Global Macro Trends: Today & Tomorrow
Institute of Actuaries – 25th September 2018

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Notes from a Small Island

GDP (2017)
$3 trn
$17 trn
$80 trn

Source: IMF
The impact of four waves

- GLOBALISATION
- TECHNOLOGY
- DEMOGRAPHICS
- POPULISM

Global growth... we’ve never had it so good?

Global GDP, log scale
1800 = 1

- 1600 – 1820
  (0.3% per annum)
- 1820 – 1900
  (1.3% per annum)
- 1900 – 1950
  (2.0% per annum)
- 1950 - 2015
  (3.8% per annum)

Source: IMF, Maddison Project Database, LGIM
Driven by specialisation and trade

Globalization over 5 centuries (1500-2011)
Shown is the sum of world exports and imports as a share of world GDP (%)
The individual series are labeled with the source of the data

GLOBALISATION

Globalisation = urbanisation

<table>
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<tr>
<th>2015 Population (million)</th>
<th>2030 Population (million)</th>
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<tr>
<td>Tokyo</td>
<td>38</td>
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<td>Delhi</td>
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</table>

Source: UN Urbanisation Prospects, 2014
**The cost advantage in emerging markets is hard to ignore**

![Graph showing the cost advantage in emerging markets vs. developed markets.](image)

Source: IMF, LGIM

**Catch-up of emerging markets**

![Graph showing the GDP growth of emerging markets compared to developed markets.](image)

Source: PWC, The World in 2050
Energy… a scarce resource or a technology?

Source: Getty images

Global warming…
Massive changes needed to limit global temperature rise

Global Warming Projections

Source: https://commons.wikimedia.org/wiki/File:Global_Warming_Predictions.png
Energy mix revolution…
Has been done before…coal, wood, animals

Source: Ayres and Warr (2007)

Solar and battery prices
Trend decline in prices due to technological improvement

Source: Bloomberg New Energy Finance
Battery technology
Inverse relationship between density and price

![Graph showing Li-Ion Pricing and Energy Density, 1991-2005](http://batteryuniversity.com/learn/archive/battery_statistics)

**Source:** http://batteryuniversity.com/learn/archive/battery_statistics

Other technology prices falling too
Collapse in data storage -> big data -> AI -> autonomous driving

![Image of IBM 14-in HDD next to today's highest capacity 3.5-in HDD](http://www.computerworld.com/article/3192207/data-storage/cw50-data-storage-goes-from-1m-to-2-cents-per-gigabyte.html)

**Source:** https://www.computerworld.com/article/3192207/data-storage/cw50-data-storage-goes-from-1m-to-2-cents-per-gigabyte.html

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Disruption from falling data storage prices
Will the robots destroy all the jobs?
Nand Flash = SD card, DRAM = computer memory

Price of storage and memory costs through the years


Disruption is happening quicker?
Smartphone 4 years, computer 16 years, phone 43 years

Source: https://ourworldindata.org/technology-adoption
Don’t underestimate the potential for technological change

“There is a world market for maybe five computers”
Thomas Watson, IBM Chairman, 1943

“There’s no chance that the iPhone is going to get any significant market share”
Steve Ballmer, Microsoft CEO, 2007

Demographics – Population Pyramid Scheme
Running out of workers!

Source: UN WPP 2015
Population Pyramid Scheme – Rising life expectancy

Average life expectancy of a 20-year old (i.e. survived childhood)

- In 1908, life expectancy was BELOW pension age
- In 1940s, the gap was 7 years
- Today, the gap is 17 years

Source: ONS

More retirees than school leavers!
Net effect = shrinking domestic born workforce

Net change in domestic-born workforce (nb this excludes retiring immigrants!)

Source: ONS
UK story the same globally…
Global labour force slowing

Global labour force growth
(adjusted for age and gender productivity)

Source: OECD, UN, Macrobond, LGIM estimates

Tax and spend
Middle aged taxpayers fund children and pensioners

Source: LGIM, Macrobond, OBR
Public finances under pressure
Lower taxes and higher health/pension costs to boost deficit

Cumulative impact on public finances (% of GDP) from ageing

Global inequality has fallen due to rise of China
But developed market middle class has suffered

Source: “Global Income Distribution: From the fall of the Berlin Wall to the Great Recession” Lakner and Milanovic, World Bank Economic Review, September 2015
“An ideology that pits a virtuous and homogeneous people against a set of elites and dangerous ‘others’ who are together depicted as depriving (or attempting to deprive) the sovereign people of their rights, values, prosperity, identity, and voice”

Albertazzi & Duncan (2008), Twenty-First Century Populism
Trade war?
Let’s keep it in context

- 10% tariff on all Chinese imports is still only an average tariff of 1.7%
- CPI impact of tariffs is small but noticeable…
  - Round 1: 25% tariffs on $50bn ≈ 0.1%
  - Round 2: 10% tariffs on $200bn ≈ 0.1%
  - Round 3: 10% tariffs on $200bn ≈ 0.1%

Source: IMF, BEA, LGIM

Who needs high immigration?

Who wants high immigration?

35% of Americans described immigration as having a “very or fairly positive” impact on their country.

16% of Europeans* described immigration as having a “very or fairly positive” impact on their country.

Source: “Global Views on Immigration and the Refugee Crisis” Ipsos, Sep 2017. European data are an unweighted average of Hungary, Italy, Belgium, France, Poland, Germany, Sweden, Spain and the United Kingdom.

Source: BBC

Rise of nationalism in Europe

In many countries nationalists got higher scores in European Parliament elections and opinion polls.

Source: BBC

Last updated: June 2018
Legal & General Investment Management

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So what?

Source: LGIM