



Global Macro Trends: Today & Tomorrow

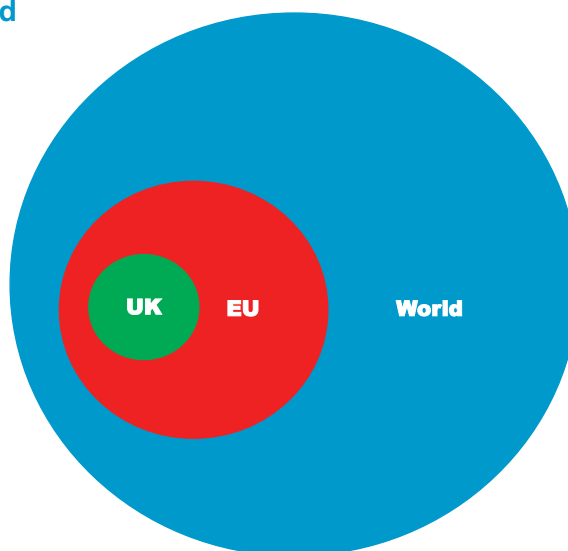
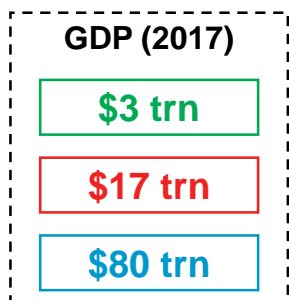
Institute of Actuaries – 25th September 2018

James Carrick, Global Economist
Chris Jeffery, Asset Allocation Strategist



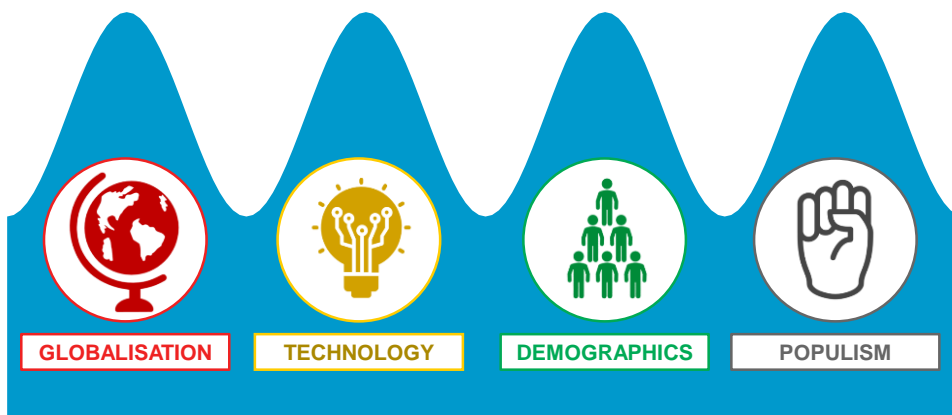
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Notes from a Small Island



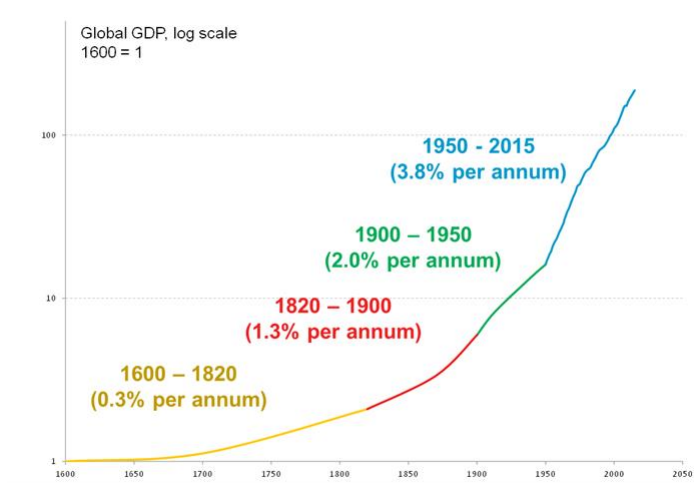
¹ Source: IMF

The impact of four waves



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



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Source: IMF, Maddison Project Database, LGIM

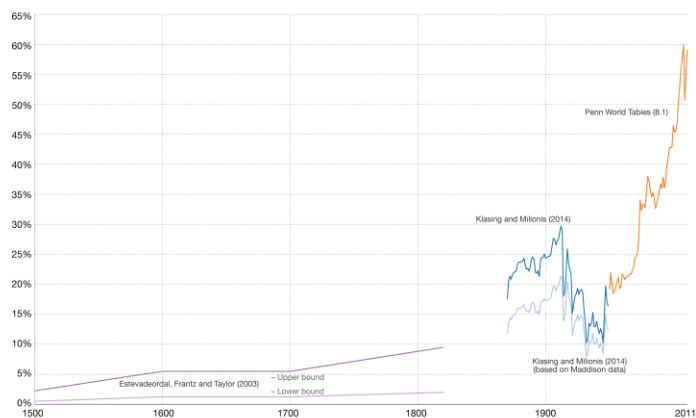
Driven by specialisation and trade



GLOBALISATION

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

Our World
in Data

Data sources: Klasing and Miloris (2014), Esteveadorral, Frantz and Taylor (2003) and the Penn World Tables Version 8.1
The interactive data visualization is available at OurWorldinData.org. There you find the raw data and more visualizations on this topic.

