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SUMARIO

The contradictions of 21st century capitalism

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Abstract: In this article, Michael Roberts analyses the economic, environmental, and geopolitical contradictions inherent in the capitalist system from a historical and comparative perspective. According to the economist, the Long Depression in which the world economy has been submerged for decades may end up assuming various forms (recessions, technological revolution, changes in the economic cycle), or through political action that consciously replaces the capitalist social formation. However, the turbulences of the world today could also, as in the imperialist past that preceded the First World War, end in creative destruction through war. In any case, the global threat of climate change, if current trends are not reversed, could even end life as we know it.
Keywords: Capitalism, Global Crisis, Inequality, Poverty, Ecological Crisis.

Las contradicciones del capitalismo del siglo XXI

Resumen: En este artículo, Michael Roberts analiza las contradicciones económicas, ambientales y geopolíticas inherentes al sistema capitalista desde una perspectiva histórica y comparativa. Según el economista, la Larga Depresión en la que se encuentra sumergida la economía mundial desde hace décadas puede terminar asumiendo diversas formas (recesiones, revolución tecnológica, cambios en el ciclo económico), o mediante una acción política que reemplace conscientemente la formación social capitalista. Sin embargo, las turbulencias del mundo actual también podrían, como en el pasado imperialista que precedió a la Primera Guerra Mundial, terminar en una destrucción menos creativa a través de la guerra. En cualquier caso, la amenaza global del cambio climático, si no se revierten las tendencias actuales, podría incluso acabar con la vida tal como la conocemos.
Palabras clave: Capitalismo, Crisis Global, Desigualdad, Pobreza, Crisis Ecológica.

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INTRODUCTION

The contradictions in the capitalist mode of production have intensified in the 21st century. There is the *economic:* with the Global Financial Crash of unprecedented proportions occurring in 2007-8, followed by the Great Recession of the 2008-9 (the biggest economic slump since the 1930s) (Roberts, 2009)[1].

Then there is the *environmental*, with the COVID pandemic as capitalism's rapacious drive for profit generated to uncontrolled urbanisation, energy and minerals exploitation, along with industrial farming. This eventually led to the release of dangerous pathogens previously locked into animals in remote regions for thousands of years[2]. These pathogens have now escaped across farm animals and from (possibly) laboratories into humans with devastating results. And there is the impending global warming nightmare descending on the poor and vulnerable globally[3].

Third, there is the *geopolitical* contradiction amid the struggle for profit among capitalists in this depressed economic period. Competition has intensified between the imperialist powers (G7-plus) and some economies which have resisted the bidding of the imperialist bloc, like Russia and China. So, in the 21st century; from Iraq to Afghanistan and onto Yemen and Ukraine, geopolitical conflicts are increasingly being conducted through war. And the big battle between the US and China/Taiwan is coming closer.

The economic

Since 2008, the major capitalist economies have been in what can be called Long Depression (Roberts 2016). We can distinguish between what economists call recessions (or slumps) and depressions. Under the capitalist mode of production (ie production for profit appropriated from human labour (power) by a small group of owners of the means of production), there have been regular and recurring slumps every 8-10 years since the early 19th century. After each slump, capitalist production revives and expands for several years, before slipping back into a new slump.

Before the 1890s, all economic downturns were commonly called depressions. The term recession was coined later to avoid stirring up nasty memories. A recession is technically defined by mainstream economics as two consecutive quarters of contraction in real gross domestic product (GDP) in an economy. According to data compiled by the US National Bureau of Economic Research (NBER), recessions in the US economy on average have lasted about eleven months in the eleven official recessions since 1825. On average, the gap between each slump has averaged about six years in the post-war period and a little less over all thirty-three cycles, as defined by the NBER (2022).

However, depressions are different. A depression is defined here as when economies are growing at well below their previous rate of output (in total and per capita) and below their long-term average. It also means that levels of employment and investment are well below

1 Available in https://thenextrecession.files.wordpress.com/2013/11/the-causes-of-the-great-recession.pdf
2 Available in https://thenextrecession.wordpress.com/2020/03/15/it-was-the-virus-that-did-it/
3 Available in https://thenextrecession.wordpress.com/2021/08/12/climate-change-the-fault-of-humanity/

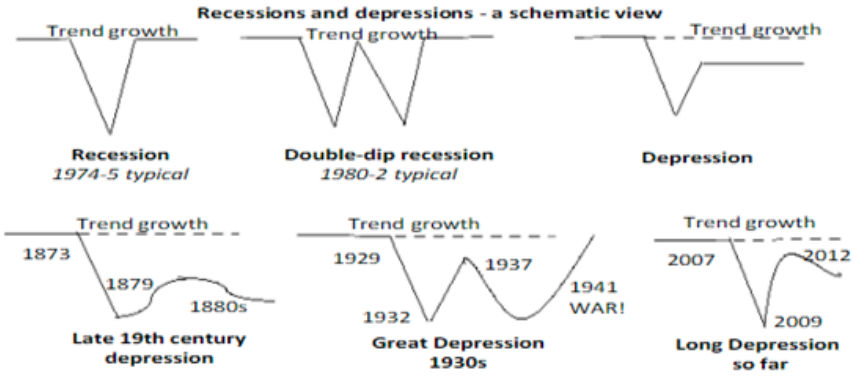
those peaks and below long-term averages. Above all, it means that the profitability of the capitalist sectors in economies remains, by and large, lower than levels before the start of the depression. Instead of coming out of a slump, capitalist economies stay depressed with lower output, investment and employment growth than before for a longish period.

