Investing For The Long Run:
Capturing the Last Pension Investment Frontier

International Pension Conference of Montreal
2016 06 13

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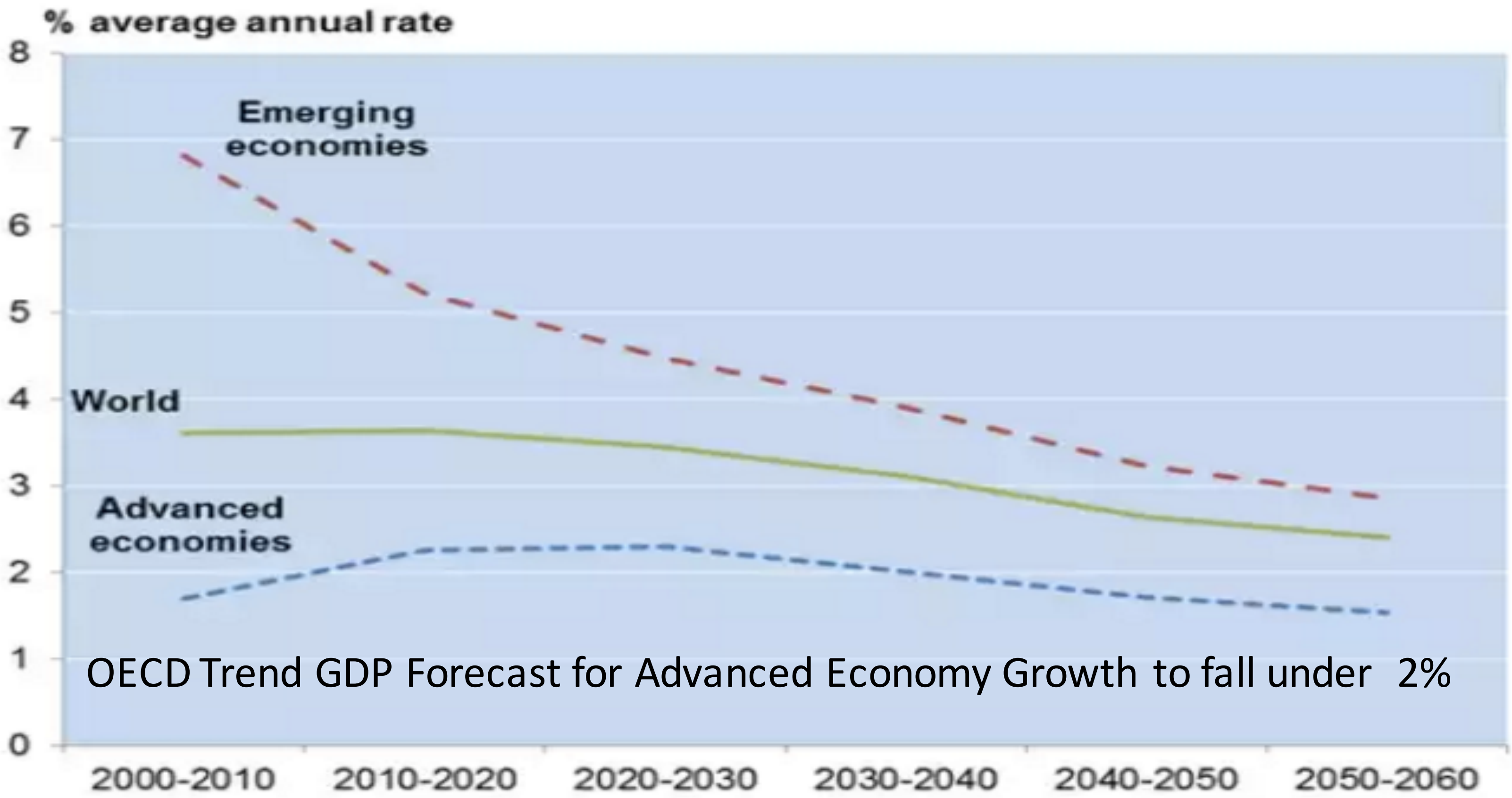
Main Points

- Investment returns alone cannot compensate for 4-fold increase in cost of funding pensions
- Low growth “New Normal” returns are not inevitable
- We can build a better future by faster adoption of new technology and social infrastructure
- Pension managers can help + increase pension returns by monetizing value of stable, LT capital
- Must overcome resistance to change from companies, pension boards, managers, clients and regulators

1990-2015 Shifts in Asset Allocation and Pension Management Efficiency

- **Larger allocations to Real Estate, Infrastructure, Private equity, Timber, has added to returns**
  - But allocated capital has grown faster than good opportunities
- **Internal management can add >0.5% to net return reducing costs of building a pension by about 10%**
  - 0.5% matters when expected 60% stock - 40% bond real pension return is about 4%
  - Internal management saves 50% on cost of managing stocks and bonds
  - Reduces unit cost of managing most other asset classes by ~75%
  - E.g. AIMCo: 40% of budget goes to 80% of assets internally managed
60% of budget goes to 20% of assets externally managed
- **The biggest under-exploited pension advantage: monetizing ability to provide stable long-term capital**

