

Global Index Investing

Presented at the:

Second Annual

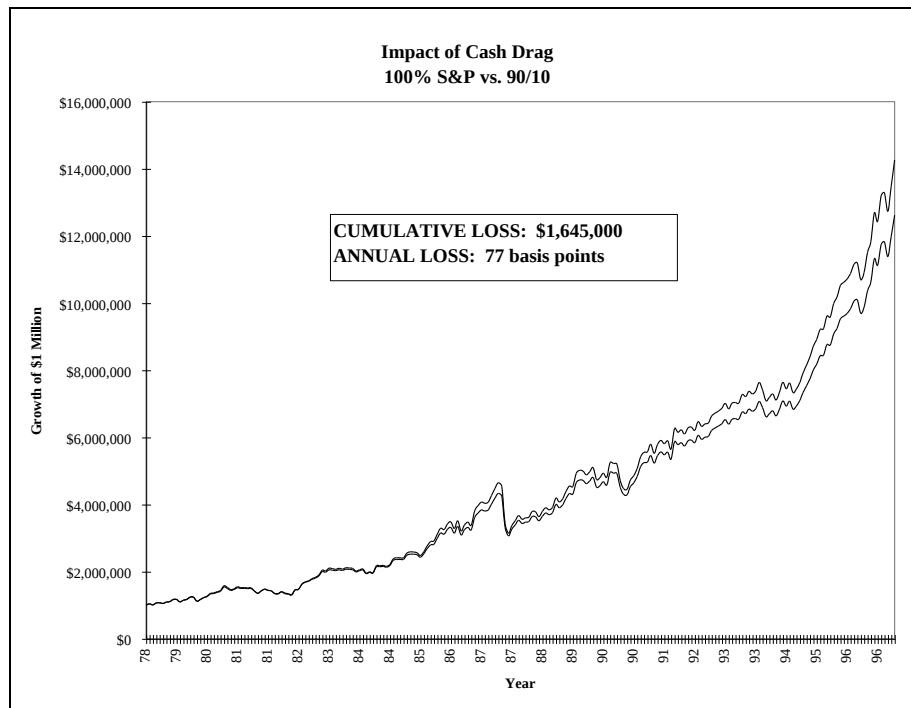
Fire & Police Pension Funds Summit

Hilton Head Island, June 25, 1997

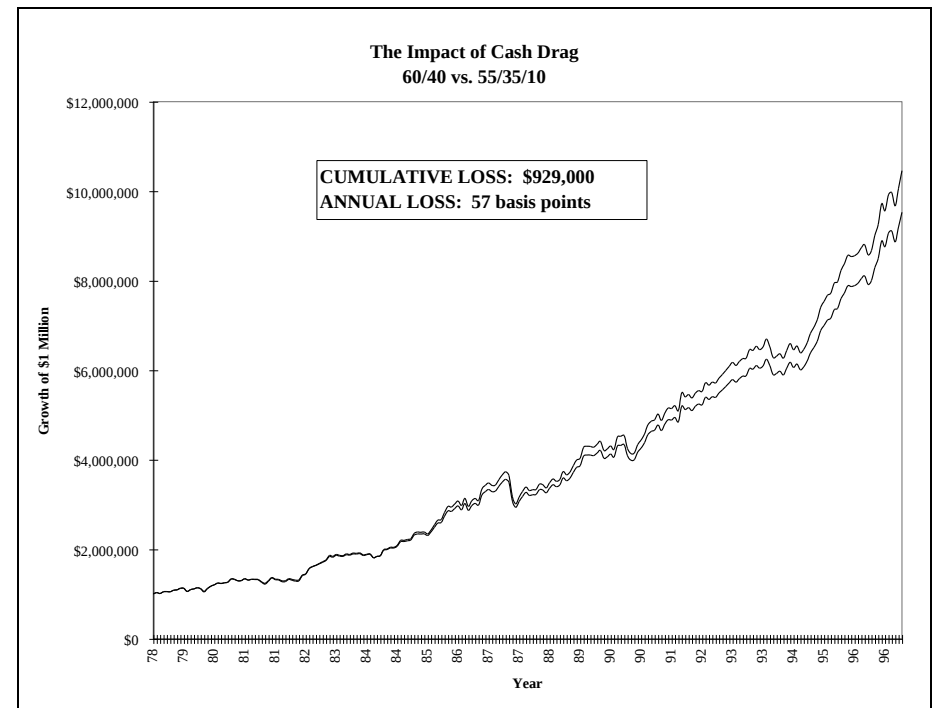
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The Perils of Cash Drag

