

Readjusting the Rations

Report of the Financial Inequality Working Party 2014

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Version and Purpose Note (4 August 2014)

We are a group of actuaries based in the UK who started to meet late in 2013 aiming to produce a paper and talk for the following GIRO conference. Over time, enthused by our research and discussions, our vision and ambition has grown somewhat. We have also been invited to present at the 2014 Life conference, and intend this version of our paper to be suitable for both events.

We believe this is an interesting area and that there may be opportunity to extend and develop our work from this point. If you would be interested in participating, you are welcome to discuss this with any of us. (The 2013/14 chairman would prefer to use his work email for this purpose: phil.ellis@apollounderwriting.com)

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1 Introduction

Fundamentals

Some financial inequality is both inevitable and arguably desirable. It seems clear to us that naïve equality of distribution is both unattainable and unworkable. Further, all over the world and in various economic systems, the opportunity to “get on” is a fundamental driver of economic effort. Few would dispute that commensurate rewards should sensibly be allowed to accrue to those who have made significant effort or contribution, or exhibited supreme levels of some desirable skill.¹

At the other end of the thought-experiment spectrum, extreme concentration of wealth or income in the hands of a tiny few, leaving the vast majority in penury, seems both unfair and inefficient. Further, the impact of both the unfairness and the inefficiency increases if there is no possibility of movement between the groups.

This working party paper considers what the current levels of inequality are, and how they compare with history and across countries. We consider an appropriate actuarial response and what we as a group have learned during the course of our research and discussions.

Motivations

Financial inequality is currently a big issue, regularly commented on by politicians, economists and business leaders. In a May 2014 conference², Christine Lagarde, MD of the IMF, said *“A greater concentration of wealth could — if unchecked — even undermine the principles of meritocracy and democracy. It could undermine the principle of equal rights proclaimed in the 1948 Universal Declaration of Human Rights.”*

In his speech at the same conference Mark Carney, Governor of the Bank of England, gave a number of thought-provoking comments including:

- *“Inclusive capitalism is fundamentally about delivering a basic social contract comprised of relative equality of outcomes; equality of opportunity; and fairness across generations”,*
- *“Returns in a globalised world are amplifying the rewards of the superstar and, though few of them would be inclined to admit it, the lucky. Now is the time to be famous or fortunate”,* and
- *“Capitalism loses its sense of moderation when the belief in the power of the market reaches the realm of faith.”*

As we will demonstrate, on almost all measures and in almost all economies the recent trend has been of inequality increasing.

¹ Heated arguments may follow, of course, over what is the appropriate “commensurate reward” ...

² Conference on Inclusive Capitalism: Building Value, Renewing Trust, 27 May 2014, <http://www.inclusivecapitalism.org/>

The initial idea for a working party with a “social justice” theme arose at a meeting of the Christian GI Actuaries Group. However, following an appeal for volunteers, our working party quickly expanded to draw in members from a wide variety of backgrounds and beliefs. Fairly early on we identified three issues that motivated us:

- Self-interest: is it true that increasing inequality leads to a more dysfunctional society and worse outcomes for (almost) everyone?
- Compassion for the poor: especially if they are trapped with relatively little hope
- Reflections on our current and prior beliefs: have we been in error, even if well-intentioned?

Although data is most readily available for income inequality, in addition we wanted to consider inequality in accumulated wealth.³ We also adopted an international perspective alongside our initially UK terms of reference.

For example, early in 2014 Oxfam issued an analysis asserting that the accumulated wealth of 85 of the world’s wealthiest people was equal to the total wealth of the poorest half of humanity – a single London bus full, compared to 3.6 billion people. Given that there are 31.6 million seconds in a year, it would take 114 years to count this many people at one-per-second (... with no hesitation, deviation or repetition). This struck us as a telling comparison. We consider later in our paper whether this widely-reported analysis is well-founded, but it does shed light on the scale of global inequity in broad terms.

Harvard economist Larry Katz offers one of the most compelling analogies for wealth inequality in the US. “Think of the American economy as a large apartment block. A century ago – even 30 years ago – it was the object of envy. But in the last generation its character has changed. The penthouses at the top keep getting larger and larger. The apartments in the middle are feeling more and more squeezed and the basement has flooded. To round it off, the elevator is no longer working. That broken elevator is what gets people down the most.”

There’s a lot out there!

Once we started looking in earnest we found a vast plethora of related material, both “data” and, particularly, argument pieces. We have tried to capture and consider a range of these sources but to balance cataloguing zeal with practicality, and breadth with added value. We accepted early on that attempting anything like a comprehensive inventory would be an aim that we just could not achieve.

Further, during the eight months of our discussions, this topic has bubbled near the surface in lots of different areas – political debate, press commentary, this year’s “hot new thinking-classes book” (Piketty, 2014), to mention a few. Although this has been interesting, it has

³ Clearly the two are inter-related, e.g. wealth inequality helps drive income inequality since additional assets collect additional dividend or rental income.

added to the vast pile of material that we could never hope to scale fully. We've necessarily been a bit selective.

Our paper

Throughout the first sections of the paper, we have sought to be objective and balanced, particularly about theories and measures in so far as they can be observed to be plausible or robust. Such objectivity has not been easy and we may not have fully achieved our aim. From what we have seen, vastly more has been written by those challenging the status quo than those defending it. This "writing to challenge" bias is to be expected here, as it is in other areas. It is not necessarily because "the wicked and exploitative elite have stifled debate in mainstream media and political circles and dulled the minds of the majority to force their complicity in the great swindle", as certain authors might have us believe (*... though it might be!*).

Section 4.2, on what the working party thinks, was in many ways the most interesting for us. We are a mix of actuaries, most of whom currently work in General Insurance. We also have a mix of perspectives. Some of us believe that greed is inherently wrong, that all humans have intrinsic value that derives from their creation in the image of God. Others of us sympathise with compassionate conservatism or left-wing political sentiment and believe that society needs to protect the poor from the rich, who, without restraint, would line their own pockets excessively, regardless of the vast collateral damage to others and the environment. As a working party, we were able to reach a consensus independent of our particular religious or political stances.

In Section 5 of this paper, we have included our own commentary on some of the books, papers and articles that we found. We commend this to you, for a quick overview of those materials and for further reading if you wish to delve more deeply into any aspect.

We hope you enjoy and are challenged by this paper. You should find it easy enough to visit separate sections independently, but we trust that the result works as a coherent whole so that starting from the front and reading it all consecutively makes sense.

2 “Facts” and Information about Inequality

This section has five elements:

- We start by considering how inequality can be measured.
- Next we investigate data for income inequality, both current and historic, for the UK and a number of other countries.
- Then we give some corresponding results for wealth inequality.
- Our fourth section considers what data and analyses are available to help assess the impact of inequality on a range of social factors.
- Finally we include some thoughts on the issue of intergenerational inequality.

There is quite a lot of material here. Feel free to flip pages once you have a feeling for what the content is, but do note that the different sub-sections have different flavours and we recommend that you at least give each one a sensible try before moving on.

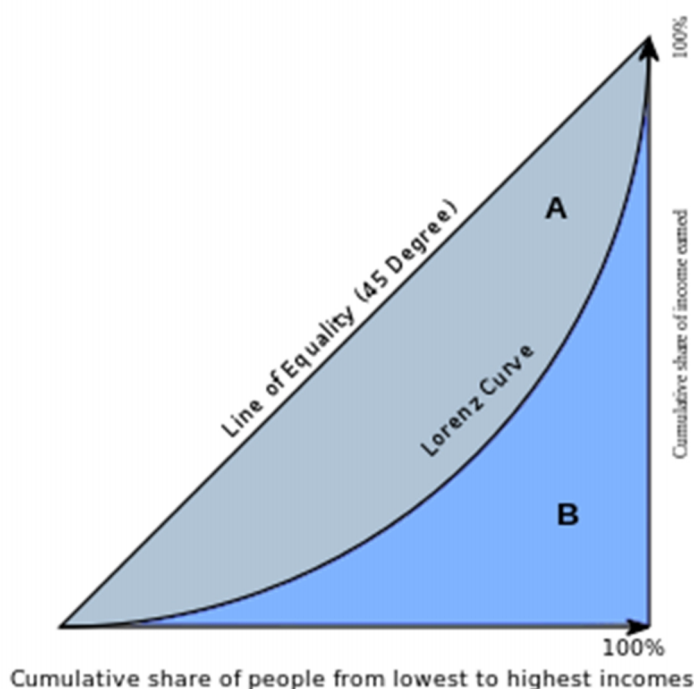
2.1 Measuring Financial Inequality

Although the concept of financial inequality is easy to grasp, it is hard to capture the extent in a simple statistic that is easy to measure and understand that also has “all the right properties”. In this section we explain the widely used Gini coefficient and other possible measures, several of which we refer to in later sections.

Gini Co-efficient – Income (or Wealth)

Definition: A measure of statistical dispersion often used to represent either the income or the wealth distribution of a nation's residents. The Gini co-efficient has a value of between 0 and 1, with 0 representing a completely even distribution and 1 representing “perfectly unequal” distribution where all the income (or wealth) goes to one individual and everyone else has nothing. The coefficient is based on the Lorenz Curve, shown below, a plot of cumulative income (or wealth) against cumulative percentage of population, ordered from the poorest on the left to the richest on the right. In the diagram below, the Gini coefficient is represented by the ratio $A / (A+B)$.

Figure 2-1 – Diagram illustrating the Lorenz Curve and the calculation of the Gini coefficient



Along the line of equality ($y=x$), everybody has the same income. The Gini coefficient can be thought of as representing the average deviation of the statistic (income / mean income).

Properties: The Gini coefficient is one of the most widely reported measures of inequality, but can be calculated for income either pre- or post-tax, for individuals or households, or with a variety of other subtleties. As a result, care should be taken when making comparisons.

Its popularity arises since it has a number of desirable properties for a measure of inequality, namely:

- *Ease of Calculation:* subject to some simplifying practical assumptions.
- *Anonymity:* it doesn't matter who the high and low earners are.
- *Scale independent:* it doesn't matter what measure is used or whether the country is wealthy or poor on average.
- *Population independent:* it doesn't matter how large the population is.
- *Transfer principle:* transferring money from wealthy to poor generally decreases inequality.⁴

Limitations: However, the Gini-coefficient is a relatively simple measure which has a number of important limitations that can make comparisons misleading:

⁴ Exceptions can be constructed, such as extremely large transfers to relatively few individuals.

- It is a relatively complex, non-intuitive measure of inequality which can be hard to communicate.
- The same value may result from many different distribution curves, as the coefficient does not give an indication of where and how in the distribution the inequality occurs.
- It can be influenced by the granularity of the observations used to calculate it – for example, using five 20% quantiles usually result in a lower Gini than using twenty 5% quantiles.⁵
- Demographics can affect the value of the observed Gini coefficient partly because income and wealth generally increase over individual lifetimes. A move to smaller households (e.g. more single parent families) can also increase the observed Gini coefficient without any change in individual incomes.
- It can struggle to account for benefits and the informal economy, particularly where benefits are hard to value because of the lack of a free market (e.g. the NHS) or because the income is not recorded (subsistence farming or bartering).
- Perhaps most importantly, the Gini coefficient does not consider absolute values – for example, according to UN figures, the Netherlands and Bangladesh both had a Gini coefficient for income of 0.31 in 2010.⁶ This statistic does not capture the fact that average income (and resulting standard of living) in the Netherlands is much higher.

20:20 and P90:P10 (or similar) Ratios

Definition: (a) Ratio of total income of top 20% to total income of bottom 20%, and
(b) Ratio of income for individuals at the 90th and 10th percentiles of distribution.

Properties: The key property of using a measure such as the 20:20 or P90:P10 ratio is that it lessens the effects of extreme outliers on the comparison. It also appears to be better correlated with social stability indicators than the Gini coefficient, making it potentially a more useful statistic when looking to draw conclusions.

Limitations: Many of the limitations of the Gini coefficient also apply to these ratios.

For example, the 20:20 ratio ignores the middle 60% of the population and the P90:P10 ignores all but those two points. Hence whilst they each can dampen the effects of the extreme outliers, it does mean that the focus of the metric is near the ends (or chosen points) of the distribution, rather than on the bulk of the population. Depending on purpose, this can sometimes be viewed as an advantage, as it moves away from the middle classes and on to the rich-poor divide – often what people are most interested in when they talk about inequality in a general sense.

⁵ Philippe Monfort (2008), "Convergence of EU regions – Measures and Evolution", European Union – Europa, pp 6

⁶ United Nations Development Program, Human Development Report, "The Real Wealth of Nations: Pathways to Human Development (2010 Human Development Report – see Stat Tables)", pp 152-156

As noted above, other percentiles can be considered. For the 20:20 (TVaR type) measure, smaller ranges mean more extreme groups are used, so the metric naturally records higher values, though the size of this effect differs between countries (and over time). For the P90:P10 (VaR type) comparisons, data for extreme upper percentiles can be hard to obtain or inaccurate. Finally note that to enhance ease of understanding comparisons are often made and quoted against the median, i.e. effectively the Px:P50 ratio, even if results are not always stated in these terms.

*Palma Ratio*⁷

Definition: The Palma ratio is defined as the ratio of the richest 10% of the population's share of gross national income divided by the poorest 40%'s share. The rationale for this metric is that “middle class” accounts for around 50% of income earners in many countries, with the rest divided between the richest 10% and the poorest 40%, although the share of those groups varies considerably.

The Palma ratio addresses the Gini index's perceived over-sensitivity to changes in the middle of the distribution and insensitivity to changes at the top and bottom, and also seems to be a more intuitive measure of inequality. Our research, however, suggests that this ratio is rarely used at present.

*Hoover Index*⁸

Definition: The Hoover index is the simplest of all inequality measures to calculate: it is the proportion of all income which would have to be redistributed to achieve a state of perfect equality (this has led to it being called the “Robin Hood index” in the UK).

It can be graphically represented as the longest vertical distance between the Lorenz curve and the line of equality – i.e. using the graph in the Gini section, it is the longest vertical line that can be drawn within the region A. As a result, it takes a value between 0 and 1.

*Theil Index*⁹

Definition: The Theil index is an entropy measure – a measure of disorder. It measures the “distance” the population is away from the “ideal” egalitarian state, using ideas imported from information theory.

As with the other indices, full equality is represented by a value of zero. A mathematical advantage of the Thiel index is that it is additive – for example inequality in the United States could be constructed as the weighted average inequality across the States, plus the inequality between the States.

⁷ Palma, José Gabriel (January 2011), "Homogeneous middles vs. heterogeneous tails, and the end of the 'Inverted-U': the share of the rich is what it's all about", Cambridge Working Papers in Economics (CWPE) 1111, Cambridge University

⁸ http://en.wikipedia.org/wiki/Hoover_index

⁹ http://en.wikipedia.org/wiki/Theil_index

As a result of its complexity, this statistic is rarely used, possibly as it is hard to communicate to policymakers and the general public.

2.2 Income Inequality

Definition

Income inequality is an indicator of the size of the gap between the rich and the poor. There are two ways of looking at income inequality. One is to consider inequality within one country (intra-country inequality) and the other is to consider inequality between them (inter-country inequality). Often the direction of the change in inequality is felt to be of more interest than its absolute level.

Before we move to understand the trends in income inequality, it is useful to define "income" in this context. Income can be assessed at a household or individual level. Household income may be adjusted for household size by using various 'equivalence' scales¹⁰, or analysed unadjusted. The income component may or may not include state benefits and be before or after taxation.

In the UK, the Department for Work and Pensions (DWP) uses 'equivalised' household net income in its inequality studies. This includes income from all sources, including earnings, profit or loss from self-employment (losses are treated as a negative income), investment income, pensions, and state support (i.e. benefits and tax credits), minus council tax and any direct taxes paid on these sources.

Gross Domestic Product (GDP) per capita adjusted for market or Purchasing Power Parity (PPP) exchange rate is often used in an analysis of inter-country inequality.

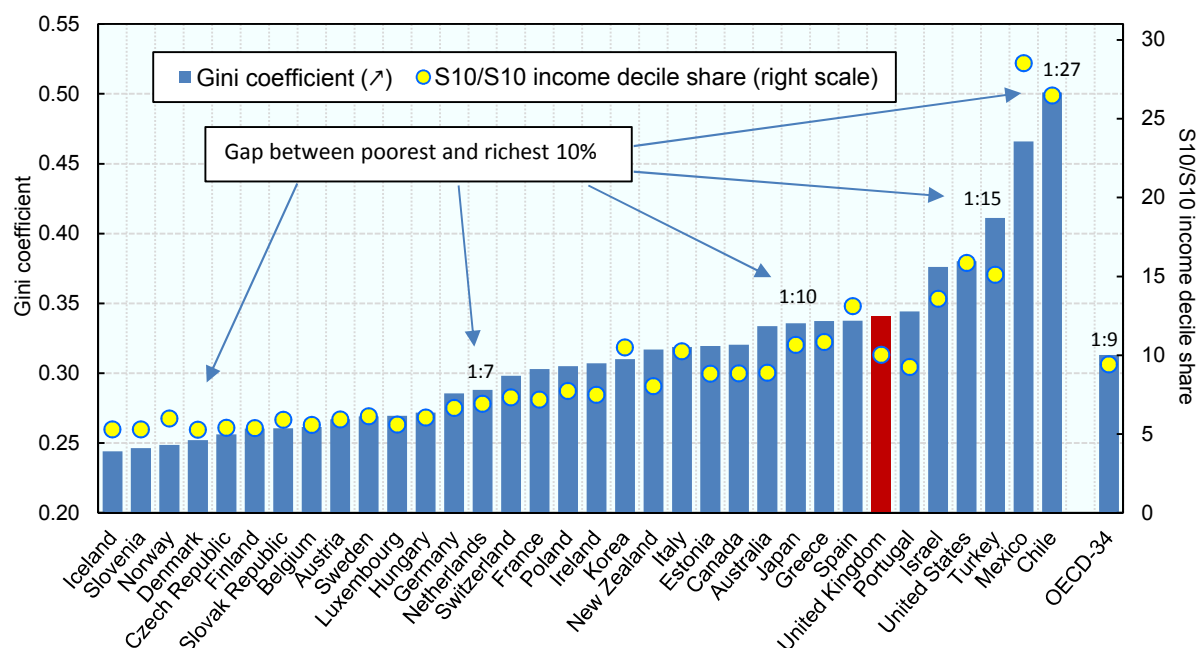
Some have argued that, rather than income, one should look at consumption and expenditure to measure inequality as they may be a truer indicator of the standard of living, though relevant and reliable statistics are far less easy to compile. A possible issue with this however is that it does not capture income received but not spent.

¹⁰ For more details on equivalence scale, please refer to the OECD article <http://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf>

Global Intra-Country Comparisons

When considering within-country inequalities, the mean income of the richest 10% of the population averages about nine times that of the poorest 10% across the OECD countries.¹¹ As can be seen in Figure 2-2, the extent of inequality varies considerably across countries. It is much lower in the Nordic and many continental European countries but significantly higher in Mexico and Chile.

Figure 2-2 – Gini coefficients of household disposable income and gap between richest and poorest 10%¹²



Notes:

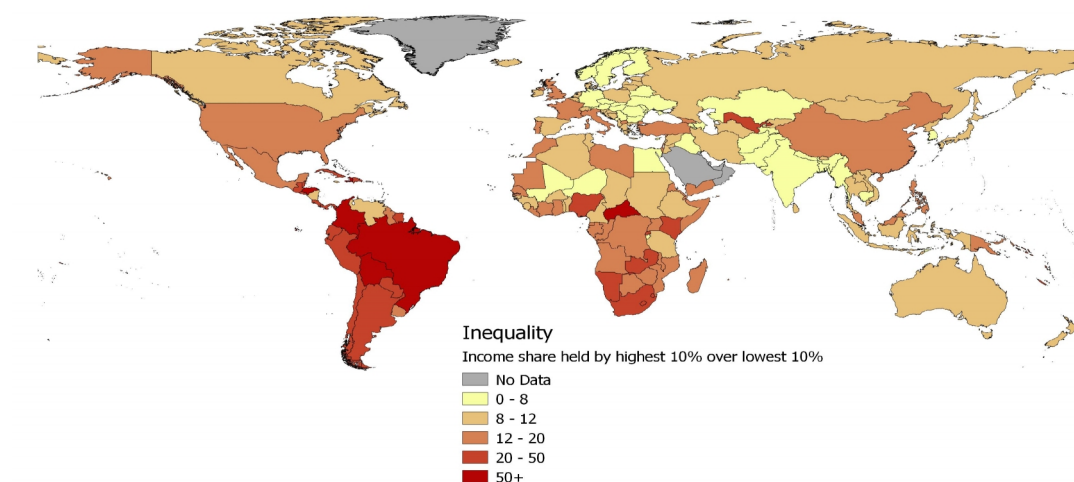
1. Data generally refers to 2010. However, data refers to 2009 for Hungary, Ireland, Japan, New Zealand and Turkey; 2011 for Chile. Data based on EU-SILC for 2010 are still provisional for Austria, Belgium, Czech Republic, Estonia, Finland, Greece, Iceland, Italy, Luxembourg, Poland, Portugal, Spain, Slovak Republic and Slovenia.
2. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

11 OECD, "Divided we Stand: Why Inequality Keeps Rising" (2011-12-05) documented the causes, consequences and its implications of income inequality across the OECD countries

12 OECD Income Distribution Database: www.oecd.org/social/income-distribution-database.htm (Accessed 5 July 2014)

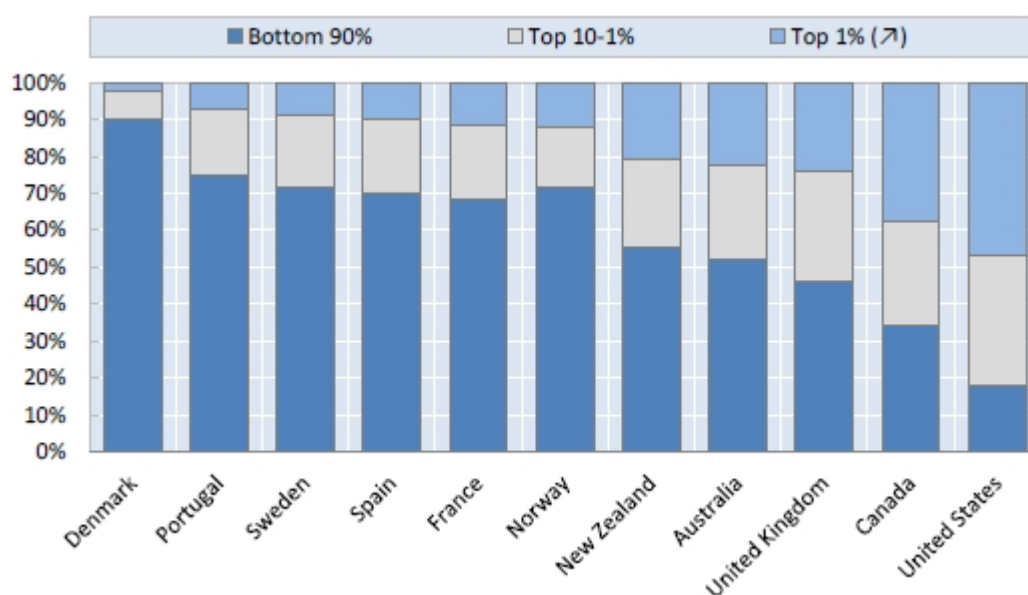
The following map, showing recent Gini income coefficients for each country, illustrates the existence of particular concentrations of inequality.

