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Resolution Foundation

Examining an elephant

Globalisation and the lower middle class of the rich world

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Acknowledgements

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Executive Summary

The UK's vote to leave the EU has prompted a renewed debate about the winners and losers of globalisation, as have the US presidential election and proposed free trade deals across the world. Questions of how open or closed economies should be, and in particular what the right policy mix is for developed economies targeting inclusive growth, are back at the centre of political and economic thinking. Looking back, the two decades before the financial crisis were in some ways "a heyday of global trade integration" in which international trade as a share of the global economy rose dramatically. Despite a post-crisis slowdown, it remains at unprecedented levels. The accompanying increase in international competition and specialisation has produced both winners and losers. Properly understanding that impact, and the nature of any losses, is key to ensuring that the renewed debate on globalisation focuses on the right questions – let alone the right answers.

This paper aims to make a contribution to that understanding by exploring how incomes across the world have changed over this period and what conclusions we can and cannot draw from such figures. We focus specifically on the experience of low and middle income households in the developed world, because they are both the centre of much of the contemporary debate and the group the Resolution Foundation focuses on in the UK.

The elephant curve and conclusions drawn from it

Understanding the impact of globalisation requires global data. The seminal recent contribution to this debate has therefore been the impressive dataset of household incomes from across the world put together by Branko Milanovic and Christoph Lakner. Famously that data has been summarised in the so-called 'elephant curve', generating sufficient excitement to be described as possibly "the most important chart for understanding politics today"[1] and "the most powerful chart of the last decade"[2].

[1]   M O'Brien, *This may be the most important chart for understanding politics today*, The Washington Post, 13 January 2016

[2]   T Nangle quoted in L Kawa, *Get Ready to See This Globalization 'Elephant Chart' Over and Over Again*, Bloomberg, 27 June 2016

Figure 1: Replication of the Lakner-Milanovic global growth incidence curve ('elephant curve'), 1988-2008

Growth in average per capita household income of each percentile group

Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

Notes: Axis is cut off at negative 20 per cent

This curve (compared in shape to an elephant, with the trunk pointed up on the right) is a graph of how much richer each part of the global income distribution of 2008 was compared to the same part of the distribution in 1988. It is the unusual shape of the curve, and in particular what that unusual shape tells us about the winners and losers from globalisation around the turn of the millennium, that has made it so popular. Three conclusions about globalisation that have been drawn from this chart – often by commentators rather than Milanovic and Lakner themselves – are worth drawing out:

1. A boom for some: very strong income growth for the global middle class, usually attributed to China in particular, and also for the global top one per cent – described as "the global plutocrats". Overall, underpinning the argument that globalisation raises living standards in aggregate, the chart shows average income globally grew by 24 per cent over this 20 year period.

2. Income stagnation for much of the developed world: the chart shows that the parts of the global income distribution around the 80th percentile of global incomes have seen a stagnation of incomes over this 20 year period. These have been described as the "lower middle class of the rich world" including countries like the US and UK. This apparent income stagnation is the single claim that has drawn most attention to the elephant curve.

3. Inevitability: the chart shows global results across many countries and a substantial period of time. The conclusion drawn is often that these are therefore shared trends with economic destiny inevitably holding down or reducing the incomes of the working and middle class of richer nations.

These are big conclusions, with the first two underpinning the arguments of both proponents and opponents of globalisation. The focus of this paper is on whether and to what extent those conclusions are justified, by digging into the data underpinning the elephant curve and then looking in yet more detail at the experience of the UK during this time period.

Are those conclusions supported by the data underlying the elephant curve?

The significant data put together by Milanovic and Lakner has notably improved our knowledge about global income developments and global inequality in particular. But some of the claims made about what the data shows demonstrate the dangers of using this global, multi-decadal graph to draw conclusions about particular countries and particular groups within them. Policy makers and commentators looking to understand how income growth has actually been experienced risk drawing the wrong, or overly-strong, conclusions without a detailed understanding of what lies behind the elephant curve. Our analysis of the underlying data shows:

Overall income growth is understated because of changing country selection. As Milanovic and Lakner have themselves stressed, the chart is not about the income growth rates of particular people. For example, the globally poor in 1988 and those in 2008 are not necessarily the same groups of people – so growth doesn't refer to individuals. But furthermore, different countries are included in the 1988 and 2008 datasets that underpin the

elephant curve. The addition in the latter year of countries with below-average incomes drags down the growth figures significantly. Using a consistent set of countries in both years shows a global average income growth of 32 per cent, rather than 24 per cent, and slow growth, rather than stagnation, for those around the 80th percentile.

Uneven population shifts suppress the recorded income growth of parts of the global distribution. Population changes, rather than just income changes, have driven the income growth distribution in the elephant curve. Because the population of poorer countries has grown disproportionately, and the population share of mature economies has shrunk, average incomes have been dragged down. For example, if the relative populations of countries had remained as they were in 1988 (again using a consistent set of countries) then global income growth would have been 41 per cent. Crucially this 'demographic headwind' has been particularly strong around the global 70th-85th percentiles. Once we account for this, it would be hard to argue that the incomes of the developed world's lower middle class stagnated during this period, although the income growth of this part of the global income distribution still appears weak relative to other parts.

The aggregate data hides big variation between developed economies. Further exploring the apparent losers of globalisation, we find that the weak figures for the mature economies as a whole are driven by Japan (reflecting in part its two 'lost decades' of growth post-bubble, but primarily due to likely flawed data) and by Eastern European states (with large falls in incomes following the collapse of the Soviet Union after 1988). Looking only at the remaining mature economies, far from stagnation we find average real income growth of 52 per cent with strong growth across the distribution, though slightly higher at the top. And there are great differences between these nations. US growth of 41 per cent was notably unequally shared, with low (but not zero) growth for poorer deciles meaning that the US comes closest to matching the stagnation and inequality narrative – despite international trade being much less important on a national level there than elsewhere. But most people in most other rich countries experienced stronger growth. UK growth if anything appears *too* strong in this data relative to other sources, particularly for the poorest.

So while global trends are likely to have played a structural role in driving lower income growth for some groups and higher growth for others, it is clearly only one factor among many and the distribution of gains is susceptible to domestic policy choices as much as global pressures.

Figure 2: Income growth in each decile of mature economies, excluding Japan and ex-Soviet satellites / Baltics

Income growth, 1988-2008 (bubble sizes represent 1988 population)
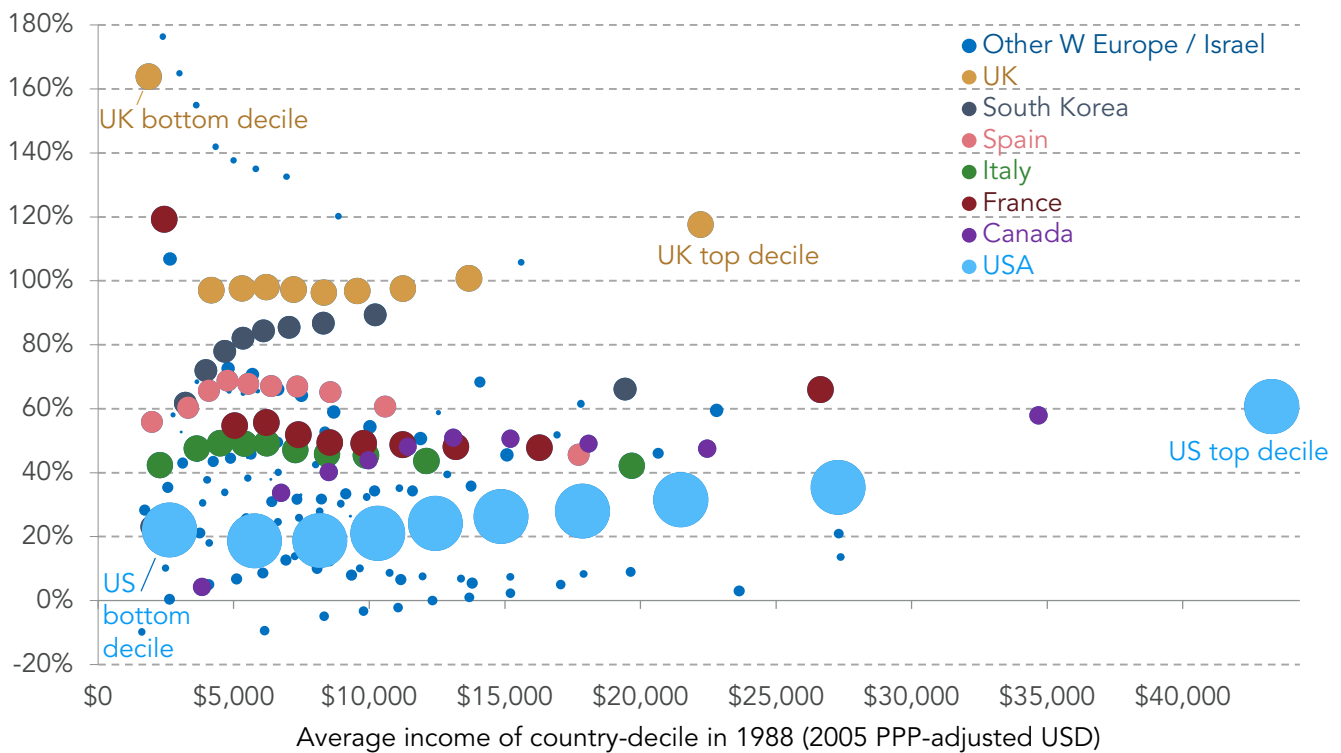
Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

Notes: Axis is cut off at 180 per cent. Start and end years may differ slightly from 1988-2008 but growth rates are adjusted to 20-year equivalents.

Returning to the three conclusions that have been drawn from the elephant curve, these alternative methodologies and deeper exploration of the data suggest that:

1. There has been even stronger growth in the middle of the global distribution than the original elephant curve implied, though this is driven primarily by amazingly rapid growth in China. Those on the highest global incomes have also done slightly better than most.

2. The view that average incomes of the lower and middle classes of the rich world have stagnated over this particular period as a whole is not supported by the data, but the US has seen particularly unequal growth.

3. Large variation between mature economies means we should be cautious about assuming that there is anything inevitable about stagnant incomes for the lower middle class of the rich world or that domestic policy choices do not play a big role.

The experience of the UK, what it tells us, and the role of domestic policy

Different data sources may provide somewhat different pictures for any individual country. We explore the three conclusions above using more detailed UK data, including equivalisation to reflect differing economies of scale by family size (rather than using per capita figures). We concentrate on the working age population, both before and after housing costs, and we again find strong growth for most of the income distribution across the period as a whole (though weaker than in the UK Lakner-Milanovic data, particularly for the poorest).

Crucially however, different time periods show a wide range of income growth patterns. And where incomes have stagnated or declined for some this can often be attributed to identifiable factors such as rising housing costs, welfare policy and economic shocks – again suggesting that global forces are only one part of the story.

The descriptive analysis in this paper does not argue against the idea that globalisation boosts incomes overall – including in poorer countries. Nor that the top one per cent in developed countries have done well over this period (and before). But it cautions against the claim that large parts of the working population of the developed world have seen entirely stagnant incomes consistently across a period of several decades, because (except possibly in the US) they have not. That does not mean we should ignore the serious challenges globalisation poses, especially for those working in industries directly affected by greater competitive pressure. Instead it means those striving for more inclusive growth have a much harder task than simply preventing or reversing globalisation. That task is about how the gains from trade are shared, not its existence, and about how public policy supports places and people affected by economic change from trade or elsewhere. Crucially it is also about recognising that domestic policy is central to determining working people's living standards even in a globalised world. Changes to trade policy, even where desirable, are not a substitute for progressive taxes and benefits, fair wage policies and sufficient house building.

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Section 1: Globalisation is now at the centre of economic and political debate

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Section 1

Globalisation is now at the centre of economic and political debate

Britain's relationships with the rest of the world are in a period of flux. Following the result of the EU referendum, the UK may need to begin to formulate its own individual trade policy for the first time since joining the European Communities in 1973. Its future level of openness as a trading nation – levels of tariffs, subsidies and harmonisation of regulations – is highly uncertain, as are the shapes of possible deals with the EU, other rich nations and developing economies across the globe.

During the referendum campaign, free trade was presented as a positive by both sides. The Remain campaign argued that "being able to trade freely across the EU" was good for the UK, while the Leave campaign said that we should instead "be free to trade with the whole world" and "make free trade deals with fast growing economies like India and China".[3]

But globalisation, in its many forms, is not always discussed in such positive tones. While much free movement of capital now usually goes without comment, foreign investment in the UK can be controversial. And while not the focus of this paper, the possible impacts of migration ("globalisation made flesh"[4] for most people) on living standards have been a key concern in the UK as well as other richer countries (as explored in a recent Resolution Foundation paper).[5]

On the core issue of trade, global competition has had an undeniable effect on many UK firms (with some types of manufacturing and the remaining steel industry notably among those continuing to feel the pressure). Proposed trade deals such as the US-EU Transatlantic Trade and Investment Partnership (TTIP) have been viewed with suspicion partly because of similar pressures on some firms and workers and in part because international co-operation and standardisation inevitably mean reducing national sovereignty for future policy makers.

Similar debates have fuelled political argument in the US ahead of the presidential election and the potential ratification of the Trans-Pacific Partnership (TPP) trade agreement. Donald Trump, for example, has said that this deal would "force American workers to compete directly against workers from Vietnam, one of the lowest wage countries on Earth" and "not only will the TPP undermine our economy, but it will undermine our independence."[6]

Looking backwards, Figure 3 demonstrates how the importance of international trade has grown in these large economies and others, and globally too. The volume of imports and exports relative to the size of economies has grown significantly, and particularly in the 1988-2008 period – "a heyday of global trade integration"[7] – that is the main focus of this paper.