To date, there have been three depressions (as opposed to regular and recurring economic slumps or recessions) in modern capitalism. The first was in the late nineteenth century (1873-93); the second was in the mid twentieth century, the so-called Great Depression (1929-40); and now we have one in the early twenty-first century (2008-?). These all started with significant slumps (1873-9; 1929-32; and 2008-9).

Depressions (as opposed to recessions) appear when there is a conjunction of downward phases in cycles of capitalism. Every depression has come when the cycle in clusters of innovation have matured and have become «saturated»; when world production and commodity prices enter a downward phase (inflation slows and even turns into deflation); when the cycle of construction and infrastructure investment has slumped; and above all, when the cycle of profitability is in a downward phase. This conjunction of these different cycles has only happened every sixty to seventy years. That is why the current Long Depression is so important.

Think of it schematically. A recession and the ensuing recovery can be V-shaped, as typically in 1974-5; or maybe U-shaped; or even W-shaped as in the double-dip recession of 1980-2. But a depression is really more like a reverse square root sign, which starts with a trend growth rate, drops in the initial deep slump, then makes what looks like a V-shaped recovery, but then levels off on a line that is below the previous trend line (Figure 1). In a depression, the pre-crisis trend growth is not restored for up to ten to fifteen or even twenty years.

Figure 1. Schematic representations of GDP growth and investment



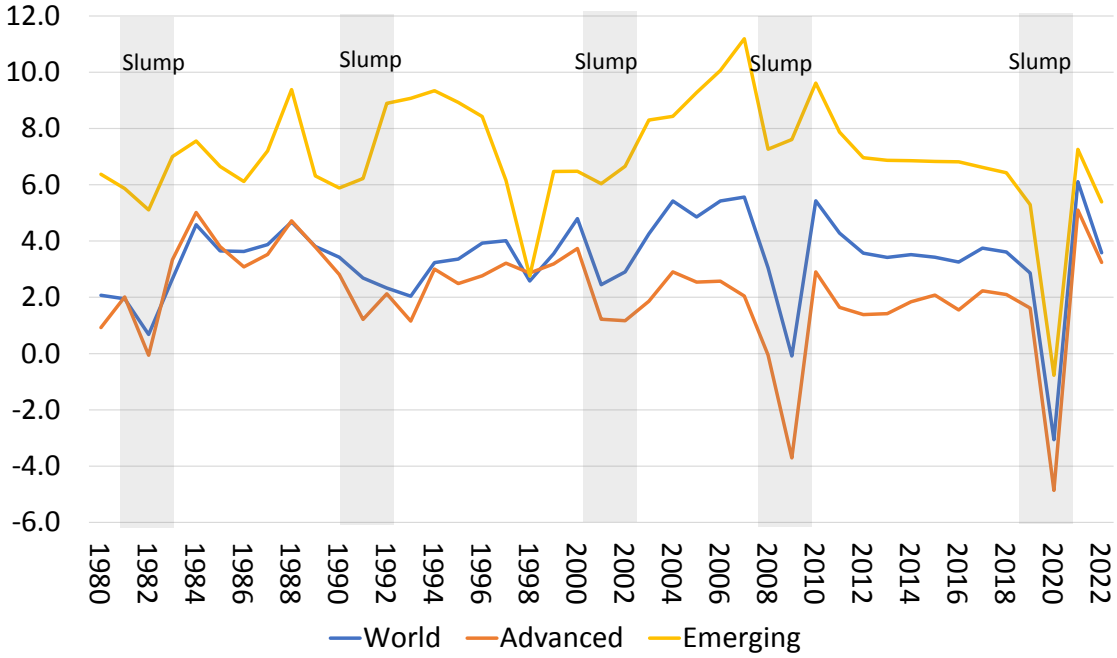
Source available in https://thenextrecession.files.wordpress.com

With this definition, the Great Depression of the 1930s qualifies as a depression. Although the initial slump from 1929 to 1932 was the deepest in capitalist history so far, it was not the longest-lasting at forty-three months. The initial recession in the first long depression of the late nineteenth century was much longer at sixty-five months from 1873 to 1879. Recovery back to the trend growth rate in the United States was not achieved until 1940 after the Great Depression and not until the mid-1890s in the earlier depression.

In the current Long Depression, the actual initial slump, the Great Recession, lasted only eighteen months, although this was the longest in the post-WW2 period. Previous trend real GDP growth has not been restored in the subsequent decade after the start of the Great Recession. So, in that sense, it is a depression.

In the Long Depression of the 21st century we can identify some key contradictions in capitalism. The first is the perpetual one of regular and recurring slumps in capitalist production and investment that leads to huge losses of employment, income and livelihoods for millions in the advanced capitalist 'North' and billions in the poor capitalist 'South' (Figure 2).

Figure 2. Annual real GDP growth (%)



Source: IMF World Economic Database.

Capitalism is failing to develop the productive forces globally and take humanity forward to a world of prosperity and the end of toil, poverty and inequality. The key measure of the development of the productive forces is the productivity of labour.

Real GDP growth can be considered as comprising two components: productivity growth and employment growth. The first shows the change in new value per worker employed, and second shows the number of extra workers employed.