ALL EQUITY



BALANCED



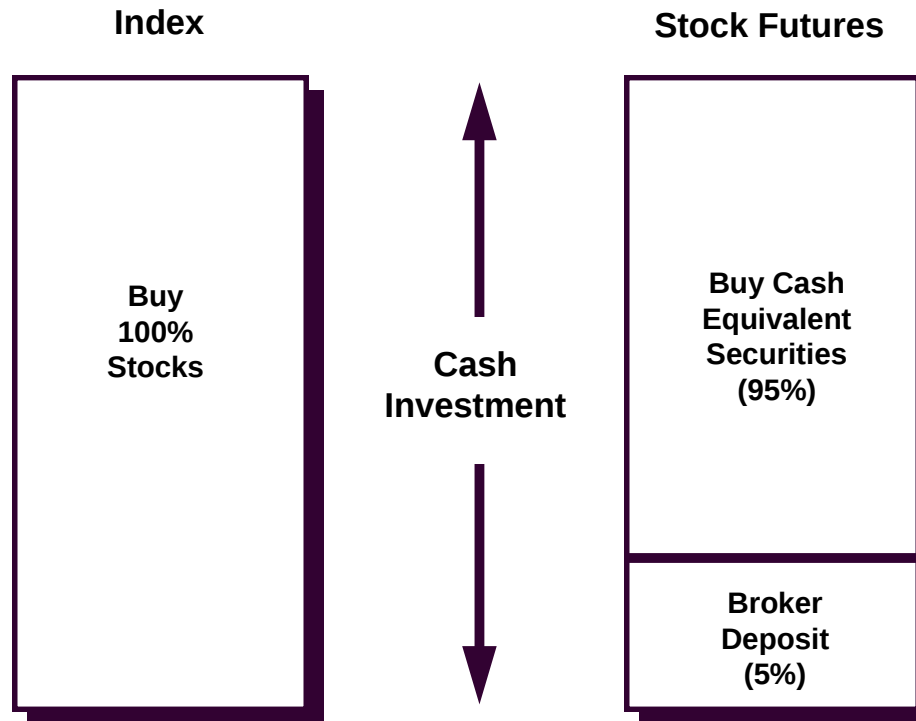
Options for Eliminating Cash Drag

- **Replace the manager with an index fund**
 - Transition Costs
 - Lose the Active Manager's Value-Added
- **Force the manager to invest the cash**
 - Cash is the Basis of Active Management
 - Cash May be Needed for Meeting Payments
- **“Equitize” cash held at custodian**
 - Full Benchmark Can Be Achieved
 - No Single Manager Loses Their Ability to Add Value

How Futures Track Indices

Exposure to an index can be achieved either by:

- Purchasing the Index
- Going Long Futures and Buying T-Bills



The Futures Roll

- **Futures must be “rolled” periodically**
 - Expirations are usually less than one year
 - Front month has the most liquidity
- **The roll does not have to be a cost**
 - The roll should trade at “fair value”
 - Fair value implies the roll will not ultimately be a cost
- **Proper management of the roll is necessary**
 - Deviations from fair value lead to tracking error
 - A good manager can minimize tracking error to < 25 bps per year.

Factors Affecting The Futures Roll

- **Interest Rates**

- Interest rates, especially the shape of the yield curve, affect the price of the roll. The steeper the curve the more “expensive” the roll relative to the nearby futures contract.

- **Dividend Yields and Timing**

- Dividend yields and particularly the *timing* of cash flows can affect the roll price, especially if the roll occurs before or after a significant change in expected cash flow.

- **Supply and Demand**

- A long roll involves selling the nearby contract and buying the further contract. If there are a large number of players rolling at the same time supply pressures can affect the roll price.

- **Ease of Arbitrage**

- Futures that are easily arbitragible against their underlying asset or basket remain closer to fair value during the roll.