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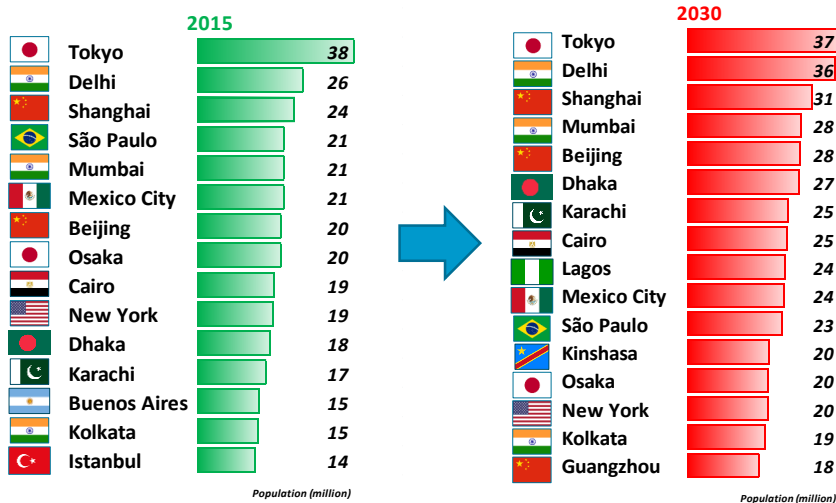
Source: https://ourworldindata.org/wp-content/uploads/2013/05/ourworldindata_world-trade-over-5-centuries.png



Globalisation = urbanisation



GLOBALISATION



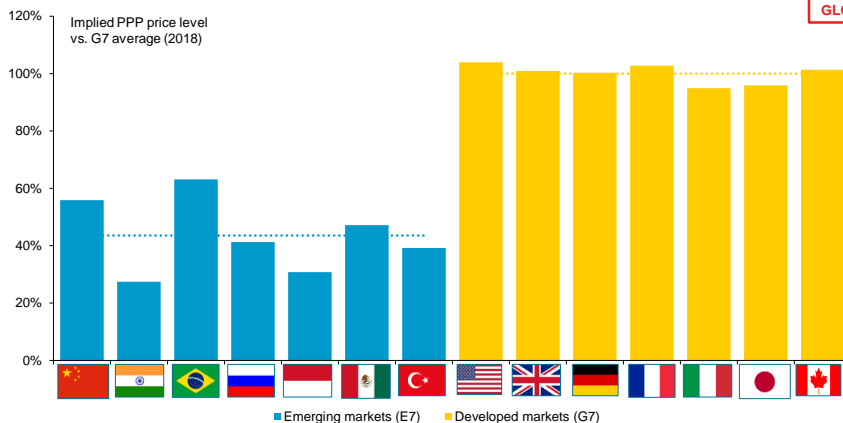
5 Source: UN Urbanisation Prospects, 2014



The cost advantage in emerging markets is hard to ignore



GLOBALISATION



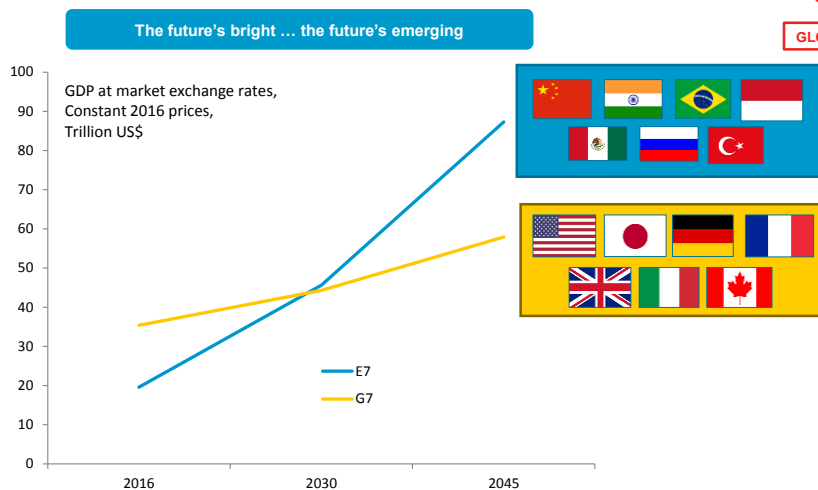
6 Source: IMF, LGIM



Catch-up of emerging markets



GLOBALISATION



7 Source: PWC, The World in 2050



Energy... a scarce resource or a technology?



