



# Pension Funds and the Evolution of Risk

Are you getting what you need?

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# Agenda

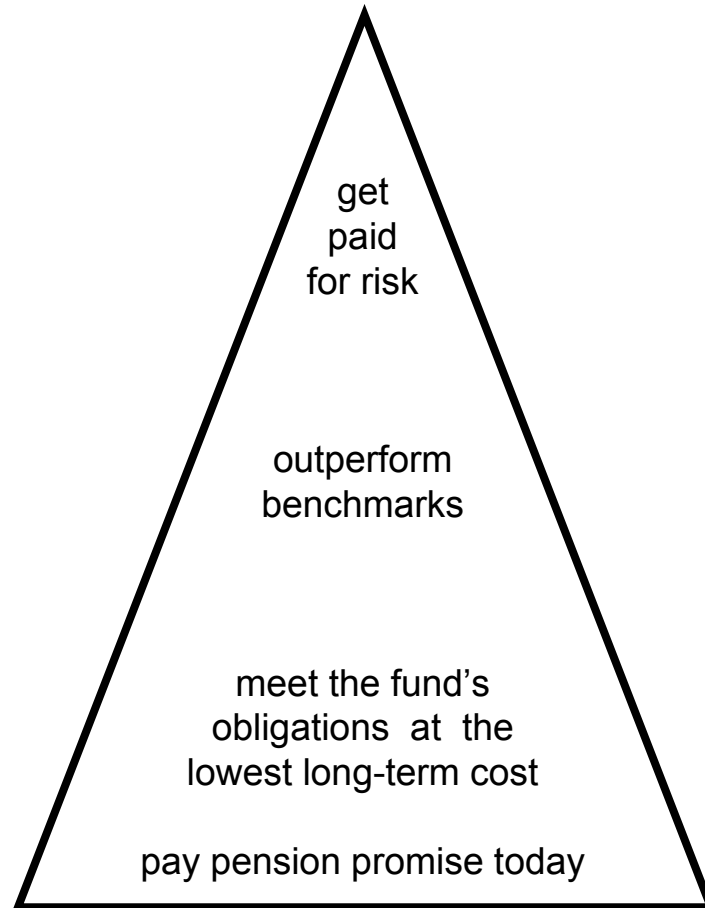
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I. Oversight/Management	A. What are pension funds' <b>needs</b> ? Wants?
	B. What are the <b>barriers to excellence</b> ?
	C. What <b>decisions</b> helped funds avoid undue risk and increase risk-adjusted returns?
II. Measurement	D. What <b>resources</b> help us go from good (or not-so-good) to great?

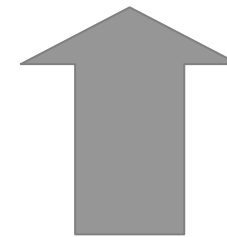
# A. Hierarchy of Needs

You can't always get what you want ... but get what you need ...

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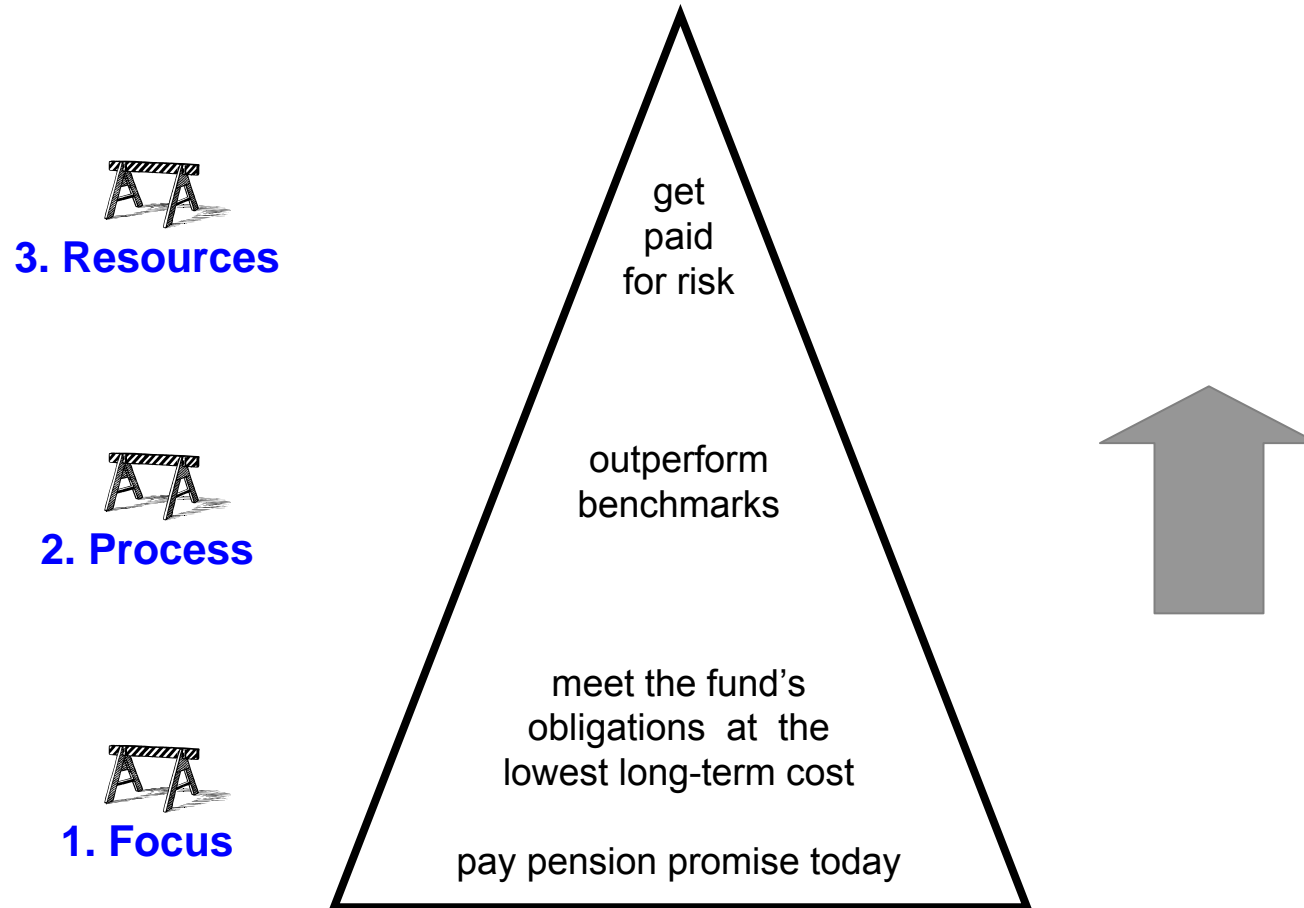
**“Thrive”**



