NEXT GENERATION INVESTMENT STRATEGIES FOR RISK POOLS

DAN SMERECK, MANAGING DIRECTOR
WHY INVESTMENT MATTERS FOR RISK POOLS?
PURPOSE

- INVESTMENT INCOME:
  - IS A CORNERSTONE TO THE RISK TRANSFER BUSINESS MODEL, AND MAXIMIZING INVESTMENT INCOME CAN MEAN THE DIFFERENCE BETWEEN REMAINING COMPETITIVE OR LOSING MEMBERS TO AGGRESSIVE PRICING.

- HOW MUCH CAN YOU EXPECT TO EARN?

- HOW MUCH RISK ARE YOU WILLING TO PRUDENTLY TAKE?
APPROACH

• INVESTMENT PERFORMANCE OBJECTIVES:

Where do you fall on this objective continuum and why?

- Book yield ‘or’ Income Only
- Constrained Total return
- Most Risk Pools & Insurers
- Total return
WHAT IT TAKES TO EARN 7.5% ANNUALIZED

<table>
<thead>
<tr>
<th>Year</th>
<th>Allocation of Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>100%</td>
</tr>
<tr>
<td>2005</td>
<td>51% Bonds, 24% US Large Cap, 10% US Small Cap, 5% Non-US Equity, 10% Real Estate</td>
</tr>
<tr>
<td>2015</td>
<td>30% Bonds, 30% US Small Cap, 15% US Large Cap, 5% Non-US Equity, 10% Real Estate</td>
</tr>
<tr>
<td>2017</td>
<td>23% Bonds, 30% US Small Cap, 15% US Large Cap, 5% Non-US Equity, 10% Real Estate</td>
</tr>
</tbody>
</table>

Legend:
- Bonds
- US Large Cap
- US Small Cap
- Non-US Equity
- Real Estate
- Private Equity
WHAT TO **EXPECT** TO EARN **7.5% ANNUALIZED**
INCOME VS. PRICE RETURN

Monthly Price & Income Return for 10Yr U.S. Treasury

- Price Return
- Income Return
YIELD + PRICE = BOND RETURNS

Total Return = Price + Income

- 1990-1999: 96.75%
- 2000-2009: 90.64%
- 2010-2018*: 110.08%

*The income return for the 2010-2018 period is not explicitly shown in the chart.
REGULATORY REGIMES

• FLEXIBLE VS. INFLEXIBLE
• REGULATED VS. UNREGULATED
• OPPORTUNITY COSTS & IMPLICATIONS
FLEXIBLE VS. INFLEXIBLE

**INFLEXIBLE**
- U.S. TREASURY BONDS/NOTES
- U.S. AGENCY BONDS
- FDIC INSURED CDS

**FLEXIBLE**
- ALL “INFLEXIBLE” ITEMS PLUS:
  - INVESTMENT GRADE CORPORATE BONDS
  - MORTGAGE BONDS
  - ASSET-BACKED BONDS
  - HIGH YIELD BONDS
  - EQUITIES
  - INSURANCE REGULATIONS
ORSA IS COMING FOR YOU...

ORSA = “Own Risk & Solvency Assessment” Testing - NAIC
## OPPORTUNITY COST - INCOME

<table>
<thead>
<tr>
<th>Portfolio Size</th>
<th>1 Year</th>
<th>3 Years</th>
<th>5 Year</th>
<th>10 Year</th>
<th>20 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US Treasury 1-3 Year</strong></td>
<td>$1,540,000</td>
<td>$1,591,595</td>
<td>$2,524,493</td>
<td>$5,615,092</td>
<td>$37,370,882</td>
</tr>
<tr>
<td><strong>Barclays U.S. Aggregate</strong></td>
<td>$2,645,000</td>
<td>$2,904,493</td>
<td>$6,763,842</td>
<td>$22,043,547</td>
<td>$75,525,857</td>
</tr>
<tr>
<td><strong>Additional Income</strong></td>
<td>$1,105,000</td>
<td>$1,312,898</td>
<td>$4,239,349</td>
<td>$16,428,455</td>
<td>$38,154,975</td>
</tr>
<tr>
<td><strong>85% Barclays Aggregate / 15% S&amp;P 1500</strong></td>
<td>$3,215,000</td>
<td>$5,951,673</td>
<td>$10,628,195</td>
<td>$35,326,303</td>
<td>$87,027,421</td>
</tr>
<tr>
<td><strong>Additional Income</strong></td>
<td>$1,675,000</td>
<td>$4,360,078</td>
<td>$8,103,703</td>
<td>$29,711,211</td>
<td>$49,656,539</td>
</tr>
</tbody>
</table>
Manager vs Benchmark: Standard Deviation
May 1999 - April 2019 (not annualized if less than 1 year)
CAPITAL MARKET CONDITIONS
INTEREST RATES