TECHNOLOGY



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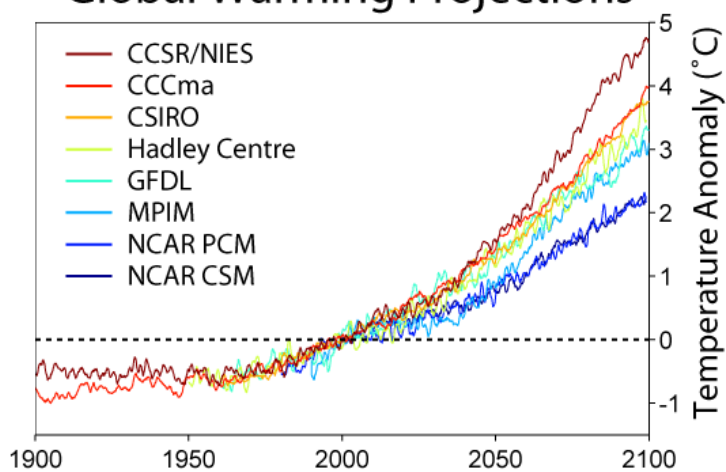
Source: Getty images

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Global warming...

Massive changes needed to limit global temperature rise

Global Warming Projections



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Source: https://commons.wikimedia.org/wiki/File:Global_Warming_Predictions.png

TECHNOLOGY

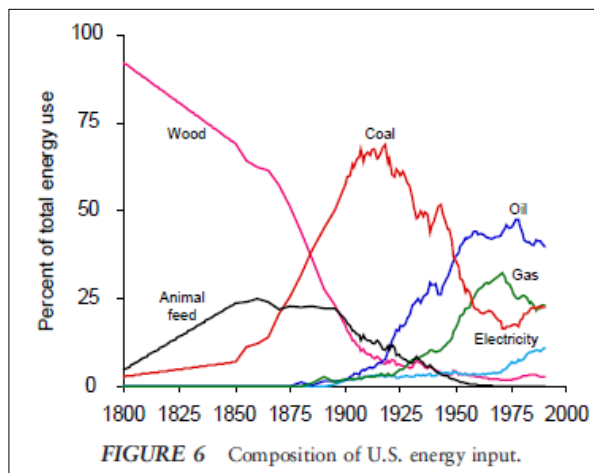
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Energy mix revolution...

Has been done before...coal, wood, animals



TECHNOLOGY



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Source: Ayres and Warr (2007)



Solar and battery prices

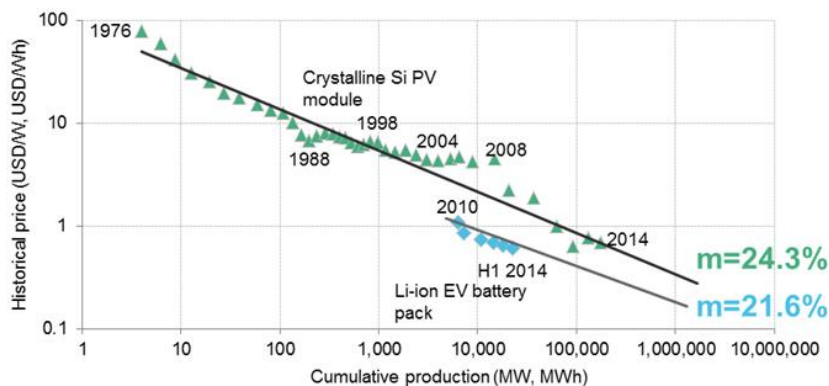
Trend decline in prices due to technological improvement



LITHIUM-ION EV BATTERY EXPERIENCE CURVE COMPARED WITH SOLAR PV EXPERIENCE CURVE

Bloomberg
NEW ENERGY FINANCE

TECHNOLOGY



Note: Prices are in real (2014) USD.