Why Not Replace Cash Drag With Global Returns?

- **Diversification**

- Adding less correlated markets offers opportunity for risk reduction.

- **Return Enhancement**

- Foreign markets offer passive levels of return not available in the US without leverage or active trading.

- **Liquidity**

- While not as liquid as the US, many foreign markets offer more than sufficient liquidity for the average institutional trade.

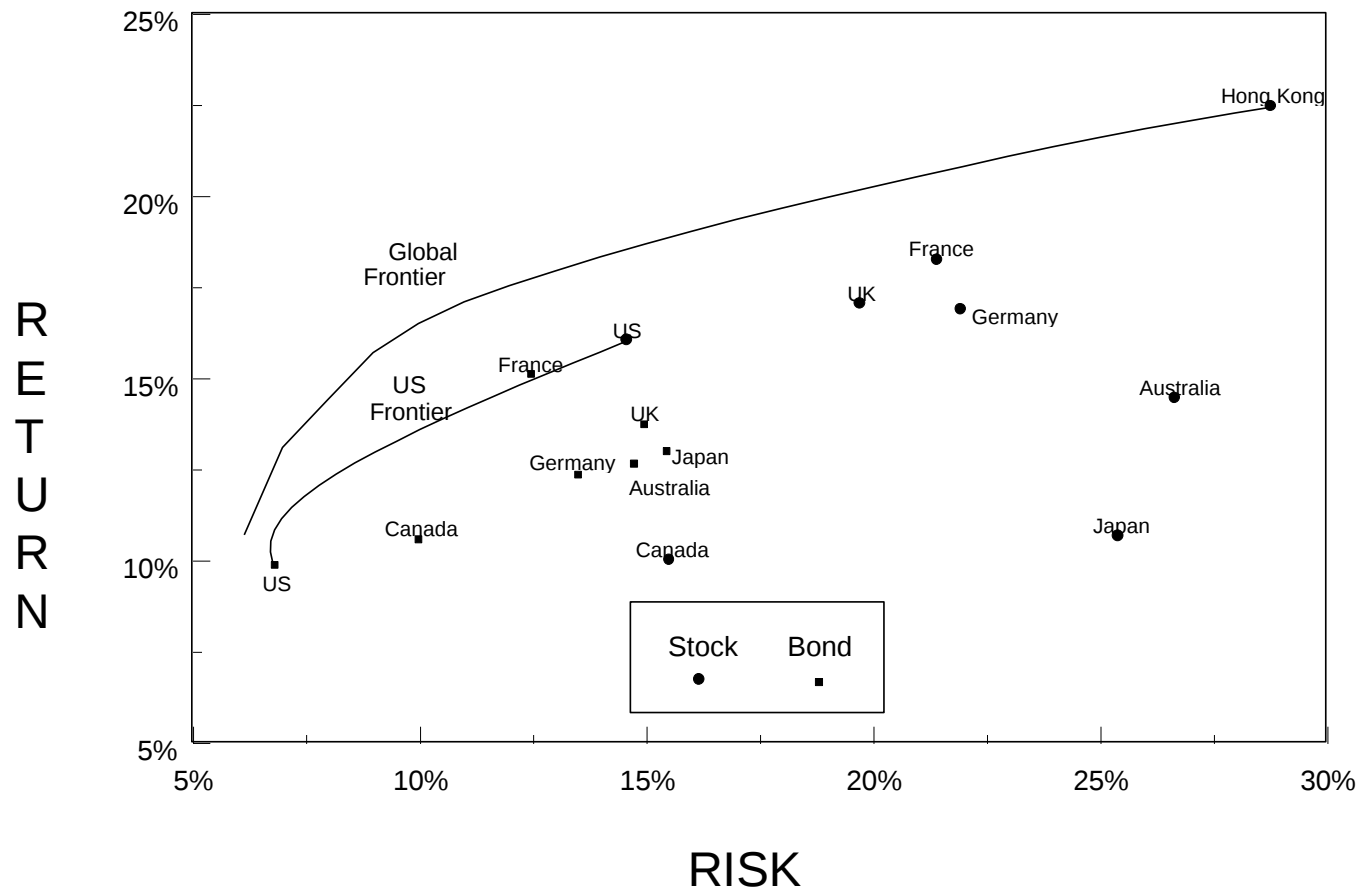
- **Currency Management**

- Use of foreign markets offers an additional investment lever: the degree of hedging in the appropriate currencies.