**“Survive”**

## B. Barriers to Excellence

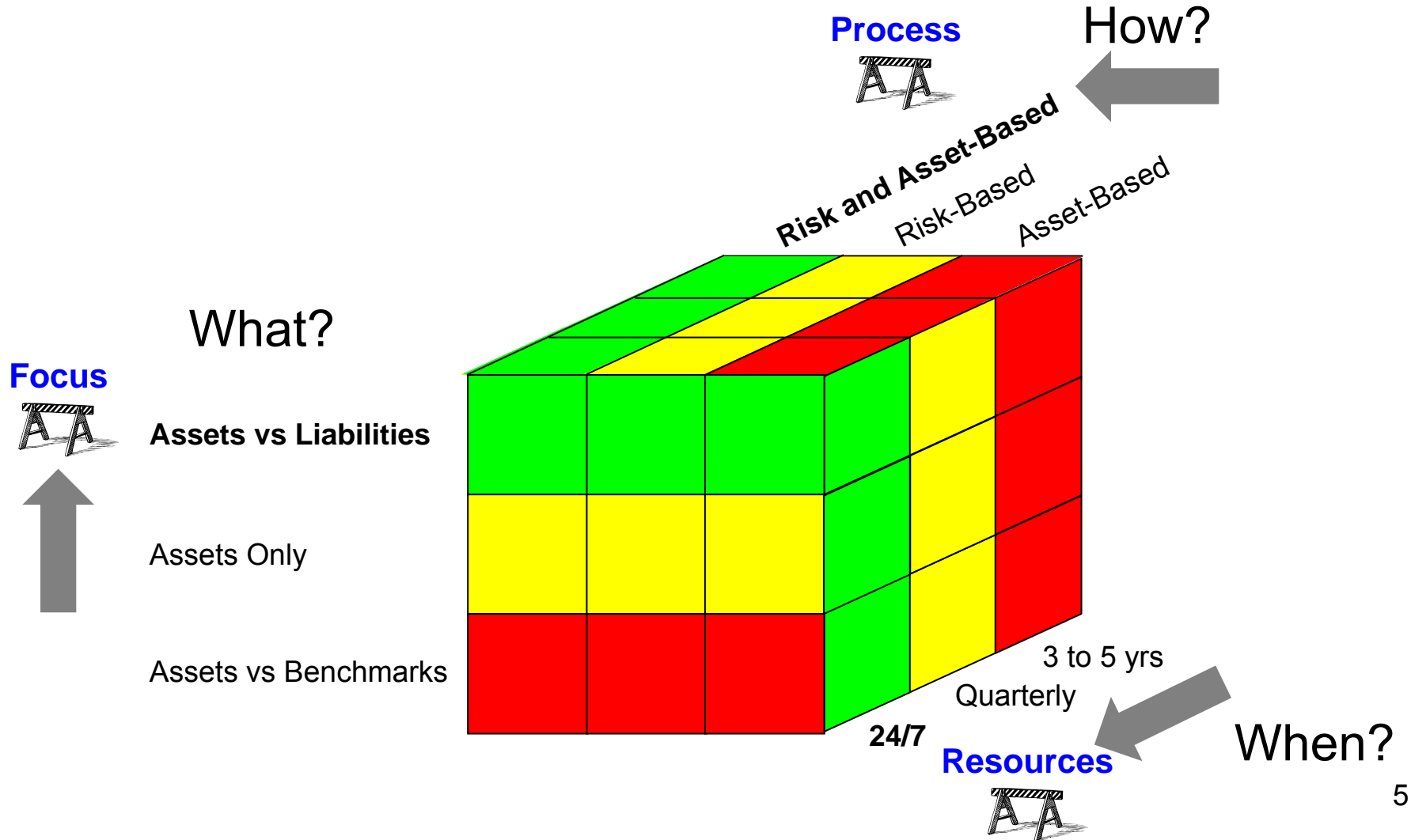
1. Lack of **focus**/clarity in mission, 2. poor **process**\*, 3. **resources**
- \* including communication and inertia<sup>1</sup>
- 



1. Source: *Pension Fund Excellence*, Keith Ambachtsheer and Don Ezra, 1998

# C. Risk Decisions (and Trends)

What risks matter? | How should risks be managed? | When?