Figure 2-3 – Map of the world showing the spread of income inequality as of 2010



The gap between rich and poor has widened in almost all OECD members over the last 30 years. Figure 2-4 below shows that most of the income growth in a recent thirty year period went to the richest 1% of people: around 47% of the total in the United States, 37% in Canada and about 20% in the UK, Australia and New Zealand¹³.

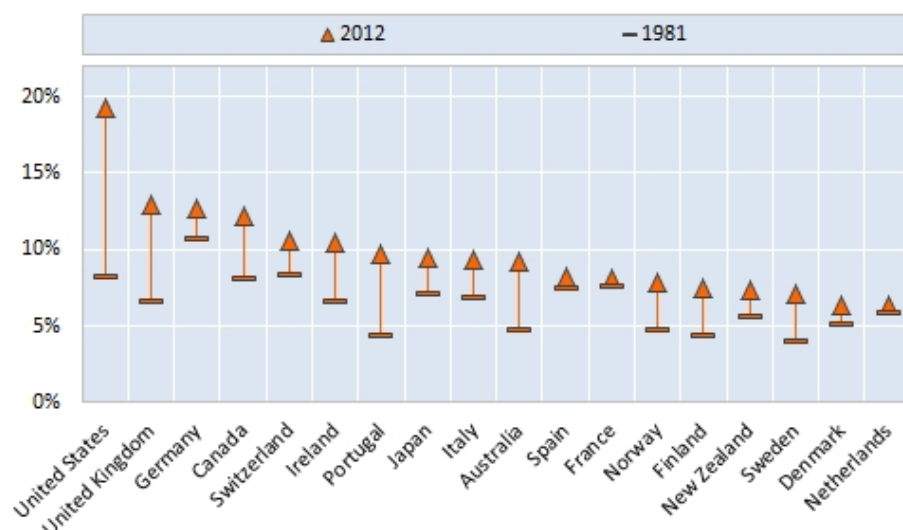
Figure 2-4 – Share of total income growth captured by income groups from 1976 to 2007



¹³ OECD (2014), "Top Income and Taxation in OECD countries: Was the crisis a game changer?", <http://www.oecd.org/els/soc/OECD2014-FocusOnTopIncomes.pdf>

Figure 2-5 shows that the share of the total income to the top-1% of income recipients by number has increased significantly in most countries over a slightly different thirty year period. The growth in share is particularly spectacular in the United States and Portugal where the share of the richest 1% has more than doubled since 1980.

Figure 2-5 – Share of total pre-tax income to the top 1% in 1981 and 2012¹⁴



The most common explanation given for increasing inequality is that rich households have done particularly well in comparison with middle-class families and those at the bottom.

In many places the recent economic crisis also seems to have often hit the poorest particularly hard. A recent OECD study reported that out of the 33 countries where data was available, 21 countries showed that the top 10% of the population fared better than the poorest 10% between 2007 and 2010.¹⁵

However another widely considered reason for rising inequality is due to changes in the structure of households, e.g. if families fragment or the proportion of elderly increases. There are now more single and single-parent households today than ever before. When considering income per household this tends to depress values and increase inequality measures, especially if more of the fragmentation takes place among the poor.

In contrast, evidence has shown that in general pensioner poverty has reduced significantly in the last two decades with improved private pension provision and government's redistributive efforts.

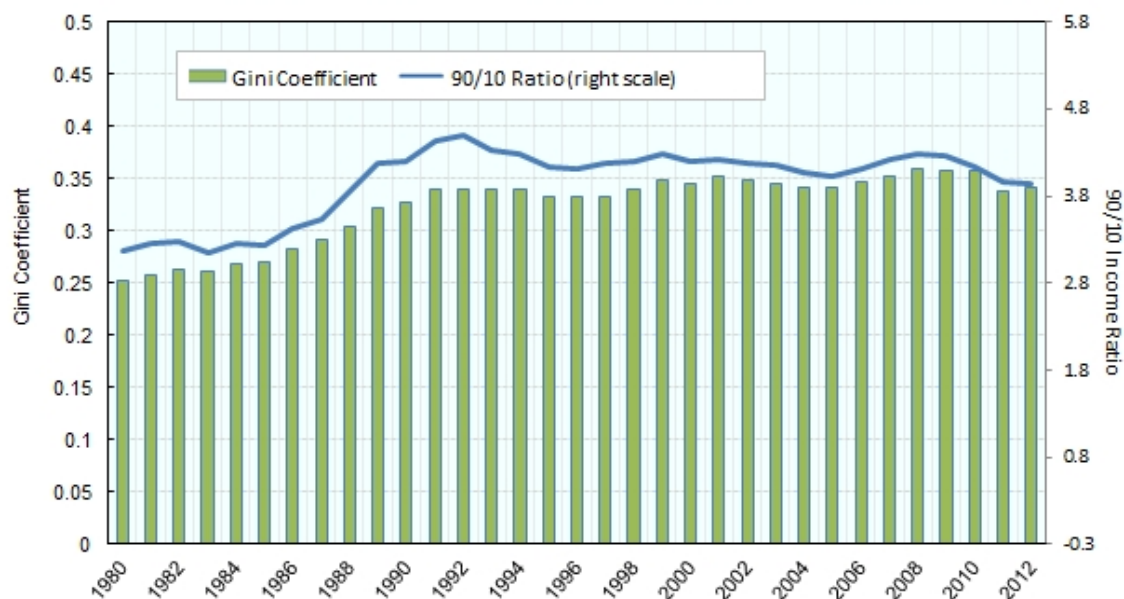
¹⁴ <http://www.sochealth.co.uk/2014/04/30/income-distribution-poverty/income-2/>

¹⁵ OECD (2013), "Growing risk of inequality and poverty as crisis hits the poor hardest", <http://www.oecd.org/els/soc/growing-risk-of-inequality-and-poverty-as-crisis-hits-the-poor-hardest-says-oecd.htm>

UK Trends

Over the past 30 years as a whole, income inequality in the UK has grown significantly. The Gini coefficient has grown from 0.24 in 1977 to 0.34 in 2012. The UK now appears to be one of the most unequal countries in the developed world. It is ranked 7th highest out of 34 OECD countries (Figure 2-2). Despite there being some years of decreasing inequality, such as 1994-1996, 2001-2005 and 2010-2011, in general income inequality has increased in recent decades (Figures 2-4 and 2-5).

Figure 2-6 – Gini coefficient of household disposable income and gap between richest and poorest 10%



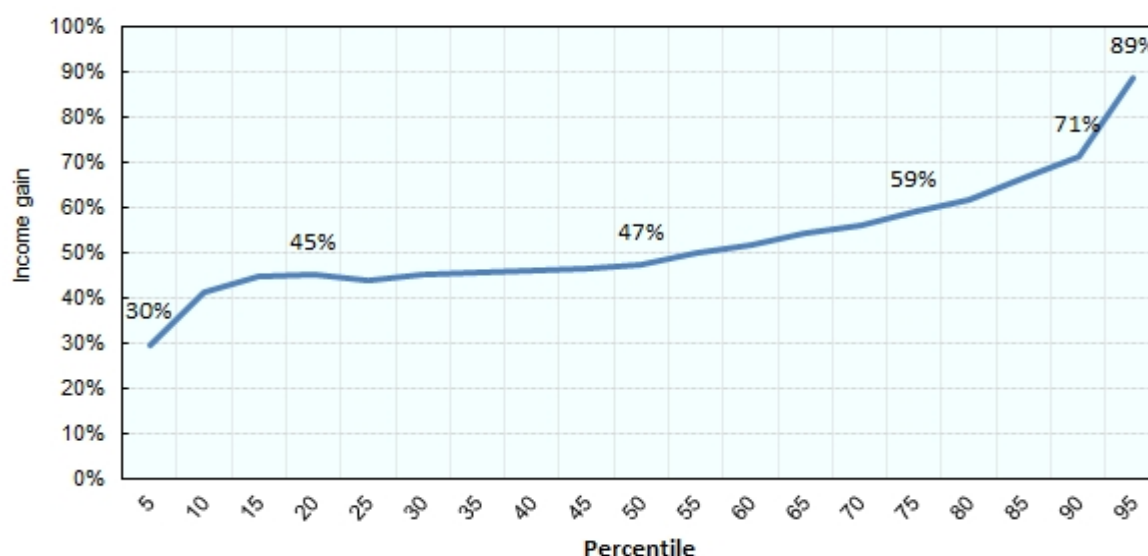
Notes:

1. Incomes have been adjusted for inflation using RPI.
2. Incomes have been measured before housing costs have been deducted.

There is a vast difference between the average income of the richest and the rest of the UK. Figure 2-7 shows how the income in the UK has changed since 1980 across the income distribution. It shows that income at the top 5th percentile has grown almost twice as fast as those at medium income and three times as fast as those at the lower 5th percentile. Over the last decade, the proportion of total income going to the richest 10% has been around 28% while only 3% goes to the poorest 10%.¹⁶

¹⁶ DWP, Households Below Average Income, Before Housing Cost, <http://www.ifs.org.uk/fiscalFacts/povertyStats>

Figure 2-7 – Real income growth by percentile point, 1980 - 2012



Notes:

1. Incomes have been adjusted for inflation using RPI.
2. Incomes have been measured before housing costs have been deducted.

In contrast to the chart above, the recent recession has seen inequality falling back a bit to the level last seen in the mid-1990s. Research suggests there are two reasons for this:

- Wealthier people would tend to have more exposure to riskier financial assets, which performed poorly during the recession,
- Real increases in income from benefits and tax credits have bigger positive impact on the poorest households, while many in the middle and towards the bottom of the distribution have seen their wages fall in real terms.

With improving corporate profitability, a return to real earnings growth and cuts to benefit and tax credit entitlement, the reduction in inequality is likely to be a temporary rather than permanent phenomenon.¹⁷

Global Inequality Situation is more complex

When considering the trend of inter-country inequality since 1980s, the conclusions are much more varied. Economists are divided as to whether income inequality is ultimately increasing, relatively stable or reducing. This is due to the various methodologies one can take in studying global inequality. Milanovic called this disparity the “mother of all inequality disputes” and showed that, using the same data on Gini coefficient, if incomes were unadjusted by population size inequality increases, but if they were adjusted

¹⁷ IFS Report R81, "Living Standards, Poverty and Inequality in the UK: 2013". This report also showed how the changes in inequality have differed across the income distribution, <http://www.ifs.org.uk/comms/r81.pdf>

inequality decreases.¹⁸ This pattern is mainly driven by the rapid economic growth in China and India, which together represented almost 40% of the world's population.

Data Limitation

There are numerous challenges in comparing income inequality between different countries. One of the most important issues is the differences in the definition and measurement of income used. Because there is no worldwide household survey, the best one can do is to combine individual countries' surveys. This will inevitably reflect differences in the definition of survey income between countries. Income figures can also be affected by the choice between market or PPP exchange rate, and between the different methods in calculating PPP exchange rate.¹⁹

A further problem is that most countries only undertake national surveys every five years (or less often) and these are produced at different points in time in different countries. This means that the global inequality studies are forced to use data that are based on a mix of different time periods for different countries. Other comparability issues include differences in survey methodology over time and across countries.

There is also a concern about data accuracy. Household surveys tend to under-represent the very poor and the very rich as they are less accessible. Incomes above a certain threshold are often lumped together so the potentially huge skewness of the top band may not be fully recognised. It is estimated that income inequality are under-reported by as much as 10 percentage points.²⁰

2.3 Wealth Inequality

Definition

Another indicator of the gap between the rich and the poor is wealth inequality. An individual's wealth is defined as that person's net worth, or assets minus liabilities. As with income inequality we mostly consider comparisons of wealth to be between households.

The UK's Office for National Statistics' Wealth and Assets Survey makes the following distinctions when assessing assets and liabilities:

- Assets can be Financial – including money held in bank accounts, financial investments, cash, and private pensions; or Non-Financial – primarily properties and other valuables, such as art, vehicles and other collectables.

18 Milanovic (2011), "Global Income Inequality by the Numbers: in History and Now – An Overview"

19 Three different methods have been used to calculate the domestic price level: (i) the Geary-Khamis (GK) Method, (ii) the Eltető-Köves-Szulc (EKS) method, and (iii) Afriat's method. For an overview of the relative merit of these methods, please read Goda (2013) "Changes in income inequality from a global perspective: an overview"

20 The Equality Trust, Equality Trust Research Digest 2011, "Income inequality: Trends and Measures", pp.1-8
<http://www.equalitytrust.org.uk/sites/default/files/research-digest-trends-measures-final.pdf>

- Liabilities can be split likewise, into Financial – primarily household borrowing and bills; and Non-Financial – the value of any mortgages or other loans secured on the individual's main residence or other properties.

Wealth inequality would therefore represent a different view of the gap between the rich and the poor than income inequality. Assets which have been built up over a lifetime contribute greatly to one's wealth, whereas income is defined as the amounts received in the current period. While economic well-being may be routinely measured by income, an individual's resources may be greatly influenced by their overall wealth.

This highlights a difficulty with the study of inequality. A pensioner may struggle to make ends meet, being asset rich and cash poor. A house owner in a large city may have wealth of over \$1 million whereas a similar house in a rural area could be valued at one tenth, yet both owners enjoy the utility of a house. Similarly, some argue that it is almost impossible to live on \$4,000 a month in Geneva, say, whilst in many parts of the world one could live like a king with that income. In this paper we will not attempt to study lifestyle inequality, either within a country or globally.

Global Review

Studies have shown that wealth inequality is even more pronounced than income inequality. A recent paper from the World Institute for Development Economics Research asserts that "wealth is more concentrated than income both on an individual and national basis."²¹

This 2008 paper provides one of the first estimates of the level and distribution of global household wealth. Some of the key results include:

- The Gini coefficient for the global distribution of wealth is estimated at between 0.8 and 0.9
- 71% of global wealth is owned by the top 10% of the population
- Wealth of US\$8,325 means that you are in the top half of the global wealth distribution
- Wealth of US\$517,601 means that you are in the top 1% of the global wealth distribution

The table and graph below shows a comparison between different countries. These countries represent the largest rich and the largest poor countries across the world.

A reasonably consistent picture emerges across most of the countries. Typically, between 15% and 35% of these countries' wealth is held by the top 1% of households, with 60% to 90% of wealth held by the top 20% of households.

²¹ Davies, Sanstrom, Shorrocks, Wolff (2008), "The World Distribution of Household Wealth"

Figure 2-8 – Share of a country's wealth held by the top percentiles of households and Gini coefficients²²

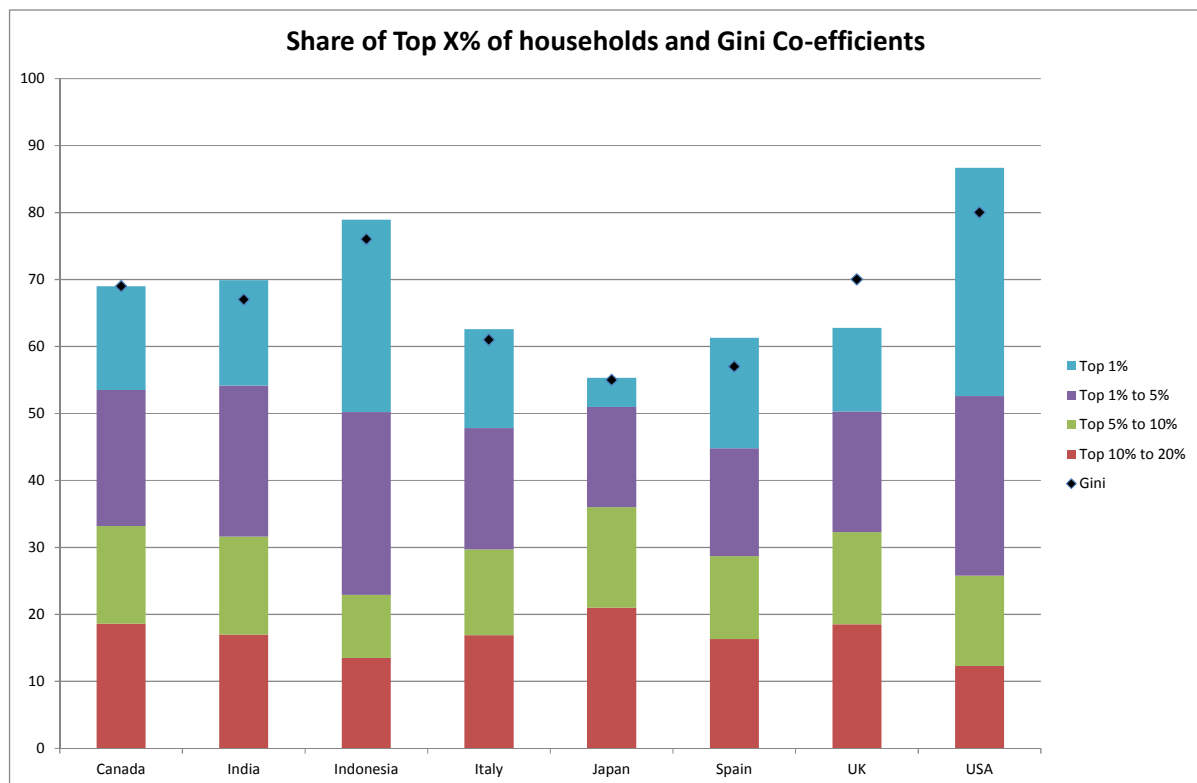
Country	Year	Unit	Share of top:				Gini Co-efficients
			20%	10%	5%	1%	
Australia	2010	Household	61.8				62.0
Austria	2011	Household	77.1	61.7			
Belgium	2010	Household	61.2	44.1			
Canada	2005	Family	69.0	50.4	35.8	15.5	69.0
Chile	2007	Household	65.5	43.9			
China	2002	Person	59.3	41.4			55.0
Cyprus	2011	Household	72.4	56.8			
Denmark	2009	Family	92.9	69.4			
Finland	2010	Household	64.9	45.0			
France	2010	Household	67.5	50.0			73.0
Germany	2011	Household	76.3	59.2			67.0
Greece	2009	Household	56.7	38.8			
India	2002	Household	69.9	52.9	38.3	15.7	67.0
Indonesia	1997	Household	78.9	65.4	56.0	28.7	76.0
Italy	2020	Household	62.6	45.7	32.9	14.8	61.0
Japan	2009	Household	55.3	34.3	19.3	4.3	55.0
Republic of Korea	2011	Household		63.9			
Luxembourg	2011	Household	66.7	51.3			
Malta	2011	Household	62.0	46.9			
Netherlands	2010	Household	61.3	40.2			65.0
New Zealand	2011	Tax Unit	67.0	48.0			
Norway	2004	Household	80.1	65.3			
Portugal	2010	Household	67.9	52.7			
Slovakia	2010	Household	48.9	32.8			
Slovenia	2010	Household	54.3	36.2			
Spain	2008	Household	61.3	45.0	32.6	16.5	57.0
Sweden	2007	Adult		67.0	49.0	24.0	
Switzerland	1887	Family		71.3	58.0	34.8	80.0
Thailand	2006	Household	69.5				71.0
UK	2008	Adult	62.8	44.3	30.5	12.5	70.0
USA	2010	Family	86.7	74.4	60.9	34.1	80.0

The following graph presents in graphical form the same information for the eight countries for which all five values are given. This helps bring out the differences in distributions (note particularly the differences in shares to the top 1% and the bottom 80%).

²² Credit Suisse Research Institute (2013), "Global Wealth Databook 2013" <http://www.international-adviser.com/ia/media/Media/Credit-Suisse-Global-Wealth-Databook-2013.pdf>

The editor did check (final morning) and the Swiss data is for **1997** – not quite so historic – but I can't tweak this picture!

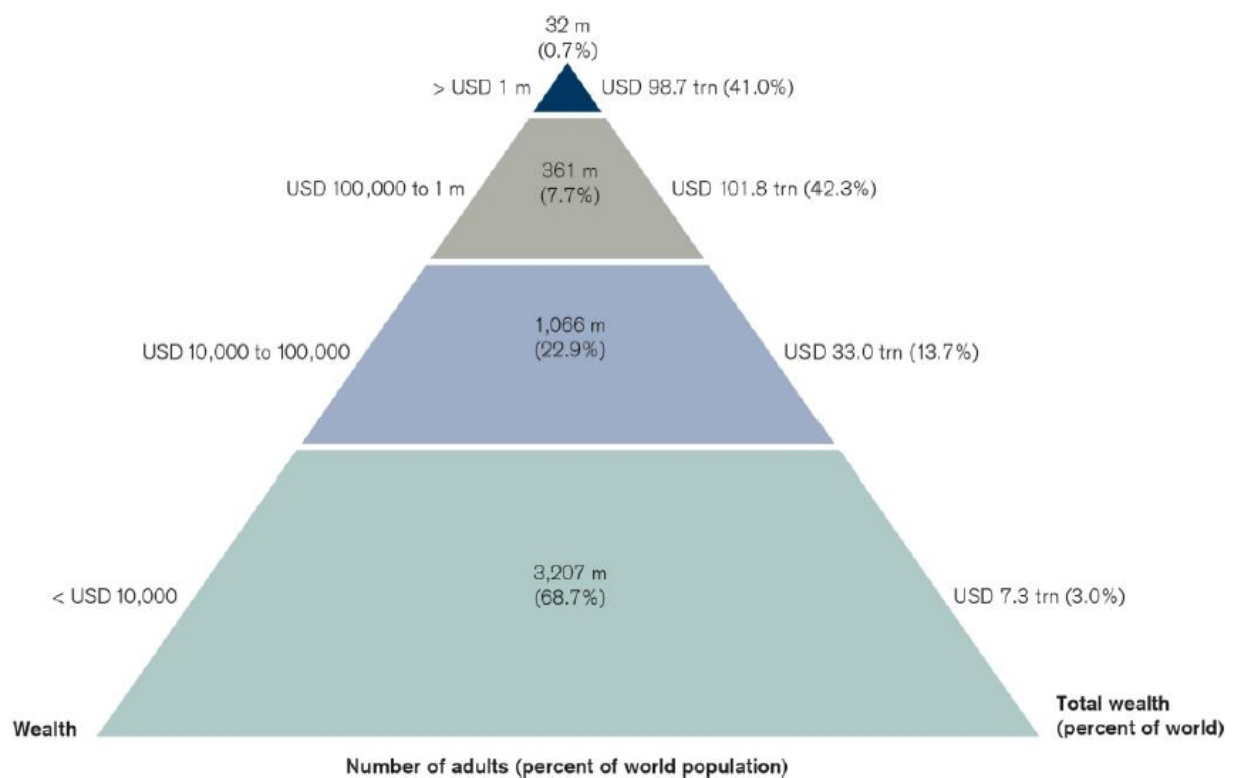
Figure 2-9 – Share of a country's wealth held by the top percentiles of households and Gini coefficients²³



Another way of highlighting the marked contrast in share of wealth held by the various proportions of the world population is shown in the exhibit below. For example, the top 1% of the global population owns over 40% of the overall wealth, while the bottom two-thirds of the global population owns just 3% of the global wealth.