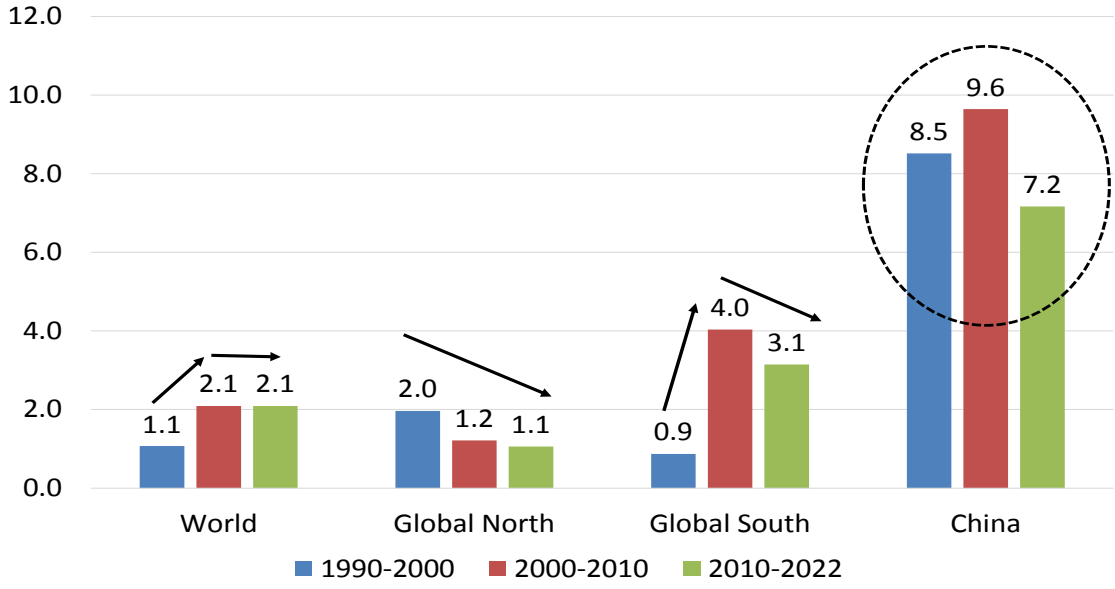
The mainstream neoclassical economics view is that these components are independent and exogenous to the economy. Technological advances and population growth are independent variables to the processes of the capitalist mode of production. The Marxist view is the opposite: that they are endogenous. In Marxist economics, employment growth does not depend on population growth as such but on the demand for labour by the capitalist sector of the economy. Capitalist investment is the determining variable, and employment is the dependent one. Capital accumulation can be positive for employment as investment grows, but it can also be negative as machines and technology (robots) replace labour.

Productivity growth is really the flip side of the growth in investment. Capitalist accumulation aims to raise profitability by the introduction of new techniques that raise productivity and relative surplus value. No new technique is introduced unless the individual capitalist reckons it will deliver more value than otherwise. The flaw in the capitalist productivity process is that the drive for more productivity to undercut rival capitalists leads to a tendency of the rate of profit to fall that over time exerts itself over the rise in the rate of surplus value and other counteracting factors to that tendency. This leads to a crisis of profitability that can only be resolved by a slump and the devaluation of the existing capital employed to start the process of accumulation and growth again.

Global productivity growth is slowing. What the productivity growth figures show is that the ability of capitalism (or at least the advanced capitalist economies) to generate better productivity is waning. Thus capitalists have cut back on the rate of capital accumulation in the «real economy», and increasingly try to find extra profit in financial and property speculation.

The story for productivity is repeated for employment growth in the advanced economies. Employment growth is far less than 2% a year in the twenty-first century. If you add (to productivity growth) an employment growth rate globally of 2% a year, then global growth is going to be little more than 4% a year for the next decade (and a maximum of just 2% a year for the advanced economies see Figure 3).

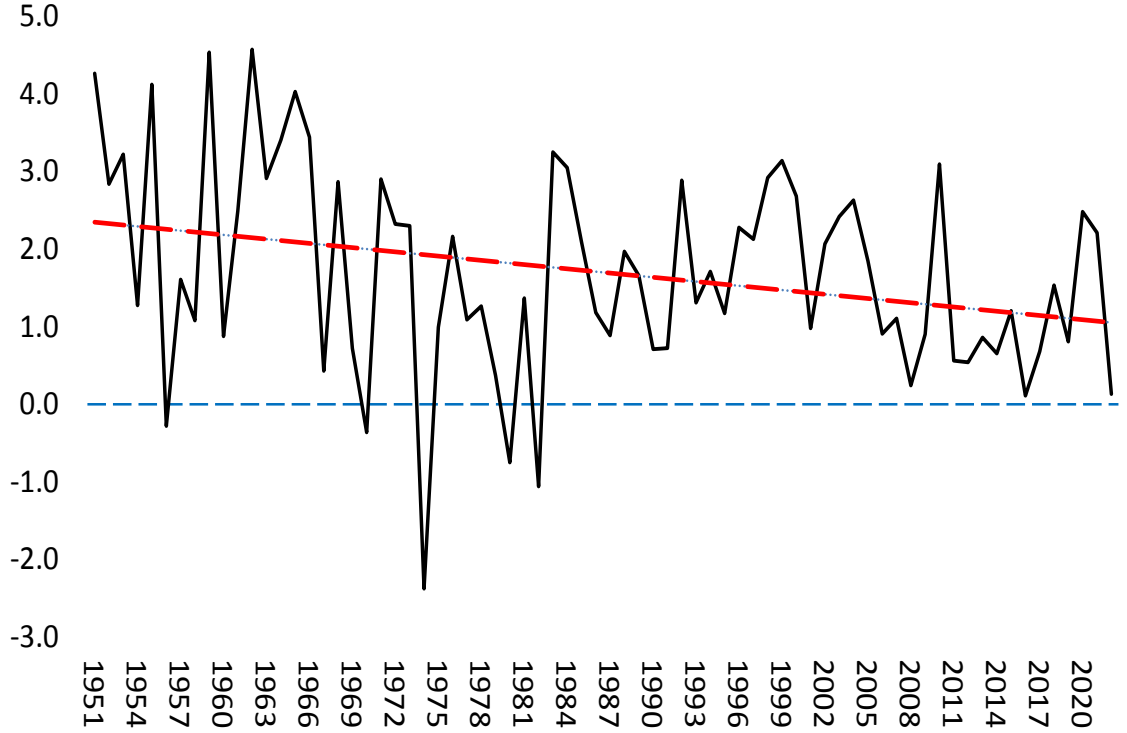
Figure 3. Annual average growth in productivity of labour (%)