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[3]   http://www.strongerin.co.uk/get_the_facts and http://www.voteleavetakecontrol.org/why_vote_leave

[4]   J Van Reenen, *The aftermath of the Brexit vote – the verdict from a derided expert*, LSE, August 2016

[5]   S Clarke, *A brave new world: how reduced migration could affect earnings, employment and the labour market*, August 2016

[6]   Speech in Monessen, Pennsylvania, 28 June 2016

[7]   M Sandbu, *The shock of free trade*, Prospect, July 2016

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Figure 3: Trade has grown as a share of the economy both globally and nationally, 1960-2015

Imports plus exports as a share of GDP
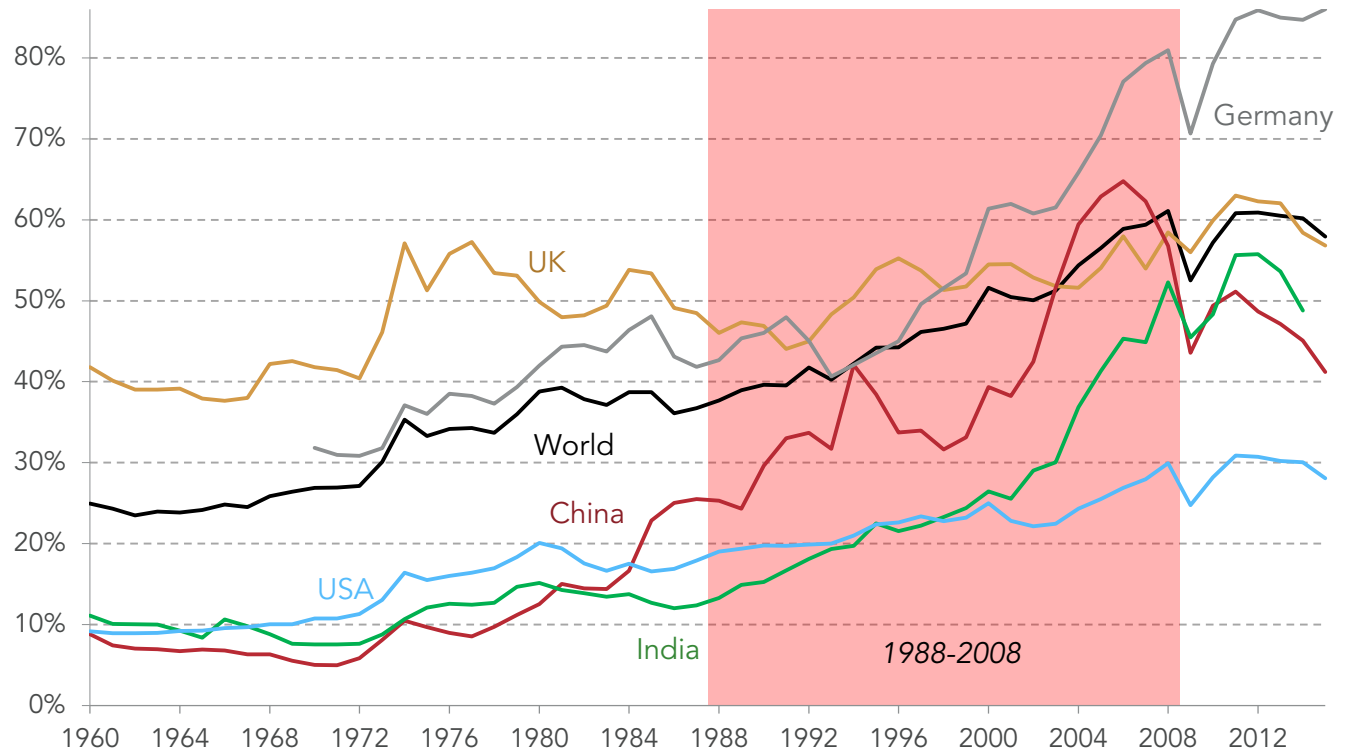
According to this data, world trade grew from 38 per cent of the global economy in 1988 – largely unchanged from the early 1980s – to 61 per cent in 2008.[8] In China trade as a share of the economy more than doubled over the same period, while in India it quadrupled.

These changes were not entirely inevitable or accidental: deliberate policy choices have played a role. These include the creation of free trade agreements such as the development of the European Single Market, the North American Free Trade Agreement and the World Trade Organisation (WTO); as well as the expansion of the EU and the entry of China into the WTO in 2001. International trade has not grown as a share of the global economy in recent years but, nonetheless, it essentially remains at levels never seen before in history,[9] and there are many more proposals in development that aim to reduce trade barriers.

This paper explores the contention that these globalisation processes have produced both winners and losers and, in particular, that increased competition with poorer workers abroad has inevitably led to stagnant living standards for low and middle income families in richer countries over this period. There are many pressing decisions to be made on trade policy, not least in the UK and US, and an understanding of what has really happened is critical if we are to learn the right lessons from recent decades.

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[8]   Note that globally imports match exports, so this figure is twice as large as either of those individually.

[9]   M Nagdy and M Roser, *International trade: five hundred years of world trade to GDP ratios*, OurWorldInData.org, 2016

Section 2

The 'elephant curve' has been used to paint a particular picture of globalisation

If we are to understand the impact of globalisation, we need global data. Valuable work by researchers Milanovic and Lakner has brought together income data from around the world, popularised by the 'elephant curve' which shows how the global income distribution has changed over this period of 'high globalisation'. This section describes this work and some of the conclusions that commentators have drawn: that there has been a boom for some, stagnation for the lower middle class of the developed world, and that these are an inevitable and shared outcome of global-isation. The rest of the paper explores whether the data really supports these contentions, both globally and in the UK especially.

Global phenomena need global data. Enter the elephant curve

What happened to living standards across the world as international trade grew to never-before-seen levels?[10]

Rather than compare the average incomes of countries, or look only at inequality between individuals within countries, invaluable work by other researchers allows us to begin to compare individuals across the globe. While there is no global household survey, the World Panel Income Distribution shared publicly by Branko Milanovic and Christoph Lakner combines income and consumption data that together now cover over 90 per cent of the world's population (coverage in the Middle East and Africa being particularly low, for example).[11] This is a major step forward.

However, it is early days for such global living standards data and it is not perfect given the complexity of combining large numbers of different national data sources. As Milanovic and Lakner make clear, many countries still do not have or make available any data; the data the authors have released currently only extends to 2008;[12] it contains only decile groups within countries rather than full microdata; and – as with most such survey data – may be poor at accurately including those with the very highest and lowest incomes.

Nonetheless, a database of incomes across the world and over time is a powerful resource.[13] Derived results published by Milanovic and Lakner, most notably in a series of impressive

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[10]   While this note focuses on trade clearly a wide range of factors and policies have affected income levels in each country across this period. See Section 4 for a UK-focussed discussion, for example.

[11]   Lakner-Milanovic (2013) World Panel Income Distribution (LM-WPID) data, 1988-2008 at 5 year intervals
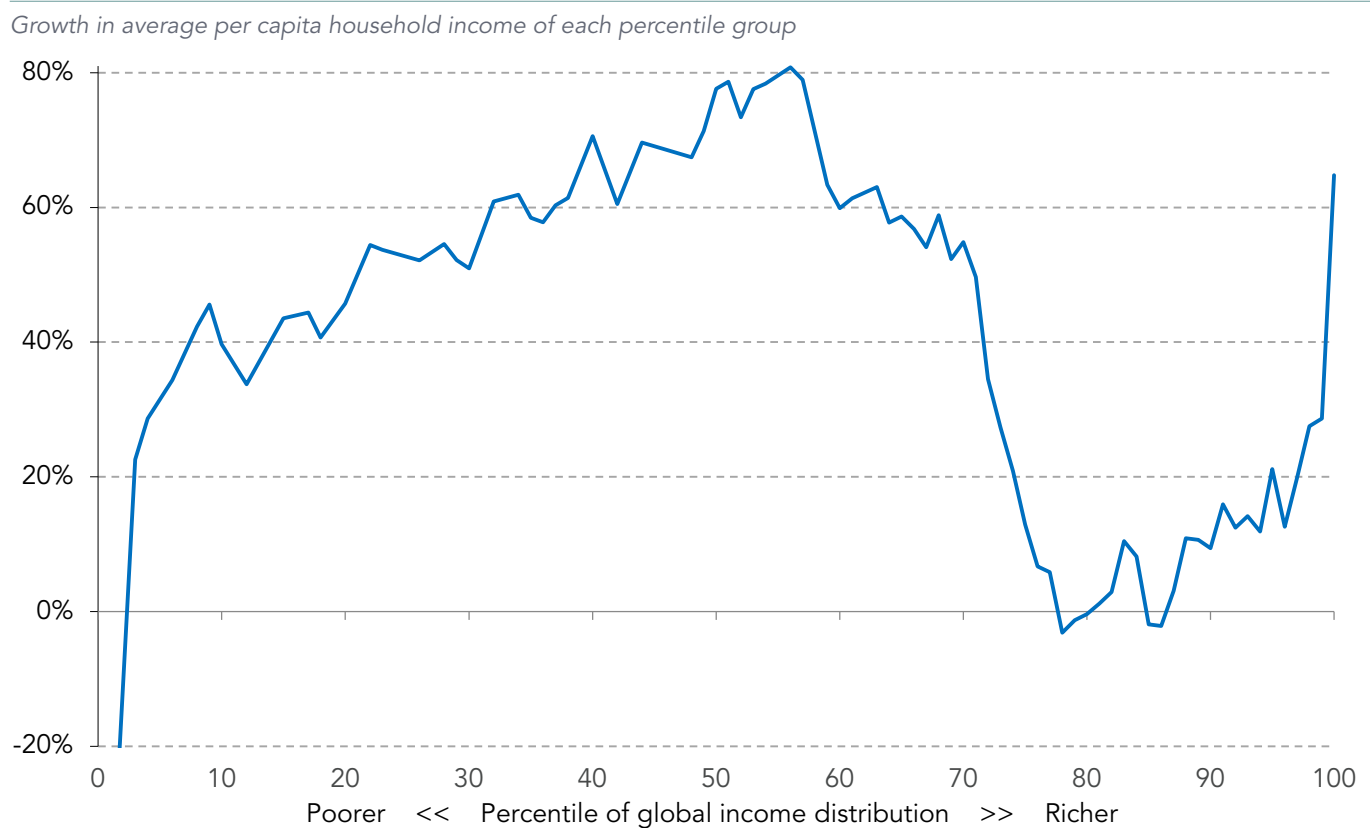
[12]   Adding data to 2011 (including 2011 PPP figures) gives a roughly similar trend – though with income falls for the richest during the financial crisis – as reportedly does 2013 data. B Milanovic, *The greatest reshuffle of individual incomes since the Industrial Revolution*, VOX, July 2016

[13]   The data is a mix of income and consumption data but this paper refers to both as income data.

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papers[14] and the former's 2016 book 'Global Inequality',[15] have been republished and commented upon frequently.

This discussion has centred on one particular chart dubbed the 'elephant curve' – so-named by commentators because of its shape. The elephant curve is a graph of how much richer each part of the global income distribution of 2008, from poor to rich, was compared to the same part of the distribution in 1988.[16] It is replicated without amendment in Figure 4 (though using percentiles instead of vingtiles – which are more often used). On the Y axis is total per capita real income growth over this 20 year period, while the X axis goes from the world's poorest one per cent on the left to the world's richest one per cent on the right (or rather the poorest/richest one per cent who are included in the available data). Incomes are adjusted for inflation over time within countries, and then converted to comparable US dollars using 2005 Purchasing Power Parity (PPP) exchange rates (accounting for differing costs of living in different countries).

Figure 4: Replication of the Lakner-Milanovic global growth incidence curve ('elephant curve'), 1988-2008

Growth in average per capita household income of each percentile group

Poorer << Percentile of global income distribution >> Richer

Source: RF analysis of Lakner-Milanovic World Panel Income Distribution, replicating C Lakner and B Milanovic, *Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession*, The World Bank Economic Review, 2015

[14]   For methodological details and choices, see C Lakner and B Milanovic, *Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession*, The World Bank Economic Review, 2015

[15]   B Milanovic, *Global Inequality : A New Approach for the Age of Globalization*, Harvard University Press, April 2016

[16]   Though note that data for individual countries may be from up to 2 years either side of 1988 or 2008.

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Most of the ample commentary surrounding this graph, including Milanovic's book, points to three main groups within the distribution:

1. Those around the global median (the 50th percentile). Milanovic describes how "they are people from the emerging Asian economies, predominantly China, but also India, Thailand, Vietnam, and Indonesia." The middle of the graph implies tremendous growth and they are described as "the obvious beneficiaries of globalization".

2. Those around the 80th percentile. Milanovic writes that "about three-quarters of the people in this group are citizens of the 'old-rich' countries of Western Europe, North America, Oceania, and Japan. [...] For simplicity, these people may be called the 'lower middle class of the rich world.' And they are certainly not the winners of globalization." The graph implies a 20-year stagnation of real incomes here. An earlier version of the same graph published in 2012 – and still frequently shared – actually showed a fall in real incomes.[17]

3. The richest one per cent of the world's population, described as "the global plutocrats". "People who belong to the global top one per cent are overwhelmingly from the rich economies. The United States dominates there: half of the people in the global top one per cent are American. (This means that approximately 12 per cent of Americans are part of the global top one per cent.) The rest are almost entirely from Western Europe, Japan, and Oceania."

A fourth notable group might be the very poorest – "the poorest five per cent of the population, whose real incomes have remained the same"[18] driven by a 45 per cent fall for the bottom percentile (beyond the scale of the graph). This has been less commented upon, however, and there are good reasons to be sceptical of these particular figures, as explored later.

Many conclusions have been drawn from the elephant curve

The elephant curve is an exciting and very welcome contribution to global economics. It has been described as possibly "the most important chart for understanding politics today"[19] and "the most powerful chart of the last decade"[20]. However, while it is useful to combine data from within countries, across countries and across time to get one big picture, commentators relying solely on this would certainly risk misunderstanding or over-extrapolation. The rest of this paper aims to help explore whether the following conclusions can really be supported by the elephant curve and other data.