Source: Bloomberg New Energy Finance, Maycock, Battery University, MIT

Michael Liebreich, New York, 14 April 2015

@MLiebreich

#BNEFSummit

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Source: Bloomberg New Energy Finance



Battery technology

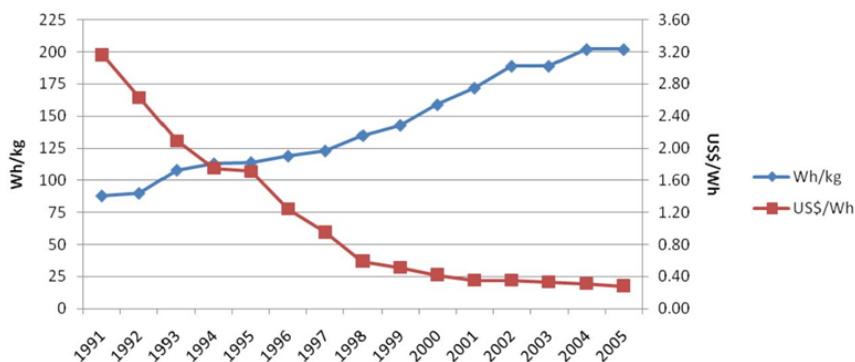
Inverse relationship between density and price



TECHNOLOGY

Li-Ion Pricing and Energy Density, 1991-2005

Adapted from Buchman (2005)



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



Other technology prices falling too

Collapse in data storage -> big data -> AI -> autonomous driving



TECHNOLOGY



An IBM 14-in HDD from the early 1980s next to today's highest capacity 3.5-in HDD. The 14-in HDD holds 200MB; the 3.5-in HDD from Western Digital holds 10TB of data or more than 50,000 times the amount of data.



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Source: <https://www.computerworld.com/article/3182207/data-storage/cw50-data-storage-goes-from-1m-to-2-cents-per-gigabyte.html>
By Grendelkhan [CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0/>)], from Wikimedia Commons

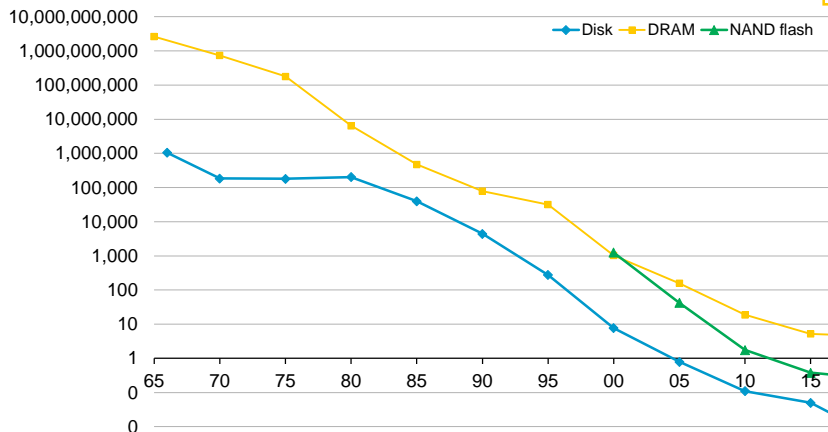


Disruption from falling data storage prices

Will the robots destroy all the jobs?

Nand Flash = SD card, DRAM = computer memory

Price of storage and memory costs through the years



TECHNOLOGY

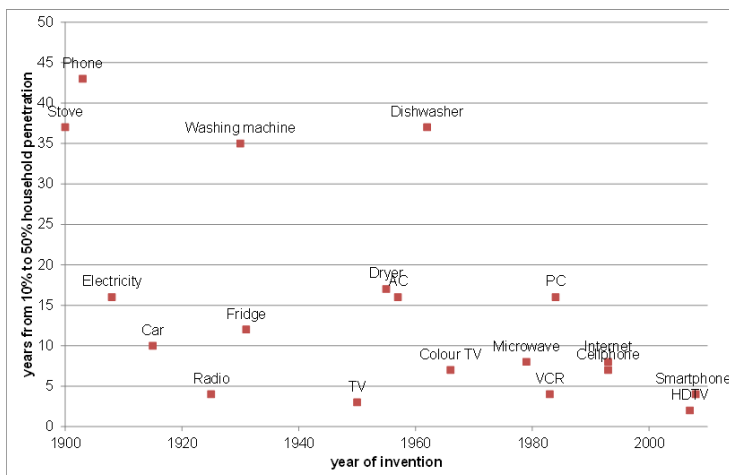
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Source: <https://www.computerworld.com/article/3182207/data-storage/cw50-data-storage-goes-from-1m-to-2-cents-per-gigabyte.html>



Disruption is happening quicker?