Source: US Conference Board.

Globalization and the high-tech revolution reversed the productivity growth decline in the 1990s, but in this century productivity growth in the advanced economies has headed toward stagnation. Only productivity growth in the emerging economies has enabled world productivity growth to stay near 2% a year. Since the Great Recession, US productivity growth has dropped to under 1% a year (Figure 4).

Figure 4. US output per employee



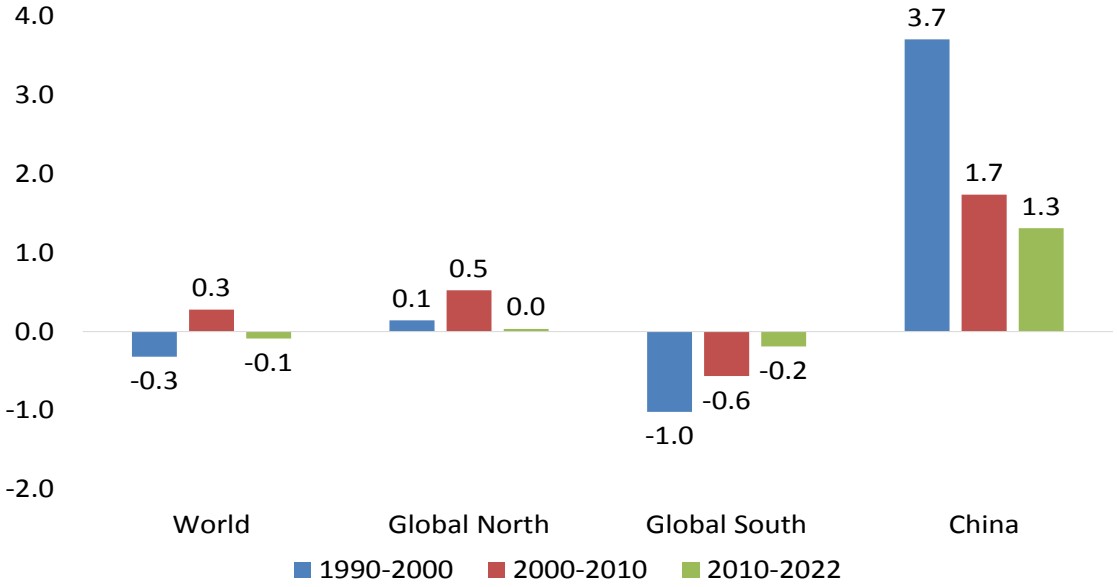
Source: Penn World Tables 10.0 series.

This slowdown is a clear indicator that world capitalism is failing to provide dynamic growth.

Neoclassical economics likes to use a more sophisticated measure of productivity called total factor productivity (TFP). This supposedly measures the productivity achieved from 'innovations'. Actually, this is just the residual from the gap between real GDP growth and the productivity of labour and «capital» inputs. So it is really a rather bogus figure. But taking it at face value, the US Conference Board finds that total factor productivity dropped to zero for the global economy in the 2010, indicating «stalling efficiency in the optimal allocation and use of resources» (The Conference Board, 2022).

It is called total factor productivity (TFP) and shows how much of the growth in the productivity of labour is due to new technology and management innovations. TFP growth has been in terminal decline in the major economies (Figure 5).

Figure 5. Average annual growth in total factor productivity (%)



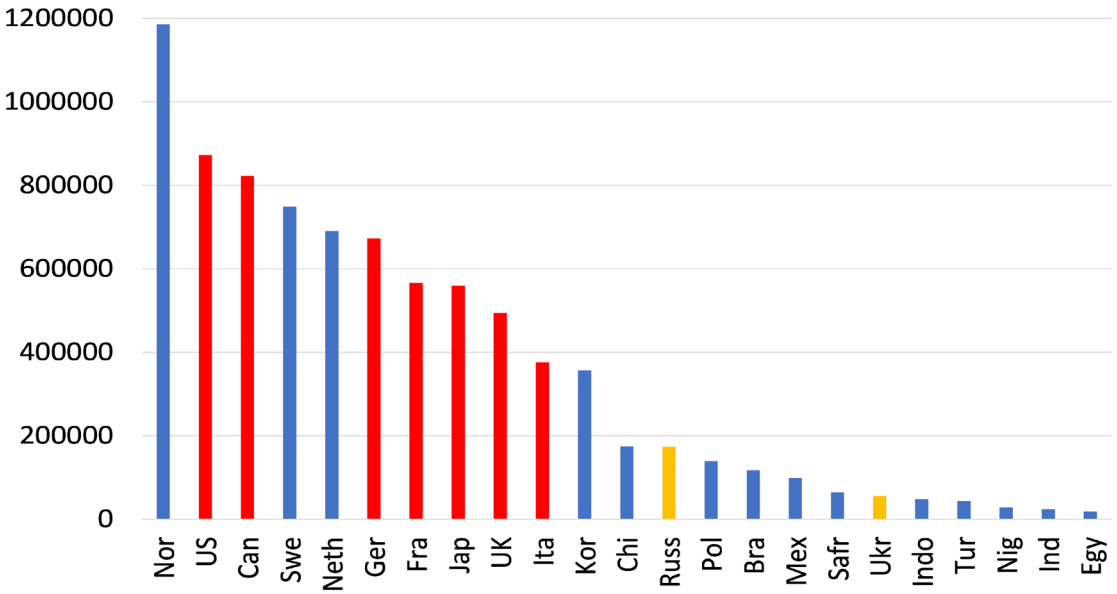
Source: US Conference Board.