1. That the global story is fundamentally a positive one but with some big winners. The elephant chart shows average income globally growing by 24 per cent over this 20 year period of "high globalisation"[21] and global inequality falling from a (very high) Gini score of 72.2 to 70.5.[22] (For comparison, Gini coefficients for individual countries range from those such as Norway with 24 to those like South Africa with 63.) The proportion of humanity in extreme absolute poverty also fell from 37 per cent in the late 1980s to 19 per cent in 2008,

[17]   B Milanovic, *Global Income Inequality by the Numbers: in History and Now*, World Bank, Policy Research Working Paper 6259, November 2012. It is not clear what changed between this version and later versions such as B Milanovic, *Global Income Inequality in Numbers: in History and Now*, Global Policy Volume 4, Issue 2, May 2013

[18]   B Milanovic, *Global Income Inequality by the Numbers: in History and Now*, World Bank, Policy Research Working Paper 6259, November 2012

[19]   M O'Brien, *This may be the most important chart for understanding politics today*, The Washington Post, 13 January 2016

[20]   T Nangle quoted in L Kawa, *Get Ready to See This Globalization 'Elephant Chart' Over and Over Again*, Bloomberg, 27 June 2016

[21]   B Milanovic, *Global Inequality : A New Approach for the Age of Globalization*, Harvard University Press, April 2016

[22]   C Lakner and B Milanovic, *Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession*, The World Bank Economic Review, 2015

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and has fallen further since.[23] And the elephant curve shows that the average income of the global middle and the global top one per cent grew by over 60 per cent – making them the biggest winners.

2. That for others – "the lower-middle classes in Europe and North America"[24] – incomes have stagnated. That, as one commentator puts it, "nobody has done worse […] than the working-class in countries like the United States, United Kingdom, and France. Their inflation-adjusted incomes actually fell over this period."[25] Near-zero income growth over a 20 year period – as implied by the graph – could certainly not be considered a success.

3. That any stagnation in the rich world has been inevitable and common in the face of global structural pressures: that "the working-class in all these [rich world] countries have stagnated as they've faced increasing competition from the billions of workers who have entered the global economy following the fall of the Berlin Wall".[26]

These three conclusions are often brought together into a single narrative: that globalisation policies have particularly benefited the global one per cent (owners of capital and high-skilled workers) and poorer countries such as China but inevitably caused a stagnation of incomes among "middle and working classes in the advanced countries". Both proponents and opponents of free trade have therefore sometimes suggested that there is a direct relationship between the living standards of the global middle and the distribution of incomes in richer countries, and therefore a trade-off to be made for those concerned about both international and domestic inequality.

Milanovic himself takes a more nuanced view that economic forces, like globalisation, shape the context for political debates and may be a force for increased inequality within countries but without inevitability: "Political battles [over the distribution of income] take place in a much broader economic environment, within parameters set by such factors as the existence or nonexistence of globalisation […] Political forces that push for greater inequality will, of course, be emboldened and stronger when the economic trends work in their favour […] But such a situation does not guarantee their victory."[27]

But to what extent are the three conclusions above – of clear winners, losers and inevitability – supported by the data? This paper cannot attempt to explore all of the evidence surrounding international trade or income growth in every country. But the same data used to create the elephant curve, together with a wider analysis of the UK, can illuminate which aspects of these conclusions hold water and should be at the forefront of our mind as debates about globalisation rise up the agenda.

[23]   M Roser, _Declining global poverty: share of people living in extreme poverty, 1820-2015_, OurWorldInData.org, 2016

[24]   L Ploumen, Dutch Minister for Foreign Trade and Development Cooperation, _Taming the elephant: to save globalisation, we must eradicate inequality_, 29 August 2016

[25]   M O'Brien, _This may be the most important chart for understanding politics today_, The Washington Post, 13 January 2016

[26]   M O'Brien, _This may be the most important chart for understanding politics today_, The Washington Post, 13 January 2016

[27]   B Milanovic, _Global Inequality : A New Approach for the Age of Globalization_, Harvard University Press, April 2016, p86

Section 3

Examining the elephant

To assess whether the elephant curve really supports certain conclusions about globalisation and the lower middle class of the rich world, we explore the data behind it in more detail. First, we note a technical point that the countries used in 1988 and 2008 differ: using a consistent set suggests slightly stronger growth. Second, and more significantly, we find that the impact of uneven population growth on the global income distribution has been very large over this period. And third, we drill down into the data for the rich world and for individual countries. We find that it is incorrect to conclude that there has been stagnation for the lower middle class of the rich world. We also find that there is a wide range of rich world experiences with the US having had particularly unequal growth; and that much of the elephant curve is driven by phenomenal growth in China. The rest of the paper then looks in more detail at the UK experience.

Between 1988 and 2008 some countries are added to (or fall out of) the data

A key point in interpreting the elephant curve and graphs like it is to understand that the population in each percentile is not the same in the base year and end year. They compare for example the global poor in 1988 with the global poor in 2008: they do not show how the specific people who were poor in 1988 have performed over that period. There is nothing wrong with this – the same applies when tracking median earnings within a country for example – but it is often misunderstood. Importantly, while the distinction often doesn't matter much, particularly over short periods or where relative changes in incomes or demographics are limited, when looking at the whole world over 20 years there is a large amount of churn in the distribution. We therefore need to look in more depth to explore what is really happening.

Yet while it is normal for the populations being compared in the two time periods (in this case in each percentile) to differ due to natural compositional change, in the Lakner-Milanovic data the countries included in the dataset also change between 1988 and 2008. This has the advantage of opening up more data and therefore improving the accuracy of the global income distribution in each year, but changing the geographical make-up in this way distorts any comparison over time.

The countries not available for 1988 but then added in the 2008 data include large countries such as Russia, Ukraine, Vietnam, South Africa, Kenya, Tanzania, and DR Congo, as well as some of the very richest like Luxembourg, Norway and Singapore. Conversely, some countries are in the 1988 data but then not in the 2008 data – including Australia, New Zealand, Iran, Uzbekistan and Algeria.

Figure 5 shows what the elephant curve looks like if we only include countries that are in both the 1988 and 2008 data: removing any effects from adding or removing countries. A further change from Figure 4 is to ensure the data is divided equally into 100 percentiles, whereas the code shared by Milanovic and Lakner produces uneven divisions and missing percentiles.[28] This makes little substantive difference except to reduce growth for the top one per cent.

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[28]   I split each country-decile into 100 identical subgroups, allowing them to be spread across percentile groups, and add an insignificant random number centred around zero to separate those with equal income in Stata. The original Lakner-Milanovic code is available at https://sites.google.com/site/decrgchristophlakner/publications

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Figure 5: Global growth incidence curve with a consistent set of countries and equal percentile sizes, 1988-2008

Growth in average per capita household income of each percentile group
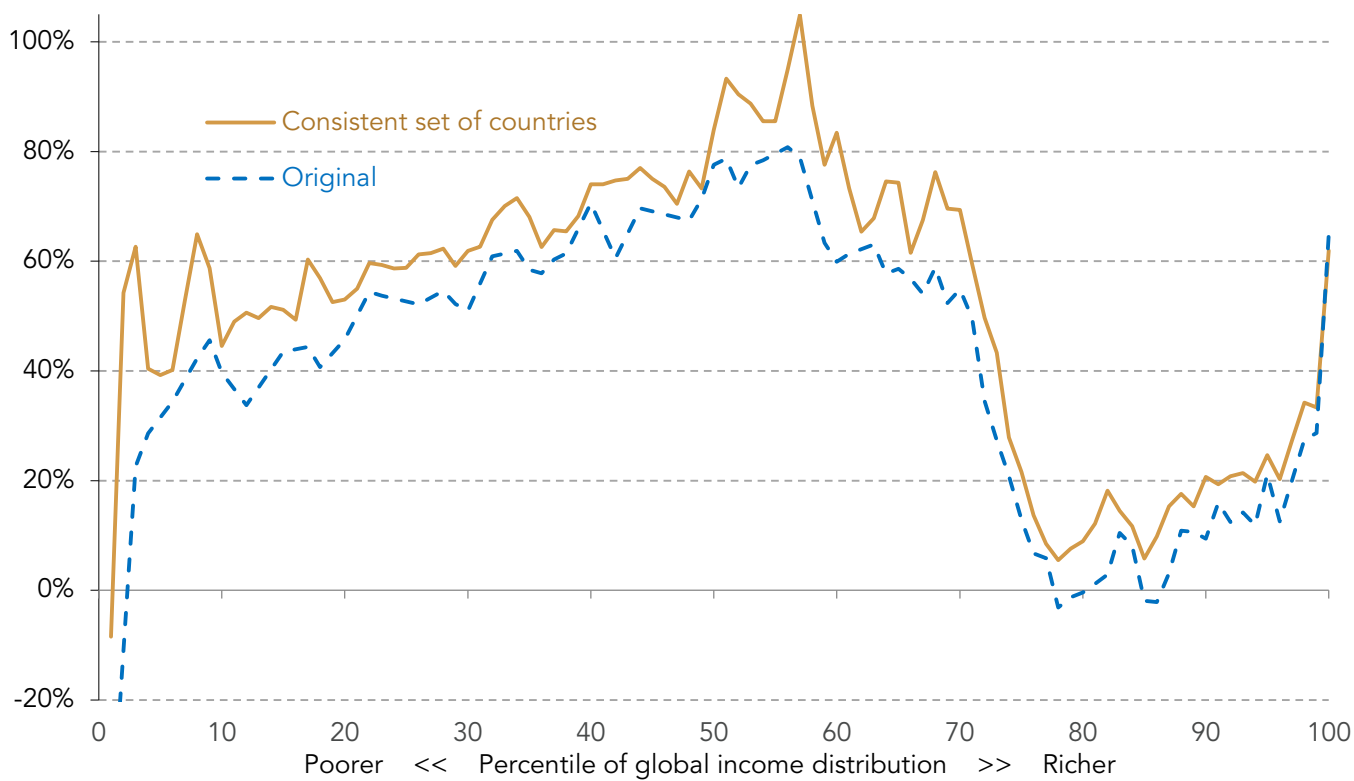
Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

The effect of using a consistent set of countries is not vast, but is significant.[29] Figure 5 shows higher global growth across all of the distribution when using a consistent set of countries (except for the top one per cent – due to the switch to equal percentile sizes). Growth of the global average is 32 per cent, compared to the 24 per cent reported by Milanovic and Lakner. The difference is because the countries not in the 1988 data but in the 2008 data typically have below-average incomes.

At the bottom of the distribution, the suggestion that the very poorest in the world have been excluded from growth no longer seems to hold (the addition of DR Congo – the poorest country in the 2008 data and without any data for 1988 – has a significant effect in the original work).[30] Growth in the middle is also higher than in Figure 4. Around the 80th percentile growth remains weak but is nonetheless improved slightly and moves away from zero.

Of course, looking at a consistent set of countries leads to a smaller set of data – only 60 countries rather than 130 – and further increases the dominance of China and India in the figures. But this consistent approach highlights some of the ways in which the original is open to misinterpretation and how alternative approaches can lead to different results.

[29]   The effect on the global Gini inequality reduction reported by Milanovic and Lakner is less strong. With a consistent set of countries, global Gini falls from 1988 to 2008 by 2.5 per cent (1.8 points), rather than the 2.3 per cent (1.7 points) reported by them.

[30]   The remaining weakness of the bottom percentile's growth appears to be attributable to the figures for Nigeria's poorest, who apparently saw a large real income fall.

Population growth in poorer countries has had a large effect

Even using a consistent set of countries, however, the make-up of each percentile group changes substantially over this 20 year period – due to both uneven population growth and groups leapfrogging each other in incomes. This is not a problem, and indeed might be considered an important part of any global inequality analysis, but this effect is often ignored in interpretation. It makes a significant difference when population growth has differed so substantially across the globe.

For example, in 1988 mature economies – a fixed group defined by Milanovic and Lakner – made up 23 per cent of the population in the consistent set of data; by 2008 that had fallen to 20 per cent. India on the other hand went from 21 per cent of the population to 23 per cent. Because the population of poorer countries has grown disproportionately, and the population share of mature economies has shrunk, average incomes have been dragged down. Such compositional effects are often seen in economic statistics. For example, if low-skilled workers move from unemployment to employment, this can drag down average earnings, even if everyone is better off than they were.[31]

Figure 6: Population change has had a compositional effect on the global income distribution

% mature economies in global income percentile (smoothed)
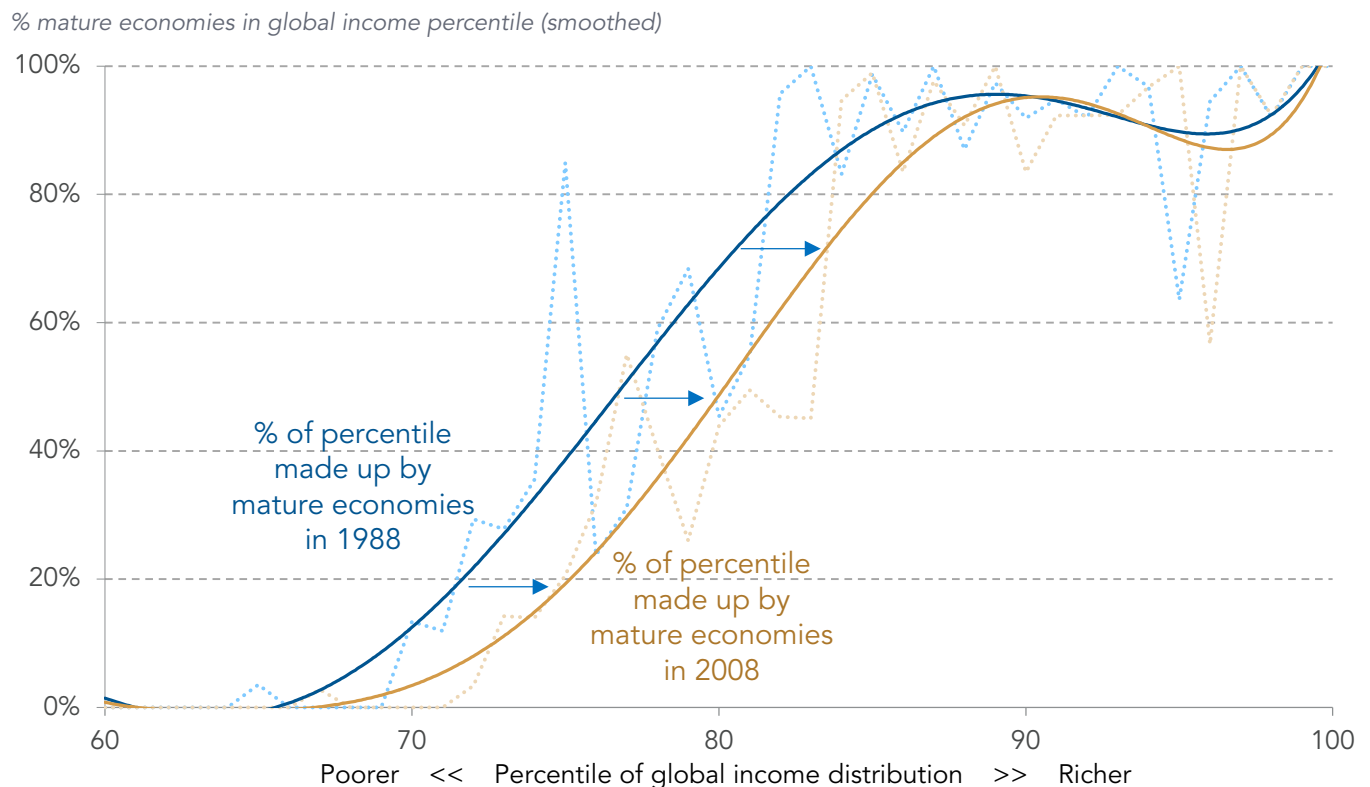
Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