²³ Credit Suisse Research Institute (2013), "Global Wealth Databook 2013"

Figure 2-10 – The Global Wealth Pyramid²⁴



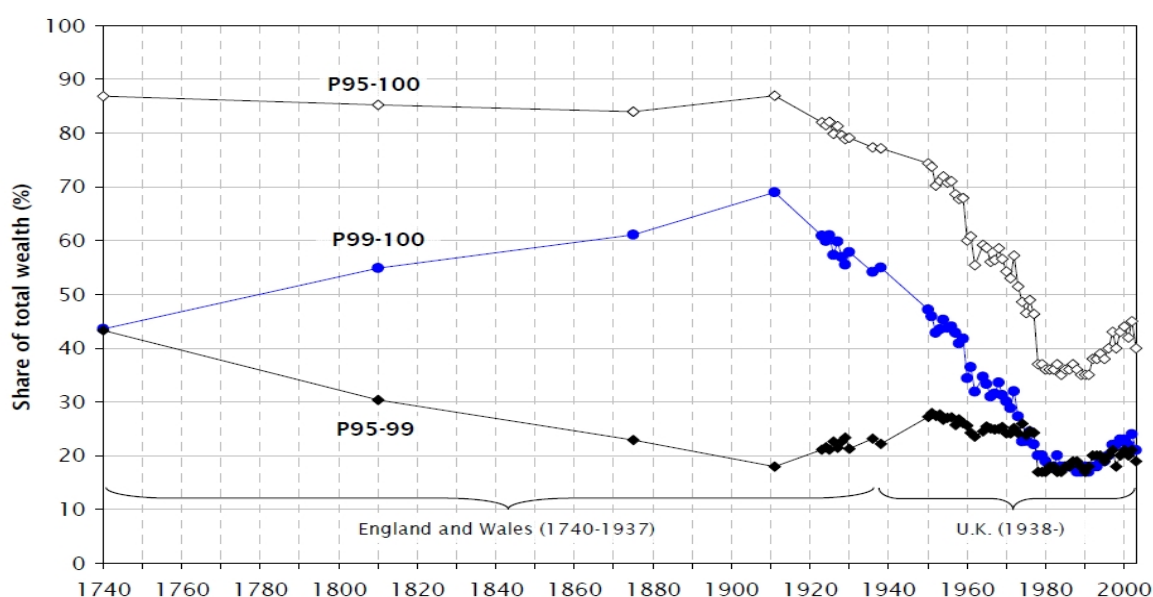
Wealth Inequality within the UK

Within the UK, the distribution of wealth amongst the top percentiles has changed dramatically over time. The graph below highlights some of the changes over the 19th and 20th centuries. In the early 20th century, the top 5 percent of the UK population held nearly 90% of the wealth. This dropped over time to a low of around 35% during the 1980s, but has since reversed and increased to around 45% recently.

Whilst the data in the early 19th century was sparse, the trend was clear. The absolute increase in wealth for the very top percentiles of the population was likely due to the wealth being held in the hands of merchants, aristocrats and landowners. Following World War I, this trend began to change. As the middle classes began amassing their own wealth, most likely in the form of occupied-property and increasing share prices, this reduced the proportion of total wealth held by the top one percent. The relatively recent surge in the late 20th century has not yet fully been explained, but one possible driver could be the deregulation of the financial markets leading to a surge in share prices, most likely held in greater proportion than the rest of the population by these upper percentiles.

²⁴ Credit Suisse Research Institute (2013), "Global Wealth Databook 2013"

Figure 2-11 – Top wealth shares in the UK (and England and Wales, 1740-2003)²⁵



Data Limitations

As expected, detailed wealth distribution information is difficult to obtain in a reliable and consistent format, especially across different countries. Much of the data used to construct the tables shown above relies on different methods of collection and are compiled across varying time periods.

In addition, valuation of assets and liabilities at any given point compounds the difficulty in establishing the true wealth of any given household, particularly for non-financial items. These are likely to be subjective at best, resulting in inconsistent measurements of wealth even within individual countries.

2.4 The impact of inequality on social indicators

We have seen from the statistics on income and wealth inequality that the disparity between the rich and the poor is great and seems to be increasing. These findings are prevalent in many poor and rich countries and the understanding of its impact on society should therefore be considered. Studies have found that health and social problems increase with higher levels of income inequality, including issues like infant mortality, teenage births, obesity, mental illness, trust in peers, homicides and number of people in prison amongst others.

We briefly discuss some of these findings here, mostly based on statistics for income inequality – researchers note that although wealth inequality may be both more severe and

²⁵ Ohlsson, Henry; Roine, Jesper; Waldenström, Daniel (2006), Long-run changes in the concentration of wealth: An overview of recent findings, Research Paper, UNUWIDER, United Nations University (UNU), No. 2006/103

more significant, there is generally more information available for income inequality. The studies we consider include mostly rich countries to control, to a small degree, for the effect that extreme poverty would also have on these social indicators.

Richard Wilkinson has contributed a large number of studies conducted on the topic of income inequality and its impact on social factors. We reference his and Kate Pickett's work extensively but have also included research from other sources and some opposing views to their conclusions.

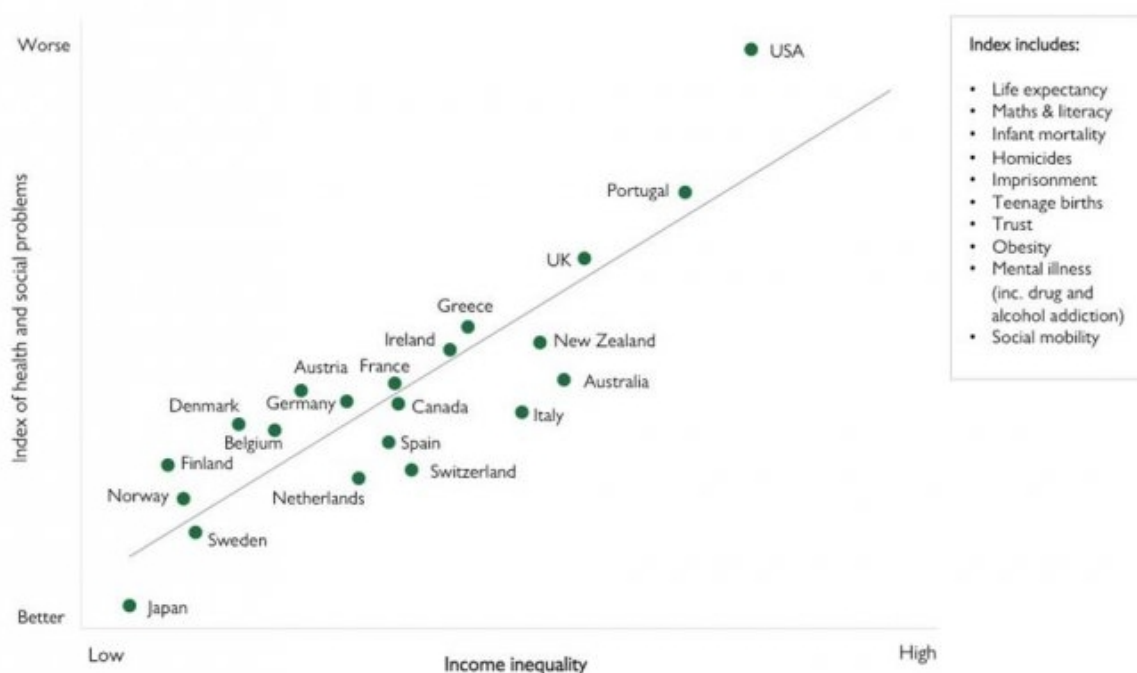
General consideration of health and social problems

Wilkinson and Pickett compiled and published a number of their studies on income inequality and its impact on society in their book "The Spirit Level".²⁶ They noted that health and life expectancy seem to plateau when a certain level of wealth and absolute national income has been reached but that income inequality seems to continue to have an influence.

As part of their work, Wilkinson and Pickett also constructed an index of a number of health and social problems using the results from their study of individual social factors. This index consisted of life expectancy, maths & literacy, infant mortality, homicides, imprisonment, teenage births, trust, obesity, mental illness (including drug and alcohol addiction) and social mobility, with each factor carrying equal weight in the index. The graph below shows the correlation found by Wilkinson and Pickett using their constructed index.

26 R Wilkinson & K Pickett (2009), "The Spirit Level", The Equality Trust

Figure 2-12 - Graph of income inequality against an index of health and social problems²⁷



The graph shows a strong correlation between income inequality and the constructed index of health and social problems. The US fares particularly badly compared to other countries in terms of the index and inequality while Japan fares well on both. This is because these countries fare badly and well respectively on most of the individual components which make up the index. Wilkinson and Pickett note that the relationship is particularly strong because combining the ten different health and social problems emphasise what they have in common.

They argued that income inequality leads to low self-esteem, stress and depression, resulting in low life expectancy, high teenager pregnancies and many other health and social problems. They also argued that violent crimes are commonly triggered by disrespect, loss of face and humiliation which is more prevalent in the unequal societies.

Cultural differences in these countries may give insight into the pattern we see above. In Japan, people see status as a reward in itself and this can compensate those with low income. It is also well known to be a culture with strong status hierarchy and healthy diet. This may explain why Japan scores well on both inequality and the index.

We discuss some of the components of this index in the rest of this section – namely, child well-being, mental health, homicides and imprisonment.

²⁷ R Wilkinson & K Pickett (2009), "The Spirit Level", The Equality Trust

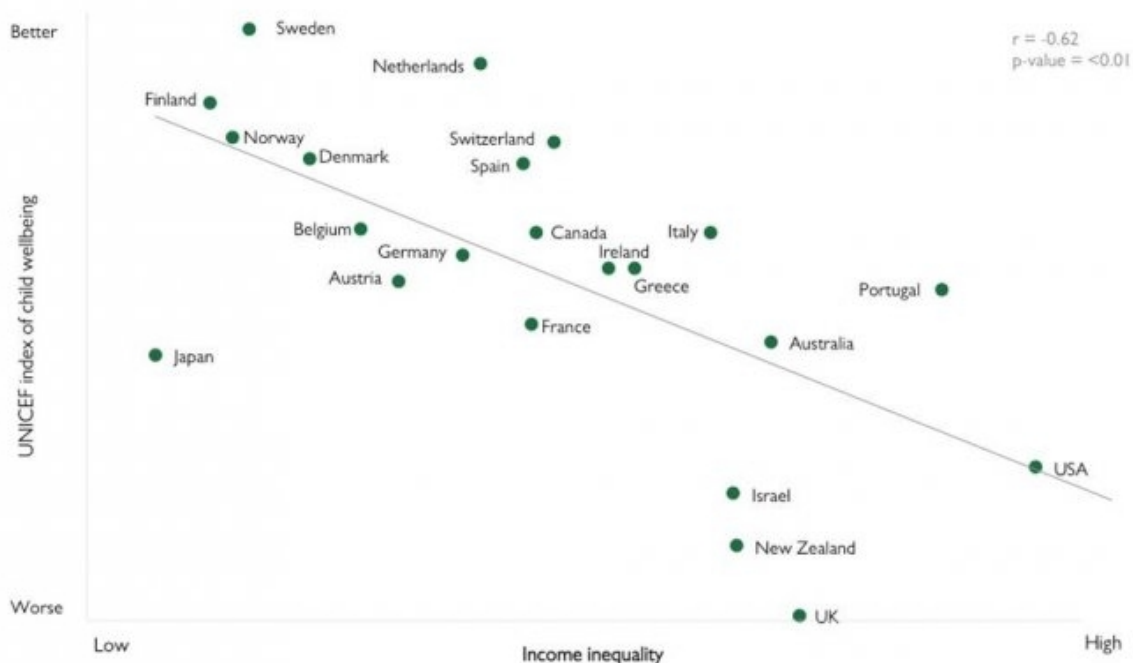
Child well-being

Child well-being is an area significantly affected by income inequality, as Pickett and Wilkinson demonstrate in an article published in the British Medical Journal. The study considered data from rich developed countries. Pickett and Wilkinson considered many factors and showed on an overall and more granular level that child well-being was negatively correlated with income inequality and the percentage of children in relative poverty, but not with average income.²⁸

The UNICEF index of child well-being was used as an overall indicator but more granular groupings were also considered. These included material well-being (e.g. deprivation and low affluence), health and safety (e.g. child mortality, health at birth), educational well-being (e.g. achievement at school, further education and aspiration), family and peer relationships, behaviours and risks (e.g. risk behaviours, experiences of violence, health behaviour) and subjective well-being (e.g. personal, school and health well-being – self rated). Infant mortality, low birth rates, teenage pregnancy, overweight children and children reportedly bullied by others were notably worse in countries with higher levels of inequality.

The graph below shows how countries differ with respect to their income inequality and child well-being, and suggests that a negative correlation exists overall.

Figure 2-13 - Graph of child well-being against income inequality



²⁸ R Wilkinson & K Pickett "Child wellbeing and income inequality in rich societies ecological cross sectional study" British Medical Journal: Published 22 November 2007

The graph shows that the UK was the lowest scoring country on child wellbeing while having one of the highest levels of income inequality. Wilkinson and Pickett do not postulate particular reasons for this but note that in the UK drunkenness and sex before the age of 15 was worse than expected (compared to other countries in the study) in groups that also consider their peers helpful. On the other hand, they scored better than other countries (especially considering the lower overall child well-being score) with respect to mortality from accidents or injury – perhaps due to better health and safety standards or other cultural influences.

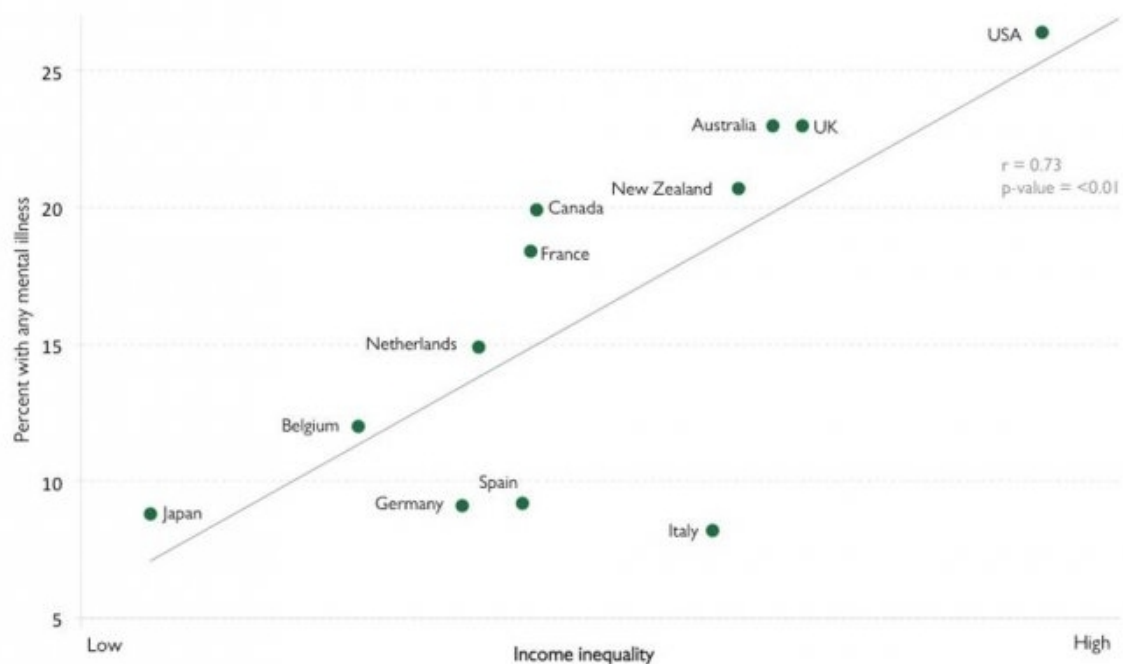
Another study by UNICEF²⁹, argues that spending quality time and having good relationship with parents is important for children's wellbeing. It suggests that parents in the UK tend to struggle more to find the time that the children need and want. However in Spain and Sweden, who have high score in the index, there is a strong and social expectation that family comes first before work and other commitment. The research also finds that there is an inequality in children's access to outdoor, sporting and creative activities in the UK. Another difference between these countries is in dealing with materialistic culture. It appears that families in the UK are more likely to use material goods to compensate for the lack of time that parents have to be with their children.

Mental Health

Wilkinson and Pickett also considered the relationship between income inequality and mental illness. Their analysis relied on the results of World Health Organisation surveys completed for a number of rich developed countries. They attempt to measure the proportion of people who had been mentally ill in the twelve months prior to the study, based on a number of diagnostic criteria. Analysis of the data suggested that people in more unequal countries appear more susceptible to mental illness.

²⁹ UNICEF, "Child well-being in the UK, Spain and Sweden: the role of inequality and materialism"

Figure 2-14 - Income inequality relative the percentage of people with any mental illness³⁰



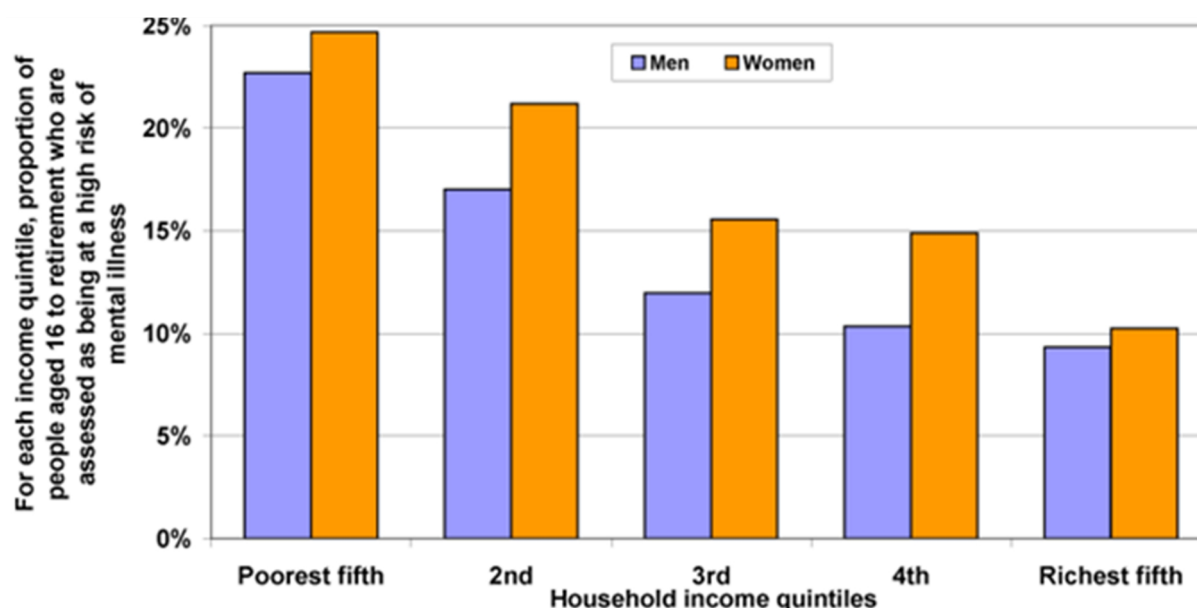
Their study also considered the prevalence of specific areas of mental illness and Wilkinson and Pickett note that anxiety, mood disorders and impulse-control disorders and severe illness are all strongly correlated to income inequality. Alongside this study, they also consider findings from the World Drug Report published by United Nations Office on Drugs and Crime which showed that the use of illegal drugs is more common in unequal societies.

The relationship of income inequality and mental illness was also considered within the US states. Wilkinson and Pickett found that the data exhibited a relationship between relative levels of mental illness and income inequality between states for adult women and children but not for adult men. Unfortunately the lack of relationship was not discussed further in the book. However, on an overall level the US has a much higher proportion of mental illness compared to other countries, consistent with expectations given the high level of income inequality.

Findings from a Health Survey for England, shown below, showed that the proportion of both men and women susceptible to mental illness decreases the richer they are.

³⁰ R Wilkinson & K Pickett (2009), "The Spirit Level", The Equality Trust

Figure 2-15- Graph of income quintiles relative to proportions of people aged 16 to retirement who are assessed as being at a high risk of mental illness.³¹



Anna Barford of the Equality Trust notes that “mental illness can stem from many circumstances, including stress, lack of financial security, and lack of respect”.³² Part of this stress and respect may be linked to one’s environment and self-perceived status; Barford notes that the “susceptibility to mental illness may be linked to anxiety about one’s ability to ‘keep up’ socially, but also whether one’s environment is conducive to feeling safe and relaxed.” Barford further notes that luxuries experienced by the rich and affluent, such as holidays away from home, may contribute to mental well-being while not being able to benefit from these experiences may be particularly disappointing.