Inequality and poverty

During this decline in the growth of productive forces as measured by the productivity of labour, global poverty has remained staggeringly high while inequality of income and wealth between nations and within nations has generally widened.

Large disparities in per capita wealth around the world persist. On average, an individual in an OECD country was implicitly endowed with US$62,278 in wealth at birth in 2018. For an individual born in a low-income country, the estimate was just US$11,462 (World Bank, 2021).

Figure 6. Wealth per capita (2018 $ MER)



Source: World Bank.

In the G7 economies (in red), average wealth per capita is some six times larger than the selected so-called 'emerging economies'. And the latter includes China. The divergence in wealth (as defined) between the imperialist bloc and the rest is huge. For topicality, I include Russia and Ukraine. The US wealth per capita is five times larger than Russia, while in turn Russia's wealth per capita is over three times larger than Ukraine – perhaps a measure of the relative strength of each country in the world order.

The world has become more unequal in income and wealth in the last 40 years, according the World Inequality Report (WIR) (Chancel *et al*., 2022), in 2021, *«after three decades of trade and financial globalisation, global inequalities remain extremely pronounced… about as great today as they were at the peak of Western imperialism in the early 20th century»*. Although the World Inequality report found inequalities *between* nations had declined since the end of the cold war (mainly due to the rise in living standards in China), it said inequality had increased within most countries and had become more pronounced as a result of the global pandemic over the past two years (*The Guardian*, 1 Apr 2021)[4].

The global concentration of personal wealth is extreme. According to the WIR, the richest 10% of adults in the world own around 60-80% of wealth, while the poorest half have less than 5%. This is a similar result to the other important survey of global inequality of wealth produced each year by Credit Suisse (2021). That report finds that just 1% of adults in the world own 45% of all personal wealth while nearly 3bn people own nothing.

Real wealth concentration is about the ownership of productive capital, the means of production and finance. It's big capital (finance and business) that controls the investment, employment and financial decisions of the world. A dominant core of 147 firms through interlocking stakes in others together control 40% of the wealth in the global network according to the Swiss Institute of Technology[5]. A total of 737 companies control 80% of it all.

Wealth inequality is higher than income inequality, but the latter is still very high. The WIR finds that the richest 10% of the global population currently takes 52% of global income, compared with just an 8% share for the poorest half. On average, an individual from the top 10% of the global income distribution earned $122,100 a year in 2021, whereas an individual from the poorest half of the global income distribution makes just $3,920 a year, or 30 times less!

Indeed, the share of income presently captured by the poorest half of the world's people is about half what it was in 1820, before the great divergence between western countries and their colonies. In other words, the rise of imperialism as the 'latest stage' of capitalism has delivered increased inequality of income globally. This is what uneven and combined development means after 200 years of capitalism.

The WIR notes that while «Nations have got richer — governments have got poorer. Wealth, both tangible and financial, is not held commonly at all». Over the past 40 years, countries have become significantly richer, but their governments have become signifi-

4 See also in https://thenextrecession.wordpress.com/2018/06/05/inequality-poverty-and-populism/
5 Available in https://thenextrecession.files.wordpress.com/2013/07/147-control.pdf

cantly poorer. The share of wealth held by public actors is close to zero or negative in rich countries, meaning that the totality of wealth is in private hands».

In the 21st century the inequality of wealth has risen significantly. Indeed, the wealth of the 50 richest people on earth increased by 9% a year between 1995 and 2001, with the wealth of the richest 500 rising by 7% a year. Average wealth grew by less than half that rate, at 3.2% over the same period. Since 1995 the top 1% took 38% of all additional global wealth in the last 25 years, whereas the bottom 50% captured just 2% of it. The rise of the so-called middle class income group is mostly due to China's reduction of poverty levels. The top 0.01% of adults increased their share of personal wealth from 7.5% in 1995 to 11% now. The billionaire population increased their share from 1% to 3.5%.

And it is the rich that make the most carbon emissions (through transport and travel) and reap the most of the benefits of the vaccines to avoid disease or death[6].

The last two years in the pandemic have only accelerated inequality. During the first waves of the Covid-19 pandemic, global billionaires' wealth grew by $3.7 trillion. This amount is «almost equivalent to the total annual spending on public health by all governments in the world before the pandemic — approximately $4-trillion». (Total spending on health from all sources was $7.8 trillion in 2017 according to the WHO)[7]. But in the same period, 100 million more people around the world have been thrown into extreme poverty as a result of Covid (World Health Organization,2020).