To explore the 'stagnation' part of the elephant curve, Figure 6 shows how the make-up of the global top 40 per cent has changed over this period, looking only at the proportion of each percentile that is made up by mature economies.[32] The key thing to note is how the mature economies have been pushed to the right (and shrink as a whole) as they have been squeezed out of lower income

[31]   L Gardiner and M Whittaker, *Why 2014 hasn't been the year of the pay rise*, Resolution Foundation, November 2014

[32]   Also see Figure 4 in C Lakner and B Milanovic, *Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession*, The World Bank Economic Review, 2015, but note that this uses inconsistent sets of countries.
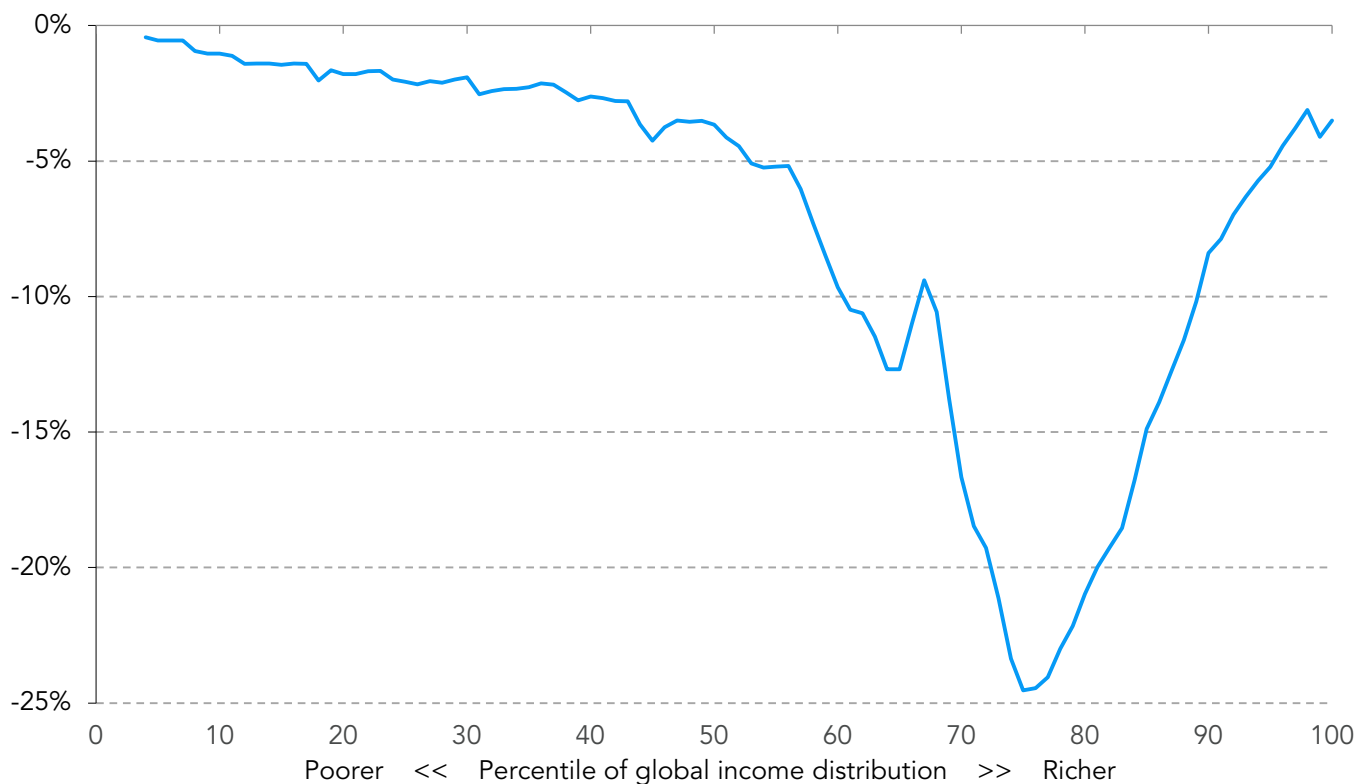
percentiles due to these population changes. In many percentiles of this range, therefore, rich countries have been replaced by non-mature economies or by poorer mature economies.

For example, the poorest decile of people in the US were in the 70-75th percentile range in 1988. But population growth among poorer countries would have pushed those Americans up into the 75th-80th percentile range by 2008. The bottom US decile would be replaced in the 70-75th percentile part of the global distribution by the richest urban Chinese, but the latter's average income was around $1,500 compared to the former's $2,600: producing a fall in the average income of those percentiles.

Such compositional changes have a substantial effect. To illustrate this, Figure 7 shows what the 1988-2008 global income growth incidence curve would look like if there had been zero income growth for every decile in every country – leaving only the effect of uneven population growth between countries. This 'demographic headwind' peaks in a fall in average income of around a quarter around the 75th percentile. That incomes rise rapidly from percentile to percentile in this part of the distribution – reflecting inequality between upper-middle and richer countries – means that compositional change can have a particularly large effect. The effect is much smaller among the richest percentiles.

Figure 7: Demographic headwind to the global growth incidence curve, 1988-2008

Growth in average per capita household income of each percentile group (rolling average) if there had been no income growth and changes were solely due to uneven population growth
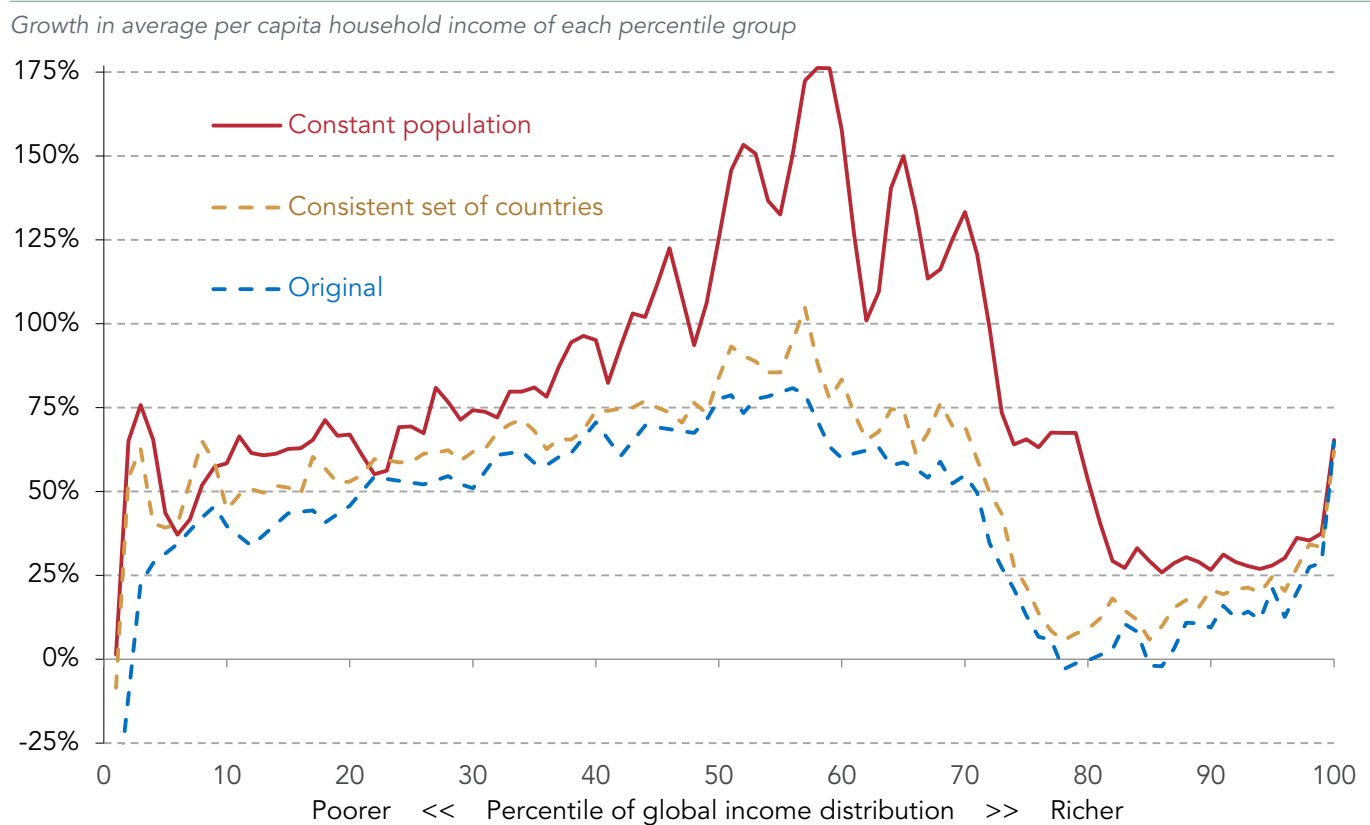

Poorer << Percentile of global income distribution >> Richer

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In exploring how particular groups such as the lower middle class of richer countries have fared, we need to strip out these global compositional effects. One way to do this is simply to look at the data for individual countries (and the deciles within them), instead of working with the changing global income distribution, and this is explored later in this paper. But to explore the effect of uneven population growth while diverging as little as possible from the elephant curve approach, we repeat the analysis from Figure 5 but holding the overall population in each country constant at its 1988 level. Figure 8, therefore, is the elephant curve but without the compositional change that comes from the relative size of each country changing.[33] This demonstration shows much higher growth across the distribution – reaching around 175 per cent in the middle, and having a *minimum* of 26 per cent (except for the very bottom one per cent). This again suggests lower relative growth in the richer countries but is far less suggestive of stagnation. If there had been no change in the relative populations of different countries, the growth of the global mean would have been 41 per cent, rather than the 32 per cent reported above (both with consistent sets of countries).

Figure 8: Global income growth incidence curve if the relative size of each country had remained unchanged, 1988-2008

Growth in average per capita household income of each percentile group

Poorer << Percentile of global income distribution >> Richer

Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

Understanding this compositional effect is important in understanding the drivers of the elephant curve and what has happened to the lower middle class of the rich world. It is also likely to hold in future – as the share of the world's population living in Africa is expected to grow from 15 per cent

[33]   Overall – rather than separate urban and rural – data are used here for China, India and Indonesia, to allow for rural to urban population change *within* these countries. Other demographic and compositional changes within countries will also have an effect on average incomes: it is only the relative size of countries that is held constant here.

in 2008 to 25 per cent in 2048.[34] Such changes might also provide upwards pressure on the global Gini inequality coefficient. There are separate debates to be had about future changes in the age structure of different countries and the world as a whole, but these are not explored in this paper.[35]

But there are further reasons why the elephant curve may give a misleading picture of how living standards have changed within richer (and particularly Western) countries. Looking at data for individual regions and nations can provide a much richer and more informative picture.

There is great variation between mature economies

Given discussion of the elephant curve in richer countries including the US and UK, and the description of the apparent losers from globalisation as the "lower middle class of the rich world", it is worth checking how incomes have grown in these kinds of countries specifically. Looking at how trends have differed between seemingly similar countries can also help tell us whether a country's fate has been inevitably dominated by global forces or whether discretionary domestic choices are more important.

Japan and former Soviet satellites and Baltics drag down growth rates for the richer world

To hone in on 'Western' countries like the US, UK and France, Figure 9 shows a regional version of Figure 5 (i.e. using a consistent set of countries, and allowing population change). It excludes China – whose growth would be off the scale and is explored later – and divides the rest of the world into three groups of countries. The yellow line shows the growth incidence curve for those countries not classed as 'mature economies' in the Lakner-Milanovic data. And the mature economies are then split out into two groups: separating out Japan and the former Soviet states or satellite states (including Germany) from the remaining mature economies (those in the 'West' plus South Korea).