## Focus on Investment Policy (Assets vs Liabilities)

“Don’t play the loser’s game” (or make fewer mistakes if you do)

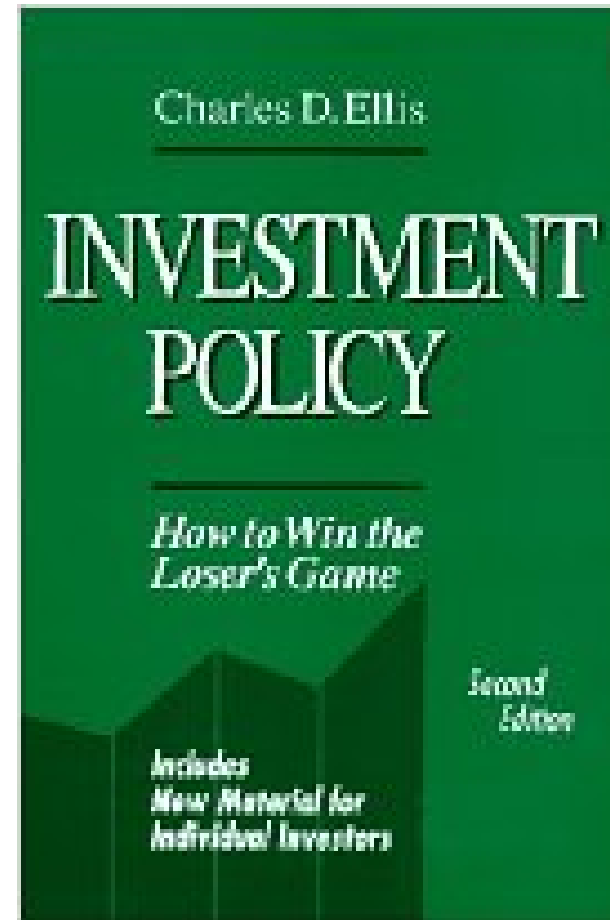
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Loser’s games:

- Amateur tennis
- Beating benchmarks

How do you win a loser’s game?

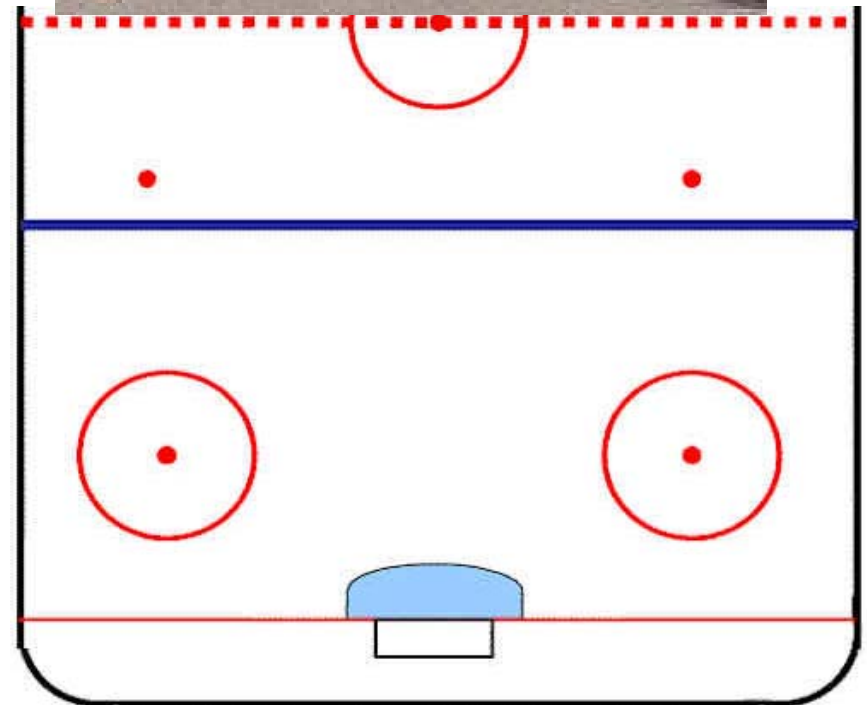
- “Don’t play” (Charles Ellis)
- Make fewer mistakes



# Have at Least *Some* Liability-Matching Assets

“Play with a goalie (and don’t play road hockey, eh)”

	Road Hockey		NHL	
Forwards (Equities)	3	60%	3	50%
Defence	2	40%	2	33%
Goalies (ILBs)	-	-	1	17%



## Focus on Managing the Balance Sheet

“Match assets and liabilities before you try to add value”

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What was your biggest challenge?  
(per interview with *Benefits Canada*)

“... was, and always is, getting people to  
**focus on managing the balance sheet.**

In other words, do your best to  
**match assets and liabilities  
before you try to add value”**