Smartphone 4 years, computer 16 years, phone 43 years



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Source: <https://ourworldindata.org/technology-adoption>



Don't underestimate the potential for technological change



TECHNOLOGY

“The telephone has too many shortcomings to be seriously considered a means of communication”

William Orton, Western Union President, 1876

“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

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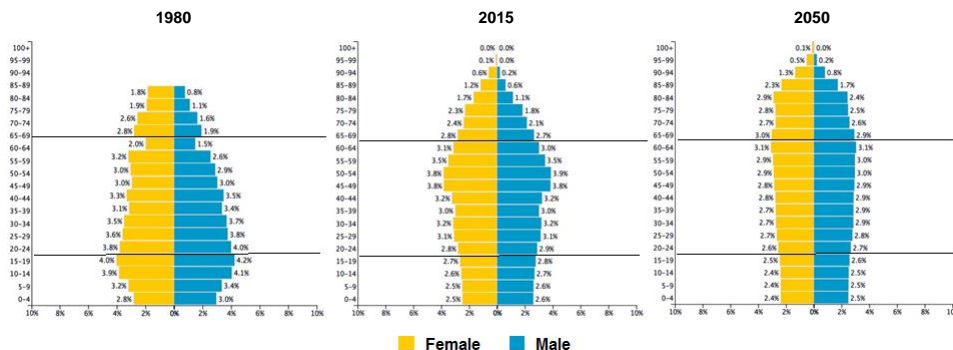
Demographics – Population Pyramid Scheme

Running out of workers!



DEMOGRAPHICS

Western Europe Population Pyramids



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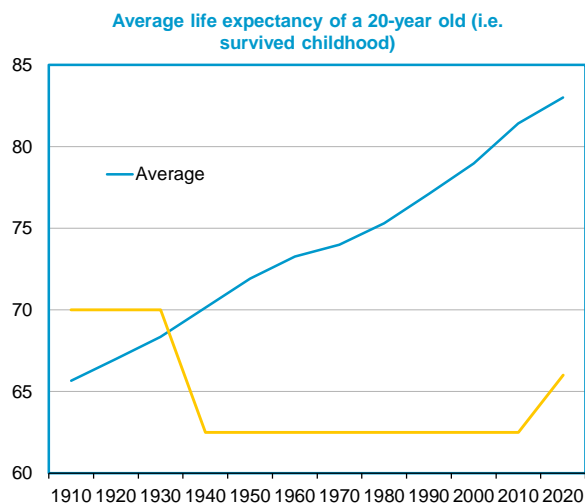
Source: UN WPP 2015



Population Pyramid Scheme – Rising life expectancy



DEMOGRAPHICS



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

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Source: ONS



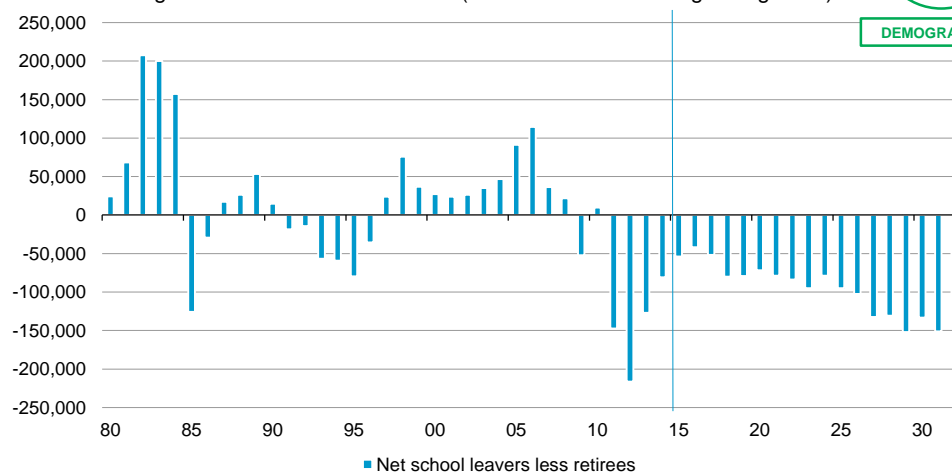
More retirees than school leavers!