Working hours

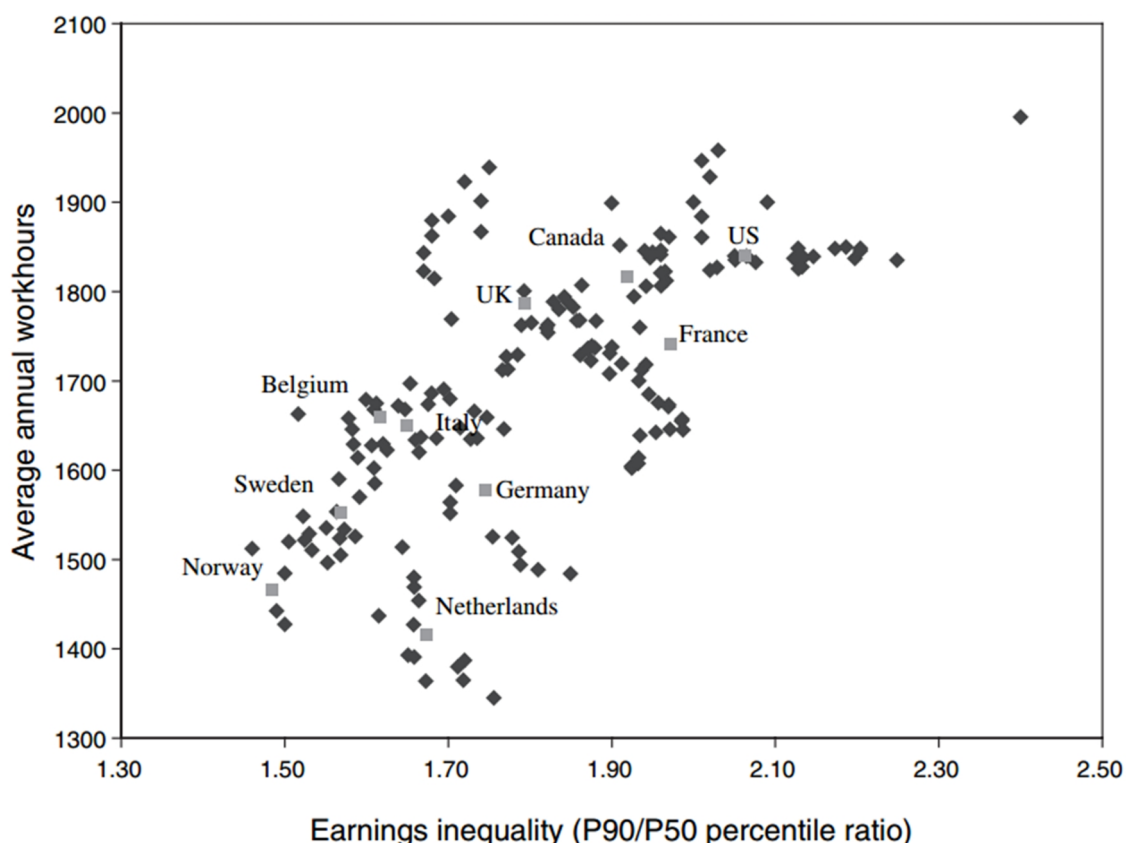
One potential influence on mental health may be the stress from the number of hours worked and the decrease in leisure time. A study by Bowles and Park³³ showed that income inequality is related to average work hours in developed countries. They suggest that the desire to enjoy the benefits of the rich influences the number of hours spent on work instead of leisure. A society with greater income inequality would therefore also tend to work longer hours. The graph below shows the relationship between work hours and income inequality in developed countries.

31 Health Survey for England, DH; the data is the average for 2008 and 2009; England; updated Mar 2011. Health Survey for England, 2008-2009; <http://www.poverty.org.uk/62/index.shtml> - Graph 3,. Accessed 3 May 2014

32 Anna Barford, “The lives of the other four fifths”, Equality Trust Research Digest 2011; no.3: pp.1-17

33 S Bowles and Y Park, “Emulation, Inequality and Working Hours”

Figure 2-16 - Graph of income inequality against average annual work hours³⁴



Netherlands appears to be an outlier above. However this can be explained by the fact that part-time working is much more common in the Netherlands than in other Western countries. In a survey published by EuroStat, almost half of the workforce was working part-time in the Netherlands compared to only 27% in the UK in 2012.³⁵

The longer working hours, may be driven by the desire for more income due to the disparate levels seen within society. It is interesting to note, however, that this factor is seen in groups with higher income potential and not only among the poorer quintiles of the population.

Some studies suggest that different levels of education influence the number of hours worked and may be a factor to control for when considering the relationship of hours worked with income inequality. An article in the Economist looked at some of these studies and noted that people with a bachelor's degree or above seem to work longer hours than those with high school education or less³⁶. One study showed that the proportion of college educated American men who regularly work more than 50 hours per week has increased from 24% to 28% between 1979 and 2006. It may be that as wages of the higher percentile earners have increased it seems that leisure has become more expensive leading

³⁴ S Bowles and Y Park, "Emulation, Inequality and Working Hours"

³⁵ http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/3-19042013-BP/EN/3-19042013-BP-EN.PDF

³⁶ The Economist (April 19th 2014), "Free exchange - Nice work if you can get out", pp 75

to less time taken on relaxing, or alternatively, their job security has decreased and they feel obliged to work long hours and forgo holidays.

Homicide and Imprisonment

A research paper by the Equality Trust³⁷ asserts that income inequality and violent crimes, such as homicide rates, are significantly related in both developed and developing countries.

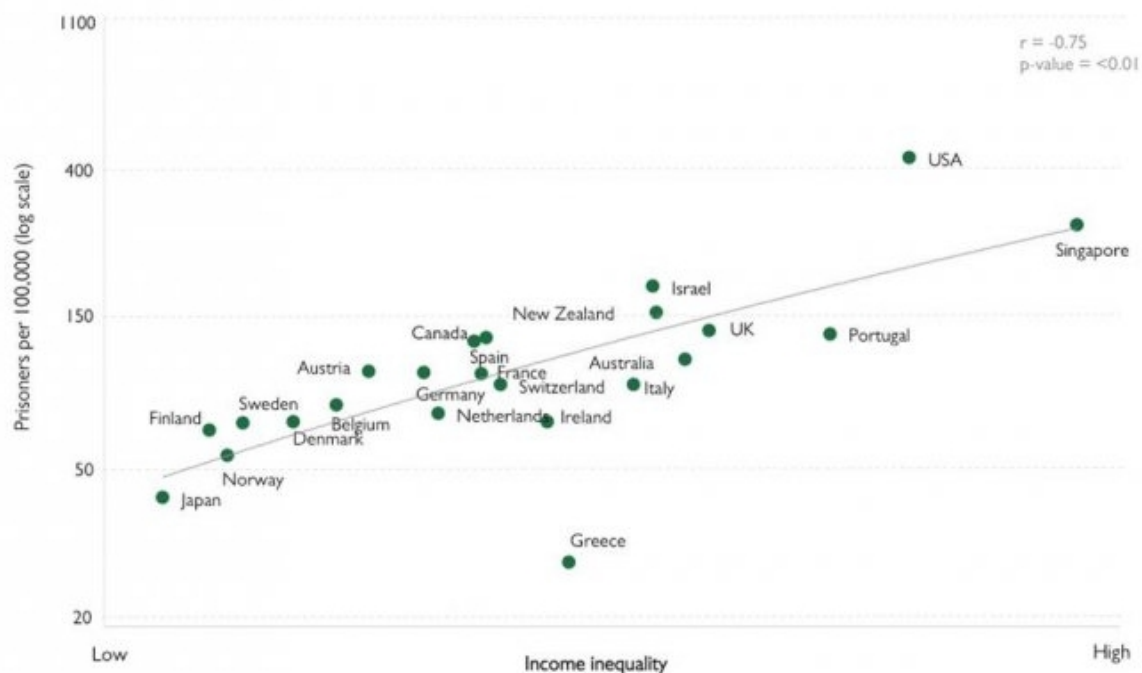
Some studies have shown that decreases in inequality reduced homicide rates. Japan, for example, saw a decrease in inequality in the second half of the 20th century accompanied by a 70% decrease in homicides. Contrary to this, England and Wales experienced increases in income inequality between 1967 and 2001 and saw homicide rates double in the same period. Similarly, rates of imprisonment in the UK have almost doubled between 1990 and 2007.

It is interesting to note that murder rates within Britain, have not increased among the rich (as one may suspect from the relationship between homicide rates and inequality) but among poorer men – the issue therefore is not a backlash against the rich. Worsening relative poverty, as experienced within Britain between in the 1980s and 1990s, may instead contribute to factors such as decreased opportunities and self-worth, especially amongst the young. Divisiveness within society may therefore increase with income inequality, due to the perception of relative social status and disintegration of cohesion within a community.

The relationship between prison rates of imprisonment and income inequality would therefore not be too surprising given the relationship with violent crimes. However, Wilkinson and Pickett also refer to Alfred Blumstein and Allen Beck's study of US imprisonment which suggests the majority of the growth in state prisoners as being due to the increasing likelihood of imprisonment rather than non-custodial sentences being given. Wilkinson and Pickett note a similar trend in imprisonment rates in the UK. They believe that more punitive sentencing is related to hardening of social attitudes which may have to do with fear across classes, lack of trust, and lack of involvement in community life as a result from the widening gap within income inequality.

³⁷ Equality Trust Research Digest: No1:2011, "Income inequality and violent crime", <http://www.equalitytrust.org.uk/sites/default/files/research-digest-violent-crime-final.pdf>

Figure 2-17 - Graph of income inequality relative rates of imprisonment³⁸



Counter-arguments and criticisms:

As noted in the introduction to this section, a number of statistics and relationships described above are taken from the work of Wilkinson & Pickett, known for their extensive contribution to the field. It should, however, be noted that some criticism has been raised against the outcomes of their studies. We have included some of these criticisms within the discussion above but also briefly note others here.

Christopher Snowdon, in *The Spirit Level Delusion*, criticises, amongst other things, the data used by Wilkinson and Pickett. A few of his points are summarised below:

- Singapore is not shown in many graphs or discussed much despite data being available for comparisons. Hong Kong and the Republic of Korea are also left out of *The Spirit Level* but Japan's good results are included – perhaps due to other Asian influences on social welfare, Snowdon notes. Other countries, such as Slovenia, Hungary and the Czech Republic appear to show a narrow income inequality gap but have also been excluded. Snowdon believes that including these countries would muddy the apparently very strong relationship between inequality and social problems suggested by Wilkinson & Pickett.
- For their findings on mental health, Wilkinson & Pickett rely on data from the World Mental Health Survey Consortium (WMH). Snowdon, however, notes that this study is believed to underestimate the prevalence for mental illness in Europe. If data

³⁸ Wilkinson & Pickett (2009), "The Spirit Level", The Equality Trust

from a study produced by the International Consortium in Psychiatric Epidemiology (IPCE) is used the relationship with mental illness is much less clear. It was also noted that some countries such as Singapore, Mexico, China and Nigeria do not show high levels of mental illness despite their very high levels of inequality. Snowden admits that there is not much data or other studies to compare to but cautions taking a definitive view on the WMH study given the problems.

- Although we have not discussed it here, The Spirit Level describes how life expectancy can also be shown to differ between rich countries based on the level of inequality. Snowden notes that the study used by Wilkinson & Pickett may show this relationship but more recent versions of the same study, also referenced in The Spirit Level, do not.

Other notable criticisms of Wilkinson & Pickett's findings include:

- The conclusion is very sensitive to the choice of countries and time period examined. Not all the findings are based on the same set of countries / year, which gives the impression of cherry picking.
- The conclusions do not always fit with other data.
- Cultural, economical, political differences between countries have not been taken into account.

Wilkinson & Pickett responded that even after allowing for these criticisms in their study (e.g. by including Singapore and other countries) the correlation is still strong between inequality and their general measures of social indicators. It seems that although the relationships appear to be present in the data, there is not complete consensus on their validity or strength.³⁹

We have not looked at the merits of these criticisms or their counter-arguments in detail. Instead, this section's purpose is to introduce the reader to the potential impacts of inequality and not be an exhaustive study of it. We, however, draw some confidence for the balance of our presentation here from the fact that studies like Wilkinson & Pickett's have undergone peer review prior to publication and are supported by similar published research papers.

2.5 Wealth Inequality Between Generations

Measures of inequality such as the Gini coefficient measure the extent to which individual incomes are dispersed among a population at a point in time. It is also of interest to consider the extent of inequality between different generations over time. Inter-generational equity underlies some of the major issues facing the world today:

³⁹For further details on the criticism of the findings in The Spirit Level, please refer to:

- The Spirit Level Delusion (Christopher Snowden)
- A critical reading of The Spirit Level: What is the scientific content of the book? (Milos Simic)
- Does income inequality cause health and social problems? (Karen Rowlingson)

- Environmental concerns often focus on the impact of our current lifestyles on future generations
- The economic crisis appears to have hit the young harder, at least in terms of unemployment. Running a high deficit now favours current people but at the expense of debts to be serviced by future workers
- And, more relevant to the actuarial profession, there are huge discussions around pensions

Historic Prosperity of Generations

The last two centuries of industrial growth have generally seen inter-generational inequality in a positive sense – with the exception of two world wars, each generation has enjoyed more material comforts than the generation before. A friend of one of this report's authors recounts a conversation with his late father:

"It was your generation that had to fight the war, and suffer all the losses and deprivations. Yet it was my generation that largely reaped the benefit. Don't you ever feel resentful to this generation?"

"Of course not. Why do you think we fought the war?"

Subsequent generations have been less fortunate. Recent reports from the Institute for Fiscal Studies⁴⁰ and from the Social Mobility and Child Poverty Commission⁴¹ have pointed out that children born in the 1970s and 1980s may be the first generation to enjoy a lower standard of living than their parents, with the outlook for subsequent generations being even bleaker.

The debate about the causes of this about-turn has at times been rancorous. Some of the areas of debate relate to government actions (taxation, benefit entitlement, national debt, NHS funding) while others relate to individual decisions by retired people (such as choosing between round-the-world cruises or helping with grandchild care). In a notorious Guardian article⁴² Chris Huhne highlighted six areas where he claims the "selfish old" have grabbed an unfair advantage over later generations, claims which are of course hotly disputed.⁴³

The role of Discount Rates

Personal decisions almost invariably reflect implicit discounting at positive rates – in general, people would prefer to have things now rather than later. Government assessments use the same framework but with a more rigorous treatment. Decision making

⁴⁰ Institute for Fiscal Studies (Dec 2013), "The economic circumstances of cohorts born between the 1940s and the 1970s"

⁴¹ Social Mobility and Child Poverty Commission (2013), "State of the Nation: Social Mobility and Child Poverty Commission"

⁴² Chris Huhne (22 December 2013), "Someone needs to fight the selfish, short-sighted old. The cost of pandering to pensioners means we are penalising our young in relation to education, healthcare and housing", The Guardian

⁴³ The basic argument was: Old people vote, so politicians allow house prices to rise and protect the NHS while limiting EU freedom of movement, reducing young-adult benefits, raising tuition fees, and not addressing climate change.

about questions of environment, infrastructure and other government investments often takes the form of a cost-benefit analysis using discounted cash flows, which is an area of expertise for actuaries.

When looking at decisions at a society level, things are not as clear as for individuals. Having a positive time preference element would suggest that this generation's wellbeing (as measured by consumption) is more important than the next's, which is in turn more important than the next's, and so on. Whether this is correct or not is a social or ethical decision, not a technical one. One reason that may seem to justify some element of time preference is the chance of not being around in the future (i.e. contrary to usual actuarial practice mortality is implicit in the discount rate rather than explicit).

When considering the issue of climate change, Stern's review⁴⁴ used a discount rate of 1.4%, which at the time (2006) was lower than rates used elsewhere. This is one reason why he came out so strongly in favour of positive actions which, with an initial cost, would benefit future generations. The fact that that countries have, by and large, failed to heed Stern's warnings could indicate that higher discount rates were used, although there are many other obstacles to action, including the need to gain political consensus in the face of free-rider problems.

Intergenerational Fairness in Actuarial Funds

The idea of fairness between generations is fundamental to actuarial funding mechanisms, both for defined benefit pension schemes and with-profit insurance funds. There are two conflicting benchmarks for what is fair. The first benchmark of fairness is equality of outcomes: if different generations contribute the same proportion of their income and retire on the same multiple of their final salary, then this appears fair in terms of outcomes, and long-term actuarial calculations were supposed to achieve this. The second benchmark of fairness is that each generation gets the market returns from the investment of their own contributions. Unit-linked pension savings are fair in this latter sense. The concept of smoothed asset shares in with-profit funds is based on the market return definition of fairness, with some adjustment towards equality of outcomes. In a world of fluctuating interest rates and investment return, earning market returns is not consistent with equality of outcomes, implying a conflict between two definitions of what is fair.

Schemes generally benefited from favourable investment returns during the 1980s and early 1990's. During this period, many pension schemes reported surpluses, took contribution holidays and subsidised redundancy programmes with generous early retirement provisions. The 21st century has to date seen lower interest rates, poor equity returns, improving longevity and, sometimes, difficult negotiations over funding, leading to widespread deficits across the pensions industry. The Pensions Protection Fund has published monthly updates

⁴⁴ Stern (2006), "Review of the Economics of Climate Change"

on aggregate deficits since 2007 for private sector schemes.⁴⁵ Given the size of aggregate deficits, it is not clear whether outstanding pension promises will be paid in full, nor who will pay for them. What is clear is that, ex post, defined benefit pension schemes have not actually delivered equality of outcomes between generations.

Actuaries have an influence in inter-generation equity because of the role of actuarial bases in deciding how much different generations contribute to collective savings vehicles and how much each generation can take out. The key turning point was the decade of the 1990s which saw heated debates about pension valuation bases, with some (Thornton & Wilson, 1992)⁴⁶ arguing that discount rates should anticipate the perpetual continuation of favourable returns on assets such as equities, while others (Exley, Mehta & Smith, 1997)⁴⁷ argued for the use of market-based discount rates based on government bonds. As with climate change, the use of lower discount rates tilts actions in favour of later generations. Actuaries using more conservative pension valuation bases would produce smaller surpluses (or larger deficits), and be likely to recommend larger scheme contributions and restraint in discretionary benefits such as early retirements on full pensions. With hindsight, had stronger actuarial bases been in use during the 1990's, then the outcomes of different generations of pension scheme members would have been more equal than is currently the case.

However, we are now in a situation where both with-profit funds and defined-benefit pension schemes, those mainstays of actuarial employment for decades, are now largely in run-off. Ultimately, the actuarial magic dust of long term views and professional judgement has failed to survive a decade of adverse experience.

⁴⁵ Pension Protection Fund (2007 – 2014) .The PPF 7800 index

⁴⁶ Thornton & Wilson (1992), "A Realistic Approach to Pension Funding", Journal of the Institute of Actuaries

⁴⁷ Exley, Mehta & Smith (1997), " The financial theory of defined benefit pension schemes", British Actuarial Journal

3 Theories and Perspectives

In this section we discuss various perspectives and “theories”. Often arguments can be made from opposite ends of a spectrum. We’ve tried to be even-handed and present opinions without prejudice.

This section has four sub-sections:

- We start by considering theories of how wealth spreads throughout an economy, and how our beliefs are shaped.
- “Rent-seeking” is a term which arises frequently when discussing inequality. In our second part we posit a definition and discuss some of the issues.
- We then consider actuaries’ impact on inequality.
- Finally we discuss systems theory, in an attempt to lift the focus from events right up to the deep-seated paradigms that underpin the system and must be challenged if meaningful change is to be effected.

3.1 How Does Wealth Trickle?

Many aspects of government policy affect financial inequality, including taxation, monetary intervention, health and safety, employee protection and environmental policy. In a democracy, citizens can influence these policies by voting, participating in campaigns or protests, and direct lobbying of politicians.

The connection between citizens and government policy is complex because the longer term impacts of many policies are unclear or disputed. When citizens vote, they may do so in the belief that a certain policy will benefit them or the wider community, in the future if not immediately. The way citizens’ beliefs are shaped is therefore an important factor in election outcomes, government policy and the prosperity of society generally.

Two World Views

We can classify economic beliefs into two world views, which we call “trickle up” and “trickle down”. Both of these start from the idea that the actions of a particular section of society is crucial to act as a catalyst for general growth and improved well-being.

Government assistance or motivation for these catalysts then benefits society as a whole.

The table below shows some examples of trickle-up and trickle-down views:

Table 3-1 – Examples of trickle-up and trickle-down views:

	Trickle Up	Trickle Down
Catalyst group	The poor or vulnerable	Entrepreneurs and other business leaders
Trickle	State provision of education, healthcare, housing, waste	Freeing businesses from regulation and allowing entrepreneurs to

	Trickle Up	Trickle Down
mechanism	disposal and leisure facilities allows the poor to improve their lot, with improved productivity as the capable poor are enabled to reach their full potential.	become wealthy from their efforts results in the creation of jobs. State support for systemically important businesses.
Other terms (approximate map)	Left wing, Interventionist, big government.	Right wing, laissez-faire, libertarian small government.
Typical policies	Government spending on social programmes, employment rights for workers, environmental protection, welfare provision, high taxation and spending.	Self-improvement through private initiative, flexible labour market, exploitation of natural resources, limited welfare, low taxation and spending.
Short term impact on equality	Beneficial, as social provision is most valuable to those who could not otherwise afford it, while the rich pay more tax.	Malign, as employment rights and welfare are scaled back, while the incentives are aimed at the rich.
Counter-arguments	Government action can crowd out services that could be more efficiently provided in the private sector. Bloated benefit programmes create welfare dependency where people choose not to work and arrange their lifestyle to maximise benefit receipts. Removal of choice in education and healthcare leads to inefficient state monopolies. Taxation stifles entrepreneurial incentives. Some level of inequality is necessary to create the incentive to work. Making people more equal is self-defeating if in the long run you make everyone worse off.	The so-called entrepreneurs often amass their wealth through rent-seeking rather than production that benefits society as a whole. Examples of rent-seeking behaviours include poor treatment of workers, exploitation of monopolies or information asymmetries, political corruption pollution of the environment and the destruction of communities. Human beings are far from the theoretical optimisers and may struggle to exercise free choices.

This table is of course a simplification. Many individuals will support policies from both columns. As a working party, we do not espouse any particular political view, and we are not trying to push one side or another of the political debate. Plenty of political issues, such as attitudes to government borrowing, foreign policy, narcotics or migration do not easily fit into these categories.

How Our Beliefs are Shaped

What then shapes citizens' beliefs? Most citizens have neither the time nor the expertise to develop and test economic hypotheses. Instead, they draw our views from a range of sources. We consider some of these below.