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[34]   Medium fertility variant of _UN World Population Prospects: The 2015 Revision_, UN, Department of Economic and Social Affairs, Population Division, July 2015

[35]   See for example C Goodhart, M Pradhan and P Pardeshi, _Could demographics reverse three multi-decade trends?_, Global Issues, Morgan Stanley, 2015

Figure 9: The Western economies as a whole have done well compared to other countries (excluding China), 1988-2008

1988-2008 growth in average per capita income of each vingtile
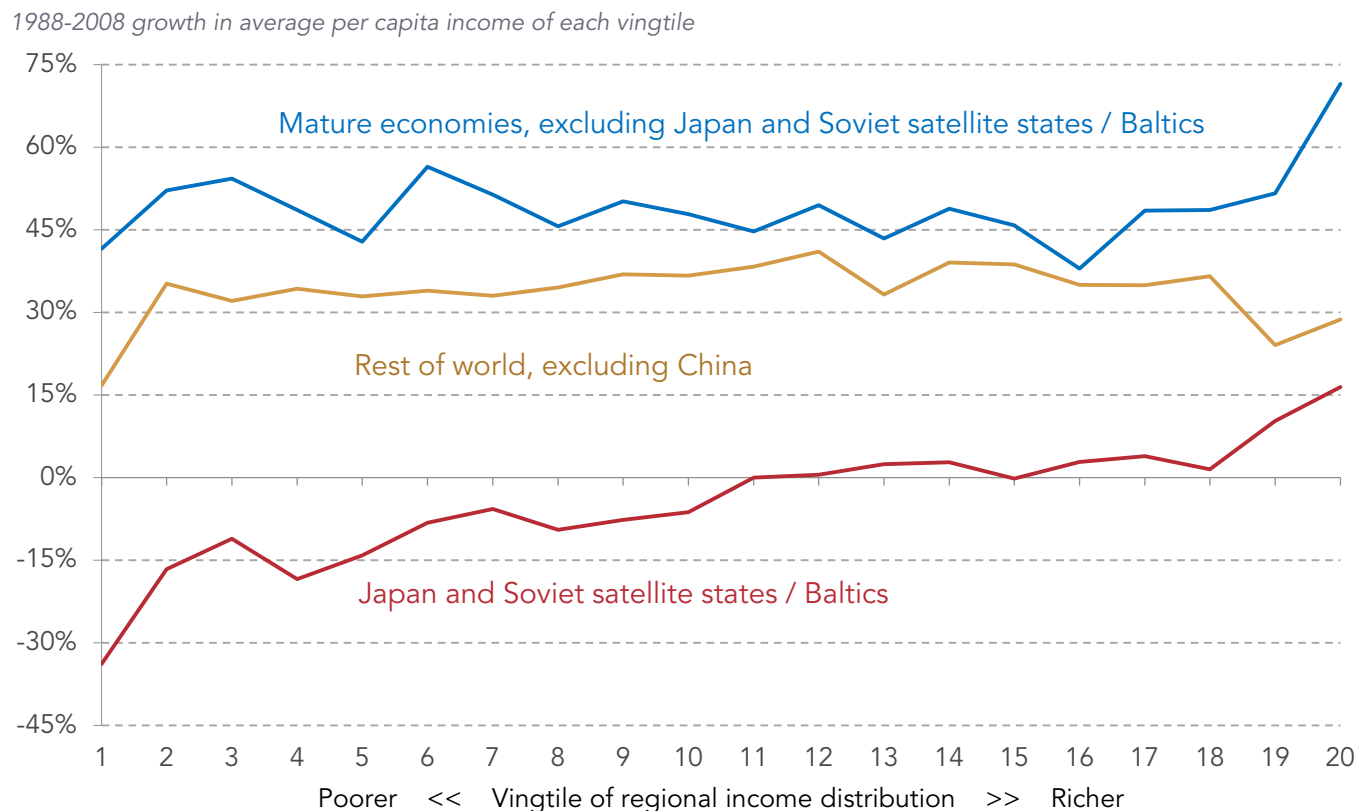
Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

Notes: The red line group is Japan, Bulgaria, Czech Republic, Estonia, Germany, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia. The blue line is Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Greece, Ireland, Israel, Italy, Netherlands, Portugal, Slovenia, South Korea, Spain, UK and USA. Rest of world (excluding China) includes (only) 30 countries for whom data is available.

Japan has since 1988 seen the bursting of an economic bubble and a subsequent "Lost 20 Years". But its underlying data within this set also seems disputable – with average real income in this data falling by 24 per cent between 2002 and 2008, or 54 per cent for the bottom decile. Published summaries of Japanese survey data do not appear to support this, [36] and real GDP per capita rose by 8 per cent over the same period. [37] Whatever the reason for Japan's very weak figures, this weighs down the rich world's growth in the elephant curve.

Similarly, then Soviet satellites like Bulgaria and Latvia show a massive decline in incomes between 1988 and the early 1990s, during the break-up of the Soviet Union. While many have performed well since then, their overall growth for these twenty years is poor because of that collapse. While these events were hugely significant, this drag on the rich world's income growth over this period does not tell us much about the effects of Chinese manufacturing competition on British or American families, for example.

When Japan and the ex-Soviet satellites / Baltics are separated out, we see that growth across the Western mature economies (plus South Korea) has been significantly higher from 1988-2008 – at

[36]   Published statistics from the Family Income and Expenditure Survey suggest only comparatively small (and progressive rather than regressive) falls in real household incomes and consumption from 2002-2008. 2008 is the first year that Japanese data is available in the Luxembourg Income Study dataset so a jump between incomparable datasets is likely to blame for the distorted growth figures.

[37]   From figures included in the Lakner-Milanovic World Panel Income Distribution, and replicated using IMF data on GDP per capita in yen and constant prices. National accounts and survey data will produce different results, but this is certainly an unusually large discrepancy.

52 per cent, or around 2 per cent per year.[38] Indeed, this is a higher average rate of growth than for the rest of the world excluding China (though the demographic headwind again plays a role here).

Within the mature economies as a whole, growth has been somewhat tilted towards the richest, with higher growth among the richest five per cent (with 72 per cent growth) than among the other vingtiles (38-56 per cent growth). This may be driven by the top one per cent, whose income shares have risen in Anglophone countries in particular (including in the earlier 1980s, not included here),[39] though the Lakner-Milanovic data does not allow us to explore beyond the level of deciles within countries.

Figure 10: Illustrative versions of the elephant chart, excluding certain countries and if the relative size of each country had remained unchanged, 1988-2008

Growth in average per capita household income of each percentile group
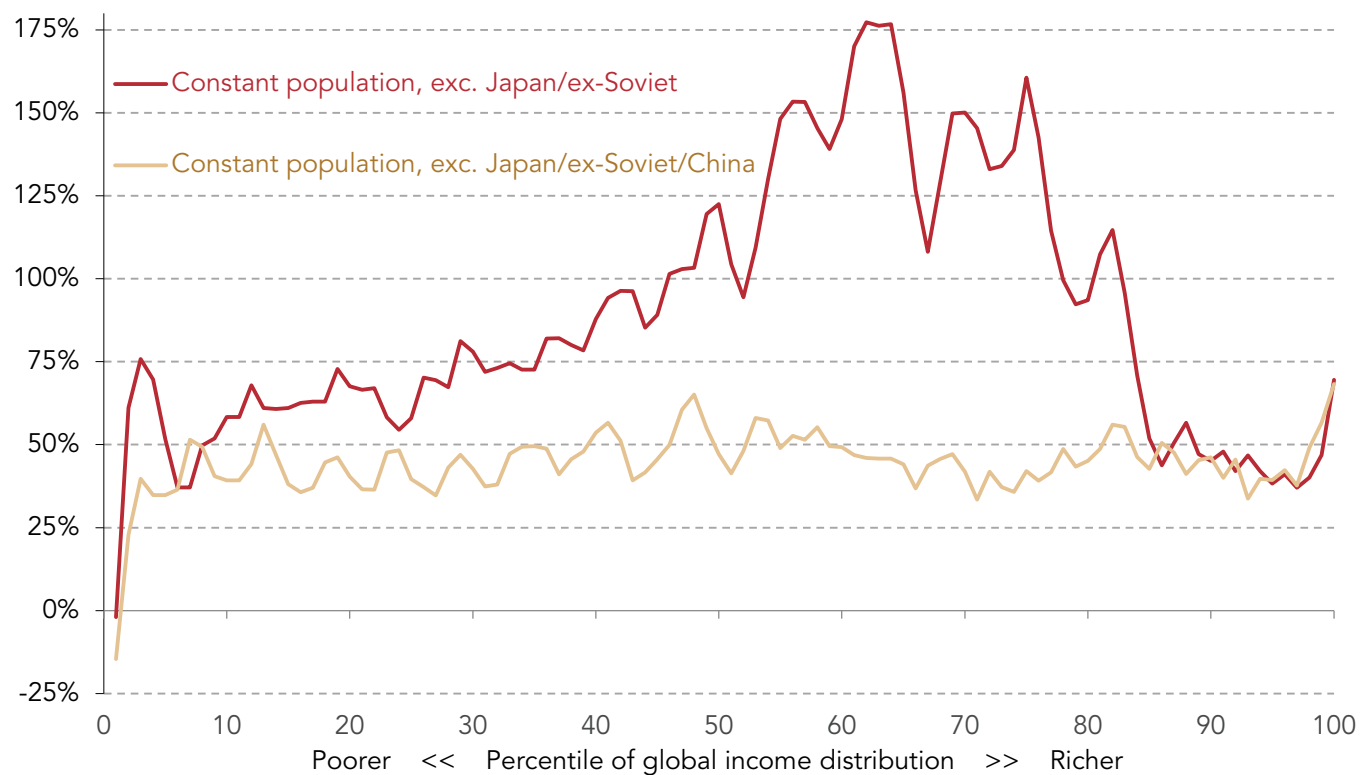
Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

Notes: The excluded Soviet satellite and Baltic states are Bulgaria, Czech Republic, Estonia, Germany, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia

If we redo the elephant chart without Japan and those states most affected by the collapse of the Soviet Union, and again holding population constant to get closer to the actual experiences of different groups, there is a substantive difference, as shown in Figure 10. Those around the 90th percentile still see lower growth than those above and below, but at 45 per cent this growth couldn't be called stagnation. We can also remove China from the data. This produces remarkably even growth across the globe – when holding population constant – and demonstrates just how large an impact China's phenomenal growth has on the elephant curve.

[38]   Note that, as ever, income is not a perfect measure of living standards or growth. In particular, the length of the average working week has decreased in most mature economies, giving people more leisure time but depressing average weekly incomes. And the value of public services are not usually counted when calculating net income, unlike the taxes that fund them.

[39]   F Alvaredo, T Atkinson, T Piketty, E Saez and G Zucman, *The World Wealth and Income Database*

There are big differences between individual countries

The exploratory analysis above, however, still obscures large differences between individual countries, and interpretation is still complicated by changes in composition and ranking within regions. We have also not explored the large differences in absolute incomes between different regions and countries.

Figure 11 shows the performance of each decile of each country independently, as well as how poor or rich they were in 1988. It therefore shows all of the data underpinning the elephant curve (excluding countries not in both years). Unlike earlier graphs, growth rates are presented on an annualised basis.[40]

Figure 11: Income growth in each decile of every country in the Lakner-Milanovic dataset

Average annual income growth, 1988-2008 (bubble sizes represent 1988 population)
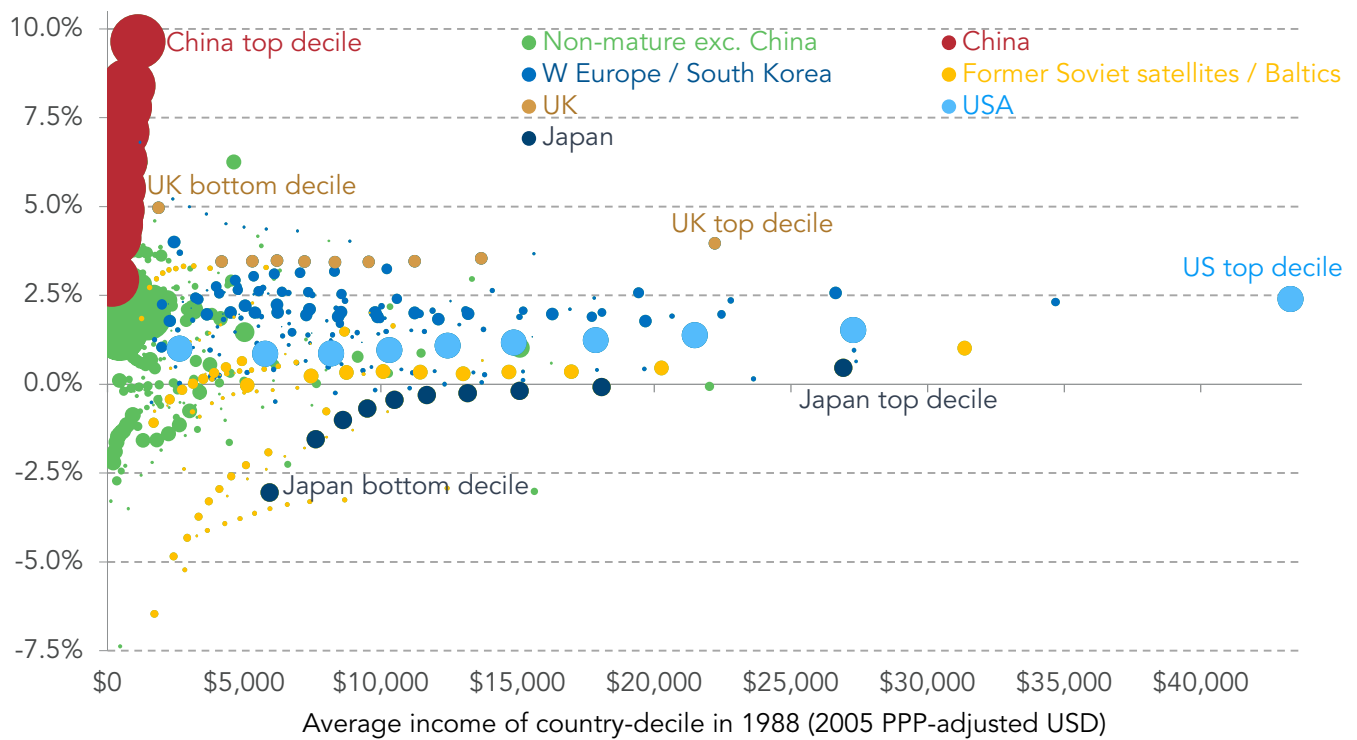
Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

Note: Data for each country may be from up to two years either side of 1988 or 2008. Excluding countries without sufficient data. See, for comparison, the similar 'quasi-nonanonymous' growth incidence curves in C Lakner and B Milanovic, *Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession*, The World Bank Economic Review, 2015.

The scales of the axes here reflect two key points. First, the degree of global inequality in 1988: with the richest such as the USA's top decile, on the right, being vastly richer than much of the world's population on the far left. And second, that growth rates over this period have also differed vastly. At the very top of the graph, the richest decile within China has had average annual income growth of almost 10 per cent. Over 20 years that equates to total growth of 530 per cent though, from a relatively low base. As shown earlier in Figure 10, very high (if unequal) growth within China has a very strong impact on the elephant curve given its high population (represented in Figure 11 by the size of each bubble). Note, for comparison with the elephant curve, that the 75th-90th global percentiles in 1988 were equivalent to incomes of around $2,600-$10,000.

[40]   Data for 1988 and 2008 may be from up to two years either side of those dates, giving slightly different timespans for different countries. An annualised measure accounts for this here.

As discussed above, Japan and former Soviet states or satellite states have, according to this data, experienced very poor growth or even large falls in income. And the non-mature economies excluding China exhibit a wide range of growth rates – with very strong growth in Indonesia, comparatively low growth within India apparently, and some seeing falls in income.