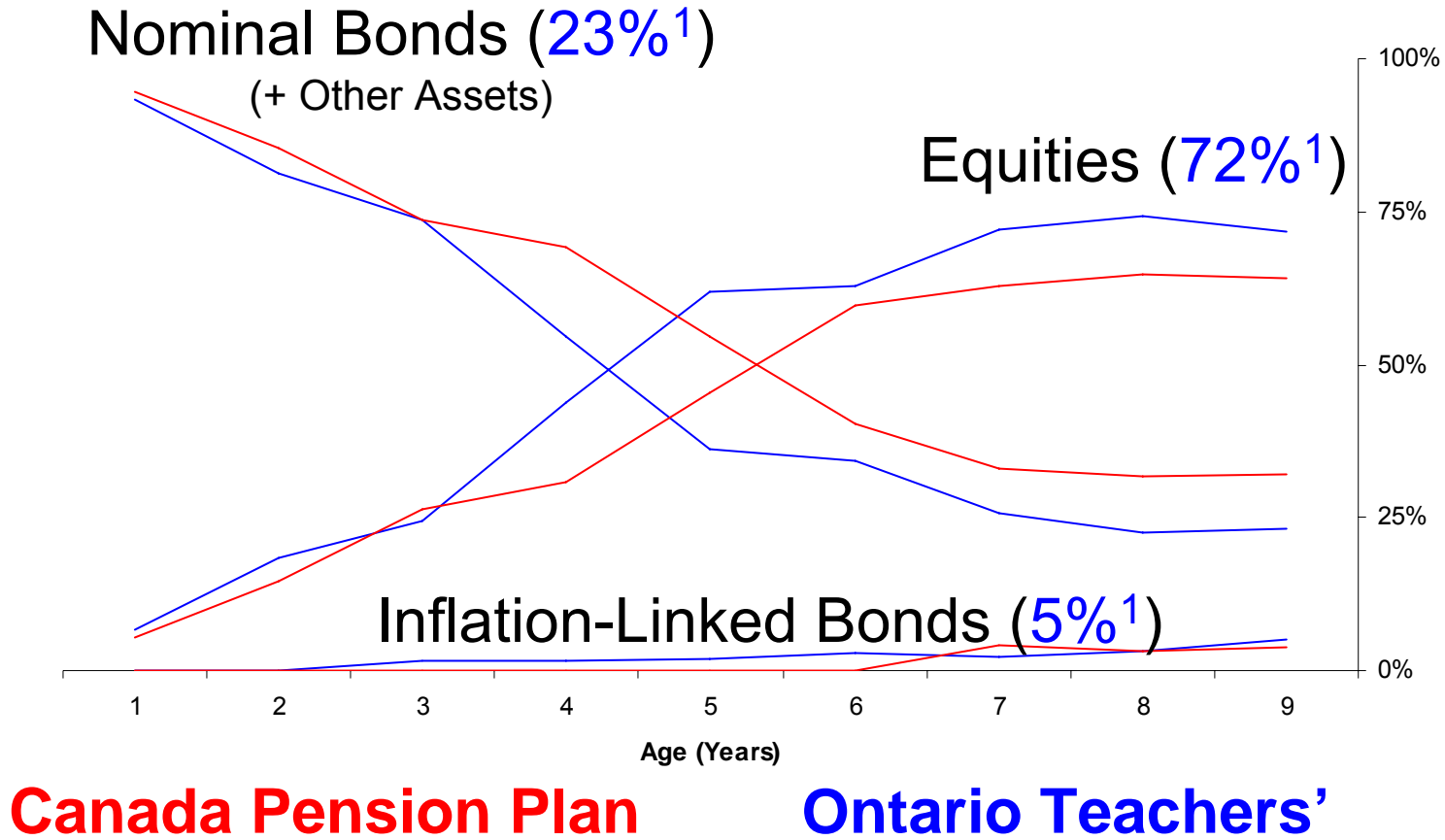


**Bob Bertram**

Retired Chief Investment Officer,  
Ontario Teachers' Pension Plan

# Growing Up in Canada, Playing (Pension) Hockey

Two of Canada's largest funds played a similar game growing up

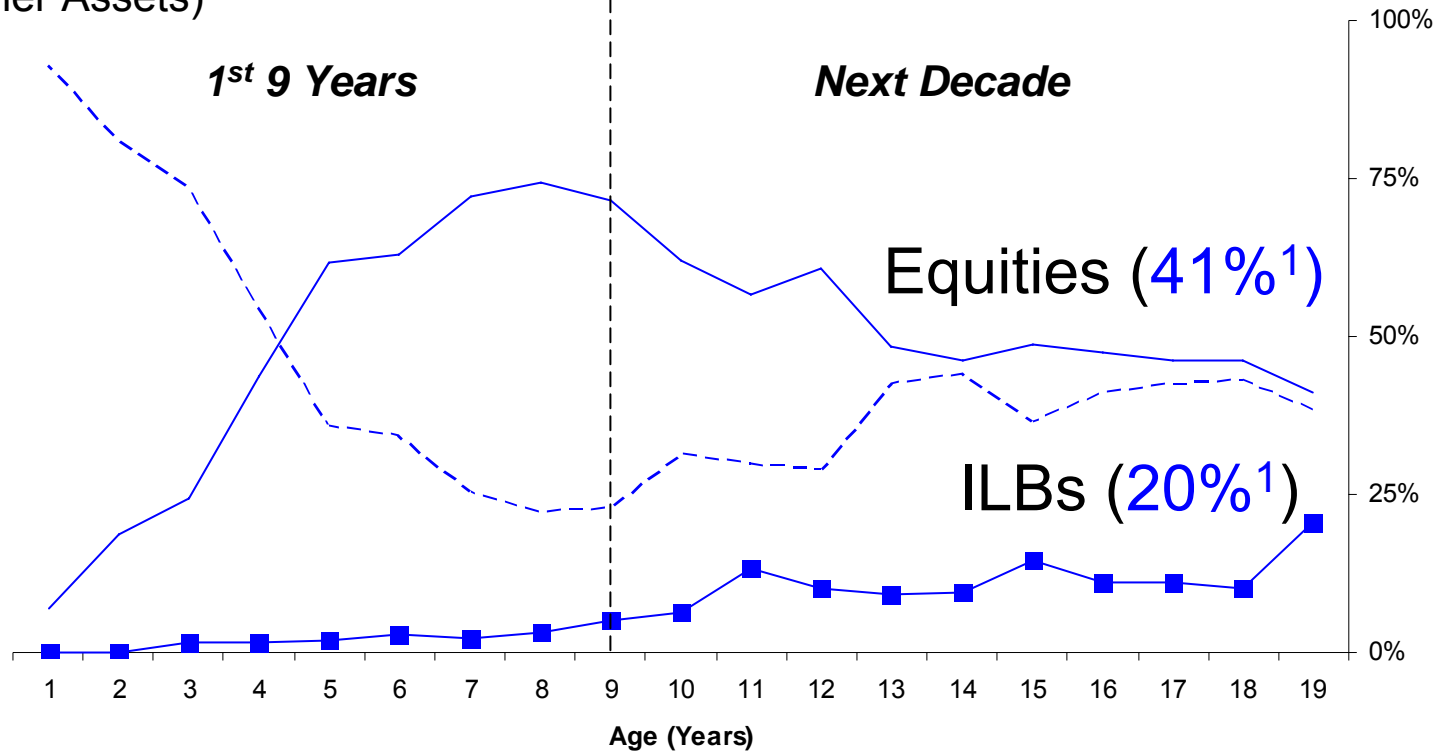


1. % figures are for Ontario Teachers' at the end of 1998 (9 years since inception).

# Ontario Teachers: A Tale of Two Decades

“It was the best of times, it was the worst of times ...”