Net effect = shrinking domestic born workforce

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



DEMOGRAPHICS



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Source: ONS

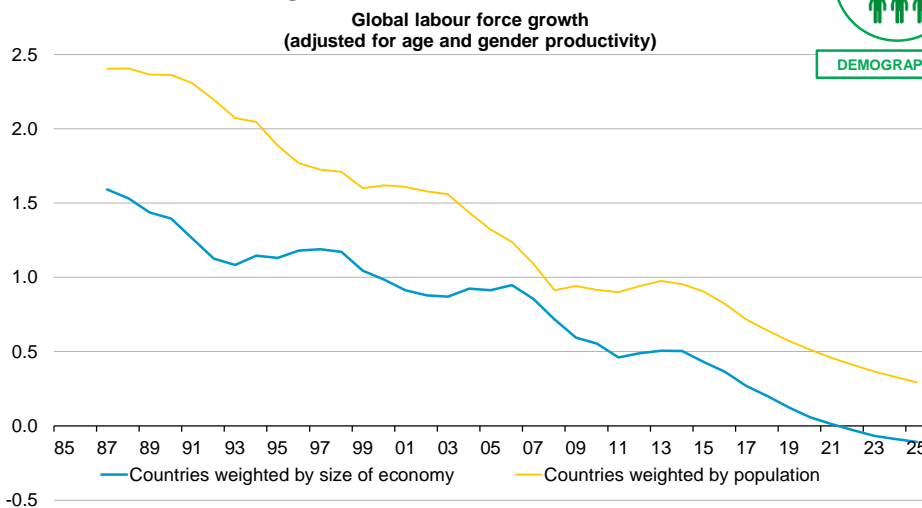


UK story the same globally...

Global labour force slowing



DEMOGRAPHICS



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Source: OECD, UN, Macrobond, LGIM estimates

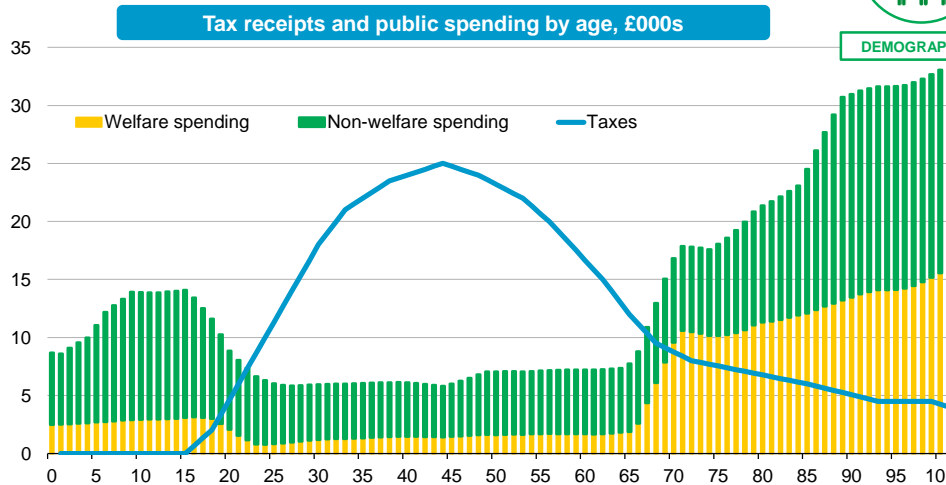


Tax and spend

Middle aged taxpayers fund children and pensioners



DEMOGRAPHICS



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Source: LGIM, Macrobond, OBR



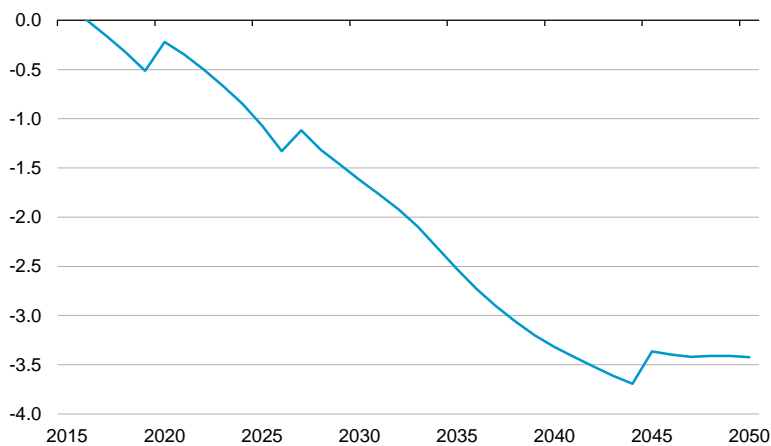
Public finances under pressure

Lower taxes and higher health/pension costs to boost deficit



DEMOGRAPHICS

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



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Source: OBR, LGIM estimates.
As at 31 August 2007.