Global Investing Expands Return Opportunities

Expanding the Efficient Frontier Via International Investing

based on countries with active stock and bond futures



Advantages of Futures in Global Investing

- **Liquidity**

- Futures contracts are more liquid (lower bid/ask spread and less market impact when traded) than WEBS or the cash market.

- **Cost**

- Holding a futures basket incurs fewer costs than holding WEBS and is comparable to holding cash securities.

- **Tax Implications**

- Futures holders do not pay foreign withholding tax on dividends, yet can capture much of the dividend through the equitization process.

- **Maintenance**

- Index maintenance is kept to a minimum. Constant reinvestment of coupons and dividends. Rebalancing for index changes is not required.

Advantages of Futures in Global Investing (Cont.)

- **Capitalization**

- Stock index futures cover over 80% of MSCI's EAFE, while bond futures track the primary benchmark bond in each country.

- **Leverage**

- Cash equitization does not require leverage, although leverage can be used to enhance index returns if desired.

- **Fully Hedged**

- Futures are automatically hedged back to base currency.

Liquidity of Futures vs. Cash Equity Markets

Dollar Volume of Daily Equity Market Trading			
Market	Cash Index	Futures	Options
S&P500	18,432*	25,846	14,548
TSE 35	876	59	21
FTSE 100	2,087	2,065	1,566
CAC 40	776	1,625	934
DAX	2,367	3,519	1,742
IBEX 35	336	321	115
MIB 30	403	992	189
Nikkei (all exch.)	3,807	9,182	3,076
Hang Seng	833	1,330	329
All Ords	544	340	151

*Figures are US dollar average daily volume, in millions - courtesy of Morgan Stanley research.

Currency Hedging Considerations

- **Single Currency Margin**

- Despite multiple global markets, futures accounts can be maintained in a single currency (e.g., the US dollar).

- **Foreign Currency Exposure**

- Holding foreign futures contracts through a single currency margin automatically creates a fully hedged position back to the units of the single currency.

- **Meeting the Benchmarks**

- Most international benchmarks (e.g. EAFE) are unhedged. A futures based Global Index Program can be returned to an unhedged state via Currency Futures or Multiple Currency Margining.

- **Regaining Currency Exposure with Futures**

- Any degree of currency hedge can be established through the passive use of long currency futures with the Global Index Program.

Remember the Three D's

DRAG ELIMINATION

DERIVATIVES ARE MORE EFFICIENT

DIVERSIFY INTERNATIONALLY

The Futures Roll

An Example - The S&P 500 Futures Roll

HYPOTHETICAL CASH MARKET ASSUMPTIONS	
Roll Date	S&P 500 Level
5/20/97	841.66

HYPOTHETICAL FUTURES MARKET ASSUMPTIONS					
Futures Contract Expiration Month	Futures Contract Expiration Date	Days to Expiration	Interest Rate to Expiration	S&P 500 Dividend Yield	Futures Contract Market Price
Front Month: Jun 97	6/19/97	30	5.65%	1.85%	844.55
First Nearby: Sep 97	9/18/97	121	5.80%	1.85%	853.10

$$\hat{F}_{\text{Jun}} = 841.66 \times \left(1 + \frac{(0.0565 \times 30)}{360} - \frac{(0.0185 \times 30)}{360} \right) = 844.33$$

$$\hat{F}_{\text{Sep}} = 841.66 \times \left(1 + \frac{(0.0585 \times 121)}{360} - \frac{(0.0185 \times 121)}{360} \right) = 852.83$$

$$\begin{aligned} \text{ROLL} &= \hat{F}_{\text{Sep}} - \hat{F}_{\text{Jun}} \\ &= 852.83 - 844.33 \\ &= 8.50 \end{aligned}$$

$$\therefore \left[\text{ROLL}_{\text{theoretical}} = 8.50 \right] \approx \left[\text{ROLL}_{\text{actual}} = 8.55 \right]$$