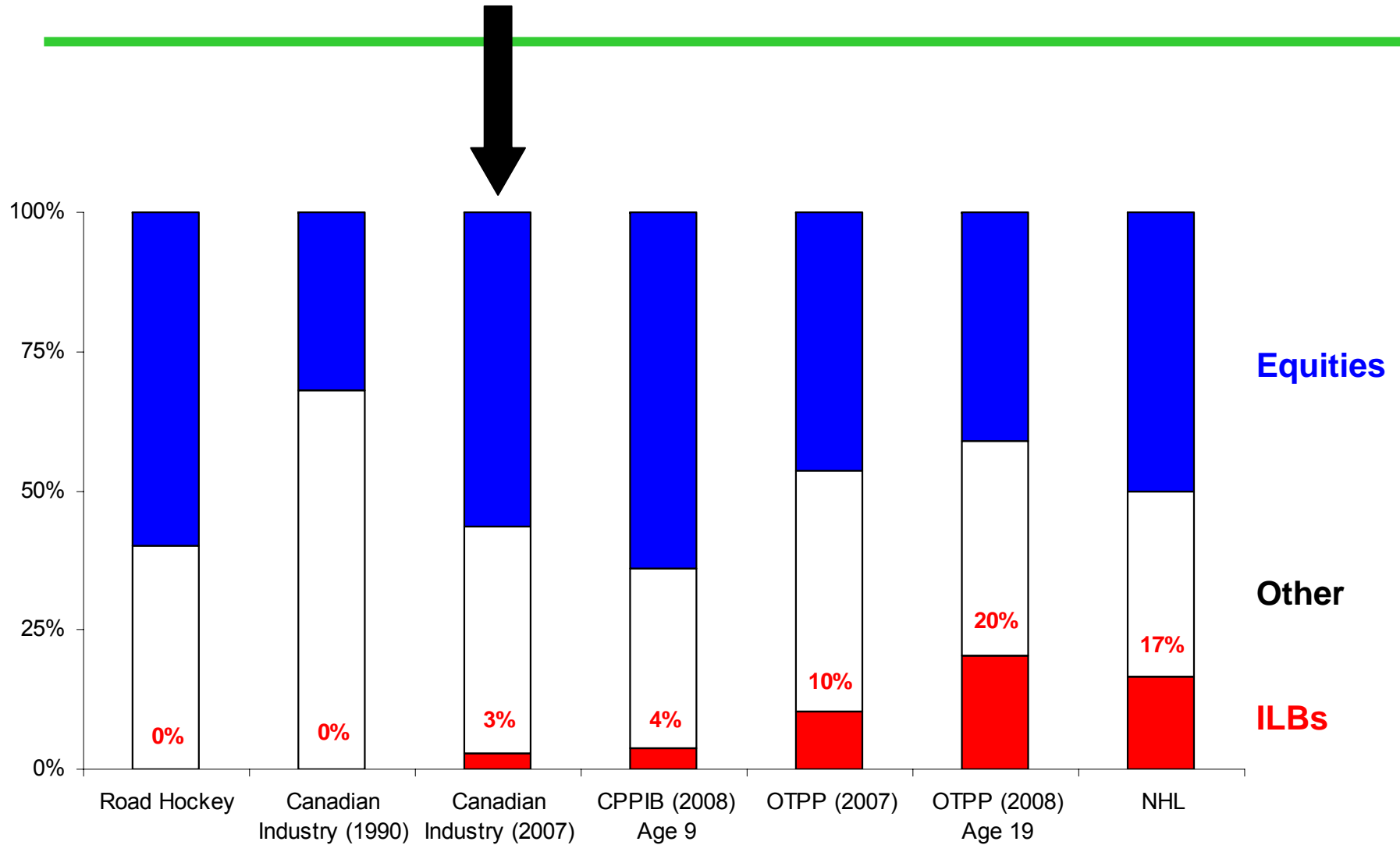
Nominal Bonds (38%<sup>1</sup>)  
(+ Other Assets)



1. % figures are for Ontario Teachers' at the end of 2008 (19 years since inception).

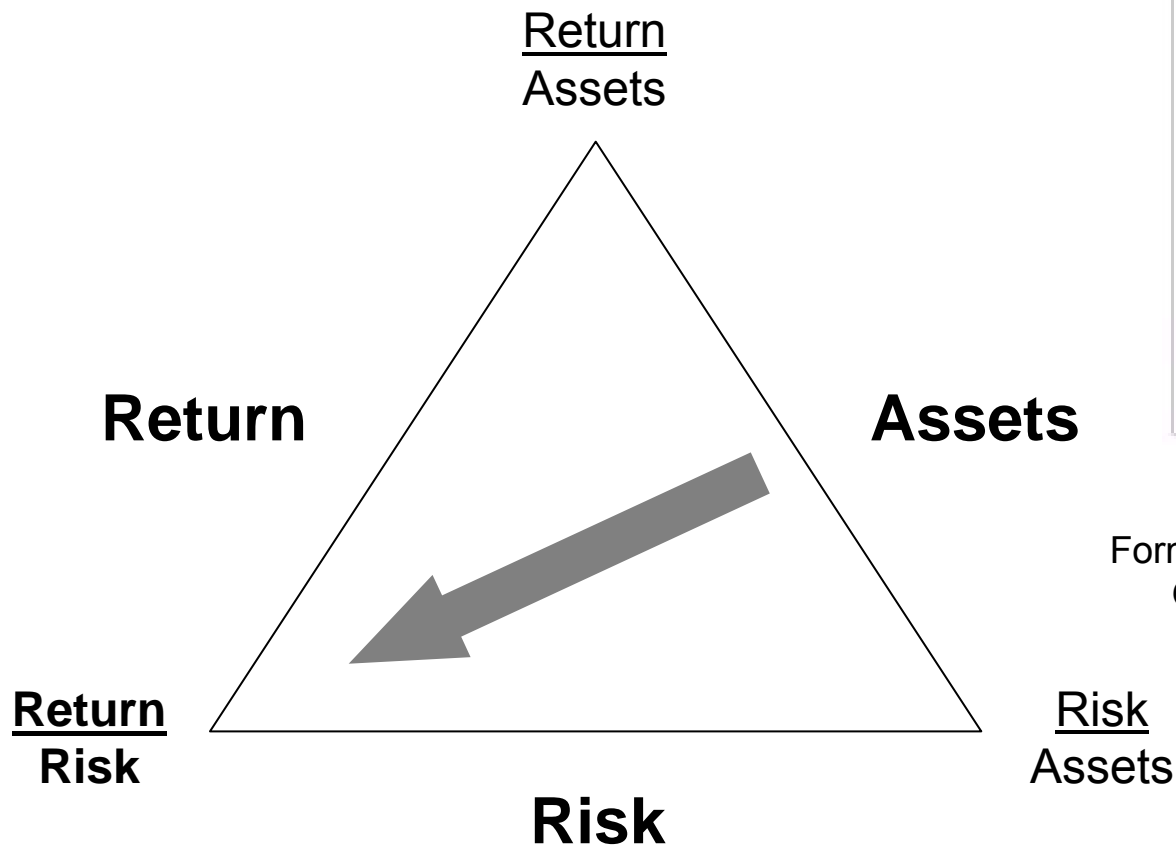
# Average Fund Has a Much Lower Allocation