Table 3-2 – Sources that shape our beliefs

Source	Impact
Media	Television, the printed media and the internet are all sources of information and opinion that can influence public opinion on which policies are likely to be effective. The influence is often subtle –even without explicitly advocating a course of action, the frames of reference affect how we think about things. For example, articles about “benefit scroungers” or “chavs” can cast doubt on trickle-up theories, while coverage of “fat cats” and “rip-off Britain” undermine trickle-down. Readers may take opinions as fact, especially if frequently repeated – for example assertions about whether public or private sector bodies are more efficient at delivering services.
Corporate marketing	Many corporate activities raise public interest concerns (whether well-founded or not). Some current contentious issues include: Fracking and other mineral extraction Agricultural innovations, including use of pesticides/herbicides, genetically modified crops, animal movement restrictions and badger culls. Pub opening hours and the regulation of alcohol sales The licensing of motorised transport, safety requirements for heavy goods vehicles and the prioritisation of vehicles versus pedestrians or cyclists in road design. Press freedom versus libel liability and privacy rights The marketing and sale of fatty or sugary foods, especially to children The manufacture of arms and restrictions on end-users Data protection issues for many firms, including internet service providers, health companies and financial services firms.

Source	Impact
	Licensing and planning consent for pawnbrokers, payday lenders or betting shops Much of the information available to the public about these questions comes from corporations whose profits are at risk from heavy regulation or from a liability to compensate those adversely affected. However, the source of opinion is not always clear to the reader, for example when interested firms sponsor scientific research. The importance of public relations is clear from the resources that firms spend on it. For example a widely quoted academic study found that the US drugs industry spent almost twice as much on PR as on research and development.⁴⁸
Charitable campaigns	Not all campaigns come from corporations. Many charities exist with an explicit aim of helping the poor. Publications from organisations such as Oxfam or Shelter are often critical of the hold that a wealthy elite hold on the poor. However, the charity sector is not uniformly left-wing. Some organisations with charitable status are little more than fronts for corporate PR – a practice known as “astroturfing”. Well known examples are medical patient groups set up by pharmaceutical companies to campaign for publically-financed access to new drugs, or FOREST that lobbies for the “right to enjoy smoking tobacco”.
Contact with friends	Our friends, family and colleagues influence how we think; we are more likely to express a view that receives approval from peers.
Contact with experts	A rising level of scepticism about national media means we place more trust in those known personally to us, especially if they are (or appear to be) an expert. The difficulties in predicting economic change and many people’s reluctance to conducting their own research can create feedback loops, where the stated views of one expert can propagate within a community. Actuaries have a particular responsibility because we are seen as experts, so any opinions we express on trickle-down or trickle-up may have a wide influence. There is an onus on us to research our opinions thoroughly, showing integrity and objectivity in the views we proclaim, even in a social context. One approach is the idea of a “rhetoric offset”; a similar idea to the carbon offset you can buy with your plane ticket. An actuary who is paid to promote the interests of the wealthy may commit personal time

⁴⁸ <http://news.yorku.ca/2008/01/03/u-s-pharmaceutical-industry-marketing-driven-york-study/>

Source	Impact
	speaking up for the poor.
Personal experience	While cynics might claim that economic theory is a device to justify pre-determined policies, the ultimate test of any economic theory is whether its predictions are borne out in practice. Theoretical arguments about communism are now largely irrelevant for most of us, because the collapse of the Soviet Union and satellite states in 1989/90 tells us it does not work. Nowadays, the media may still tell us that corporations need to operate without government regulation, or that entrepreneurs deserve tax breaks, but experience of the ongoing consequences of the 2008/9 financial crisis have undermined this narrative more effectively than any propaganda campaign. Those wanting to form an informed view need to engage with all areas of the community. This presents a challenge for actuaries, whose social circles largely comprise other wealthy and privileged people. We can challenge ourselves about how well do we know people who are: - Long-term unemployed - Suffering from a serious physical or mental disability - Obese, addicted or with any condition that some would consider self-inflicted. - Reliant on tax credits to feed the family or heat the house Social segregation also works in the other direction. At least some of the economic elite are under constant pressure from work, chasing unachievable performance targets, living off airline food, regularly interrupted at any time of day or night and when on holiday, unable to relax or devote time for family or indeed to anything much outside work. We are all limited in our ability to walk in the shoes of others, and there is a risk that we replace real experience with crude media stereotypes.

Reconciling Democracy to Inequality

In theory, a democracy should allocate an outright majority (and hence power) to any grouping that can command the support of more than half the electorate. This leads to a common criticism of the democratic process (and the stated ground of various secessionist movements) that tolerance for minorities is not built into the process; a majority can elect a government that can then oppress a minority.

In the context of inequality, we could imagine two possible equilibria. We could have a majority of the average and wealthy exploiting a poorer minority. Or we could have poor and middle incomes colluding to extract wealth from the rich.

It is more difficult to explain in this context how a small very wealthy minority could gain democratic consent to enrich themselves on the labour of the majority, as appears to be the situation in many modern democracies.

There are two explanations for this puzzle, according to how much role is ascribed to the government in determining equality.

If you think the government has little role in the level of inequality, then you could attribute inequality to personal choices or varied abilities. Many of us face a trade-off, both during education and in the workplace, between hard work that pays off later, versus procrastination that pays off immediately. Some people may place a higher value on leisure, or on immediate versus future consumption, in which case they are likely to earn less later, leading to economic inequality. This is not necessarily a bad outcome; being wealthy is not important to everybody. It is misleading to focus on wealth or income equality as a measure of human success if many of us have voluntarily substituted measurable riches for time spent on other pursuits. A more contentious argument along similar lines, is that humans have different level of innate abilities – some are good leaders or entrepreneurs, some are good at maths, others at sport or music. Certain skills are scarce and have a particularly positive impact on economic productivity of society. People lucky enough to be endowed with such abilities may gain a handsome economic reward through leverage effects where one entrepreneur gets rich from profitably employing many people on lower wages. This is a fundamental fact of economics and the democratic process is powerless to change the talents that people are born with. It could even be a bad thing to obstruct such processes; if the entrepreneur is prevented from leveraging his or her business skills then employment and production falls, leaving everyone worse off.

At the other extreme, if you think government policy has a large impact on inequality, then the poor are victims of bad government rather than their own choices or failings.

Concentration of power and wealth in the hands of the few implies a corruption of the democratic process. A pessimist might point to:

- Concentration of mass circulation media ownership in a handful of billionaires with a predominantly libertarian agenda that benefits their business.
- A political system where the major political parties rely heavily on business for campaign financing; in particular the waning influence of the trade union movement leaves voters with limited electoral choice. Whoever you vote for, the corporate lobbyists always win.
- A corporate public relations industry which has become ever more sophisticated in covertly influencing public thought to their political benefit, stimulating demand for unhealthy or addictive products which are primarily aimed at the poor.

- An academic community whose output is increasingly tainted with a corporate agenda, as industry will voluntarily finance research that benefits their proprietors (smoking is good for your health, motorised vehicles should have priority over pedestrians or cyclists, fracking and GM crops pose no public danger, taxpayers should recapitalise failing banks, insurance capital requirements should be lower , and so on).

An optimist could counter with these points:

- Even if an economic elite control everybody else for a time, this situation cannot persist for ever, as ultimately the poor and exploited must abandon trickle-down theories that conflict with the evidence of their own eyes, and vote accordingly.
- There is no easy solution to political bias in the media, but the internet age has brought a plurality of sources which gives the ordinary citizen access to wide range of views.
- Technology has lowered the barriers to entry for new political movements. When corporations have captured the currently strongest political parties, new parties can emerge which are not so conflicted. A one-man-one-vote system ultimately favours the poor over the wealthy merely by strength of numbers.
- Historically, some benevolent leaders have been driven by the search for and sharing of truth and knowledge, rather than the pursuit of personal gain.

3.2 Rent-seeking

What is rent-seeking?

In simple terms, an individual's income is the product of:

- The total income (the "cake"), and
- Their percentage of that income ("their slice")

Increasing either can increase the individual's income. Changes such as profitable trade can increase the size of the cake – and this means that all can benefit. This is the underlying assumption behind trickle economics.

But another strategy would be to increase your slice without increasing the cake, or even making the cake smaller. Such behaviour is called "rent-seeking". Put another way, this is when the personal returns from a course of action exceed the social returns. As an analogy, parasitism in the natural world could be considered the equivalent of rent-seeking.

"Rent" here is used not in the everyday sense, but with the technical economic meaning – a payment to a factor of production greater than that required to keep that factor in its use, i.e. "unmerited" profits.

The success of trickle economics depends materially on the rent-seeking activities in the economy, and who is benefiting from them: the greater the extent of rent-seeking, and the more unequal the distribution of its fruits, the less plausible arguments based on trickling

are. Given the importance of trickle-based arguments, to both left and right, it is worthwhile thinking about rent-seeking.

There are many examples of this, for example:

- Theft. This is probably the simplest form of rent seeking, whether via a street mugging, or a highly complicated fraud.
- Creating barriers to entry to maintain monopoly profits. One particular form that ought to be of interest to actuaries is barriers in the form of complex regulatory or reporting requirements. Such requirements can deter small new entrants to the market, where the requirements would be unduly onerous. Thus excess profits aren't competed away, to the detriment of consumers.
- Unions demanding higher wages without increases in productivity.
- Tax avoidance or evasion.
- Government subsidies on national industries, including import tariffs or bailouts of struggling businesses.

This is just a short list of activities involving rent-seeking; it would be possible, though rather dreary, to extend the list to cover many pages of paper. Even from this short list, though, we can make some useful observations and risk extending them to generalisations:

- Rent-seeking can be legal or illegal (though some authors define rent-seeking to refer only to legal activities, with illegal ones being classed as corruption or similar), and it can be socially acceptable or unacceptable. Take reducing one's tax liabilities as an example. Avoidance is legal; evasion is illegal. Investing in an ISA is socially acceptable; certain corporate structures that lead to low corporate tax are less so, if the national press is a good indicator of public views.
- Almost everyone engages in some form of rent-seeking, including the authors of this section. Hence this is not a party political issue – a cynic may say that the only difference between the left and the right is which group of rent seekers they represent. It may be unrealistic, given human nature, to think that all such behaviour could be eliminated, but it is worth understanding who is “best” at it, and what the most flagrant (and valuable) examples are.
- Large industries have grown up around rent-seeking: tax advice, lobbying, and so on.

It is worth acknowledging before we go any further that rent-seeking is not always a perfectly clear concept; in particular it can be hard to separate out value creating actions from rent-seeking ones. As an example of this, consider a profession. On the one hand, a profession seeks to ensure minimum levels of standards which should be beneficial to users of that profession. On the other hand, a profession's actions can protect its members from external competition. It is, though, a useful heuristic concept for understanding the motivations behind, and impacts of, certain activities.

Why does the problem persist in these “enlightened” times?

So why don't people stand up against such behaviour? What permits structural barriers to the elimination of rents through competition? One reason is that people may not realise it is going on, or the extent of the problem. This may be a particular issue where there is significant complexity (see below).

Another reason is that many forms of rent-seeking often involve taking a small amount of money from a large number of people, and redistributing it to a much smaller number of people – mass marketed financial products such as credit cards or insurance could fall into this bracket if unfairly priced. Thus, even if an individual realises what is going on, the cost for that individual, or a small group of such individuals, to act against such practices is likely to outweigh the cost to those individuals of the practices themselves.

Conversely, when rent-seeking acts in the other direction, with significant wealth taken from each of a limited wealthy group to give each of a large group a small amount (e.g. redistributive taxes, unions seeking pay rises) the large individual cost to the wealthy makes it worth their while to invest in removing these practices, through lobbying and the like, whilst it is not in the interests of (small groups of) individual beneficiaries to resist such actions.

This asymmetry may go some way to explaining why rent-seeking in general seems to help the rich get richer, even though in a democracy, one might expect the majority to hold the power, although infrequent elections of people rather than policies significantly reduce the influence of the individual. The lack of individual financial motivation also explains why organisations such as governments, charities and religious groups have an important role to play in reducing rent-seeking for the general benefit of society.

In particular, given its size and law making powers, Government has a huge role to play in this area, both in preventing rent-seeking (e.g. provision of police forces, implementation of competition laws) and in implementing it (e.g. welfare, subsidising national industries, bank bail outs). This raises at least two immediate questions: if Government controls rent-seeking, who controls Government, and does this mean the “rules of the game” are not entirely fair? Sometimes this is obvious: just think of Robert Mugabe and his followers in Zimbabwe. But perhaps we in the West shouldn't be hasty to judge the speck in someone else's eye until we have removed the plank from our own.

For example, changes in the UK over the past few decades have arguably led to a shift in the balance of power:

- Reduction in the influence of unions has led to a reduction in the ability of workers to look after their interests.
- Deregulation in financial markets has strengthened the ability of one sector of the country to protect its interests, potentially at the expense of others.

Given this is such a large area, in what follows we will focus on issues that are most likely to be relevant to the actuarial profession: “financial” rent-seeking; and the role of professions and similar service industries in adding to or reducing rent-seeking.

But before we proceed to look at these in depth, we note that there is one particular point that is common to both issues that could be a real problem for the country as a whole, including those currently benefitting from rent-seeking, or their descendants. It should become apparent in what follows that the rent-seeking involved is potentially incredibly (e.g. certain areas of banking) or very (e.g. many professions) lucrative. Current debt-laden university graduates are subject to greater financial pressures than before, and so are understandably more likely to be focussed on personal financial rewards, rather than the gain to society as a whole.

Financial Rent-seeking

Opacity can facilitate financial rent-seeking. The knowledgeable and powerful can exploit information asymmetries, keeping things opaque, and make use of OTC markets.

Volatile markets increase the cost of capital and make real investment harder, but those who can invest (i.e. the wealthy) get on average even higher returns!

Regulators are meant to set the rules for the benefit of society, but being human, regulators are as prone to economic ideology as anyone else. Adair Turner has stated that the Bank of England took it as a matter of fact that extra liquidity was axiomatically a good thing, and hence the growth in trading volumes was beneficial to society.⁴⁹

Similarly, the Chicago School of economics has pushed the idea that unfettered markets are efficient and best, and so there is a high burden of proof required to justify regulation or market intervention.

Even the language we use without thinking reflects this – the word “intervention” carries with it a sense that it ought not to be done unless necessary, and should probably not be part of the normal course of events. Similarly, virtually every government, especially early in its term of office, crusades on “cutting red tape”. Sweeping away previous rules does, however, run the risk that valuable protections, often built up from bitter experience, may be dismantled.

The movement of people between industry and regulators only goes to reinforce the risk of such “regulatory capture”.

Financial markets can now make or break a government – e.g. George Soros and the currency crises. Hence, government has a strong incentive to keep financial markets happy or suffer from adverse market reaction.

49 Adair Turner (17 March 2010), "What Do Banks Do, What Should They Do about What Public Policies Are Needed To Ensure Best Results For The Real Economy?", Speech at CASS Business School available at http://www.fsa.gov.uk/pubs/speeches/at_17mar10.pdf Retrieved 3 June 2014.

Role of professions

One of one working party member's favourite novels is Charles Dickens' "Bleak House". A central element is "Jarndyce and Jarndyce", a case in the Court of Chancery. Whilst the case is never fully explained, it is apparent that originally a lot of money was at stake for the litigants, but by the end there is nothing left – the money having gone to the lawyers who have dragged the case out over many years.

The idea is:

- Professionals properly work for their clients best interests within the confines of legal and professional standards
- Wealthy clients pay the most and so attract many of the best professionals, or at least more than the less wealthy
- So the wealthy can use professions to help protect their interests
- They are willing to pay a lot (in normal terms) to do so
- And are able to bear significant costs/delays compared to others – wear the opposition down

Compare this to the list above. Complexity is a part of the business landscape which rent seekers can exploit to their benefit. Simplifying the rules and opening up competition helps to level the playing field.

Are we in 1984?

1984, Chapter 8

... They were talking about the Lottery. Winston looked back when he had gone thirty metres. They were still arguing, with vivid, passionate faces. The Lottery, with its weekly pay-out of enormous prizes, was the one public event to which the proles paid serious attention. It was probable that there were some millions of proles for whom the Lottery was the principal if not the only reason for remaining alive. It was their delight, their folly, their anodyne, their intellectual stimulant. Where the Lottery was concerned, even people who could barely read and write seemed capable of intricate calculations and staggering feats of memory. There was a whole tribe of men who made a living simply by selling systems, forecasts, and lucky amulets. Winston had nothing to do with the running of the Lottery, which was managed by the Ministry of Plenty, but he was aware (indeed everyone in the party was aware) that the prizes were largely imaginary. Only small sums were actually paid out, the winners of the big prizes being non-existent persons. In the absence of any real inter-communication between one part of Oceania and another, this was not difficult to arrange ...

Whilst not suggesting that we are (yet) in the dystopia of 1984, there does seem to the authors to be an element of truth in the picture that Orwell paints. Many people are willing to accept a status quo of inequality as long as there is the chance that they, or their family,

can become one of those at the top of the tree. We are not thinking here about the National Lottery; rather, we are thinking of what might be called the “American Dream”, or the idea that you can go from poverty to riches in three generations. Unfortunately, it seems that these concepts are becoming less and less true, as per Larry Katz’ analogy in our Introduction. Now, the socio-economic class into which you are born is where you are likely to stay. These ideas become tools to protect the status quo.

This is just one example of where perceptions are more important than the reality, and this leads into the whole area of behavioural economics, an area of growth over the recent past spurred on by the works of Kahneman and Tversky. It has become more topical in the UK recently with the FSA publishing a paper on how it is considering this area in carrying out its role.⁵⁰

There is plenty of information elsewhere on this topic, including the actuarial exams, so there is no need to explain it in detail here. Fundamentally, though, behavioural economics is concerned with ways in which the major assumption underlying many strands of traditional economics – the rationality of market participants – is demonstrably and materially wrong. A very readable introduction to this area is Daniel Ariely’s “Predictably Irrational”.

But with greater knowledge of the issue comes greater scope to use it to one’s advantage. And those with the greatest resources to spend will be able to do so the most. This can be done in many ways, e.g. the media (to reach the masses) or lobbying (to reach decision makers).

A corollary to the idea that the wealthy have “earned” their position through hard work is the idea that the poor are in a position of their own making. Oxfam released a report⁵¹ setting out, and debunking, six myths about poverty that many readers, including the authors of this paper, will likely have believed to some extent in the past. These are that “they” (being the poor):

- are lazy and just don’t want to work
- are addicted to drink and drugs
- are not really poor – they just don’t manage their money properly
- are on the fiddle
- have an easy life on benefits
- caused the deficit

3.3 Actuaries’ Impact on Inequality

The City of London is regularly accused of exacerbating inequality; the investment banking industry in particular is sometimes portrayed as preying ruthlessly on society, producing

50 <http://www.fca.org.uk/static/documents/occasional-papers/occasional-paper-1.pdf>

51 <http://policy-practice.oxfam.org.uk/publications/truth-and-lies-about-poverty-ending-comfortable-myths-about-poverty-306526>. This is one of the sources we comment on more fully in Section 5.2, below.

little of social benefit, bailed out by taxpayers while overpaying its employees, especially the most senior, who in turn aggressively exploit tax loopholes.

Actuaries may consider themselves to be the exceptions. The pooling in insurance and pensions in many cases transfers wealth from the fortunate to the unfortunate. The industry benefits widows and accident victims; these groups deserve support by virtue of the premiums they have paid but are also likely otherwise to be poor. To the extent that risk pooling is inherently redistributive, actuaries should take comfort that it tends to reduce inequality (noting in passing that the truly wealthy can self-insure).

However those who are insured are already in the global wealthy in that they have:

- either employment or property to insure
- sufficient disposable income to purchase insurance
- insurance available to them

The vast majority of the global population are not this fortunate.

Whilst financial services and products such as micro-insurance, finance and savings are being implemented, the level of capital and resource allocation to these products, on both an absolute and relative basis, is fractional. On an individual level, the impact of these financial services and products might well be significant. These three products correspond to the actuarial disciplines of general insurance, life assurance and pensions respectively.

An increase in availability and accessibility of these products would likely be of great benefit. A member interest group within the Institute and Faculty of Actuaries has been set-up and carried out substantial research and developed micro-insurance tools. Potentially actuaries could contribute further in this area.

Risk pooling is not, however, the only area of actuarial endeavour with implications for inequality. Solvency requirements, customer segmentation, asset allocation and the decision to follow an actuarial career all have equality implications, and we consider these below.

Solvency Capital Requirements

The solvency regulation of financial services firms has strong implications for inequality. During the financial crisis, the state injected £37bn into Lloyds Banking Group and Royal Bank of Scotland.⁵² This compares to state social security spending of around £113bn per year.⁵³ The bail-outs could be considered as a form of corporate social security, as taxpayers money was directed towards corporations, and their often wealthy owners and managers. The government had a choice on how and whether to conduct a bail-out; they could, for example, have reduced bank bad debts by subsidising mortgage payments for

⁵² http://news.bbc.co.uk/1/hi/uk_politics/7666695.stm

⁵³ <http://www.ukpublicspending.co.uk/breakdown>

borrowers in difficulties, but they chose a route that offered more to the already wealthy and less to the poor.

The policy response to mitigate future bail-outs is solvency supervision. Financial firms' non-equity assets must substantially exceed liabilities, especially where those assets or liabilities are volatile. With a substantial cushion of shareholder funds, poor decisions by banks and insurers are borne by their private owners, and not by the public purse. There is no theoretically optimal strength of solvency supervision. It is a trade-off between Type I errors (authorised firm resorts to public funds to pay policyholders/shareholders) and Type II errors (a viable business is thwarted). Based on the recent pattern of bail-outs, Type I errors could be regarded as increasing inequality. Type II errors are less clear cut, as innovation and new entrants can drive down financial services prices through competition, which is of benefit to consumers. However, some product innovations such as pay-day loans exacerbate inequality by ensnaring poor people into debt. A shift to more targeted regulation may benefit the poor twice over; firstly, by reducing public fund diversion to bail-outs; and secondly, by stifling socially destructive innovations.

Solvency supervision is complex, requiring valuations of assets, technical provisions and risk measures. Actuaries are particularly involved in the valuation of liabilities and calculation of capital requirements. These calculations require a degree of judgement, and the way the actuary applies these judgements will underpin the real strength of the supervisory regime. When an actuary takes a cautious view on liability valuation, or sets capital requirements conservatively, this reduces Type I errors and may increase Type II errors, which in broad terms is likely to promote equality. Where an actuary's work reduces stated liabilities or capital requirements, the result is more Type I errors and fewer Type II errors, both of which increase inequality.