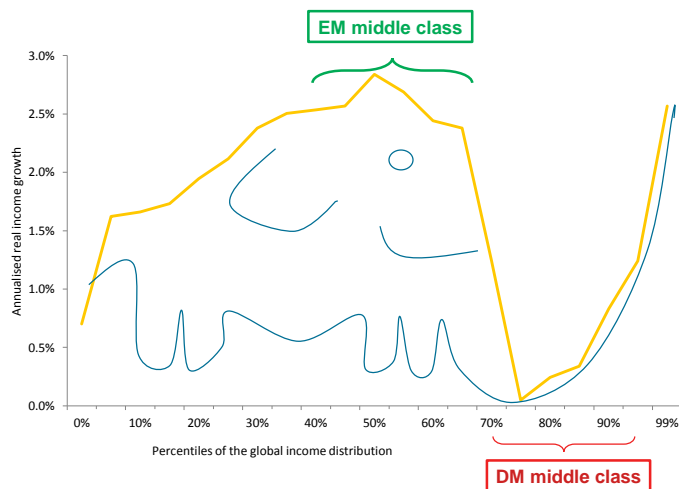


Global inequality has fallen due to rise of China

But developed market middle class has suffered



POPULISM

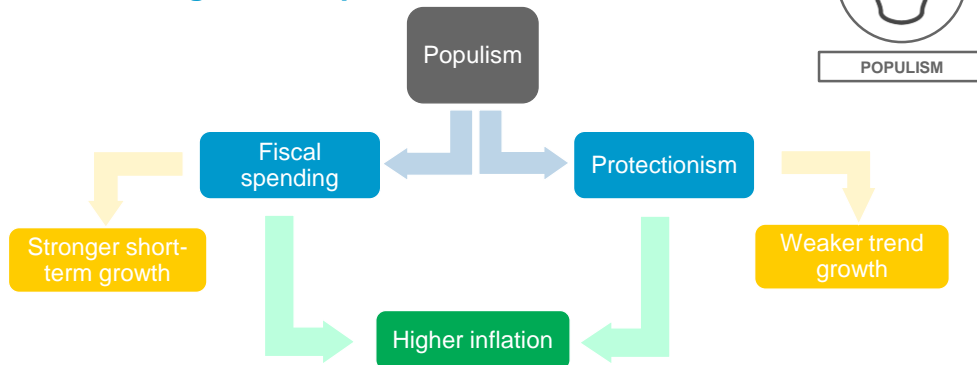


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Source: "Global Income Distribution: From the fall of the Berlin Wall to the Great Recession" Lakner and Milanovic, World Bank Economic Review, September 2015



Inflation impact of populist shift clearer than growth impact



“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”

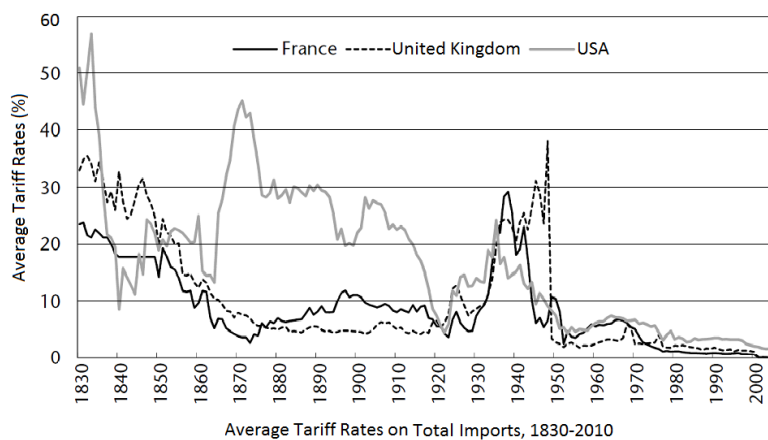
Albertazzi & Duncan (2008), Twenty-First Century Populism

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Source: LGIM



Trade war?

US often raised tariffs... but 1930s was first time we saw retaliation



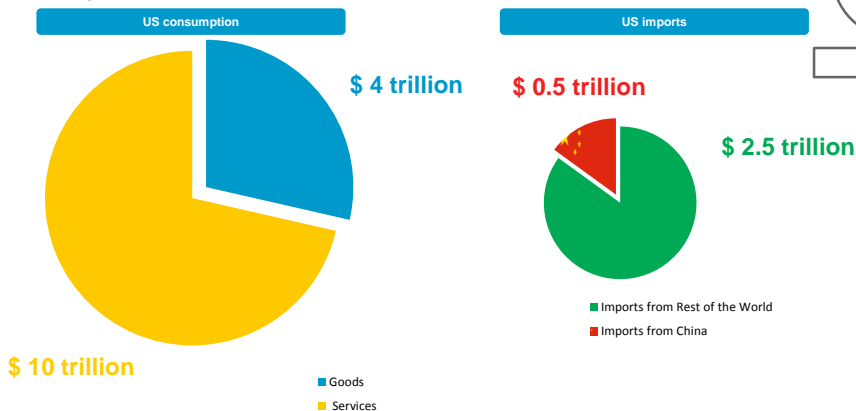
Sources: Imlah, *Economic Elements*

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Trade war?

Let's keep it in context



POPULISM

- 10% tariff on all Chinese imports is still only an average tariff of 1.7%
- CPI impact of tariffs is small but noticeable...

