Approaches to Risk Management for Insurers and
Pension Plans:
Scenario Planning in a Low Growth Environment

ERM Symposium – CS12
May 2, 2019 1:45 – 3 pm
Max J. Rudolph, FSA CFA CERA MAAA

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Outlier Scenario or Likely Result?

- A Low Growth World:
  Implications for the Insurance
  Industry and Pension Plans
  - Mark Alberts and Max Rudolph
  - Expected publication: imminent

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Key Takeaways

- Focus on factors causing low growth
  - High growth needs technological solutions,
    peace, trade, renewable energy, or a group to
    enter work force
- "Expected" growth is lower than historical
- Fiscal/monetary responses ineffective –
  choices have ramifications
- Insurance/pension - assets, premiums,
  mortality/morbidity/property claims levels
- Product designs will evolve

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Disciplined Thought Process

- Know your risk profile
- Learn/understand conventional solutions
- Identify gaps
- Seek out wisdom, knowledge, opinions of others (especially contrarians)
- Critically evaluate that wisdom
- Apply the best of old/new solutions
- Own your decision

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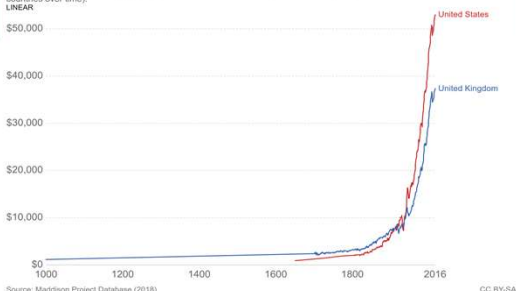

Drivers of Growth

- Productivity
  - Markets (invisible hand) and technological innovation
  - Recent innovations take a generation to increase productivity
- Population
- Ecosystem
  - Helps: biodiversity, clean environment, stable temperatures
  - Hurts: insect declines, spillover diseases, pollution, CO_2

- Advice: the economy is a complex adaptive system – look for interactions between productivity, population growth, conflict, climate, energy…

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GDP per capita

Real GDP per capita is measured using US$, inflation adjusted at prices of 2011. A single benchmark in 2011 makes these series suitable for studying the growth of incomes over time (but not for comparing income levels between countries over time).
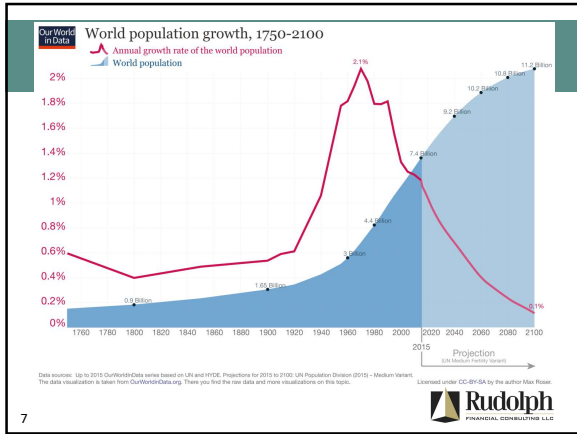LINEAR

United States

United Kingdom

$50,000
$40,000
$30,000
$20,000
$10,000
$0

1000   1200   1400   1600   1800   2016

Source: Maddison Project Database (2018)   CC BY-SA

Max Roser (2019) - "Economic Growth". *Published online at OurWorldInData.org.* Retrieved from: 'https://ourworldindata.org/economic-growth' [Online Resource]

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World population growth, 1750-2100

Annual growth rate of the world population
World population

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Demographics is Destiny

- Fewer people lowers relative GDP
  - Role of immigration, fertility rate
  - Interacts with emerging risks (e.g., conflict, pandemics, climate change is threat multiplier)
- Older population lowers relative GDP
  - Buy services
  - Spend down their nest egg

- Advice
  - Watch and learn from Japan/Europe/China

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The Rise and Fall of American Growth - Robert Gordon