The Western mature economies can again be seen to have performed relatively well compared to the rest of the world except for China, and from a high base in terms of incomes. These richer countries are shown in more detail in Figure 12, with typical growth of around 2 per cent per year. But just as notable is the wide dispersal of growth rates between them.

Figure 12: Income growth in each decile of mature economies, excluding Japan and ex-Soviet satellites / Baltics

Average annual income growth, 1988-2008 (bubble sizes represent 1988 population)
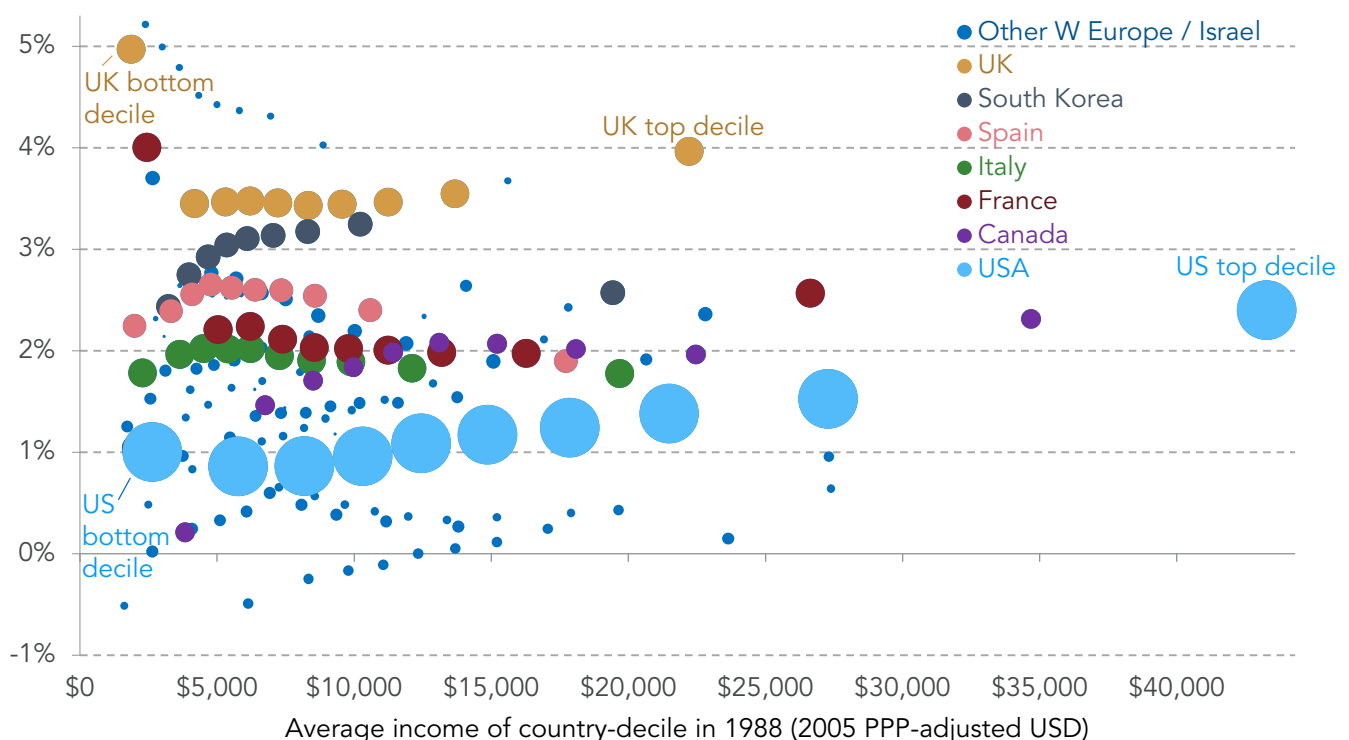
Source: RF analysis of Lakner-Milanovic World Panel Income Distribution

Notes: Other countries, not marked individually, are Austria, Belgium, Cyprus, Denmark, Finland, Greece, Ireland (for which one data point of 7 per cent growth is not shown), Israel, Netherlands, Portugal, Slovenia. Data for each country may be from up to two years either side of 1988 or 2008.

The USA can be seen as one of the worst performers among these richer countries while the UK has been, according to this data, one of the best (though other data sources suggest this is exaggerated – see Section 4). The average US income has grown by almost 2 per cent per year (41 per cent in cumulative terms) but this growth has been distinctly skewed towards the richest – who were already much richer than the rest of the world. The bottom six deciles of the US population have (in this data) seen growth of around one per cent per year (20-30 per cent in total): not nothing[41] but comparatively poor and less than half that of their top decile (68 per cent). Most parts of the population in most rich countries have done better than the low and middle income deciles of the US (Israel and Finland being among the few notable exceptions that look similar to the US in their distributions of growth over this period). Box 1 explores the US experience in more detail.

[41]   Sustained income growth of one per cent per year would equate to a doubling every 70 years.

i Box 1: A deeper look at US income growth

Given the unusual US experience, and its dominance in public debate, it is worth studying in more detail. To provide a slightly different perspective, Figure 13 uses an alternative source and looks at working age households only, given that their incomes may be the best reflection of current economic circumstances. It also uses equivalised incomes, which account for differing economies of scale for different family sizes. The overall pattern for 1986-2007 (shown with the dashed line) is similar in shape to the picture in Figure 12, with particularly strong average growth for the richest and relatively weak growth – though not zero – for others.

But these figures reveal large variations between time periods. 1986-1994 was a period of very weak growth except for the richest; 1994-2000 was a period of strong, largely progressive growth; 2000-2007 then featured falling incomes for the poorest working age households; and – going beyond the financial crisis – 2007-2013 saw declining real incomes for all except the top decile. Overall, the 27 years from 1986 to 2013 add up to household income growth of 50 per cent for the richest decile but only 8 per cent for the poorer half of US working age households. The period from 1979 to 1986, while not shown, was also one of particularly uneven growth with incomes falling for the bottom half and rising for the top half.

Figure 13: Different periods have seen different patterns of working age income growth in the US
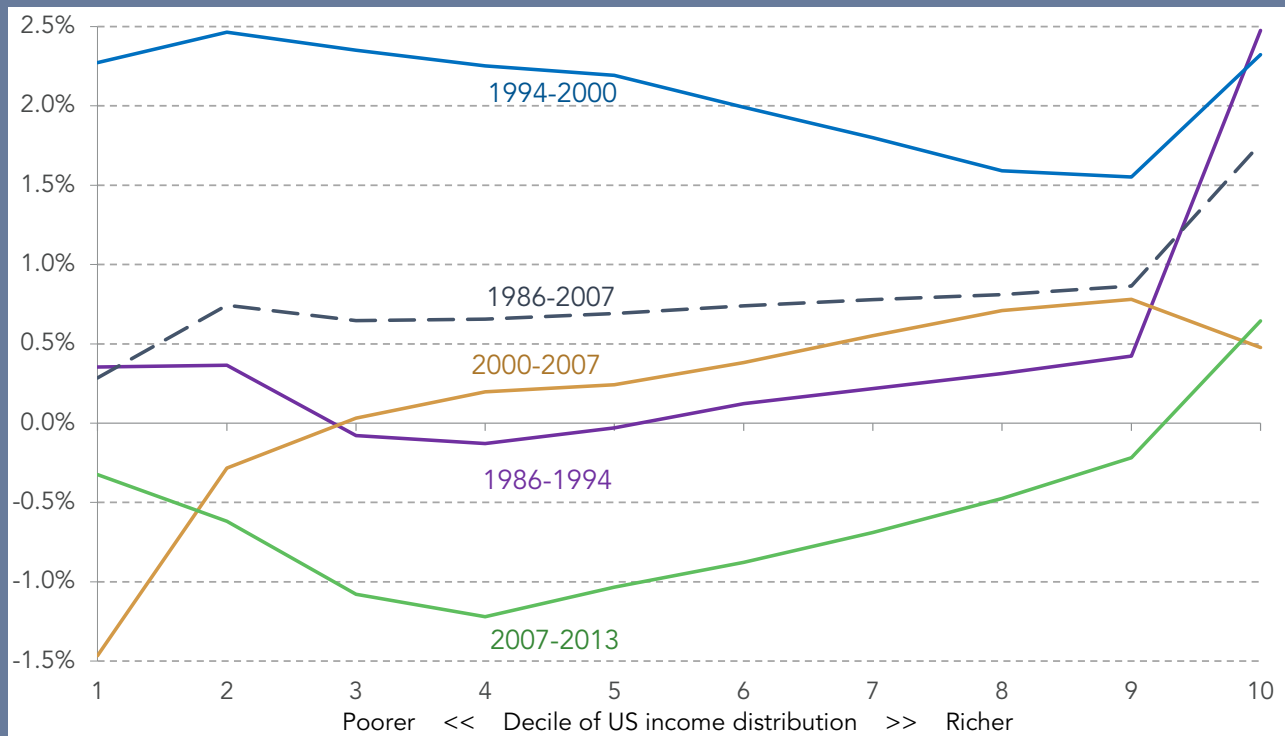
Just how poorly US incomes have performed is a matter of heated debate. For example, real growth is stronger when using the Personal Consumption Expenditure (PCE) deflator or the GDP deflator, rather than the CPI deflator used here. And there is a further large discrepancy between national accounts data and household survey data, which may partly reflect non-cash income such as food stamps or healthcare contributions, or underestimating the incomes of the very richest.[1] But few would argue that the US experience has been perfectly in common with that of most other rich countries.

[1] B Nolan, M Roser and S Thewissen, *GDP per capita versus median household income: what gives rise to divergence over time?*, INET, May 2016

Have the right conclusions been drawn from the elephant curve?

In Section 2, we set out three conclusions that some commentators have drawn from the elephant curve – regarding the winners, losers and inevitability. The analysis above helps to assess the accuracy of these.

It remains clear that there have been some big winners in the middle of the global distribution. Indeed, the original elephant chart may somewhat conceal the scale of this growth – which becomes more apparent when using a consistent set of countries, exploring the impact of uneven population growth, and looking at individual countries. Unsurprisingly, China has seen exceptionally strong growth in this period of globalisation, though the other non-mature economies have recorded lower and more varied growth. And it should be remembered that for most of these countries growth has been from a low absolute base, given the great scale of inequality between countries.

The *relative* performance of the global top one per cent is overstated in the elephant chart (and the years after 2008 saw a decline in incomes – not captured here). Yet the richest deciles within Western countries have indeed had strong income growth since the late 1980s, to say nothing of inequality increases earlier in that decade. And the data in fact does not allow us to look in more detail than the top deciles of each country so we may be understating the performance of the true top one per cent nationally and globally, in addition to the fact that the very richest are likely not captured by household surveys.

The conclusion, however, that incomes of the lower middle class of the rich world, including countries like the UK and US, have stagnated is not supported by the data that underlies the elephant curve. The part of the curve attributed to them is dragged down by changes in the list of countries for which there is data, by compositional effects due to higher population growth in poorer countries, and by low growth figures (accurate or otherwise) in Japan and those most affected by the collapse of the Soviet Union. In isolation, the remaining mature economies have seen average growth of around 50 per cent – around 2 per cent per year. Growth has in many cases been highest among the top deciles of each country, but the divide implied by the elephant curve – between stagnation for most and boom for those at the top – is certainly not apparent.

However, the US experience perhaps explains some of the intuitive appeal of the elephant curve in that country. Growth has been shared very unequally and (or because of this) growth has been low for the low and middle income parts of the distribution, though still around one per cent per year in this data rather than stagnation. In most other Western countries, including the largest such as the UK, France and Italy, the 20 year stagnation narrative is still further from the truth.

Globalisation may be one of the factors that have influenced the income growth of these rich country lower and middle classes, and their decline relative to the richest, as well as the strong growth of China. Undoubtedly there are other factors, including changes in tax policy (in the US the increase in the top 1 per cent's income share has been linked to previous tax cuts).[42] This paper does not attempt to identify the strength of any causal links. This data also focuses on averages, which as always hide a multitude of sins, and should not be taken to say that globalisation has not had significant negative impacts on particular individuals, regions and groups within developed economies.

But given the range of experience between mature economies, the contention that globalisation automatically leads to stagnant incomes for the lower middle class in these countries doesn't hold well. Insofar as globalisation has helped some and harmed others within countries, the distribution of gains has perhaps been determined by policy choices more than economic destiny.

[42]   D Campbell and L Lusher, *Trade Shocks, Taxes, and Inequality*, May 2016

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Section 4

The UK experience in more depth

Previous sections have shown that a narrative of stagnant incomes for the lower middle class of the rich world over recent decades is in general not true. To test this in more detail for the UK and come to firmer conclusions about what has affected income growth, this section uses richer data sources designed for domestic use rather than international comparability. We show that these sources differ but again show strong (but not as strong) growth for most of the distribution over the period as a whole. However, concentrating on the working age population both before and after housing costs, different time periods have shown a wide range of growth patterns. The very richest have usually seen stronger income growth, but where incomes have stagnated or declined for some this can be attributed to factors such as housing costs, welfare policy and economic shocks – again suggesting that global forces, while important, are not the end of the story.

More detailed data on British living standards shows strong but variable growth

The Lakner-Milanovic World Panel Income Distribution data used here is of course designed primarily for international comparison and, while immensely valuable, may not be the best source of information for each country in isolation, not least because it only includes deciles rather than a full distribution. Readers should therefore note that other sources may vary, including due to different income definitions and different price deflators.

To look at the UK in more detail, we can use Households Below Average Income (HBAI) data – which is the gold standard domestically for measuring household incomes and is used for official poverty measurement. Figure 14 shows average annual household income growth across the British distribution for 1988-2008 using this data.