While solvency supervision does not currently apply to UK defined benefit pensions, similar issues arise. Business owners and senior management will generally prefer to retain cash within a business, or pay it out as dividends, rather than have it locked into a pension plan. On the other hand, employees stand to lose when pension plans are underfunded. This affects not only the security of their pension promise but also their negotiating leverage when an employer seeks to renegotiate promised pensions. To the extent that employees are generally poorer than managers, an actuary who recommends larger pension scheme contributions is promoting equality. An actuary who recommends lower or zero contributions is likely to exacerbate inequality.

As with any profession, actuaries have a range of temperaments and a range of personal attitudes in relation to prudence. Actuaries who act prudently, or who engender prudence in others, are likely to have a beneficial impact on equality.

Customer Segmentation

Actuaries may also have an impact on inequality through their influence on the pricing of financial products. The main issue here is customer segmentation, when financial firms

offer different terms to different customers according to those customers' perceived likelihood of making a claim or defaulting on a debt. This could exacerbate inequality if wealthier customers generally enjoy more favourable terms of trade. This would be the case, for example, for household insurance if affordable homes are more likely to be located in areas with higher crime or exposed to hazards such as floods, therefore implying higher insurance costs for poor people.

We might argue that accurately priced insurance is not inherently bad for equality. The poor person whose house is more likely to be burgled or flooded is worse off anyway because of the underlying hazard. Fairly priced insurance makes them neither worse nor better off. There are, however, situations where selectively priced financial services can perpetuate an existing injustice, if being declined for insurance or a loan leads to exclusion from other opportunities. Furthermore, we will argue that financial services can serve society better if existing exemptions from anti-discrimination law are removed.

A currently topical area of insurance exclusion relates to the withdrawal (or "redlining") of household insurance in areas prone to flooding. Few people would choose to live in a property that regularly floods. People without the choice tend to be poorer. There are some subtle effects that mean that subsidising home insurance for flood plain inhabitants may not benefit those inhabitants anyway. The main beneficiaries may be property developers who acquire cheap land on flood plains and are able to sell at inflated prices because the buyer will be entitled to subsidised insurance. Government plans to make flood insurance affordable may be portrayed as a social programme to help the poor but much of the money can end up in the pockets of property developers.

Some financial products may enable wider participation in society; for example someone who has to drive to work may need credit to buy the car and insurance to drive it. Declining credit or insurance cover can harm a customer beyond merely being unable to borrow or buy insurance. To most financial services businesses, it is obvious that they need to be able to price selectively, as their business model relies on being able to control adverse selection. This is what supposedly justifies financial firms' legal exemption from some equality legislation. However, if financial firms had to obey the same discrimination laws as everyone else, the result could be that poor people gain better access to employment and housing – which has a magnified equality benefit greater than the original cross-subsidy.

In some cases, selective pricing can legitimise discrimination which would be illegal elsewhere. Employers and providers of goods or services are legally forbidden from discriminating on a range of characteristics. The legislation is partially effective; while businesses have processes in place to promote diversity, it is still probably the case that certain groups face prejudice and discrimination. Amazingly, financial services firms are able to discriminate where there is a statistical justification, even where part of the statistical effect is caused by illegal discrimination. For example, some groups may find it harder to get credit because of a higher default probability, even if that higher default probability is attributable to less favourable treatment by employers.

It could be argued that financial services' privileged exemptions are neither deserved nor of benefit to society. Other industries comply with discrimination law by operating cross subsidies. For example, a supermarket that installs a wheelchair ramp cannot charge the cost of that ramp only to people who use wheelchairs. Society accepts that people with disabilities suffer enough disadvantages as it is; accessibility requirements are a small step towards redressing an existing injustice. Insurance industry claims that cross subsidies cause the industry to collapse under adverse selection, have been disproved by the impact of the EU gender directive, whose result was just the intended equalisation of premiums.

Asset allocation

The selection of asset mix in an investor's portfolio affects not only the returns the investor earns, but also the availability of capital for the underlying businesses. For example, predatory pay-day lenders can exist because capital markets provide them with money to lend, while peer-to-peer lending has found it more difficult to attract the necessary capital. Asset allocators therefore have an impact on inequality through the businesses they support. Asset allocators should also bear in mind that when they choose between capital-intensive and labour-intensive industries, there are implications for employment opportunities, and hence on unemployment, which is a major source of inequality.

Opportunity costs of being an actuary

Many actuaries possess scarce skills which could be of value in many industries. We have considered the impact of actuaries in their role as actuaries, but there is also an impact on inequality of a skilled person choosing to become an actuary, when other fields such as medical research or engineering also require highly-trained numerate employees. The actuary should consider whether a career that maximises their personal gain also maximises their contribution to society.

3.4 Thinking in Systems⁵⁴

There is a well-known story of a group of blind men inspecting an elephant. A passer-by asked each of them what an elephant was like. The first, feeling the elephant's wide and rough leg answered that it was like a tree; the second, feeling the elephant's trunk coiling round his hand, laughed at the first and answered that it was like a snake; the third, feeling the elephant's ear, laughing at the obvious mistakes of the other two concluded that it must be a type of large bat! Of course, each of them was talking about a specific part of the elephant and drawing conclusions based on an incomplete picture. We can all understand why they arrived at this mistaken view, but would concede that in a limited way they were

⁵⁴ This section of our paper draws heavily on work by Donella Meadows for its inspiration. What is presented here is just a taster of General Systems Theory, and comes primarily through the lens of Donella Meadows via the writer of this part.

each right: the elephant has elements of each of the tree, snake and bat, but we also intuitively know that its totality is more than the sum of the parts.

In the same way, systems theory recognises that in order to understand a system it is insufficient to simply understand the parts. In fact, it explicitly recognises that a system is more than the sum of the parts: there are “emergent properties” that only show themselves through how the different parts of the system relate to each other.

Take a flock of birds; no amount of looking at the individual bird is likely to lead to an understanding of the beauty of the movement of the flock as a whole – the ephemeral shape-shifting and beauty and fluidity of movement. The property of the whole emerges only through how the elements relate to one another.

Systems – a definition

Formal systems theory defines a system as ***an interconnected set of elements that is coherently organised in order to achieve a goal or purpose***. There are three essential constituents: the elements, the interconnections between those elements, and the overall goal or purpose⁵⁵ of the system. The aim of systems theory is to study both the elements and their relationships in order to provide an understanding of the whole.

For example, your digestive system includes many different parts such as teeth, saliva glands, your tongue, oesophagus, enzymes, stomach and intestines. Its goal is to break down food into its basic nutrients and transfer those nutrients into the bloodstream, whilst discarding unusable wastes. An understanding of the individual elements, along with how they relate to each other is required to provide a complete understanding of the whole.

General Systems Theory emerged as a new discipline in the 1950s through the pioneering work of Ludwig Von Bertalanffy and subsequently through the work of Nobel Prize winner Ilya Prigogine, who reconciled systems theory with system thermodynamics. It exploded into the common psyche with a publication of the 1972 book, *The Limits to Growth* by the Club of Rome.

Why is this relevant in the context of Financial Inequality?

Not a day goes past without public commentary from politicians, informed commentators and the press on the subject of the economic system. Casual inspection allows us readily to accept that the system is composed of elements (e.g. individuals, corporate entities, industries, governments, regions, nations), each of which interacts with the other through agreed sets of rules in order to achieve a purpose. For example civil and criminal laws constrain our behaviour, flows of financial wealth are permitted through the rules which determine how wealth will be distributed between different elements of the system, their

⁵⁵ Goal is used for non-human systems; purpose when talking about human systems. The purpose is deduced from behaviour, not from rhetoric or stated goals (which are almost universally misleading)!

purpose being peaceful transfer of power between political parties, efficient allocation of resources between, for example, competing ends and economic growth.

It is clear from this description that the economic system forms a System in the formal sense. As a result, we can formalise our study of it through Generalised Systems Theory.

Much has been written about financial inequality. We have all been introduced to a range of challenging statistics discussing wealth inequality, for example: the world's richest 20% consume about 80% of the world's goods and services; or 40% of the world live on the equivalent of less than \$2 a day and 80% on less than \$10. Most of us have an intuitive sense that this level of inequality is not healthy. How would we like to be in a poor community? Is it fair? Is wealth and income really distributed according to merit (as we might wish it to be)?

So what can we do to improve the situation? Again, there is a dizzying array of proposed solutions: minimum wages, housing benefit, shared ownership schemes, fair trade, free trade, labour mobility, efficient markets, to mention but a few. But can we be sure they will work? What is the real impact of the minimum wage or housing benefits?

Each of the problems and the solutions may appear to have merit, however on implementation often we find that the solution may be ineffectual, or worse, simply exacerbate the problem. We have become like the blind men inspecting the elephant. Each of our experts is convinced they have the solution, but without understanding the whole it is highly unlikely that the solutions will have the desired effect.

If we wish to be try to achieve our objective of understanding the sources of financial inequality and also to have a better understanding of the solutions, it seems important to study the economic system, and in particular to understand how best we can intervene to change the outcomes of the system.

Leverage Points: Places to Intervene in a System

One of the contributors to The Limits to Growth was Donella Meadows, an environmental scientist. Following the work on the Club of Rome paper, Meadows felt called to continue to work on the big issues that she saw in the hope of making a positive difference.

During her career, Meadows participated in some of the many rounds of talks regarding the North American Free Trade Agreement (NAFTA) in the early 1990s. She realised that a very large new system was being proposed and negotiated, but that the mechanisms being agreed to manage it were too weak to be effective.

"This is a huge new system people are inventing!" she said to herself. "They haven't the slightest idea how this complex structure will behave," came her internal reply. "It's almost certainly an example of cranking the system in the wrong direction – it's aimed at growth, growth at any price!! And the control measures these nice, liberal folks are talking about to

combat it – small parameter adjustments, weak negative feedback loops – are way too puny!!!”⁵⁶

Driven by her uncontained concern, she jumped up and set on a flip chart a loose 9-point hierarchy entitled “Places to Intervene in a System”. Meadows followed up with a more thoughtful 12-point hierarchy in a formal paper “Leverage Points: Places to Intervene in a System”.⁵⁷

We don’t have space here to go through each of the 12 points in detail, but Meadows elsewhere uses a shortened framework⁵⁸ to present these ideas, which will suffice for this brief introduction to her work. It is set out below.



Events refer to those things that happen, the things that we see in the daily news. They are the outer manifestation of the system and what it does.

Behaviour refers to the general tendency of the events of a system over time and is the product of the multitude of individual events.

The events and behaviours arise out of the individual **elements** and how they relate to one another. This is the area where change can start to be instigated. However, change at this level is difficult. It is akin to changing a manager in a business, or electing a new government. Unless the rules that constrain them change, it is unlikely that significant change will come by simply changing an element of the system. However, if that new element is able to change the items higher up in the hierarchy, then more substantial change may occur.

How those elements are **interconnected** is more important than the elements themselves. The interconnections determine how information flows between the elements, and also set the rules by which the elements interact.

Changing the flow of information can have marked effects (although not always as expected). For example, the rapid transfer and dissemination of market prices is deemed to be important to ensuring efficient markets; however, Meadows cautions against assuming that it is de facto a good thing. If markets over respond to new information, rapid

56 Meadows (1999), "Leverage Points: Places to Intervene in a System", Sustainability Institute

57 http://www.fraw.org.uk/files/limits/meadows_1999.pdf

58 See YouTube lectures by Meadows on Sustainable Systems - <http://goo.gl/ExeY9X>

dissemination of information may lead instead to chaotic markets if there are insufficient feedback loops to prevent the amplification of the market signal through the rest of the financial system.

Similarly, changing how elements relate to each other can have a large effect. The manager who ceases to report to the operations director, but now reports to the sales director may cause a more significant change in a business's performance than changing the manager themselves i.e. changing the interconnections may be more potent than changing the elements. Similarly, if the information provided to the sales director is made more relevant for making decisions then this may also have a marked effect, even if reporting lines themselves do not change.

Ultimately however, the interconnections are formed by the indented **goal** of the system. A business has the goal of making profits and as a result the interconnections and elements will be selected and shaped by this focus. It will be difficult for the business to do anything else unless there is a change in the profit making goal. A change could be achieved by a change in its articles of association, or a more fundamental constitutional change, for example to become a not-for-profit.

Finally, Meadows makes the point that the goals of the system are outlined by our won world view – what she calls our **paradigms**. Paradigms can be deeply seated and almost invisible to us on a daily basis but shape our goals. Take for example land ownership. We rarely, if ever, question what has been a bedrock of the English speaking world's economic system for centuries. William Blackstone, in his commentaries wrote:

“There is nothing which so generally strikes the imagination, and engages the affections of mankind, as the right of property; or that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe. And yet there are very few that will give themselves the trouble to consider the original and foundation of this right. Pleased as we are with the possession, we seem afraid to look back to the means by which it was acquired, as if fearful of some defect in our title; or at best we rest satisfied with the decision of the laws in our favour, without examining the reason or authority upon which those laws have been built.

We think it enough that our title is derived by the grant of the former proprietor, by descent from our ancestors, or by the last will and testament of the dying owner; not caring to reflect that (accurately and strictly speaking) there is no foundation in nature or in natural law, why a set of words upon parchment should convey the dominion of land: why the son should have a right to exclude his fellow-creatures from a determinate spot of ground, because his father had done so before him: or why the occupier of a particular field or of a jewel, when lying on his death-bed, and no longer able to maintain possession, should be entitled to tell the rest of the world which of them should enjoy it after him.”

William Blackstone, Commentaries on the Laws of England, Book II, Chapter I⁵⁹

Blackstone eloquently raises questions about this paradigm and its origins in a way that is rarely considered. We can appreciate how this paradigm has acted to shape the whole system of English law and property rights around the globe. Additionally, it is highly likely that most of us have never appreciated that we see the world through this lens: we readily accept our right to absolute ownership of property without questioning too deeply the basis for this right.

Some Conclusions

We must now return to our subject at hand: that of financial inequality. So far we have introduced systems theory in general terms; identified that the financial system can be investigated through the lens of systems theory; and discussed generically how to bring about change within a system.

We are all familiar with events in the financial system – they are reported frequently in the financial press, for example:

- “Lord Sugar has sold a Mayfair office block for almost £50m more than he bought it for just five years ago”⁶⁰
- “Russia prepares to pay for trade in renminbi”⁶¹
- “UK Trade Deficit Widens in April”⁶²

None of them alone tell us much about the Behaviour of the system.

However, if we care to look there are indicators of system Behaviour: signals relating to wealth and income distribution and its evolution with time. The tendency for the world to be split between the “haves” and the “have-nots” has been with us for generations. Sometimes it may have been worse and sometimes better.

59 http://oll.libertyfund.org/titles/2140#Blackstone_1387-01_826

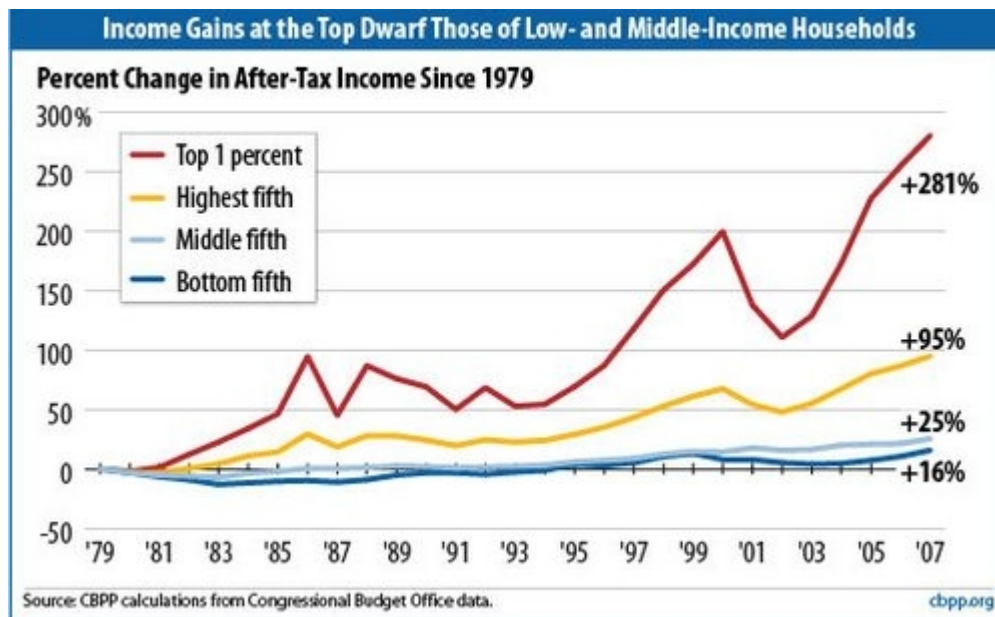
60 <http://www.independent.co.uk/news/business/news/lord-sugar-turns-a-50m-profit-on-west-end-block-8631201.html>

61 <http://www.ft.com/cms/s/0/9f686816-ed51-11e3-abf3-00144feabdc0.html?siteedition=uk#axzz344tWk3PG>

62 <http://www.ft.com/cms/s/0/7087ff7e-ed57-11e3-8a1e-00144feabdc0.html#axzz344tWk3PG>

Take the following chart:

Figure 3-1 Percentage change in after-tax income since 1979⁶³



This starts to show an aspect of the Behaviour of the financial system in the United States. There are similar charts showing a disparity in the wealth attributed to different social strata in other economies – the UK included (some of which were shown in earlier sections).

However, our goal is to understand whether we need to affect change, and if we are to do so, how to go about it. Consequently, we must question how the Elements of the system relate.

It is unlikely to be sufficient to change a few parameters such as marginal tax rates, or attempt to offset the worst of the poverty by paying, say, housing benefits. Without a full appraisal of the secondary and tertiary impacts of such policy decisions, is likely to result in unintended consequences. For example, in the absence of other policy corrections, increasing housing benefit would be likely to lead to higher rents in the fullness of time, leaving the poor in the same state that they are in but resulting in a higher wealth transfer to property owners via government intervention. This will exacerbate wealth inequality rather than reduce it! In many cases, without a holistic view of the system, the proposed solutions may in fact make matters worse.

The good news is that the renewed interest in the subjects of inequality, combined with the pending demographic challenges facing the aging western populations, is likely to lead to a greater willingness to challenge the conventional wisdom and for new and well thought through solutions to be proposed.

⁶³ <http://www.cbpp.org/cms/?fa=view&id=3220>

4 What the work party think and what can be done

In this, our most provocative section, we:

- First we consider the Actuaries' Code and whether that may have any implications for our individual or corporate response to financial inequality.
- Then (gulp) we set out what we as a group currently believe, noting that for many of us this has changed as we have gone on our journey of research and discussion.
- As a final, and hopefully uplifting, element we include a number of inspirational examples where an individual or small group has made a significant difference. Neither you, dear reader, nor any of us might be the next George Cadbury (or whoever) but we do believe we can help improve the lot of at least some others.

In many ways this is the most challenging and difficult part of our paper, and we recognise that it might potentially provoke disagreement. It is not our intention to “preach” to our readership, but we wanted to be open about where we have got to and how surprised we were by that.

4.1 Actuaries, professionalism and actuarial responsibilities

From the day that we join the actuarial profession, we sign up to a code of ethical practice. For many of us, this will have been the Professional Conduct Standards. This has now been replaced by a system of principles called the Actuaries' Code⁶⁴, highlighted by the necessity to behave at all times (even in our leisure moments) with integrity and honesty.

If we can make the broad leap of faith that the readers of this paper are not themselves directly responsible, by word, action or policy, for any excesses of financial inequality, the two relevant passages which stand out from the Actuaries' Code are the following:

- Members will speak up to their clients or to their employers, or both, if they believe, or have reasonable cause to believe, that a course of action is unlawful, unethical or improper. *[Compliance 4.1]*
- The Code consists of principles which members are expected to observe in the public interest and in order to build and promote confidence in the work of actuaries and in the actuarial profession. *[Scope]*

Speaking up or whistle-blowing

To repeat the very direct responsibility within the Actuaries' Code, all members, students and qualified, should speak up to their clients or to their employers, or both, if they believe, or have reasonable cause to believe, that a course of action is unlawful, unethical or improper. The other sections of this paper have illustrated circumstances which are for the most part, within legal acceptability. It is left to the readers to make their own minds up as

⁶⁴ <http://www.actuaries.org.uk/regulation/pages/actuaries-code>

to the extent to which these conditions or courses of action are indeed unethical and improper and whether thus it is their duty to whistle-blow. There is no requirement within the Code that the member should only react where the perpetrators are actuaries or firms employing actuaries. The call is surely that in any area where personal judgement deems that current or future practice is likely to be improper or unethical, the individual member should do something about it.

But do what? Blind acceptance, wittingly or unwittingly, of the status quo is probably easiest to cite as being inappropriate where conscience is pricked. Members should consider for themselves what the most appropriate course of personal action is, and possibly raising public awareness of issues is the most obvious – preparing articles and papers, writing letters to journals and newspapers and speaking at public meetings – to inform, to elicit support, to challenge and correct if necessary. A separate and valued response would be to exercise one's voting rights to elect candidates most likely to take suitable action in the matter. And finally for actuaries, one might work within the profession to attempt to achieve a positional stance from the profession itself as to the rights and wrongs of financial inequality.

Public interest

The other calling on members is to seek to promote the “public interest” as an everyday fundamental item on a checklist when considering the appropriateness of action, either personal or that of others. It is not always 100% clear what we as actuaries understand by the term.

In March 2007, the IFoA (then the UK Actuarial Profession) defined the profession's public interest role and what the profession expects of individual actuary members. In the context of this paper, the most relevant passages arose when the profession promised to fulfil its public interest role through its communications processes:

- being open, honest, and transparent
- acting impartially, reasonably, ethically and with a sense of justice
- contributing to the debate on the setting of standards in the financial sector in the UK and internationally
- speaking out, when it considers it appropriate to do so, on financial matters, particularly where the public might be ill equipped to understand the associated risks
- contributing to the debate on government policy in financial matters and other areas where the profession has expertise by explaining its implications
- publishing material, when it considers it appropriate to do so, which will help the understanding of consumers of financial services and the members of pensions schemes

Further, it suggested that individual members serve the public interest by:

- complying with the profession's standards for conduct and ethics, being clear for which client they are working and bringing to their client's attention any relevant conflicts of interest
- making sure clients who have fiduciary duties are made aware of the implications for the consumers of financial products and members of pension schemes of the actuarial work undertaken for them
- communicating the results of their work in such a way to enable the client to make informed decisions
- complying with the "whistle-blowing" requirements of the FSA and the Pensions Regulator if there is failure to comply with legal or regulatory requirements
- reporting other actuaries to the Profession if they fail to comply with professional standards
- taking on appointments which have a specific consumer protection role, such as that of independent expert in insurance company restructurings⁶⁵

Whereas the messages here are wider than many interpretations of public interest (defining this with regard to financial stakeholders), the implications are clear, both for the individual actuary and the profession as a whole – identify, speak out, educate and report.

