant. Focus is on risk exclusively 	<ul style="list-style-type: none"> • Expected returns are partly predictable within asset classes and returns mean revert • Identifying the lifecycle of an investment is important to assessing the expected return
Approach	<ul style="list-style-type: none"> • Very active: always fixed income heavy and risk is the only variable that matters • Risk Parity evolves slowly over time by nature (risk estimation) 	<ul style="list-style-type: none"> • Active approach, BUT alpha is very rare • Variable but persistent market characteristics
ESG	<ul style="list-style-type: none"> • Agnostic about ESG 	<ul style="list-style-type: none"> • ESG is relevant and desirable

*Source: New Zealand Superannuation Fund - "How We Invest"

(3) Risk factor based asset allocation



- Approach focus on underlying risk and return drivers
- E.g. generally higher transaction, illiquidity and agency risk exposures as we move away from 'plain vanilla' asset classes, but in some cases lower inflation and growth risk exposures (e.g. natural catastrophe insurance).

(3) Some Pros And Cons of Risk Factor Based Asset Allocation

Pros	Cons
Pays attention to risk	Asset allocation weights sensitive to mappings from risk factors.
Pays attention to returns – requires decomposition of premiums to underlying factors	Often assumed risk factors are independent in application, but they aren't (e.g. GFC)
Should result in more diversified portfolios	Maybe more difficult to back-test and hence gain confidence in approach
Consideration for investor's unique situation	Requires more judgement (though may be a good thing)
Can be motivated by theory (e.g. consumption CAPM)	Not a silver bullet as sometimes claimed
<i>Possible</i> to use approach to motivate many active return strategies	
Avoids risk of asset class 'bucketing' approach	
<i>Consistent with many of the NZSFs investment beliefs</i>	