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Figure 14: British equivalised household disposable income growth, 1988 to 2008-09

Growth in equivalised disposable household income
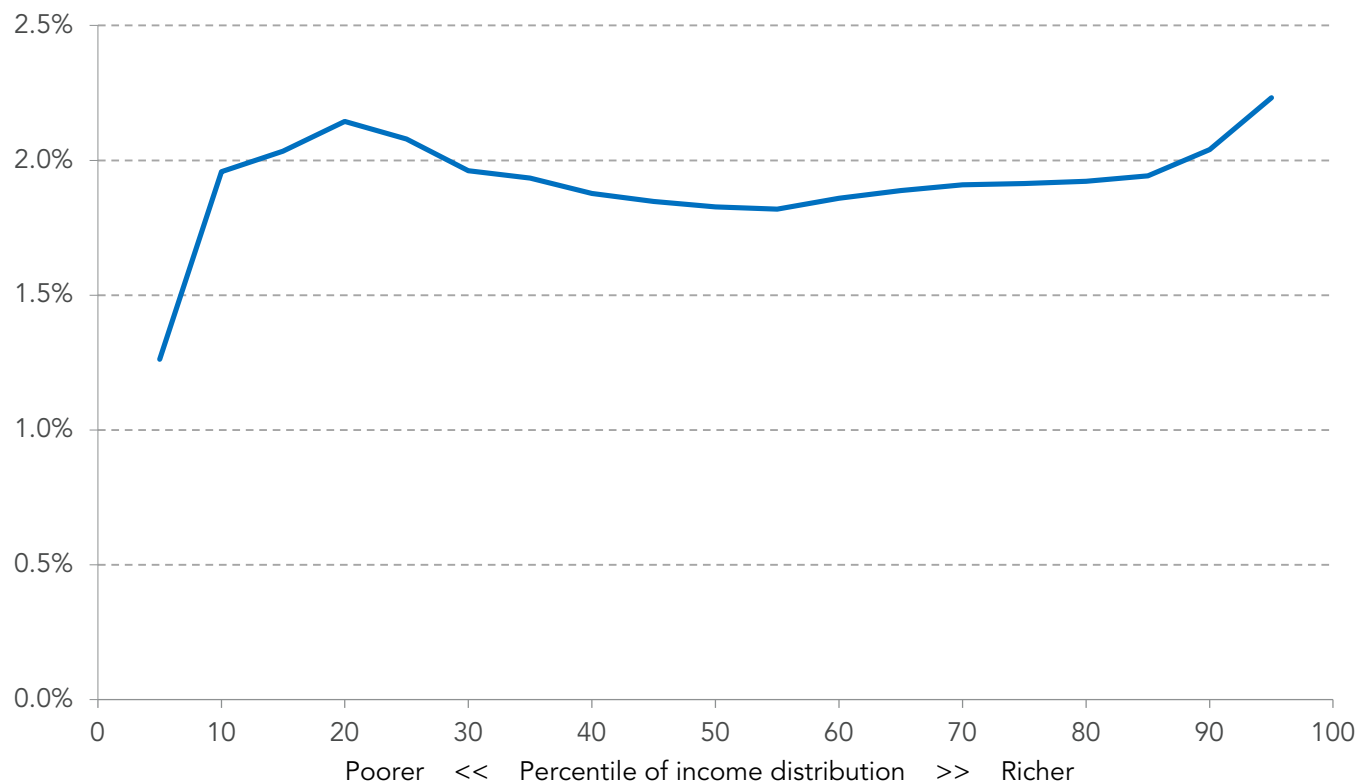
Poorer <<   Percentile of income distribution   >>   Richer

This shows relatively strong and equal average growth of around two per cent a year for most. However, this growth is weaker than in the Lakner-Milanovic data, and there is little sign of the five per cent growth for the bottom decile that was seen in Figure 12.[43] There are some differences between these methodologies: Figure 14 uses equivalised rather than per capita income (i.e. accounting for the different economies of scale for different family sizes); refers to percentile points rather than decile means; and uses a different deflator (likely more exposed to housing costs).[44] The reason for most of the difference is not clear,[45] yet the picture is again one of growth rather than stagnation.

However, as well as there being big differences between mature economies in how income is shared, there are also big differences over time within countries, including the UK. Figure 15 uses the most recent two decades of full distributional data to explore these differences, as well as the crucial difference in growth rates between income *before* and *after* housing costs. It also looks only at the working age population given that pensioners' incomes are largely driven by benefits policy and past savings, rather than the economic forces of the day. In addition, the Resolution

[43]   The Lakner-Milanovic data includes a 45 per cent rise in the average real income of the bottom UK decile between 1986 and 1991 – higher than any other decile. This seems particularly inconsistent with alternative sources.

[44]   Figure 14 also uses the 1988 - 2008-09 time period, whereas Figure 12 used 1986 as its starting point for the UK. Annuali-sation accounts for this, but the difference would actually be larger if 1986 were used for both.

[45]   Data from S Thewissen, B Nolan and M Roser, *Incomes Across the Distribution Database*, Institute for New Economic Think-ing, May 2016 would suggest that only a small part of the difference is due to basic differences between the Luxembourg Income Study and the Households Below Average Income data.

Foundation's most recent projection to 2020-21 is included, based on assumptions from before the EU referendum.[46]

A range of these income growth graphs can be explored on our website – with data back to 1961 – at resolutionfoundation.org/data/household-incomes.

Figure 15: Britain's working age income growth over the past 20 years and with pre-referendum forecast

Average real annual working age income growth before (solid lines) and after (dotted lines) housing
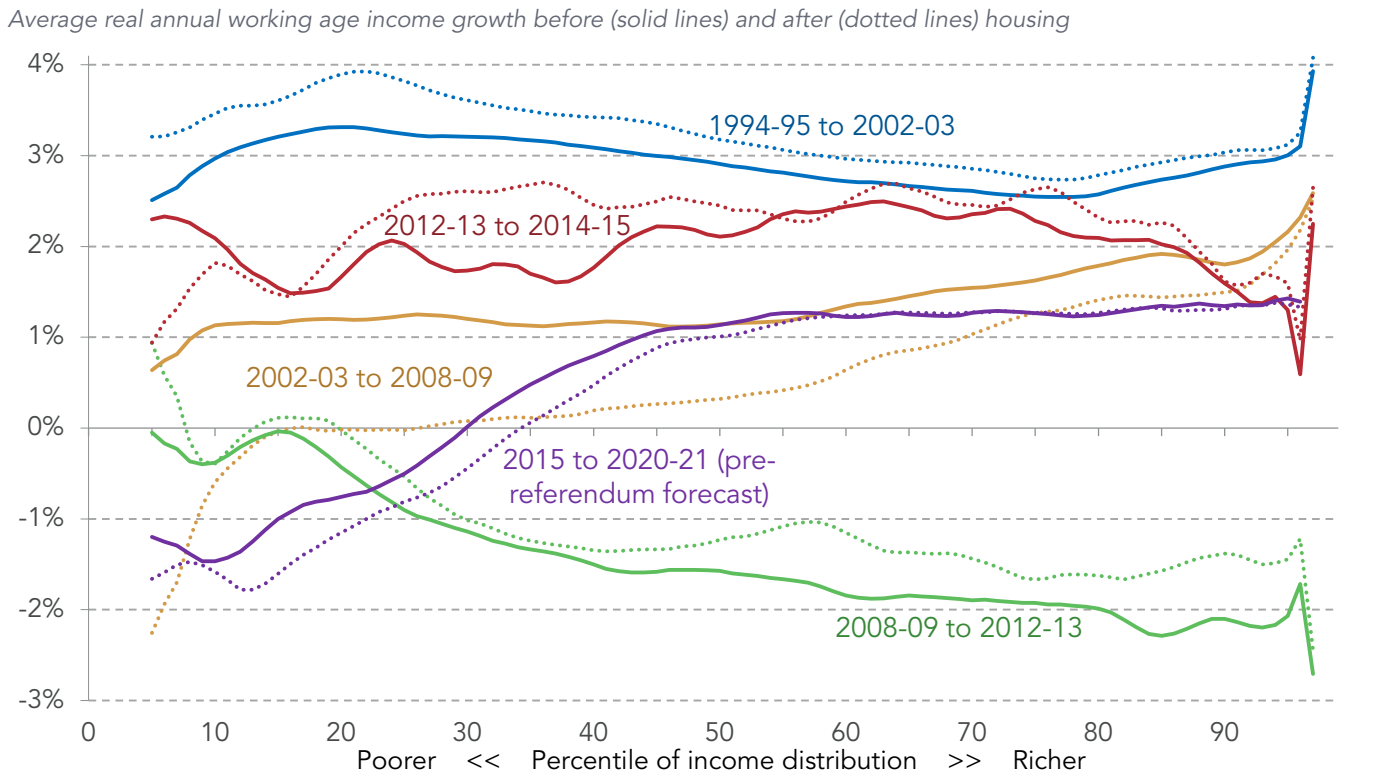
Source: RF analysis of Households Below Average Income, DWP. Adjusted for inflation using the after housing cost deflators from Living Standards, Poverty and Inequality in the UK: 2015, Institute for Fiscal Studies.

Notes: GB for 1994-95 to 2002-03; UK thereafter. The bottom five per cent are excluded due to high statistical uncertainty, and lines are then smoothed using a five-percentile rolling average. Top income percentiles may be volatile, particularly in short time periods.

These curves demonstrate how levels and distributions of working age income growth can differ greatly from period to period. From 1994-95 to 2002-03 there was a period of strong, shared growth, for example. But a number of trends are particularly worth noting:

1. Those with the very highest incomes had higher growth than most in the 1990s and 2000s, pre-crisis. And the top one per cent have performed even better than the five-percentile rolling averages in Figure 15 suggest. What's more, this household survey data likely underestimates their income growth over this period.[47]

[46]   For more details see S Clarke, A Corlett and L Judge, *The housing headwind: the impact of rising housing costs on UK living standards*, June 2016. Housing costs in this forecast include mortgage repayments and incomes exclude housing benefit.

[47]   R Burkhauser, N Hérault, S Jenkins and R Wilkins, *What Has Been Happening to UK Income Inequality since the Mid-1990s? Answers from Reconciled and Combined Household Survey and Tax Return Data*, Institute for the Study of Labor (IZA), February 2016

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2. Even before the crisis, income growth slowed significantly in the 2000s, particularly for low to middle income families. This has been linked to lower pay growth and reduced employment/hours for those in the bottom half of the income distribution.[48] But – in common with many of the periods shown – growth in before housing cost incomes was nonetheless above one per cent (and was higher for pensioners – not shown).

3. However, as the dotted yellow line shows, this slowdown was greatly exacerbated by increases in housing costs. The bottom half of the distribution saw roughly zero income growth from 2002-03 to 2008-09 once increases in housing costs are accounted for.

4. The impact of the financial crisis and subsequent recession squeezed incomes hard, particularly through lower real earnings. This was cushioned for some families by the reduced housing costs associated with record low interest rates.

5. The pre-referendum projection shows income falls for poorer households in the coming years, and low but meaningful growth for richer ones, reflecting a projected recovery in earnings alongside very large welfare cuts (which will not even be fully in place by 2020-21), despite planned increases in the minimum wage. This forecast may now be too optimistic. Following the referendum vote, higher inflation, higher unemployment and lower income growth have been forecast by other bodies,[49] which will also make worse the freeze in working age benefit levels.[50] However, there may also be lower housing costs than expected (especially for mortgagors), and the roll-out of (the now less generous) Universal Credit has been delayed.

So while it would be wrong to say that incomes for working-age households have been stagnant over the period from 1988 to the financial crisis as a whole, it is true that living standards in Britain have faced an unprecedented squeeze since the early 2000s. Average growth over the whole period from 2002-03 to 2014-15 is shown in Figure 16, along with the same to 2020-21. Using the pre-referendum forecast, the 18 year period from 2002-03 to 2020-21 appears to be one of near-stagnation (or worse) for roughly the bottom 40 per cent of the working-age population – and starkly different from the 1994-95 to 2002-03 period.
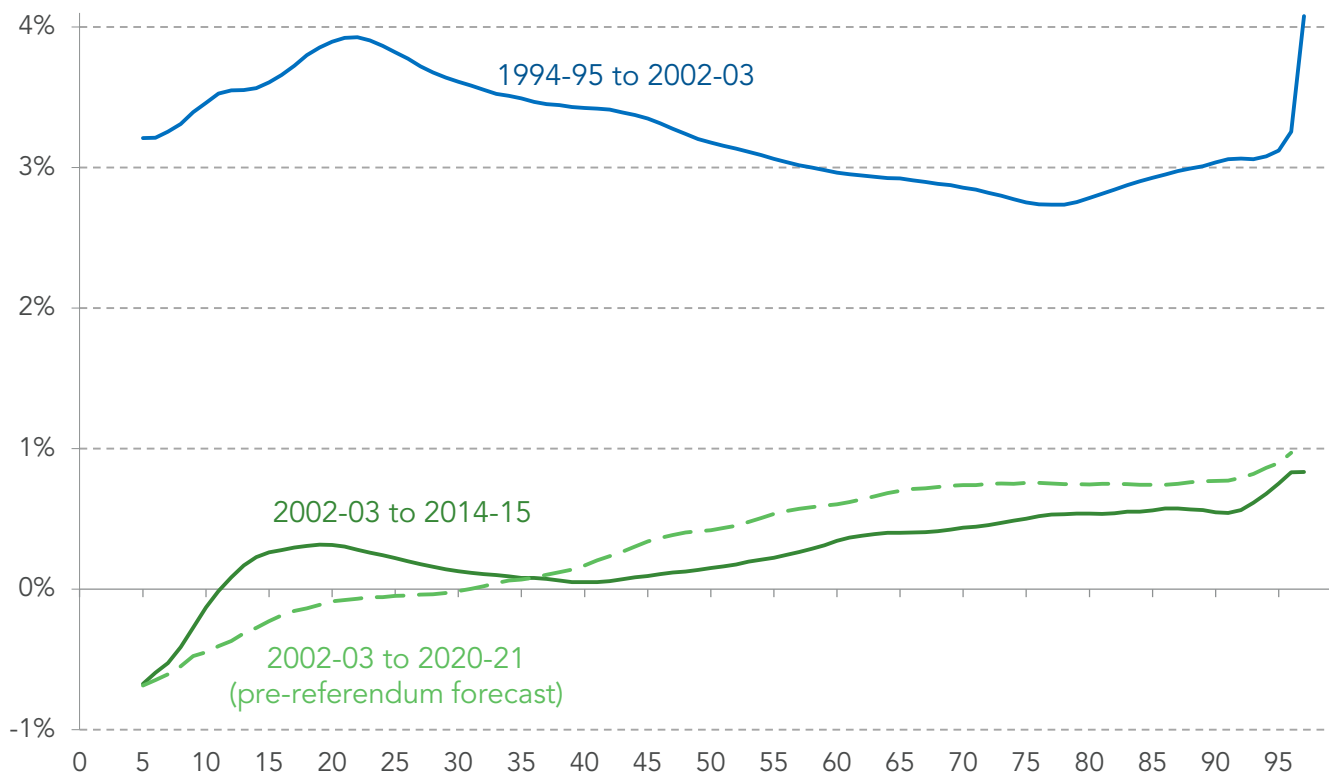
[48]   M Brewer and L Wren-Lewis, *Why did Britain's households get richer?*, IFS analysis for the Resolution Foundation, November 2011

[49]   *Inflation Report, August 2016*, Bank of England

[50]   L Gardiner, *Stagnation Generation: the case for renewing the intergenerational contract*, Resolution Foundation, July 2016

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Figure 16:   A combination of factors has led to a near-stagnation of working-age household incomes

Average real annual working age income growth after housing costs

Crucially however, in the sub-periods where there has been little or negative growth in UK incomes, there are identifiable factors unrelated to any likely impact of overseas competition: rather they are the result of domestic policy choices or political inaction.