Within the context of financial inequality, it is vision and conscience that will be the instigators to action, vision and conscience that incites the individual actuary to step above "group think" and initiate processes

- to "act with a sense of justice"
- to contribute to debates nationally and locally
- to speak out to inform the public and the Government of current injustice and longer term consequences
- to inform clients where appropriate of direction and destination
- to shape products and services appropriately
- to whistle-blow where misdeeds are being perpetrated
- to act as champion where protection and challenge are required

Claire Bellis gave further consideration to the dangers of "group think" in her 1998 paper "The origins and meanings of professionalism for actuaries"⁶⁶:

Economic theory can explain the role of ideology and the benefits of "shame". A sense of shame leads to self-monitoring and to self-control, with considerable savings in monitoring and policing costs. In communities where there is a strong sense of shame about stealing, there is no need for non-productive expenditure on locks and other security devices. The effects of ideology can be strong, but can also be

⁶⁵ <http://www.actuaries.org.uk/about-us/pages/our-public-interest-role>

⁶⁶ http://www.businessandeconomics.mq.edu.au/our_departments/applied_finance_and_actuarial_studies/acst_docs/research_papers/1997/rp97_011.pdf

weakened by exposure to other ideologies – the “everybody does it” syndrome. Actuarial organisations endeavour to inculcate a professional conscience in new recruits, but this is unlikely to be heeded if it runs counter to the belief system of the wider community.

A 1999 GIRO working party chaired by Derek Newton sought further to interpret the public interest for actuaries⁶⁷:

The actuarial profession has an obligation to serve the public interest. Collectively it seeks to do so by informed contribution to debate on matters of public interest and by influencing those with the power to protect and enhance the public interest. It is noticeable that the profession is not restricted in the areas in which it might serve the public interest, merely that its means of so doing will be via informed contribution to debate and by influencing those with power. Less clear is the public interest role of actuaries as individuals as opposed to the professional body.

Insofar as there is an understanding of how individual actuaries would serve the public interest, there seems to be an assumption made by many that this obligation is primarily one of “whistle-blowing”, of highlighting instances where the public interest is not being served. We on the working party believe that our brief as actuaries to serve the public interest is wider than that and indeed far more positive. We agree that actuaries should assist the move away from current practices when they are contrary to the public interest but we consider one of the most valuable roles of the actuary to be to defend existing or proposed practices that are already in the public interest but which have come under attack from ill-informed commentators or from bodies with vested interests in alternative procedures. This means that actuaries may well get involved in matters that in themselves do not appear to be strictly actuarial. We do not have a problem with that. Actuaries’ knowledge and understanding of insurance extends far beyond actuarial techniques and practices. Where possible, actuaries should use that knowledge and understanding to contribute constructively to industry debates.

This sense of wider responsibility in the public interest has driven this 2014 Working Party to write this paper, some 15 years after that earlier one.

In her recent masters’ dissertation, “*Actuaries and the Public Interest*”, Ilona Turnbull, a lawyer employed by the IFoA, sought to define public interest. “Whilst difficult, I believe that a working definition of the “public interest” should be attempted because excellent professionals must act in the public interest in order to benefit society as a whole thereby fulfilling the profession’s function and avoid harming the wider public.” It is this sense, the avoidance of public harm, that is the perfect call to arms for all of us to narrow the bounds of financial inequality.

⁶⁷ <http://www.actuaries.org.uk/research-and-resources/documents/general-insurance-and-public-interest-0>

Turnbull goes on to consider “interest” or “good” as being concerned with what is good for humans and what is inherently good in and of itself and the inherent conflict between the perceived personal interest (riches or personal gratification) with the betterment of the population at large.

Turnbull notes that the IFOA’s Royal Charter promises “... in the public interest, to advance all matters relevant to actuarial science and its application.” This knowledge set forms one of the profession’s functions and should be used to promote clients/the wider public’s well-being. Turnbull argues positively that all professions should contribute to ensuring the achievement of security, well-being and participation in society, e.g. by protecting people’s health (medicine), finances (accountants, actuaries) or relationships (psychologists, clergy). A good actuary, who is not only technically competent but virtuous, will not only ensure that people’s financial security is preserved but will also do so in a way so as to better ensure societal flourishing because they will do it in morally good way. Whilst financial security may be seen as something which actuaries are closely linked to, given their specialist knowledge, that knowledge can also be used in the non-financial arena. Again, this public policy work benefits the public as a whole and ensures that society overall, flourishes. By serving their particular function, professions and professionals can contribute to the well-being or flourishing of society provided they do it well. The professions’/professionals’ commitment to acting in the public interest or good ensures they exercise their function virtuously so as to promote human and societal well-being. But she is aware that the extent of a stakeholder’s interest varies depending on the particular context of the work that the professional undertakes and whether the interests are public or private. This may sometimes provide a conflict with the ethical stance that greater equity in the finances of worldwide populations, now and in the future, is a desirable target.

Turnbull concludes: “Professional ethics, addressing critical concepts such as trust, truth-telling/honesty, integrity and acting in the public interest, provides the answer to this problem: it helps alleviate the information gap and reassures those who have a legitimate interest in and who are affected by actuaries’ work that the actuarial profession requires them to act morally and that they will indeed, do so.”

The actuary is left with a clear message of having to promote the public interest, but perhaps less obvious is the methodology and the ultimate goals, especially when faced with financial inequality.

4.2 What the working party think

In preparing this paper, many of us came from the standpoint of believing that free market capitalism is on the whole good and that wealth trickles down. After having read the research and discussed amongst ourselves, we have come to the belief that we need to think more critically and to be more discerning.

The free market is not free; there being many legal interventions, many of which we don't see because we take them for granted. In recent years some of the fastest growing economies, e.g. China and India, have not adopted the most liberal free market models and operate successfully with considerable constraint. While free market capitalism incentivises efficiency gains it is not as people-friendly as we think it should be. We also see that big government is not necessarily a solution to the problems of the poor. Perhaps we need a new paradigm of what qualifies as a functioning market? This should be one that rewards graft and discourages free-loading, where appropriate intervention is welcomed. A bigger view should be taken of the societal impacts when trading frameworks and contracts are set up. It seems to us unethical that the very wealthy and large corporations sometimes exploit both individuals and national resources at an unfairly low price because they have the power to do so.

Lots of large employers have affirmative action policies to increase diversity and inclusion in the work force. Unfortunately the benefits of these policies do not always find their way through the supply chain. We are all aware of news stories of portraying children stitching footballs or harvesting cocoa in poor conditions, with long hours and very low pay.

We note with interest Figure 2-10 showing how in the UK the top 5% owned a constant proportion of wealth between the industrial revolution and 1920. Between the two world wars and until about 1980, their share of wealth decreased from 86% to 37%. Post 1980, their share of wealth is increasing, and so it looks like we are living in a world with increasing inequality.

While much of this paper focuses on the UK and will resonate in many first-world economies, we recognise that for many in the world, financial services are not available. This is financial inequality at its starkest. Some countries have been blessed by rich resources and cursed by poor leaders. Mineral wealth has been exploited by western companies seeking rich gains, with third world employees living in poverty and some politicians becoming personally very wealthy. Higher moral standards by politicians and companies could have led to a much fairer distribution of wealth. Arguably many poor countries should have very little national debt in the light of their mineral wealth. The Jubilee Debt Campaign⁶⁸ argued that the West should drop the debt of many countries because that debt was created through unfair exploitation. Dropping the debt of third world countries is not in the media headlight at the moment and yet the West continues to take more in debt repayment than it gives in aid and so maintains the financial inequality.

Happily there are some bright spots in an otherwise gloomy world. Individual altruists in diverse and creative ways have made and are making a difference. In the next section we provide some wonderful examples of how life has been or is being made better by the actions of a few.

⁶⁸ <http://jubileedebt.org.uk/>

In evaluating material from many sources, we discovered just how difficult it is to find a single measure which describes financial inequality. Measures of the numbers of poor people are all fraught with difficulty about the exact definition. Nevertheless, we believe that there is much that can be done with the imperfect data and that as professionals in financial analysis we should strive to understand this issue. Indeed, our actuarial remit to work in the public interest and consider a hierarchy of stakeholders requires us to consider the poor. Some may argue that we have sometimes used an unreliable statistic or chosen a threshold that is too low. These arguments miss the point. There is huge inequality in our world and many are suffering while we enjoy the lifestyle of the world's richest 1%.⁶⁹

Being in this tiny minority does mean that we are probably not in touch with the poor in a way that some are. However, the working party do try to be in touch and we encourage readers to get personally involved with the poor in some way; the poor are close to us and one does not have to look far – some of us have relatives who struggle to make ends meet. We donate time, skills and provide financial support for education, health care. Others support various nature conservation charities and are active in reducing our carbon footprints. Closer to home we distribute food destined for waste to the homeless and support local charities. These small insights into the lives of the poor continue to help us in our motivation to do something. A big problem here might be that the very wealthy and policy makers do not know any poor people, hence their comments and policies can be well-intentioned but badly targeted. The wealthy (us included!) will know lots about minimising tax and costs but generally very little about living on benefits, tax credits or choosing which bill to pay. Speaking about this, Mother Theresa said, "The trouble is that rich people, well-to-do people, very often don't really know who the poor are; and that is why we can forgive them, for knowledge can only lead to love, and love to service. And so, if they are not touched by them, it's because they do not know them". This is a clear challenge to us: To know people in social groups less well-off than us, to help them and also to speak out of knowledge.

There is a need for action at all levels. Arguably feeding the homeless, while a good deed, is only treating the symptom and not the cause. We need to be working to raise the profile of inequality in our spheres of influence. Discussing these issues at work and socially increases awareness and understanding. As actuaries our words on financial topics might be given more weight, and therefore we have a duty to speak from an informed point of view. In time we might also be able to convince policymakers to adopt a new paradigm. A new paradigm is desperately needed.

Implicit in our current thinking is that red tape is bad. The very words evoke thoughts of bureaucrats inventing rules and employers struggling to complete the documentation required. Looking more thoroughly at regulation we see that much of it is well intentioned and envisioned to protect workers. Today we are shocked to hear about child labour but it

⁶⁹ Many readers will have wealth of \$500k or will aspire to do so in the future.

took legislation and “red tape” to outlaw this employment practice in the more developed economies. Rules that are there to protect the vulnerable are often pushed to the limit. A current example might be “zero-hours contracts”, which seem to us unfair and exploitative. A more explicitly actuarial example is pricing in a gender neutral environment where the question has been asked: “how similar is this pricing basis to the one including gender?” Neo-conservative western economics is often pursued with rigour but little thought to the morality and social impact of decisions taken. However, even in business everyone has their part to play, as economies are about people and societies.

By implicitly accepting the free market ethos, the result is that many (most) people rush headlong into a spiral of activity aimed at gaining more wealth and possessions with corporate and governmental policies endorsing this choice. Few question whether this is morally right, or even if this pursuit leads to happiness, which even a selfish person might think a better objective.

Blackstone challenges us to consider the paradigm that we implicitly accept. Meadows challenges us to better understand the system and to recognise that the paradigms and goals are the most significant drivers of the outcomes of a system.

Once we have a better understanding of the systems and mechanisms for the distribution of wealth, we will then be in a better position to understand the causes of financial inequality. And if we can enquire more deeply as to the paradigms that have established the system we have, we will be in a better position to effect lasting change. Understanding complex systems and influencing paradigms is not a task open to all. We think that actuaries have the capacity to understand the concepts and data, to analyse these and then to communicate our findings to the media and to policymakers. We strongly believe that the current paradigm needs to be challenged both in terms of income and wealth inequality and generational inequality i.e. should we exploit the planet cheaply and leave the costly problems to a future generation?

This issue is currently taking a high profile, being centre stage at the World Economic Forum⁷⁰ and making headlines in the media. It seems that this is a good time to use our skills and influence to add to this push and try to ensure that change happens.

We are all aware, via the media, of corporations who pay little or no tax in some countries. Most of these arrangements will be completely legal but we question how ethical they are. We feel that the standard of legality is too low and that professionals should think beyond legality and even behaving ethically but towards behaving for the broader society’s good, which will sometimes require subjugating personal and corporate interests. In this area we could work as a profession to influence changes in the law to better serve all society. Tax law is inherently complex, built up over decades by politicians and lawyers, significantly influenced by the very wealthy. Minimising tax paid involves hiring the best tax lawyers and

⁷⁰ <http://www.weforum.org/events/world-economic-forum-annual-meeting-2014>

accountants, who rotate in and out of government revenue collection employment. Maintaining this complexity is a form of rent-seeking which ensures the prosperity of those who have the skills and the good fortune to work in this sector. We should be arguing for tax rules that are simpler and taxation that is progressive.

Using Meadows' hierarchy of influence, we might seek to influence companies to add or bolster societal or charitable goals in their corporate ethos. Many companies already do a small amount of matched giving to charities, or engage in community days with their employees. These amounts are usually very small compared to profits and more could be done to benefit society. The knock on effects could be large, affecting employees, recipients and shareholders. Indeed this type of change would be welcomed by ethical investors. However, the reality is that charitable giving is very low corporately and individually. We would encourage readers to get involved with a good cause and to give meaningfully to it. Even better, give regularly and seek to engage with the cause using the technical and financial skills and experience you may have.

The actions of (some of) the wealthy can be seen to be creating unemployment. For example, the industrialisation of farms in developing countries directly leads to higher unemployment. Smaller farms are compulsorily purchased to create huge farms which are then mechanised. People who were self-sufficient can become landless and jobless and enter a poverty trap with little chance of escape.

We are on the brink of a similar phenomenon in many industries, with robots now capable of doing many jobs. As the unit cost of production falls, so wages fall to allow human production to compete with mechanised production. In the UK, we see the rise of zero-hours contracts. We note that these can, in some circumstances, be beneficial to both worker and employer. However, mothers needing to arrange childcare cannot benefit from these contracts and we have heard of contracts where a penalty is paid if the worker is not available! Surely there should be a premium paid for (the benefit of) such an option? We need to ask if this is inevitable or if the wider societal benefits should be considered. What is the true value of the benefits and increased healthcare costs for the unemployed or the working poor? Is the price of energy reflective of the cost? Further work is being done on a related topic by the Resource and Environment Board of the Institute and Faculty of Actuaries. We think that there is a prima face case to challenge the current thinking with its rent-seeking and high discount rate assumptions.

Bringing the argument closer to home, we think that (some of) the financial services' privileged exemptions are undeserved and may negatively impact the poor. We would like actuaries to investigate exemptions to insurance products to assess whether the less wealthy would be worse off if these exemptions ceased. It may well be the case that the world does not end for the insurers, and rather like the recent removal of the gender factor, insurers learn how to adapt. We think that the financial services industry can better serve society with fewer exemptions from anti-discrimination law.

As we seek to make our knowledge and views more widely known we should be aware of how government works. Gilens and Page have tested political theories with multivariate analysis. They show that policy and hence law is formed when the views of the economic elite are aligned with organised interest groups. Organised interest groups rarely represent the poor or the ordinary worker, and so only coincidentally reflect the views of the average voter. They also show that individual voters' preferences and broad based interest groups have little influence on policy. This may explain why citizens are becoming more detached from politics and proportions of the electorate voting have been falling in many democracies. We must therefore seek to influence the economic elite and organised interest groups if we want to effect change.

4.3 Individuals can change the world

Tax regimes, land ownership laws and the like, have a huge effect on whether power and wealth are entrenched with a small minority. Over history many people have campaigned for social change, some of them successfully. Exploring some of the successful social campaigns and inventions (from a modern anglophile perspective) shows a myriad of ways in which change happens. The common denominator is that a person (or small group of people) engages passionately with an issue and promotes it. The engagement with an issue is for some a eureka moment and for others a long enlightenment.

Whilst many people support a social cause at some level, their valuable contribution affects a relatively small number of people. A small number of individuals manage to have an impact on thousands or millions of people in a multitude of creative ways. In the following paragraphs we give some examples of the diverse ways in which social change occurred or is occurring. Some are direct and obvious, while others are creative or just different. Some are controversial and may be dismissed by some. What we aim to show is that there is no one way in which this social change happens. Some are in the gift of only the wealthiest individuals and others are open for all to participate.

*William Wilberforce*⁷¹

Social change is often not quick in coming and we can think of William Wilberforce who headed the parliamentary campaign against the British slave trade for twenty-six years until the passage of the Slave Trade Act of 1807.

*George Cadbury*⁷²

George Cadbury and his brother were concerned with the quality of life of their employees and by 1900 had created a model village with affordable housing which was a significant improvement on grimy city life. They supported educational and health establishments and

⁷¹ http://en.wikipedia.org/wiki/William_Wilberforce

⁷² http://en.wikipedia.org/wiki/George_Cadbury

politically opposed worker exploitation. They improved the lives of their workers and set an example for others to follow.

*Arunachalam Muruganantham*⁷³

Arunachalam Muruganantham is an unlikely reformer. His goal was to make sanitary pads using user-friendly technology and to create jobs for rural women. He succeeded, improving women's health and increasing their chances of staying in education and of employment. Winning a prestigious technology award and having sole rights to a patent he seemed set for fame and fortune, but he was not interested in profit. He believes that big business is parasitic, like a mosquito, whereas he prefers the lighter touch, like that of a butterfly. "A butterfly can suck honey from the flower without damaging it," he says.

*Lewis Hine*⁷⁴

Lewis Hine used photography to highlight unsafe working conditions. After Lewis Hine's father died in an accident, he began working and saved his money for a college education. He became the photographer for the US National Child Labor Committee, documenting child labour in manufacturing industries. In the 1920s and 1930s, Hine photographed the construction workers in precarious positions while they secured the iron and steel framework of the structure, taking many of the same risks the workers endured. You will recognise some of his iconic pictures.

*Jane Addams*⁷⁵

The Progressive Era in the 1890s to the 1920s was a force for social change in America. Consisting of many campaigners and politicians from both major parties, this movement made many positive changes to the lives of the poor. Choosing just one person, Jane Addams was the most prominent advocate for improving the housing conditions for residents of urban slums. She became the first American woman to win the Nobel Peace Prize.

*Fairtrade Certification*⁷⁶

A change initiative of a different type was started in 1988 in the Netherlands. The Fairtrade labelling campaign started trading coffee from Mexican growers which was sold not only in charity shops and specialist retailers, but also in mainstream retail shops. This was a game-changer in terms of the impact that this type of trade would have. From a single product in the early years to an estimated trade of over \$5Bn today this is a big success. The aim is that consumers pay a small premium for products which finds its way back to the original

⁷³ <http://www.bbc.com/news/magazine-26260978>

⁷⁴ http://en.wikipedia.org/wiki/Lewis_Hine

⁷⁵ http://en.wikipedia.org/wiki/Jane_addams

⁷⁶ http://en.wikipedia.org/wiki/Fairtrade_certification

producer. There are claims of fraudulent labelling, unscrutinised supply chains and impoverished producers which in such a large trade is inevitable. Nevertheless many genuine arrangements do exist which benefit poor producers.

Bill and Melinda Gates⁷⁷

The Bill and Melinda Gates Foundation is a very different type of organisation helping the poor. This foundation includes areas of activity to promote global development with units dedicated to financial services for the poor and agricultural development. The Health Division is well known for sponsoring research into malaria eradication and also sponsors the study of many other tropical diseases.

For the sake of balance and rigour, there has been criticism of this foundation, amongst others, for the apparent lack of synergy between investment policy and the stated causes of the organisation. Specifically, capital provided in the form of investment might be being used to fund initiatives which are in direct opposition to the initiatives which the foundation support.

Dr. Bindeshwar Pathak⁷⁸

Dr. Bindeshwar Pathak is the Founder of Sulabh International Social Service Organisation, a pioneering non-profit voluntary organisation (NGO) in the field of Sanitation in India. This organisation seeks to develop robust, workable sanitation particularly for poor communities. This is particularly important in India where many women are attacked as they search out somewhere private to complete their sanitary needs.

Alfredo Moser⁷⁹

Alfredo Moser has brought light to over a million people. His invention allows poor people to light their homes via a clear plastic bottle. Not having to buy electricity allows the money to be spent on other essential family items. He earns a small income installing the lights locally, but is delighted that others have picked up his idea for use around the world. His invention has illuminated the lives of very many.

Norbert Hirschhorn⁸⁰

Norbert Hirschhorn is an Austrian-born American public health physician. He was one of the inventors and developers of the life-saving method called oral rehydration therapy for adults and children suffering fluid loss from cholera and other infectious diarrheal illnesses. It is estimated that his work has saved around 50 million people suffering from dehydration.

⁷⁷ http://en.wikipedia.org/wiki/Bill_Gates_foundation

⁷⁸ <http://www.sulabhtoiletmuseum.org/>

⁷⁹ <http://www.bbc.co.uk/news/magazine-23536914>

⁸⁰ http://en.wikipedia.org/wiki/Norbert_Hirschhorn

5 Book, Paper and Article reviews

5.1 Books

The Price of Inequality, by Joseph Stiglitz

Stiglitz' book is a critique of neo-conservative economics, which he also calls market fundamentalism. He characterises the wealthy as "the 1%", a phrase picked up by anti-globalism protestors around the world. In a healthy functioning economy, entrepreneurs create wealth, and may themselves become wealthy from a share of the social wealth they generate. In today's America, however, he contends that the 1% have become wealthy at everyone else's expense, perverting political power to gain access to monopoly rents. The financial services industry is a particular example of this, gaining public subsidies in the bad times but making private profits in the good times.

Stiglitz' conclusion is that the current extent of inequality is bad for everyone, even for the 1% who control so much of the power. Economic productivity requires a degree of social cohesion, both for labour relations and to provide customers for businesses. Such cohesion can only arise if society's wealth is more equally shared.

This is a credible and powerful book that many working party members found very interesting. Stiglitz is an experienced and influential economist⁸¹, though his challenge to mainstream orthodoxy and the status quo ensures that his views are not universally popular.