That brings us to the question of poverty, as opposed to inequality. Poverty for billions around the world remains the norm with little sign of improvement, while inequality of wealth and income increases. Any limited improvement in global poverty levels has been mainly down to rising incomes in China and any improvement in the quality and length of life comes from the application of science and knowledge through state spending on education, on sewage, clean water, disease prevention and protection, hospitals and better child development. These are things that do not come from capitalism but from the common weal.There is little sign that the peripheral economies under the boot of imperialism have any hope of closing the income gap with the imperialist bloc. Global redistributive schemes are ridiculously inadequate. It would take 100 years to eradicate poverty under the World Bank definition and would require a 173-fold increase in poor countries GDP. The conclusion must be that the poor will always be with us under capitalism.

In a 2006 paper, Peter Edward of Newcastle University uses an «ethical poverty line» that calculates that, in order to achieve normal human life expectancy of just over 70 years, people need roughly 2.7 to 3.9 times the existing poverty line (Edward, 2006). In the past, that was $5 a day. Using the World Bank's new calculations, it's about $7.40 a day. That delivers a figure of about 4.2 billion people live in poverty today. Or up 1 billion over the past 35 years. The number of people in poverty, even at the ridiculously low

6 Available in https://thenextrecession.wordpress.com/2019/01/23/davos-climate-and-inequality/
7 Available in https://www.who.int/news-room/fact-sheets/detail/spending-on-health-a-global-overview

threshold level of $1.25 a day, has increased, even if not as much as the total population in the last 25 years. And even then, all this optimistic expert evidence is really based on the dramatic improvement in average incomes in China (and to a lesser extent in India).

Exclude China and total poverty was unchanged in most regions, while rising significantly in sub-Saharan Africa. And, according to the World Bank, in 2010, the «average» poor person in a low-income country lived on 78 cents a day in 2010, compared to 74 cents a day in 1981, hardly any change. But this improvement was all in China. In India, the average income of the poor rose to 96 cents in 2010, compared to 84 cents in 1981, while China's average poor's income rose to 95 cents, compared to 67 cents.

Using the World Bank data, the number in poverty (defined as living on less than US$1.90 per day) increased by 97 million in 2020—the first net increase in global poverty since the Asian Financial Crisis. A separate Pew Research Center study[8] finds that the pandemic pushed another 131 million people into poverty. And these poor are not rural peasants, but urban and often educated.

The environment

Capitalism is faced with a new barrier to its expansion and even survival—one of its own making. This is the irreparable damage to the planet from rapacious capitalist production and the increase in the atmospheric warming of the planet from greenhouse gases.

The International Panel for Climate Change (IPCC) brings together hundreds of scientists in the field of climate change to cooperate in drawing up a comprehensive analysis of the state of the Earth's climate and forecasts about its future. The latest IPCC report raised its estimate of the probability that human activities, led by the burning of fossil fuels, are the main cause of climate change since the mid-twentieth century to «extremely likely» (IPCC,2022).

The evidence of climate change and its man-made nature is increasingly overwhelming. The potentially disastrous effects from higher temperatures, rising sea levels, and extreme weather formations will be hugely damaging especially to the poorest and most vulnerable people on the planet. But industrialization and human activity need not produce these effects if human beings organized their activities in a planned way with due regard for the protection of natural resources and the wider impact on the environment and public health. at seems impossible under capitalism.

The environmental and ecological impact of the capitalist mode of production was highlighted by Marx and Engels way back in the early part of industrialization in Europe. As Engels put it, capitalism is production for profit and not human need, and so takes no account of the impact on wider society of accumulation for profit. This drive for profit leads to ecological catastrophe (Engels, 1873-1883/2010). Marx summed up the impact of capitalist production on nature: «All progress in capitalistic agriculture is a

8 Available in https://www.pewresearch.org/global/2021/03/18/the-pandemic-stalls-growth-in-the-global-middle-class-pushes-poverty-up-sharply/

progress in the art, not only of robbing the labourer, but of robbing the soil; all progress in increasing the fertility of the soil for a given time, is a progress toward ruining the lasting sources of that fertility [...] Capitalist production, therefore, develops technology, and the combining together of various processes into a social whole, only by sapping the original sources of all wealth— the soil and the labourer» (Marx, 1867/2010, Chapter 10, Machinery and Modern Industry).

There is now firm evidence of a strong link between environmental destruction and the increased emergence of deadly new diseases such as Covid-19. Indeed, increasing numbers of deadly new pandemics will afflict the planet if levels of deforestation and biodiversity loss continue at their current catastrophic rates.

Almost a third of all emerging diseases have originated through the process of land use change. As a result, five or six new epidemics a year could soon affect Earth's population. «There are now a whole raft of activities – illegal logging, clearing and mining – with associated international trades in bushmeat and exotic pets that have created this crisis,» says Stuart Pimm, professor of conservation at Duke University. «In the case of Covid-19, it has cost the world trillions of dollars and already killed almost a million people, so clearly urgent action is needed» (*The Guardian*, 30 Aug 2020).

It is estimated that tens of millions of hectares of rainforest and other wild environments are being bulldozed every year to cultivate palm trees, farm cattle, extract oil and provide access to mines and mineral deposits. This leads to the widespread destruction of vegetation and wildlife that are hosts to countless species of viruses and bacteria, most unknown to science. Those microbes can then accidentally infect new hosts, such as humans and domestic livestock. Such events are known as spillovers. Crucially, if viruses thrive in their new human hosts they can infect other individuals. This is known as transmission and the result can be a new, emerging disease.