Canadian pension funds have 3% in ILBs (Dec 2007)



# Risk Budgeting Process

“Try to best approximate what’s truly important”



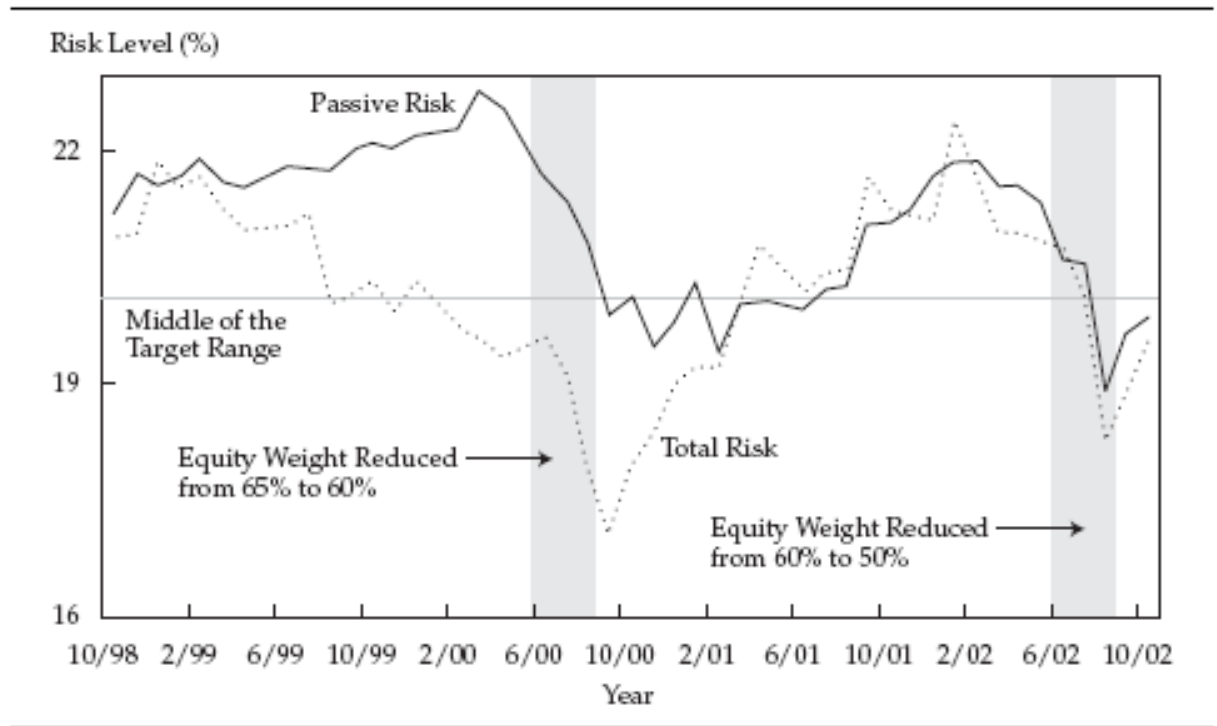
**Leo de Bever**  
Former EVP, Research and Economics  
Ontario Teachers’ Pension Plan

# Risk/Assets

Risk changes, even when the asset mix does not.