Prosperity without Growth, by Tim Jackson

Long term actuarial assumptions for price and wage inflation or investment returns usually make reference to an assumed rate of growth in economic output. Tim Jackson argues that because the earth's ecosystem is finite, economic output cannot continue to grow indefinitely. Even given continuing technological innovation, limits on mineral extraction and energy sources are already constraining economic growth.

As the economy already produces far more than we need to survive, a limit to growth is not necessarily detrimental to our well-being. Growth is only needed because the world's wealthy are currently trapped in by an insatiable thirst for novelty. Consumer society has passed a critical point where materialism is now actively detracting from human well-being. By tackling the destructive consumer culture, we can learn to live more equally and within our environmental means.

This book makes sense in the systems sense that we introduced in section 3.5 – "the answer" involves paradigm shifts.

⁸¹ Stiglitz has held a number of influential positions, including Chief Economist of the World Bank, and won the Nobel Prize for Economics in 2001. In 2011 Time magazine listed him as one of the 100 most influential people in the world.

Ecological Debt – Global Warming and the Wealth of Nations, by Andrew Simms, Second edition, 2005, 2009

In Simms' book the conventional view of foreign debt being owed by developing countries is turned on its head. An argument is made that the wealth and assets of many countries was built with raw materials which were taken without payment (from a number of countries which would now be categorised as developing countries).

This isn't a new outlook. In fact, Keynes expressed this view and performed a calculation for one country which indicated that compound interest applied to these "loans" corresponded with that country's foreign investments at the time he was writing.

The term ecological debt is explained as being whereby certain goods – "the commons" – should be accessible equally to all global citizens. However, the usage choices in terms of quantity, rate and the means by which the commons is used, by a relatively small minority, together with the pollution that is created, are threatening the commons' availability for the majority (including biodiversity and future generations).

The compound interest of climate change is the feedback loop which scientists describe whereby certain events cause other events with even more climatic changes.

There are two layers of debt. The first is in respect of raw materials and the second in respect of current usage of the commons – air, water, energy, materials.

The book calls for not only compensation but also eradication of debt.

Where is the Wealth of Nations? Measuring Capital for the 21st Century – World Bank

In this book a global balance sheet is outlined with the components being institutional, physical/produced, and natural capital. In low income/developing countries natural capital accounts for the largest share, whereas in developed/high income countries institutional capital accounts for the largest share.

The methodology for the calculation is the present value of future consumption. There might be differences of opinion about the methodology and supporting data. The framework seems useful, though it's worth highlighting the lack of explicit account taken of the environmental services that underpin human societies and economies. This is a material shortcoming, although doesn't invalidate the rest of the work.

An update to this book was published which demonstrated the change of wealth across time and regions. This is useful for the primary purpose of the book – to encourage the efficient investment of resource rents.

23 Things They Don't Tell You About Capitalism by Ha-Joon Chang

Each chapter in this book investigates a 'myth' about capitalism by first stating the accepted position and then explaining why reality is different. Each Thing is self-contained and he suggests different orders to read the book depending on one's interests. Indeed it is very easy to dip in and out of the book and not to lose the thread.

He starts with 'There's no such thing as a free market' in which he explains many constraints which we do not see due to familiarity. He argues that just as large western economies were protectionist in their early years, so third world economies should be protectionist now; and that 'Governments can pick winners'.

'Making rich people richer doesn't make the rest of us richer' examines the trickle down theory and 'US managers are over-priced' challenges the 300 times worker compensation of US CEOs.

Although difficult to see how it could be implemented without global cooperation, he suggests that new financial products (especially derivatives well removed from the primary transaction) should be regulated and subject to an approval process much like a new drug; after all, both can have a serious effect on our health.

In conclusion he argues that we ought to welcome more market intervention and that capitalism should be more compassionate and socially aware in its operations.

5.2 Papers and Articles

Paper: Just dessert, or good luck? High earner's attitude to pay

Author: The High Pay Commission

The paper is based on a series of interviews with "high earners", defined here as those in the top 1% of the pay distribution (rather than the income distribution, an important distinction). In practice, this seems to have been defined as those earning over £100k per year. Many actuaries are likely to fall in to this category, so it perhaps isn't surprising that the findings reflect many things that you're likely to have heard in conversation with your peers. The report finds that:

- High earners attribute success largely to "right place, right time", market forces and their ability to negotiate, rather than hard work or ability;
- People feel generally entitled to earn a high salary if the people around them are also getting high salaries;
- The top 1% of earners generally don't feel rich – particularly in London – as they are still at a level where they have to go to work every day in order to support their lifestyle;
- People tend to underestimate where they come in the income distribution (at all levels);
- High earners tend to believe in the "trickle down" effect.

Paper: Working for poverty: The scale of the problem of low pay and working poverty in the UK

Author: The Living Wage Commission

The paper sets out the argument for paying a “living wage” rather than the National Minimum Wage – primarily that the UK is moving towards to an increasingly uneven society where there are more working people in poverty than unemployed. The paper is well written and an easy (if worrying) read that blends poignant case studies with statistics. It is argued that:

- There is a “poverty premium” on low income household which means that they spend an average of £1,280 more on basic goods and services than the better-off. Examples given include the need to pay for public transport per journey rather than buy travelcards and the cost of pre-pay electricity meters.
- Economic growth does not necessarily drive wage growth – particularly in the recent past.
- The living wage has a strong economic rationale as well as a social one – research suggests the recipients are likely to spend the majority of any increase, funnelling money through the economy, at the same time as significantly reducing expenditure on benefits paid to people in work (as the result of means testing).
- The increase in “working poverty” is the result of increasing polarisation of the workforce, as the result of the disappearance of middle paid jobs. Some causes suggested for this include:
 - Technological and cultural change
 - Overseas outsourcing
 - The decline in collective bargaining
 - The decoupling of economic growth and wage growth (the reasons for which are unclear and subject to significant academic debate)

Divided We Stand: Why Inequality Keeps Rising (2011), and Growing Unequal? Income Distribution and Poverty in OECD Countries (2008)

Author: OECD

The OCED has written a series of reports on income inequality and poverty. The main ones are lengthy (over 300 pages!) but a more manageable summary paper is also available for a high-level overview.

Each of these reports provides empirical evidence on the global inequality trends from the mid-1980s and examines how the changes in the family formation and household structures have altered household earnings and inequality.

“Growing Unequal?” is the first in the series. It considers the factors that have an impact on the redistribution of earnings and concludes that good government policy can make a difference in reducing inequality and poverty.

“Divided We Stand” is a follow-up from Growing Unequal and answers questions on the relative importance of various causes of the rise in inequality. It uses a regression model to examine the extent to which economic globalization, skill-biased technological progress and institutional and regulatory reforms have had an impact on the distribution of earnings. It concludes that strategies focusing solely on redistribution of income should not be an end in themselves and argues that the most promising way of tackling inequality is through investing in human capital, creating more and better jobs and promoting equality of opportunities.

Paper: Missing the Story: The OECD's Analysis of Inequality

Author: Center for Economic and Policy Research

This paper provides alternative findings and counter-arguments from the OECD's Divided We Stand: Why Inequality Keeps Rising. It argues that the OECD study has overstated the significance of its results. Although some of their arguments may be valid, this reviewer feels that they are picking bones in eggs in some instances.

Paper: Global Income Inequality by the Numbers: in History and Now – An Overview

Author: Branko Milanovic

The paper presents an overview of calculations of global inequality, recently and over the long-run. It sets out the three concepts of global inequality and shows that much of the disparities of the inequality findings from academics are due to different concepts used (“... the mother of all inequality disputes ...”). It explains the social and political relevance of income inequality from a global perspective. It focuses in particular on the winners and losers of the most recent episode of globalization, from 1988 to 2008, and suggests that the period might have witnessed the first overall decline in global inequality between world citizens since the Industrial Revolution.

Paper: Living Standards, Poverty and Inequality in the UK: 2013

Author: IFS (Institute for Fiscal Studies)

This is a lengthy report (161 pages!) that is UK specific and is produced annually. The statistics used in the report are based on those from the DWP and other official sources which show the distribution of income and the extent of poverty in the UK.

Using the data underlying these statistics, this report assesses changes in average incomes, income equality and income poverty that occurred in the most recent year of data and makes comparisons with data spanning the last 50 years.

It finds that the average income per week for 2011-12 has fallen and income equality in the UK was broadly unchanged between 2010-11 and 2011-12, but this is substantially lower than before the recession.

Paper: Top to bottom: understanding fairer pay

Author: The High Pay Centre

The paper argues that government benefits to poorer people are in fact a subsidy to the richest, by allowing companies to pay their employers less. It also notes that wage inflation at the top end has been higher than at the bottom. It then goes on to analyse the effect of a redistribution of income from the richest to the poorest – for example, giving earners with incomes over £150,000 per year a 10% pay cut and spreading that income across the lowest 25% would almost bring their average income up to the “living wage”.

Paper: When Work won't pay: In-work poverty in the UK

Author: Krishnah Poinasamy (Oxfam GB)

“For the past 30 years, the political consensus has held that work is the best route out of poverty. And yet more than four million of the 13.5 million people who live in poverty in the UK are working.”

Although the paper uses a relative definition of poverty rather than an absolute one, the point remains the same – it is very easy to work very hard and not get rich; indeed it can be quite easy to work very hard and barely keep your head above water. This surprisingly well crafted paper combines an overview of the statistics with some incredibly poignant case studies and anecdotes that make this paper a good read for many of us in the actuarial community who don't often come into contact with people outside of our comfortable little bubble.

The body of the paper describes the reasons that so many people end up working so hard for little:

- Who you are – factors such as gender, nationality, ethnic identity and age appear to be strongly correlated with determining success in life, largely ascribed here to discrimination.
- “One trap to the next” – workers in low paid jobs are the least likely to see inflationary (or other) pay rises and the least likely to receive additional training or education, making it hard to move out of working in low paid jobs.
- Inadequate social protection – it can be hard to deal with fluctuations in income due to sickness or ill health, for example.
- Inadequate labour rights – zero-hours contracts and “false self-employment” are noted in particular.
- Lack of labour rights enforcement – largely due to the prohibitive costs of bringing legal action.
- Lack of responsible employment – the demise of the job for life, lack of opportunities for progression and a focus on profits over people are reducing the benefits of being in work.

The suggestions for policy responses to tackle these put forward by Poinasamy are thoughtful and interesting in their own right, although probably too detailed for a short summary!

Paper: Working for the few: Political capture and economic inequality

Author: Oxfam

This paper generated a lot of press coverage at the time of our meetings due to the finding that the richest 85 people have a combined wealth roughly equal to the bottom 50% of the global population. This statistic is truly shocking. It is derived from the estimated personal and family wealth of the lucky few on the *Forbes* rich list⁸², combined with estimates of global wealth from Credit Suisse – both of which make it hard to judge how credible this analysis is. Fortunately, this headline-grabbing statistic is more the cherry on the top of a very thought-provoking paper, rather than the whole cake.

Some quick thoughts on this analysis:

- *Scope: Forbes ignore the world's royals and dictators, so may be missing some of the most wealthy, and they also make decisions on how to define and count "families" for this purpose*
- *Missing assets: Many theorise on how much wealth might be in hidden assets, especially offshore. Obviously these are hard to count(!) Very late on we encountered some relevant research by Zucman that looked interesting, but we didn't have a chance to consider it here.⁸³*
- *The 50% are not all poor: Simply subtracting current liabilities from assets implies, for example, that many recent graduates with outstanding loans would be included in the global bottom 50% without really being "poor".*

Oxfam note in a couple of places that some income and wealth inequality is a desirable feature of an economy – people like to feel that hard work and skill is rewarded. However, extreme inequality is highly undesirable, not only for its own sake, but also because an extreme concentration of wealth can start to act against democracy. As US Supreme Court Justice Louis Brandeis said, "We may have democracy, or we may have wealth concentrated in the hands of the few, but we cannot have both."⁸⁴

The paper then aims to examine both this statement and some lessons from history about what we might do to halt the increasing inequality observed around the world. A particularly worrying piece of analysis comparing the preferences of American people with different levels of income to the voting records of their politicians shows that the rich are

⁸² Their net values (in strictly monetary terms) are updated in real time on the *Forbes* website – well worth a look for those who think Solvency II contractors are well paid. <http://www.forbes.com/billionaires/list/#tab:overall>

⁸³ <http://gabriel-zucman.eu/files/Zucman2013QJE.pdf>

⁸⁴ As quoted in "Mr. Justice Brandeis, Great American" (1941)

overwhelming represented, whilst the poor are not – although perhaps this is not surprising, as one might guess that the rich are more inclined to vote.

Another interesting piece of analysis tries to show a correlation between inequality in the US and financial deregulation. The correlation is certainly striking, although as no information is given about how the “deregulation index” has been compiled, it is hard not to wonder whether this truly supported by data rather than anecdote.

Although it is well written, this comes across as a particularly partisan paper which makes a number of arguments which may not hold up to further scrutiny. Another particular irritation with this paper is the way in which several of the graphs are scaled to exaggerate trends.

Paper: The World Distribution of Household Wealth, 2008

Author: World Institute for Development Economics Research

There has been much research on the world distribution of income, but also growing recognition of the importance of other contributions to well-being, including those of household wealth. Wealth is important in providing security and opportunity, particularly in poorer countries that lack full social safety nets and adequate facilities for borrowing and lending. However, it is precisely in those poorer countries where household wealth is the lowest, both in absolute and relative terms. Globally, wealth is more concentrated than income both on an individual and national basis. Roughly thirty percent of world wealth is found in each of North America, Europe, and the rich Asian-Pacific countries. These areas account for virtually all of the world’s top 1 per cent of wealth holders.

This paper describes the significant difficulty inherent in attempting to estimate distributions of wealth across different nations, including varying levels of granularity, quantity and quality of information available in each country.

Paper: Global Wealth Databook 2013

Author: Credit Suisse Research Institute

This paper attempts to investigate the distribution of wealth within nations (across individuals) and across nations, focusing on individual net worth. The authors devise methods of estimating the distributions following a similar structure in The World Distribution of Wealth studies, but carry out further comparisons to the Forbes-published “rich lists” to aid in validation of the estimates.

Specific work was done to attempt to adjust the distributions estimated to accommodate the tendency to underrepresent the wealthiest individuals. Other aspects of the paper considered include wealth mobility between different percentiles; intergenerational mobility; and the impact of the financial crisis on household wealth base on differing financial assets held.

The general theme remains the same: the vast majority of wealth is held by the top percentiles in any given country, and this is remarkably consistent across the majority of countries in the world.

Paper: Emulation, Inequality, and work hours

Authors: Samuel Bowles and Yongjin Park

Bowles and Park argue that rising inequality within a society leads to longer working hours, as workers strive to work longer to earn more money in order to emulate the lifestyles of the rich. The correlation between working hours and inequality is shown using the ratio of the 50th percentile to the 90th percentile; the Gini coefficient is also considered. A log-linear regression is used to assess the factors that are predictive of long working hours.

The authors also discuss the possibility that longer working hours lead to rising inequality as those who work longer become richer. Whilst they find some evidence for this in the literature within professions/industries (e.g. actuaries who work longer hours may be likely to earn more), this should not lead to a wider distribution as a result of higher average hours.

In short, this is an interesting and reasonably mathematical paper, but possibly one which is slightly spurious.

Paper: Income inequality and violent crime

Author: unknown

The paper examines the link between income inequality and homicide rate. Whilst there appears to be a link between the two, shown using US states and Canadian provinces and a number of anecdotes, the conclusion is drawn using a limited number of observations at a point in time. For two countries, the UK and Japan, the comparison is made across time.

The paper does not seem to consider other factors which may be driving the observed changes in inequality and homicide rate (for example, increased taxation creating more equal incomes and being used to law enforcement which increases the homicide conviction rate).

However, it is noted that average incomes do not correlate with homicide rates, whilst the Gini coefficient does.

Whilst the explanation given – that more unequal societies are less trusting and less capable of maintaining the social bonds which inhibit violent and anti-social behaviour – seems plausible, the quality of the analysis presented here is not convincing.

Paper: Executive Superstars, Peer Groups and Overcompensation: Cause, Effect and Solution

Authors: C.M. Elson; C.K. Ferrere

This paper takes a very different view from some of others listed above; rather than looking at how the bottom 99% are getting a rough deal, it examines why some of the 1% are able to make so much more than the rest of society. It also frames the argument for greater equality not in terms of social justice, but in terms of economics and fiduciary duty – it is not in the interest of shareholders to overpay their employees. Finally, it is one of the most directly relevant of these papers to actuaries, many of whom work in “reward and benefit consulting”.

It argues (in some detail!) that CEO and management remuneration has risen so dramatically over the last few decades due to peer comparisons. Elson and Ferrere critique the idea of there being a free market in CEOs, with the biggest companies competing to get the best managers who, “though perhaps only marginally better than the rest ... [are] highly valuable and sought after because of the incremental returns they could produce” due to the scale of the companies they lead. They make some strong arguments that the skills that make CEOs good at what they do are not that transferrable. Although they do concede that technology is making it easier for managers to change industries, they suggest that a deep knowledge of the firm, its culture, its market and its relative strengths and weaknesses are important when leading a company at a strategic level.

So rather than *having* to pay these individuals astronomic amounts of money leading to rising wages, it is rise of external benchmarking and messaging that high pay creates that has caused this inflation. The history of this process is examined in detail – starting with Hay Consulting in the 1940’s and 1950’s Boards and Remuneration Committees have used external benchmarking to set pay. Pay is typically set at the 50th, 75th or 90th percentile of the peer group; almost never lower than the median. Paying executives at a high percentile gives a message to shareholders of confidence, success, and high expectation, and is ultimately a statement of intent. Setting pay at lower than the median could even undermine a CEO and be seen as an admission of hiring a second-rate manager. In this environment, it is easy to see how salaries and bonuses have spiralled out of control.

The paper closes by suggesting alternatives to the benchmarking process. Whilst the discussion is helpful and raises a number of useful ideals, it seems a little thin in terms of practical actions which can be taken.

Unpublished Actuary Article about the “Occupy London” protest (late 2011 & early 2012)

What has Capitalism ever done for Us?

Sarah Bennett, Deepak Jobanputra, Andrew Smith and Peter Tompkins interviewed anti-capitalism protestors outside St Paul’s Cathedral.

We found a diverse community airing a bewildering array of grievances. Some were concerned with green issues and resource depletion. Others paraded hobby horses such as ill-explained grudges against particular insurance companies or banks. One academic from Canada was running a lone crusade against arcane forms of credit default swaps, complete with complex diagrams being handed out to bemused onlookers.

Protestors were, however, united in a hope that, through a series of lectures and workshops, they could frame proposals for change to make the world economy fair and sustainable for the future. Standing in the way was their self-admitted ignorance of how the current system works.

We interviewed one group considering income tax reform.

Protestor: The rich should pay more tax to help the poor

The Actuary: How much more? For example, someone earning a million pounds a year – how much tax should they pay?

Protestor: Nobody earns that much. Or if they did, they wouldn’t pay any tax on it. They’d escape tax by pushing the money through offshore companies. The government wouldn’t get a penny.

The Actuary: More than ten thousand tax payers reported more than £1m of total income to HMRC last year. So how much tax should they pay?

Protestors (after much deliberation): We think they should be paying at least £100,000 in tax.

The Actuary: You might be interested to know that someone with an income of £1m currently pays more than £450 000 tax.

There is an uncomfortable tension protesting against a capitalist system in which every protestor is inevitably entangled. Like readers of The Actuary, anti-capitalist protestors have bank accounts, drive polluting cars and buy products from multinationals off supermarket shelves. The camp is full of contradictions. One person condemns the corrosive depersonalising effect of technology while another logs into his Google mail account via wifi. A speaker condemns multinationals while a poster in the kitchen solicits donations of bananas. Deregulation is needed to free up land and build more houses, but banking deregulation was an unmitigated disaster that must be rolled back.

Many placards complained that corporate interests subvert the democratic process through financial muscle and misinformation. The proposed remedy is education, and the camp

offered a selection of technical lectures and workshops. One of us was surprised to attract an audience fascinated by an explanation of the Basel Capital Accords. A campaigner proffered a promising range of proposals to turn banks into a force for good, with a well-articulated account of wider social benefits. “It could never work though”, he added despondently. His pessimism was grounded in a collection of what we recognized as scaremongering press releases from the banking industry. Protestors’ naive good intentions are no match for slick corporate public relations.

The protesters vowed to stay in place until the government answered their demands. Without any agreed statement of the demands, we struggled to see how they could be met. At the time we visited, the cathedral was closed, ostensibly due the camp. This precaution struck us as unnecessary and indeed a few days later, the cathedral re-opened. In January, bailiffs cleared the protests and little trace of the camp now remains. Nobody predicted that the protestors would produce a magical solution to society’s ills and indeed no concrete proposals ever emerged.

Individual protestors were, however, forthcoming with nuggets of advice to readers of The Actuary magazine. This included:

- If you’re doing a good job, carry on working to the best of your ability
- Try to find work that is of benefit to society
- Buy local produce
- Live within your means

Given the protests haven’t achieved much, we should at least be grateful for their modest use of resources. They could have gone to the World Economic Forum in Davos, achieving equally little but at far greater expense.

6 Conclusions

Some of you may have guessed that our title, “Readjusting the Rations” is a gentle nod to the George Orwell classic, *Animal Farm*. In this book, after rebelling against human owners, the animals initially have equality and harmony – “All animals are equal”. Over time the pigs, backed by their canine enforcers, assume roles as human-style leaders, and “reassess” everyone else’s rations. The initial mantras are gradually weakened with selective additions, eventually including “All animals are equal ... but some animals are more equal than others”. As the pigs become increasingly human-like, four legs are still good, but two legs go from bad (initially) to better (by the end).

The historic and recent changes in the UK are consistent with those in many other developed countries. 150 years ago, inequality in society was worse than it is now, but reforms in the twentieth century gradually permitted more of the population to share in the prosperity brought by the industrial revolution and increased international trade. (Two world wars also helped erode some of the previously accumulated wealth.) Since the last decades of the twentieth century, this progress in equality started to unravel, with increasing concentration of wealth and influence in the hands of what protestors called “the 1%”, which includes many actuaries.

The reality is significantly more complex than this – amongst the richest, there is a further stratification with increasing power concentrated in the top 0.1% and then the top 0.01%, and so on. Most actuaries sit below these levels. However, at least some actuarial work serves to reinforce the privilege of the very wealthy, to the disadvantage of everyone else. In addition, actuaries’ knowledge and understanding is well respected, so actuaries have a responsibility to consider how the way they act and the views that they espouse perpetuate, or challenge, the growing inequality in the society around us.