Central Bank Policy Rates

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>1-Mo. Ago</th>
<th>12-Mo. Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Federal Reserve</td>
<td>2.50%</td>
<td>2.50%</td>
<td>1.75%</td>
</tr>
<tr>
<td>BOE</td>
<td>0.75%</td>
<td>0.75%</td>
<td>0.50%</td>
</tr>
<tr>
<td>BOJ</td>
<td>-0.10%</td>
<td>-0.10%</td>
<td>-0.10%</td>
</tr>
<tr>
<td>ECB</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Market Expectations for Future Central Bank Rates

- **U.S. Federal Reserve:**
  - 3M: 2.33%
  - 6M: 2.25%
  - 1Y: 2.07%
  - 2Y: 1.87%
  - 3Y: 1.89%

- **BOE:**
  - 3M: 0.72%
  - 6M: 0.71%
  - 1Y: 0.70%
  - 2Y: 0.81%
  - 3Y: 0.90%

- **BOJ:**
  - 3M: -0.08%
  - 6M: -0.09%
  - 1Y: -0.14%
  - 2Y: -0.15%
  - 3Y: -0.14%

- **ECB:**
  - 3M: -0.40%
  - 6M: -0.41%
  - 1Y: -0.41%
  - 2Y: -0.32%
  - 3Y: -0.14%
### World Trade Volume

Year-over-year, % change, 3-month moving average, monthly

- **Average:** 5.1%
- **Oct. 2018:** 3.7%

### Exports as a Share of GDP

Goods exports, 2017

<table>
<thead>
<tr>
<th>Country</th>
<th>U.S.</th>
<th>EU</th>
<th>EM ex-China</th>
<th>China</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td>19%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td></td>
<td></td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td></td>
<td>36%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td>36%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48%</td>
</tr>
<tr>
<td>Taiwan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>55%</td>
</tr>
<tr>
<td>U.S.</td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>Eurozone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
</tr>
<tr>
<td>UK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25%</td>
</tr>
</tbody>
</table>
TRENDS TO CONSIDER
INVESTMENTS ARE PEOPLE-DRIVEN
HISTORICAL GAME CHANGERS

1) THE RISE OF MECHANICAL POWER
2) THE ADVENT OF ELECTRICITY & COMMUNICATION
3) THE DIGITAL AGE & DEVELOPMENT OF MODERN COMPUTING
4) NOW – BUILDING & EXTENDING THE IMPACT OF DIGITIZATION IN NEW AND/OR UNANTICIPATED WAYS

Source: World Economic Forum
HARD TRENDS – GLOBAL

1) DEMOGRAPHIC
2) GOVERNMENT REGULATION
3) TECHNOLOGY
GLOBAL HARD TREND #1 - DEMOGRAPHIC

Source: Research Affiliates, LLC based on data from United Nations
GLOBAL HARD TREND #1 – GDP IMPACT

How Demographics Affect GDP Growth Around the World

Abnormal Growth in GDP per Capita

Source: Research Affiliates, LLC, based on data from the United Nations, Penn World Table and Global Financial Data.