Future “New Normal” Low Growth Reflects Underestimation of Historical GDP Growth



OECD Trend GDP Forecast for Advanced Economy Growth to fall under 2%

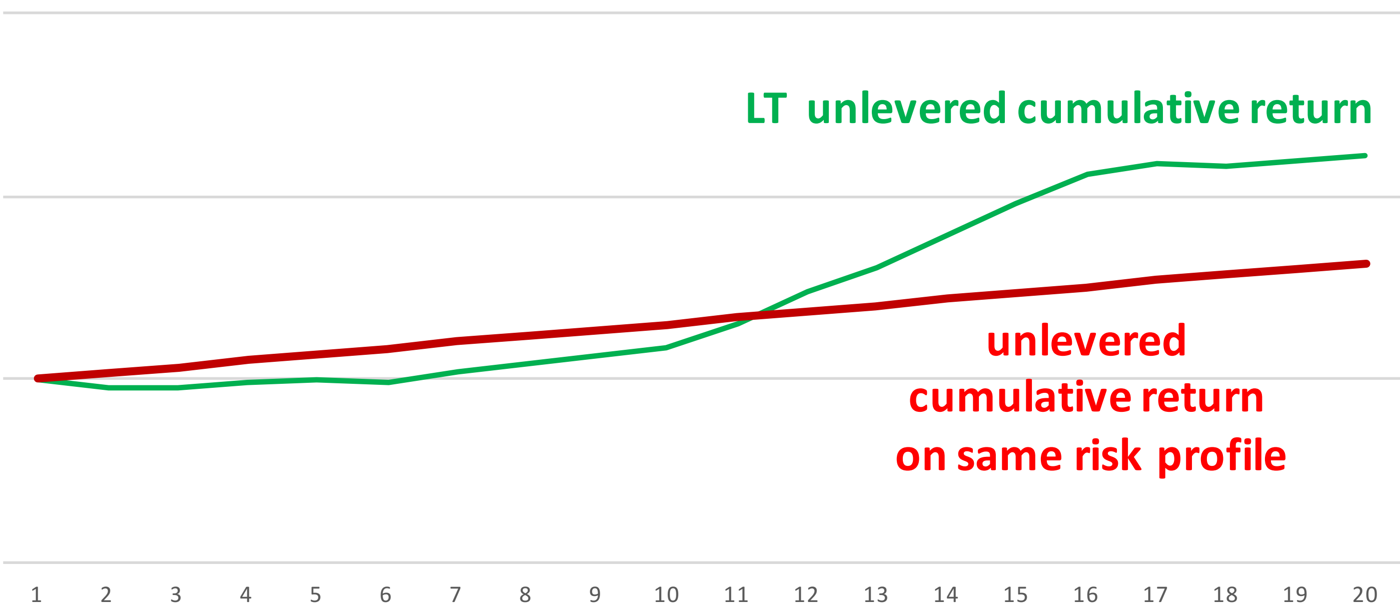
Low Growth "New Normal" is in Part a Statistical Artifact

- **GDP methodology has trouble valuing outputs in fastest growing industries**
  - Output of stuff we can touch is reasonably well measured
  - Service output often measured by inputs – hard to get productivity
  - **It severely understates the value of ideas, intangibles, e.g. the information value of a Google search, the quality of medical care, better communications**
- **GDP numbers have been too low by ~0,5%/year for some time**
  - Martin Feldstein estimates cumulative effect on income level estimates at ~10%
  - Inflation likely overstated by the same %: technological change is deflationary
- **As historical productivity is revised upwards, future productivity forecasts will be increased as well**

Technological Change is Accelerating

- **Never have so many people had access so fast to so much of human knowledge at such a low cost**
- **Smaller minimum efficient scale**
  - Allows for quick prototyping and design improvement, reducing risk of cost overruns
  - Design once, build many: cost benefits come from mass production, not equipment size
- **Modular: can be built where costs are lowest**
- **Mobile: can be put anywhere, for as long as needed**
  - Making it mobile also means it can be leased instead of owned
- **Often combines the profitable and the desirable**
  - Including environmentally desirable
- **Some changes can be adopted quickly, some have long development phase and sizeable capital needs**

Long Term Investing:
Trade-off Between LT and ST Return



Long-term investing consists of investments
that cannot be replicated with a sequence of short-term investments

Opportunities for LT Investors

- **Commercializing new technology with long lead time**
  - Clean and Cleaner energy technology
  - Water treatment and conservation
  - More efficient and environmentally friendly energy extraction and upgrading
- **Expediting adoption of new technologies**
  - Social cost of delaying productive technologies is high
  - Private return on delay of change can be high as well
- **Upgrading social infrastructure**
  - What we have may not be what we need going forward

Perils of Long Run Investing

"[I]t is the long-term investor, he who most promotes the public interest, who will in practice come in for most criticism, wherever investment funds are managed by committees or boards or banks.

For it is in the essence of his behaviour that he should be eccentric, unconventional and rash in the eyes of average opinion.

If he is successful, that will only confirm the general belief in his rashness; and if in the short run he is unsuccessful, which is very likely, he will not receive much mercy.

Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally"

John Maynard Keynes

Impediments To Be Overcome

- Resistance of corporations invested in old technology
- Funding vehicles incompatible with investment horizon
- Re-designing short-term personal reward systems
- Reluctance of Pension Boards to follow strategies that pose headline, reputation, or personal liability risk
- Finding ways to source opportunities that start out small but could grow to be large
- Change Regulation to fit changing social objectives

In a Nutshell

Forecasts are the shadows of things that may be;
They are not the shadows of the things that have to be

We can imagine a better future
and set out to make it reality

Long-term pension and endowment capital
can invest in that future at an attractive return,
if it learns to take some new risks

We miss 100% of the shots we do not take
It's time to take more shots