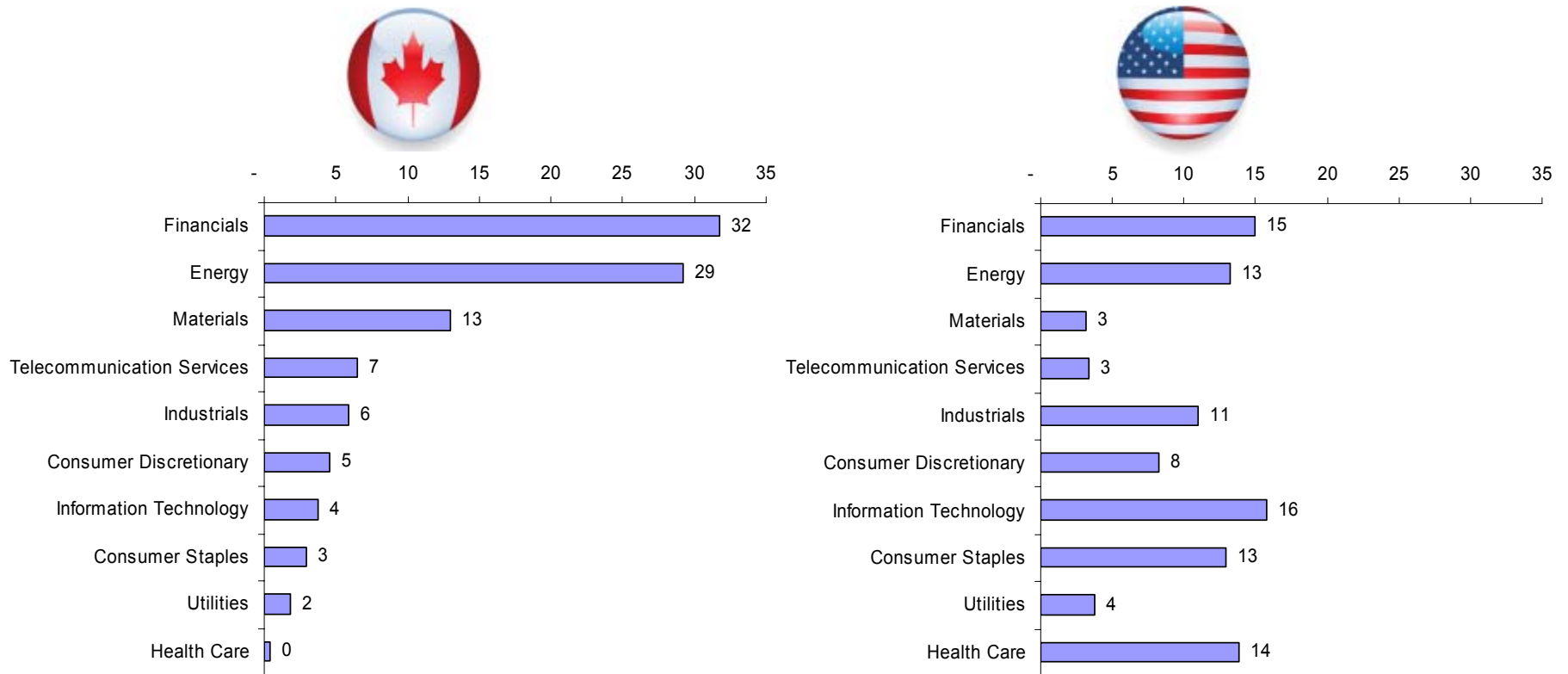
Risk budgeting is more relevant and less costly than “asset allocation”.

Figure 6. Passive and Total Risk Relative to Liabilities, October 1998–October 2002



Source: *Developing and Implementing a Risk-Budgeting System*, Leo de Bever, Senior Vice President, Research and Economics, Ontario Teachers' Pension Plan, 2003

# Sector Mix (Market Value)



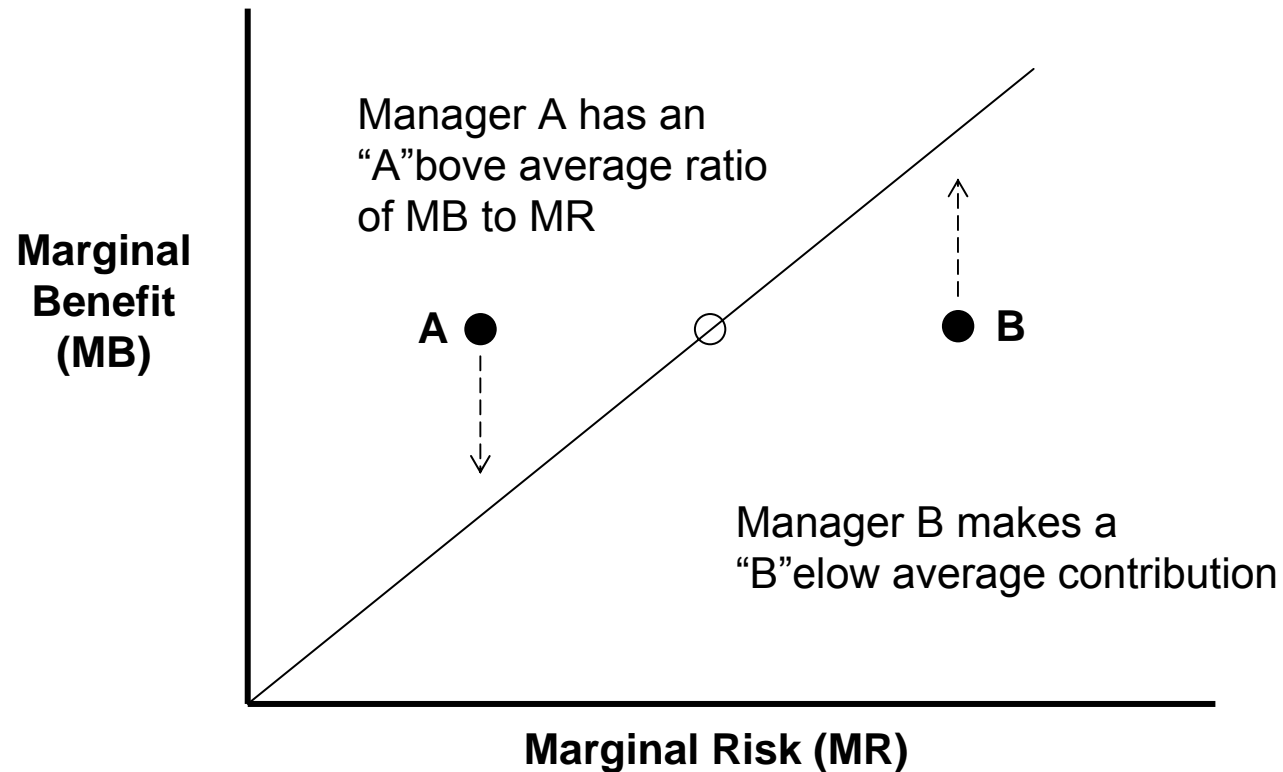
Sector concentrations change.

Financials are concentrated in most markets.