It should be noted that all the statistics in this paper have used a single measure of inflation within countries (or two in the case of Figure 15 – with or without housing costs). They will therefore not capture any differential impacts of freer trade on costs for different households. Although prices rose faster overall for the poorest households in the UK than for the richest from 2003 to 2014 due to fuel, food and energy costs,[51] there is evidence to suggest that globalisation disproportionately drives down costs for poorer households.[52] It may be some time until analysis of living standards can fully reflect these forms of impacts.

Finally, it is worth noting that we have looked only at the aggregate picture, rather than at the impacts of new trade competition on individual localities, sectors, firms or people. These impacts may be significant. One piece of research found that "employees in sectors highly affected by Chinese imports spent more time out of employment and experienced a [relative] drop in earnings when compared to workers in less affected sectors between 2001 (the year China joined the WTO) and 2007 (the year before the Great Recession)."[53] Similar research, reaching similar conclusions,

[51]   T Flower and P Wales, *Variation in the inflation experience of UK households: 2003 - 2014*, ONS, December 2014

[52]   P Fajgelbaum and A Khandelwal, *Measuring the Unequal Gains from Trade*, The Quarterly Journal of Economics, March 2016

[53]   J Pessoa, *International Competition and Labor Market Adjustment*, Centre for Economic Performance, LSE, March 2016

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Section 4: The UK experience in more depth

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has also been conducted in the US.[54] Our own work on economic change and the scale of reduction in jobs in some sectors it can lead to demonstrates that at the micro-level globalisation (and the separate but related issue of automation) brings with it serious challenges irrespective of ongoing growth in average incomes.[55] For example, Figure 17 shows just some of the British industries that have declined significantly in recent years in terms of numbers employed.

Figure 17: The decline of employment in four classes of UK manufacturing
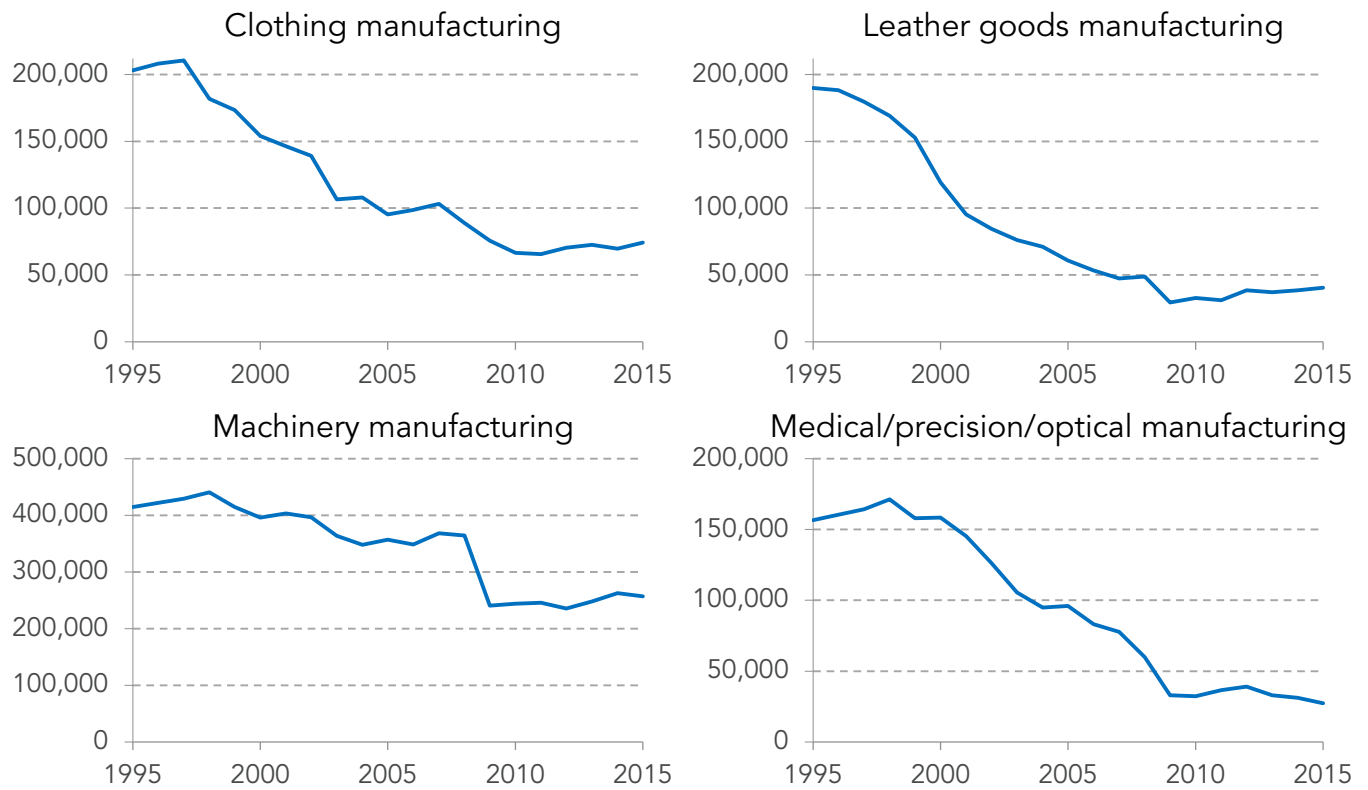
Source: RF analysis of LFS. Includes the self-employed.

The impacts on individuals and areas are real, yet the degree and permanence of associated losses are affected by policy choices: both regarding the provision of targeted support and retraining and regarding more general policies on the safety net and inequality. If freer trade in aggregate "brings benefits to developed economies" ("even facing a fierce competitor such as China"),[56] then the optimal solution may be to do support this while compensating losers and sharing the benefits, alongside ensuring that policy does not provide other headwinds to working class living standards.

[54]   D Autor, D Gordon and H. Hanson *The China Shock: Learning from labor market adjustment to large changes in trade* NBER Working Paper, January 2016

[55]   A Corlett, *Robot wars: automation and the labour market*, Resolution Foundation, July 2016

[56]   J Pessoa, *International Competition and Labor Market Adjustment*, Centre for Economic Performance, LSE, March 2016

Section 5

Conclusion

Study of the global income distribution is a fascinating new avenue of economic analysis. The work done by Milanovic, Lakner and many others in developing (and making available) global income datasets is a big step forward of great communal benefit. There is a long way to go before these global datasets match the quality of (for example) UK household microdata, but in large part this will require increased effort and transparency from governments around the world rather than from the researchers concerned.

The elephant curve has helped shine a light on a number of trends during a period of growing trade, including slight reductions in our staggering high level of global inequality. But some of the conclusions drawn from it by others need shooting down. We have shown that incomes for the lower middle class of the rich Western world have grown, not stagnated. Yet, on the other hand, gains have indeed flowed disproportionately to the richest within many countries, including in the UK. And beneath the national figures lie many individual and regional losers.

A narrative of rising inequality and low growth in living standards at the bottom is less inaccurate for the US. But the wide range of experience between mature Western economies should make us reluctant to accept that the US experience has been simply an inevitable result of global forces (perhaps particularly because international trade makes up a relatively low share of its economy overall).

We should note too that we cannot assume that historic trends will continue, something Milanovic himself warns us against. [57] Processes such as the offshoring of some manufacturing jobs from the UK or US to China may have already happened and be unrepeatable, and because of its remarkable growth China is no longer such a low paying nation. We do not know if India or sub-Saharan Africa will benefit from exporting, inward investment and rapid growth in the same way that China did, nor what impact global demographic trends will have. And new technologies may change the equation too, continuing to shift commerce into the digital realm while reducing the need for primary and manufacturing labour in both poorer and richer countries.[58]

Nonetheless, the UK – traditionally a relatively open country – is now going to have to decide again where it stands on many aspects of globalisation. While looking to the future, we need to avoid a misleading conclusion that the UK experience has been entirely like that of the US in recent decades, but also recognise that the gains from globalisation have not always been shared equally in the UK, both in terms of overall distribution and geographically.

Despite the challenge of narrowing global inequality, we must of course continue to chase productivity growth in richer countries, which has lately been in short supply as Figure 18 shows. Pushing forward the global technological frontier and doing more to see that technology

[57]   "Economists and social scientists see the future as being composed of fundamentally the same substance as what makes up the present and the very recent past… What seems salient to us today, however, may turn out later to be inconsequential." B Milanovic, *Global Inequality : A New Approach for the Age of Globalization*, Harvard University Press, April 2016, p158

[58]   A Corlett, *Robot wars: automation and the labour market*, Resolution Foundation, July 2016

diffused will continue to be a priority for those seeking improved living standards for low and middle income households in rich countries.

Annual growth in GDP per hour worked, average of last 5 years
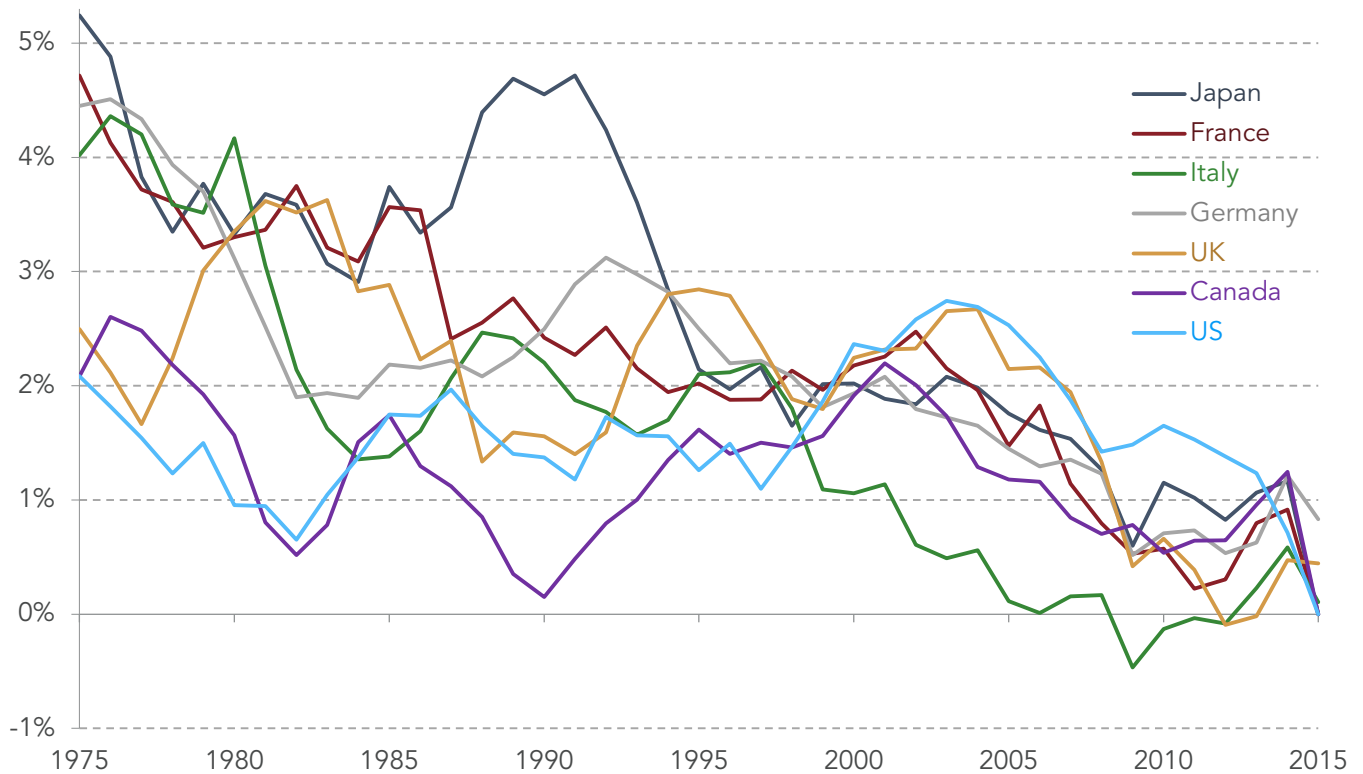
Source: RF analysis of OECD

Theory at least would suggest any pro-growth agenda should include freer trade. But even policies that make every country better off may still create losers, either in absolute terms or relative to their richer compatriots. That is why policy makers striving for more inclusive growth have a much harder task than simply reversing globalisation: managing the effects of free trade rather than ending it, supporting places and people affected by economic change, while recognising that wider domestic policy is central to determining working people's living standards even in a globalised world.

Not only is this task hard, but it is crucial. It is up to policymakers to share the gains sufficiently, compensating losers and reining in domestic inequality, otherwise they might be encouraged to shoot the globalisation elephant. Fortunately for future opportunity, it is clear that policies that were always within domestic control, such as housing, welfare spending and (to a debateable extent) the causes of some economic shocks – alongside broader, long-run productivity growth – remain crucial determinants of living standards.

Resolution Foundation

Resolution Foundation is an independent research and policy organisation. Our goal is to improve the lives of people with low to middle incomes by delivering change in areas where they are currently disadvantaged. We do this by:

» *undertaking research and economic analysis to understand the challenges facing people on a low to middle income;*

» *developing practical and effective policy proposals; and*

» *engaging with policy makers and stakeholders to influence decision-making and bring about change.*

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