The drive for profit under the capitalist mode of production breaks the necessary connection between human activity and nature. It is not 'illegal logging, clearing and mining' or wildlife markets that are the problems. They are the symptoms of the expansion of productive forces under capitalism. Logging and forest burning and clearing are done not only by large corporations, but also by many poor farmers unable to make a living as the land and technology is mainly owned and exploited by big business. It is the very uneven development of capitalist accumulation that is the fundamental cause.

Over 140 years ago, Friedrich Engels noted how the private ownership of the land, the drive for profit and the degradation of nature go hand in hand. «To make earth an object of huckstering — the earth which is our one and all, the first condition of our existence — was the last step towards making oneself an object of huckstering. It was and is to this very day an immorality surpassed only by the immorality of self-alienation. And the original appropriation — the monopolization of the earth by a few, the exclusion of the rest from that which is the condition of their life — yields nothing in immorality to the subsequent huckstering of the earth» (Engels, 1843/2010). Once the earth becomes commodified by capital, it is subject to just as much exploitation as labour.

The sixth report from the Intergovernmental Panel on Climate Change (IPCC) runs to nearly 4,000 pages. The IPCC has tried to summarise its report as the 'final opportunity' to avoid climate catastrophe. Its conclusions are not much changed since the previous publication in 2013, only more decisive this time. The evidence is clear: we know the cause of global warming (mankind); we know how far the planet has warmed (~1C so far), we know how atmospheric CO2 concentrations have changed since pre-industrial times (+30%) and we know that warming that has shown up so far has been generated by historical pollution. You have to go back several million years to even replicate what we have today. During the Pilocene era (5.3-2.6 million years ago) the world had CO2 levels of 360-420ppm (vs. 415ppm now).

In its Summary for Policymakers, the IPCC states clearly that climate change and global warming is «unequivocally caused by human activities» (IPCC, 2022). But can climate change be laid at the door of the whole of humanity or instead on that part of humanity that owns, controls and decides what happens to our future? Sure, any society without the scientific knowledge would have exploited fossil fuels in order to generate energy for production, warmth and transport. But would any society have gone on expanding fossil fuel exploration and production without controls to protect the environment and failed to look for alternative sources of energy that did not damage the planet, once it became clear that carbon emissions were doing just that?

Indeed, we now know that scientists warned of the dangers decades ago. Nuclear physicist Edward Teller warned the oil industry all the way back in 1959 that its product will end up having a catastrophic impact on human civilization[9]. The main fossil fuel companies like Exxon or BP knew what the consequences were, but chose to hide the evidence and do nothing – just like the tobacco companies over smoking (Hall, 2015). The scientific evidence on carbon emissions damaging the planet, as presented in the IPCC report, is about as inconvertible as smoking in damaging health. And yet little or nothing has been done, because the environment must not stand in the way of profitability.

The culprit is not 'humanity' but industrial capitalism and its addiction to fossil fuels. At a personal level, in the last 25 years, it is the richest one percent of the world's population mainly based in the Global North who were responsible for more than twice as much carbon pollution as the 3.1 billion people who made up the poorest half of humanity[10]. The richest 10 percent of households use almost half (45 percent) of all the energy linked to land transport and three quarters of all energy linked to aviation. Transportation accounts for around a quarter of global emissions today, while SUVs were the second biggest driver of global carbon emissions growth between 2010 and 2018. But even more to the point, just 100 companies have been the source of more than 70% of the world's

9 Available in https://cleantechnica.com/2018/01/03/edward-teller-warned-oil-industry-carbon-dioxide-climate-change-6-decades-ago/

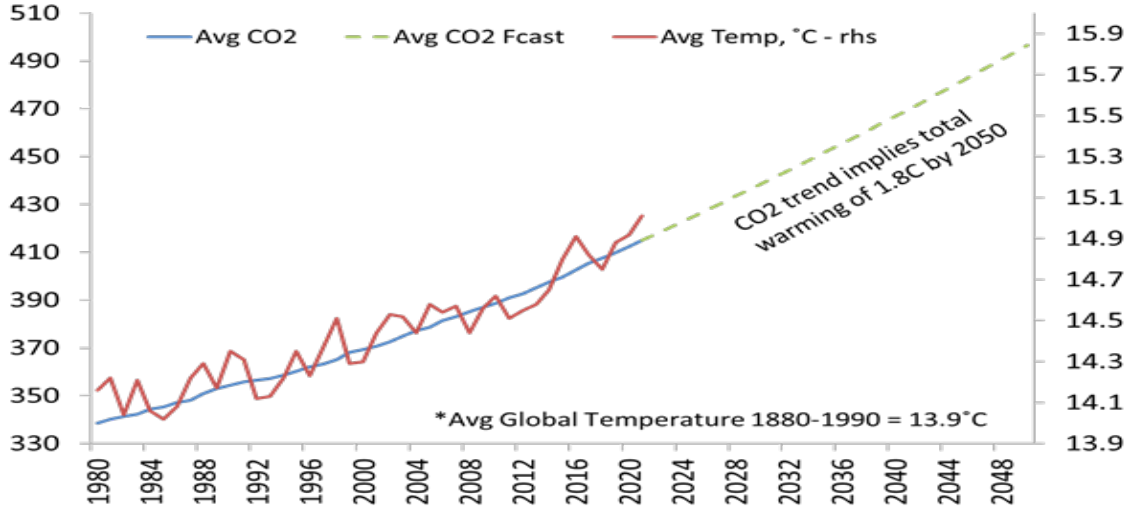
10 Available in https://www.oxfam.org/en/press-releases/carbon-emissions-richest-1-percent-more-double-emissions-poorest-half-humanity

greenhouse gas emissions since 1988[11]. It's big capital that is the polluter even more than the very rich.