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GLOBAL HARD TREND #2 – GOVERNMENT REGULATION

1) RENEWABLE ENERGY USE INCREASING
2) CYBER-CRIME POLICY EVOLUTION
3) ACCELERATING USE OF HIGH SPEED DATA ANALYTICS FOR AUDITING & COMPLIANCE
GLOBAL HARD TREND #3 - TECHNOLOGY

1) INCREASING USE OF MOBILE APPLICATIONS

2) INCREASING USE OF CLOUD & VIRTUALIZATION SERVICES

3) INCREASING USE OF NETWORKED SENSORS & MACHINES
TECHNOLOGY HARD TREND - FOCUS

- PROCESSING POWER
- DIGITAL STORAGE
- BANDWIDTH

120 Years of Moore’s Law

Source for Graphic: Ray Kurzweil, DFJ
 BLOCKCHAIN INNOVATION

Source: McKinsey Global Institute
GOVERNMENTAL RISK POOLING

HARD TRENDS
HARD TRENDS – RISK POOLS

• AGING WORKFORCE – KNOWLEDGE/WISDOM TRANSFER
• INCREASED RESPONSIBILITIES OF LOCAL GOVERNMENT
  • CREATIVE COVERAGE & RISK MANAGEMENT SOLUTIONS
• INCREASED USE OF TECHNOLOGY WILL EMPOWER RISK POOLS
• COLLABORATION WILL CONTINUE & ACCELERATE
HARD TRENDS – CAPITAL MARKETS

1) GLOBALIZATION CONTINUES
2) TECHNOLOGY INNOVATION CONTINUES TO AUGMENT & DISRUPT MARKETS
3) WORLD FINANCIAL LEVERAGE INCREASING
Slowbalisation

The future of global commerce
WORLD ECONOMY - $80 TRILLION

Source: VisualCapitalist.com
GLOBAL GDP GROWTH 2019

PERCENTAGE SHARE OF GLOBAL GDP PPP GROWTH (2019F)

CHINA 33%

OTHER ASIA 30%

U.S.A. 11%

REST OF WORLD 8%

MENA 4%

LATAM 3%

OTHER EUROPE 3%

EURO AREA 4%

AFRICA 2%

U.K. 1%

CANADA 1%

Source: VisualCapitalist, IMF, Standard Chartered
GLOBAL FLOWS – TRADE, FINANCE, & DATA

Global flows of trade and finance are flattening, while data flows are soaring.
GLOBALIZATION: THEN VS. NOW

<table>
<thead>
<tr>
<th>20TH CENTURY</th>
<th>21ST CENTURY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible flows of physical goods</td>
<td>Intangible flows of data and information</td>
</tr>
<tr>
<td>Flows mainly between advanced economies</td>
<td>Greater participation by emerging economies</td>
</tr>
<tr>
<td>Capital- and labor-intensive flows</td>
<td>More knowledge-intensive flows</td>
</tr>
<tr>
<td>Transportation infrastructure is critical for flows</td>
<td>Digital infrastructure becomes equally important</td>
</tr>
<tr>
<td>Multinational companies drive flows</td>
<td>Growing role of small enterprises and individuals</td>
</tr>
<tr>
<td>Flows mainly of monetized transactions</td>
<td>More exchanges of free content and services</td>
</tr>
<tr>
<td>Ideas diffuse slowly across borders</td>
<td>Instant global access to information</td>
</tr>
<tr>
<td>Innovation flows from advanced to emerging economies</td>
<td>Innovation flows in both directions</td>
</tr>
</tbody>
</table>

Source: McKinsey Global Institute
THE DEATH OF EXPERTISE

The Campaign Against Established Knowledge and Why it Matters

TOM NICHOLS

GLOBALIZATION

KNOWLEDGE, THE NEWS CYCLE & EXPERTISE
150 YEARS OF US EMPLOYMENT – BY SECTOR

World debt hits record $247 trillion

Global debt rose to a record $247 trillion in the year to the end of March, piling pressure on emerging markets. World debt has surged almost $150 trillion over the past 15 years.

**Global debt (1st quarter, US$ trillions*)**

- **2008:** Following global financial crisis, households, businesses and governments in emerging markets (EM) more than double their foreign currency borrowing.
- **2018:** After decade-long borrowing binge, EM debt hits $58.5 trillion, 84.3% of total $69.4 trillion increase since 2008.