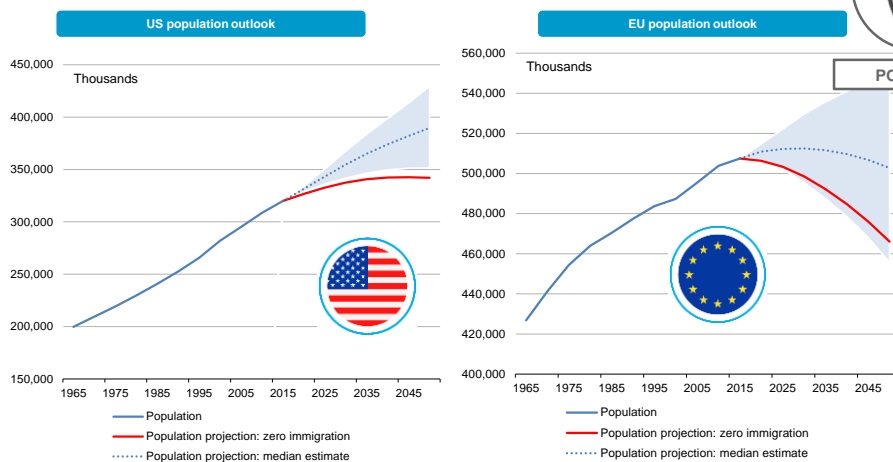
Round 1: 25% tariffs on \$50bn \approx 0.1%
 Round 2: 10% tariffs on \$200bn \approx 0.1%
 Round 3: 10% tariffs on \$200bn \approx 0.1%

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Source: IMF, BEA, LGIM



Who needs high immigration?



POPULISM

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Source: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, DVD Edition.



Who wants high immigration?



POPULISM

35%

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

16%

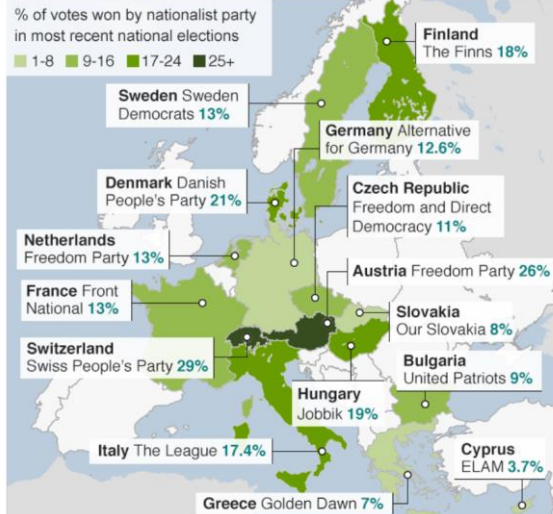
of Europeans* described immigration as having a **“very or fairly positive”** impact on their country

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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.



Rise of nationalism in Europe



In many countries nationalists got higher scores in European Parliament elections and opinion polls
Last updated: June 2018

BBC



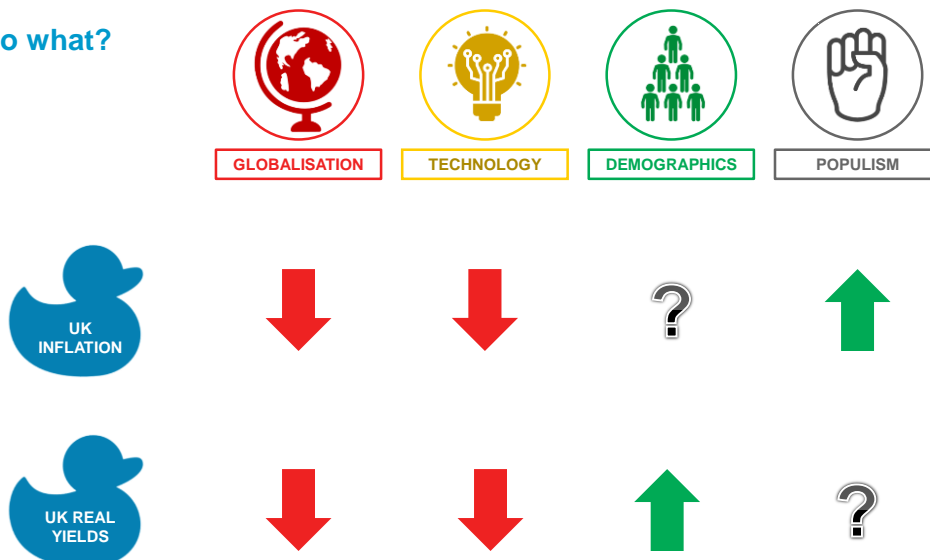
POPULISM

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Source: BBC



So what?



30 Source: LGIM



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