In Canada, 3 sectors can make up 75% of the broad market index.

# Return/Risk

- If risk is a “good”, its budgeting follows basic rules of economics
- “Demand curve” for risk represents an equilibrium solution, where optimal (unconstrained) allocations plot along a line



# Return/Risk

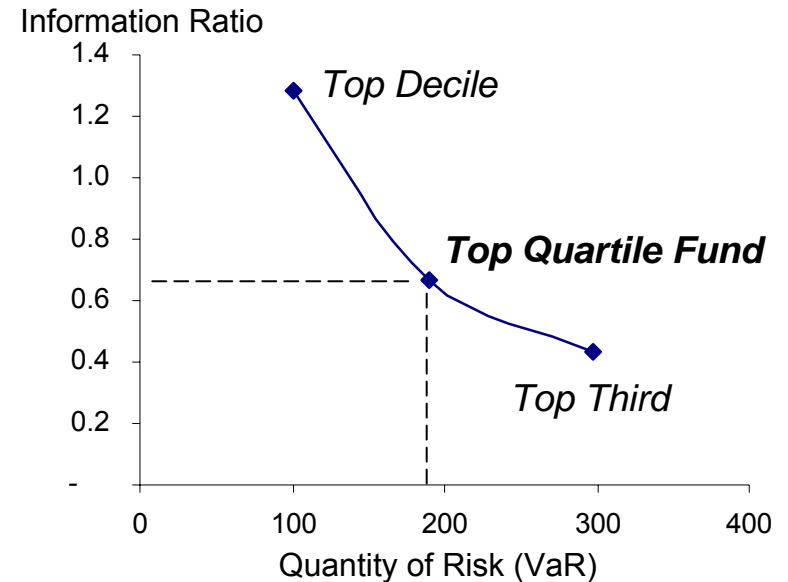
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- For assets only, the marginal benefit of allocating more \$ to an asset class = return
- For active management, marginal benefits depend on:
  - **Weight x IR** if we allocate more risk, where IR = information ratio ( $\alpha/\sigma$ )
  - and **Risk ( $\sigma$ ) x IR** if we allocate more assets
- Marginal risk contributions are more complicated

# Active Risk Budgeting

- **Risk:** economic good (resource), not a “bad”;  
consumed to produce a value added “quota” (e.g. alpha = 1%)
- **Risk budgeting:** process of allocating risk “resources”

<b>Risk Premium</b>	Define goal	How much return do we need?
<b>Risk Target/Budget</b>	Set target/ budget	How much risk should we take, and where?
<b>Risk Limits</b>	Set limits	How much risk is too much? Not enough?



- **Demand curve for risk:** top quartile funds ( $IR = \alpha/\sigma = 0.67$ )  
demand 200 bps VaR ( $\sigma \approx 150$ )  
to produce 100 bps of alpha (gross)

## Bob Bertram's Biggest Achievement

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“... developing an overall ... program where we integrated risk management compensation systems and portfolio management into a single set of measurements.

Basically integrating our programs so they were centered on risk management and then tying the compensation system into the risk management budget.”

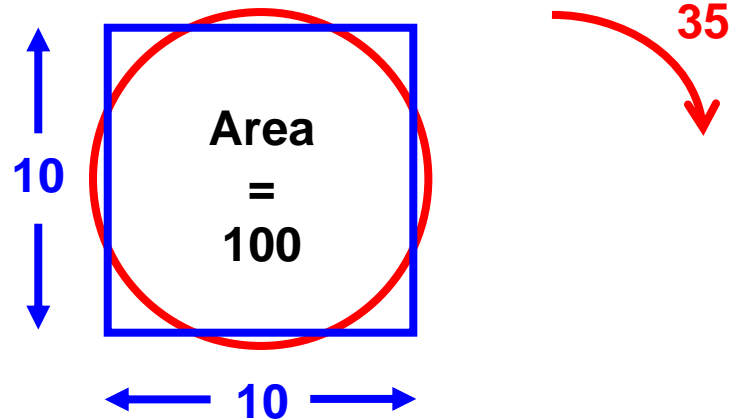


**Bob Bertram**

Retired Chief Investment Officer,  
Ontario Teachers' Pension Plan

# Avoid Costly Constraints

Think Outside the Box



**Square**

**\$40** (10ft x \$1/ft x 4sides)

**Circle**

**\$35**

**Cost \$5**  
(12%)

# Difference Between Good (or Not-So-Good) and Great

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FOCUS	PROCESS	RESOURCES
<p><b>Risk Policy/Framework</b></p> <ol style="list-style-type: none"> <li>1. Minimum Risk Portfolio</li> <li>2. <b>Risk Premium</b></li> <li>3. <b>Risk Target/Budget</b></li> <li>4. <b>Risk Limits</b></li> <li>5. RANVA/RAROC</li> </ol>	<p>Guidelines/Procedures</p> <p>Generally Accepted Risk Principles (GARP)</p> <p><b>Risk Budgeting (applying 2 – 4, given 1)</b></p> <p><b>Risk Reports</b></p>	<p><b>Risk System</b></p> <p>Risk-Aware Culture</p>

# Risk Framework Q&A

## Illustrative answers to questions

Element	Active Risk ( $\alpha$ )	Policy Risk ( $\beta$ )
1. Minimum Risk Portfolio	Policy Portfolio	Liabilities
<b>2. Risk Premium</b>	<u>Fund</u> $\alpha/VaR = 34\%$ <u>Asset Classes or Managers</u> $\alpha/VaR < 34\%$	Beyond scope
<b>3. Risk Target/Budget</b>	<u>Fund</u> 5% <u>Asset Classes or Managers</u> $> 5\%$ (e.g. 10%)	
<b>4. Risk Limits</b>	1.0%: blue 6.0%: yellow 7.5%: red	
5. RANVA/RAROC	Is $\alpha/VaR > 34\%$ for Total Fund?	