- Return to pre-1700 growth rates (0.2%)
  - Third Industrial Revolution (computers) breakthroughs have been incremental rather than transformative – is he right?
  - Where are cars, electricity, lighting, refrigeration
  - One time circumstances in 1930s/1940s
- Why growth will stall
  - Females already in workforce
  - Outsourcing/gig economy
  - Education – single parents, student debt
  - Sustainability/climate – historical, future
  - Income inequality
  - Government actions – debt, stimulus
- http://www.cepr.org/sites/default/files/policy_insights/PolicyInsight63.pdf

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Economic Forecasts

- Reviewed 20 existing GDP scenarios
- Global results, split US and China
- University of Denver Pardee Center's International Futures (IFs) model
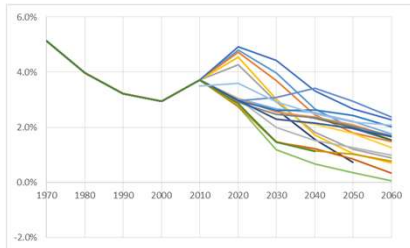 - Open access modeling platform – free!

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GDP Growth

	Historical 1960-2010	Low	Medium	High
World aggregate	3.8%	1-2%	2-2.5%	2.5-3.5%
World per capita	2.1%	0-1%	1-2%	2-3%
U.S. aggregate	3.2%	0-1%	1-2%	2-3%
U.S. per capita	2.1%	1-2.5%	1-1.5%	1.5-2%
China aggregate	8.1%	1-2.5%	2.5-3.5%	3.5-4.5%
China per capita	6.5%	1-2.5%	2.5-3.5%	3.5-4.5%

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Global GDP Growth Scenarios

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Modern Monetary Theory (MMT)

- Unlimited spending is ok
  - US$ is reserve (fiat) currency
  - Impossible to default
  - Treasury prints money as needed
  - Relies on Congress to balance spending
- Associated with progressive Democrats
  - Alexandria Ocasio-Cortez, Stephanie Kelton
  - Consistent with every administration since 2000
- Fiscal policy is the signal, monetary policy is the noise
  - Monetary policy less effective when debt > 90% GDP
  - High/hyper inflation could result

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Hillebrand-Closson Scenario Set

- 2x2x2=8 qualitative scenarios
  - Economic growth (low/high)
  - Energy prices (low/high)
  - Geopolitical relationships (low/high political harmony)
- HC4 - low growth, low energy prices, low political harmony
  - Regional mercantilism
  - Regional trading blocks, US loses role as economic leader and reserve currency, populism and state capitalism grow

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Financial Products in a Low Growth Environment

- Unknown knowns
  - Historical data is not predictive
  - Where is your company at risk? Be proactive
- De-emphasis on investment risk
  - Shift to pass through
  - Guarantees based on real rates
  - Shift to shorter term coverage – stable time horizon
  - Risk pooling instead of systemic risk (law of large numbers)
  - Previous feedback loops
    - Loan guarantees
    - Unlimited premiums
    - Credited rate guarantees
    - Variable guarantees
    - Loose contract language

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Impact on Investments

- Depends on drivers of low growth
- Environmental drivers
  - Avoid coasts (esp. Miami), ski resorts
  - Fresh water locations or just inland from Hudson Bay
- Financial drivers
  - Be wary of leverage
    - LBO, CLO, loose covenants, BBB downgrade risk
  - Alternative investments
    - Are you knowledgeable?

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My Next Project – Seeking Input

- Historical research
  - Interest rates
  - Low growth scenario
  - Emerging risk survey
  - ERM process
  - Chief Skeptical Officer
  - Was Malthus right, but early
  - Driverless investing
  - Scenario planning
  - Climate change
  - Clustering

- Next project?
  - Country CRO
  - Extending time horizons in decision making
  - Has last 70 years been humanity's peak?
  - Likely scenarios and planning for them
  - Climate change as a threat multiplier

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Thank you!
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