*Source: Institute of International Finance*
GLOBAL BOND MARKET

- $109 TRILLION
- LARGEST INVESTMENT EXPOSURE FOR RISK POOLS

Source: J.P. Morgan Asset Management
U.S. BOND MARKET

Duration and yield of the Bloomberg Barclays U.S. Aggregate Index

Years (left) and yield to worst (right)

Higher duration = more sensitive to interest rates

Lower duration = less sensitive to interest rates

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Feb. 28, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (right)</td>
<td>5.01%</td>
<td>3.21%</td>
</tr>
<tr>
<td>Duration (left)</td>
<td>4.8 years</td>
<td>5.9 years</td>
</tr>
</tbody>
</table>

Source: J.P. Morgan Asset Management
GLOBAL EQUITY MARKET

- Emerging Markets: 27%
- Other Developed Markets: 11%
- Japan: 7%
- EU 28: 17%
- US: 38%

$85 TRILLION

Source: World Federation of Exchanges, SIFMA
INVESTMENT MANAGEMENT
HARD TRENDS
HARD TRENDS – INVESTMENT MANAGEMENT

1) ROBO-ADVISOR & ARTIFICIAL INTELLIGENCE
2) RISE OF PASSIVE INVESTING & FALLING FEES
3) LOOKING BEYOND CONVENTIONAL INVESTMENT OPPORTUNITIES (I.E. ESG, ALTERNATIVES...)
4) EVOLUTION OF ADVICE/EDUCATION/SERVICE MODEL
5) LOWER EXPECTED RETURNS...
PASSIVE INVESTING

2007

9% Index mutual funds
6% Index ETFs
85% Actively managed mutual funds

2007 total net assets: $9.5 trillion

2017

18% Index mutual funds
17% Index ETFs
65% Actively managed mutual funds

2017 total net assets: $19.2 trillion

Source: Investment Company Institute
THE WORLD AS 100 PEOPLE – ESG INVESTING?

The World as 100 People

In 2006, only 1 person out of 100 would have had a college education, today that number has jumped to 7.
Primary Education: Male 78%; Female 76%
Secondary Education: Male 66%; Female 63%

48 People would live on less than 2 US dollars per day

86 Would be able to Read & Write
14 Would be unable to Read or Write

25 People are Aged between 0-14
66 People are Aged between 15-64
9 People are Aged between 65+

If the world were 100 people 1 would be starving, but in a world of 7.5B people 75,000,000 are starving.

77 Would have a place to shelter
23 Would be living in inadequate shelter

30 People would have access to the internet
70 People cannot access the internet

7 Would have a college degree
93 Would not

87 Would have access to safe drinking water
13 Would not

60 People would live in Asia
9 People would live in South America
16 People would live in Africa
9 People would live in North America
10 People would live in Europe

Data Source: http://www.100people.org/
Icons: http://www.iconfinder.com/
IMPLICATIONS FOR RISK POOLS
RETURNS – TIME HORIZON

1972-2018
• 100% US STOCKS +10.40%
• 100% US FIXED INCOME +5.80%
• 50% / 50% +8.47%

2000-2018
• 100% US STOCKS +6.11%
• 100% US FIXED INCOME +4.64%
• 50% / 50% +5.88

Source: Portfolio Visualizer
RETURN/RISK EXPECTATIONS

Source: Research Affiliates
Risk Asset Allocation - % of Total Portfolio

<table>
<thead>
<tr>
<th>Risk Assets %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max</td>
</tr>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Average</td>
</tr>
</tbody>
</table>
NOW WHAT?
CONSIDERATIONS

• HOW IS YOUR INVESTMENT PROCESS ADDRESSING THESE TRENDS?
  • ASSET ALLOCATION
  • ENTERPRISE RISK MANAGEMENT MODELING VS. CULTURE
  • BOARD/STAFF EDUCATION
    • (DATA VS. INFORMATION VS. KNOWLEDGE)
  • INVESTMENT POLICY FLEXIBILITY
CONSIDERATIONS #2

• HOW IS YOUR INVESTMENT PROCESS ADDRESSING THESE TRENDS?
  • STAFFING
    • INTERNAL
    • INVESTMENT MANAGER(S)
    • INVESTMENT ADVISORS
  • INVESTMENT MANAGER TECHNOLOGY PLATFORM & FLEXIBILITY
  • INVESTMENT ACCOUNTING & REPORTING