The IPCC material distills a massive pool of data into a report that it hopes is irrefutable and alarming enough to force more radical change. And it provides various scenarios on when global temperatures will reach the so-called Paris target of 1.5c degrees above average pre-industrial levels. Its main scenario is called the Shared Socioeconomic Pathway (SSP1-1.9) scenario in, in which it is argued that if net carbon emissions are reduced, then the 1.5C target will be reached by 2040 at the latest, then breach the target up to 2060 before falling back to 1.4C by the end of the century. But this is the most optimistic of five scenarios on the pace and intensity of global warming in the 21st century and it's bad enough! The other scenarios are way bleaker, culminating in SSP5-8.5 which would see global temperatures rise 4.4C by 2100 and continuing upward thereafter. There isn't a scenario better than SSP1-1.9 and these are ignored by the IPCC.

Even at 1.5°C, we will see sea level rises of between two and three metres. Instances of extreme heat will be around four times more likely[12]. Heavy rainfall will be around 10 percent wetter and 1.5 times more likely to occur. Much of these changes are already irreversible, like the sea level rises, the melting of Arctic ice, and the warming and acidification of the oceans. Drastic reductions in emissions can stave off worse climate change, according to IPCC scientists, but will not return the world to the more moderate weather patterns of the past. Even if we assume the SSP1-1.9 objectives can be met by 2050, cumulative global CO2 emissions would still be a third higher than the current 1.2trn tons of CO2 emitted since 1960. That would push atmospheric CO2 beyond 500ppm, or 66% higher than where things stood in the pre-industrial period. That pathway implies 1.8C of warming by 2050, not 1.5C (Figure 7).

Figure 7. Atmospheric CO2 (ppm)& Avg Global Temp (°C) Since 1980*



Source: IPCC.

11 Available in https://www.cdp.net/en/articles/media/new-report-shows-just-100-companies-are-source-of-over-70-of-emissions
12 Available in https://www.bbc.co.uk/news/science-environment-58138714

That means even more drought and flood events than currently forecast and so even more suffering and mounting economic losses from the mix – a loss in world GDP of 10-15% on current trajectories and double that in the poor Global South.

Hoesung Lee, chair of the IPCC, bluntly explained that: «human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability». While «some development and adaptation efforts have reduced vulnerability», he continued, «the rise in weather and climate extremes has led to some irreversible impacts as natural and human systems are pushed beyond their ability to adapt». Co-chair of the IPCC working group, Hans-Otto Portner, spelt it out: «The scientific evidence is unequivocal: climate change is a threat to human well-being and the health of the planet. Any further delay in concerted global action will miss a brief and rapidly closing window to secure a liveable future». Lee made it clear what he thought should be done immediately. «The time to stop the exploration of fossil fuels, which are destroying our planet, is now. Half measures are no longer an option». But just stopping fossil fuel exploration is precisely that – a half measure. That's because to meet the Paris agreement, the world would have to eliminate 53.5 billion metric tonnes of carbon dioxide each year for the next 30 years.

The problem is that it is 'the West': the mature capitalist economies, that have built up the stock of dangerous carbon and other gases in the atmosphere over the last 100 years which are doing the least to solve the climate crisis. About one-third of the current stock of greenhouse gases has been created by Europe and one-quarter by the US. Yes, China and India are the first- and third-largest emitters today. But measured in terms of emissions per head of population, they are around 40th and 140th, and measured in terms of their stock per capita, they are one-tenth of the level of Europe. And ironically, the main contributors to carbon emissions stock benefit from global warming as these mature capitalist (imperialist) economies are mainly in cold climates.

The countries of the 'global North' (Europe, the United States, Canada, Australia, New Zealand, Israel and Japan) are responsible for 92% of total emissions that are causing climate breakdown (Hickel, 2020). Meanwhile, the Global South – the entire continents of Asia, Africa and Latin America – are responsible for only 8% of 'excess emissions'. And the majority of these countries are still well within their fair shares of the emissions boundary, including India, Indonesia and Nigeria. To make matters worse, the impacts of climate breakdown fall disproportionately on the countries of the global South, which suffer the vast majority of climate change-induced damages and mortality within their borders.

But a recent research paper in the journal *Nature* (see Nahm, Miller and Urpelainen, 2022) found that G20 countries spent$14tn on economic stimulus measures during 2020 and 2021 — but only 6 per cent of this was allocated to areas that would cut emissions. Investment bank Morgan Stanley reckons to achieve sufficient emissions reduction would cost about $50trn. About $20 trillion of cumulative investments will be required to switch out of fossil fuels. Solar, wind and hydro will require $14 trillion of

investment to deliver 80% of global power by 2050 and electric vehicle take-up will require $11 trillion to build the factories and infrastructure and develop battery technology. Biofuels, like ethanol, could be important for future global transportation alongside hydrogen and could eventually spread to aircraft, but to develop this would require a further $2.7 trillion of investment. Carbon capture and storage could play a critical part in the energy transition but a further $2.5 trillion is needed for development. Compare the $50 trillion price tag to the barely $100 billion that it has taken six years for countries to scrounge together.

Yes, greenhouse gas emissions have been reduced in some countries and there are technical solutions available. Alternative renewable energy costs have come down 85% over the last ten years. But coal production must be cut by 76% by 2030. And oil/gas infrastructure projects must be stopped. The current flow of finance is dramatically insufficient to boost renewables and manage fossil fuel reduction. Funding for all this change is miniscule compared to the task.

And a switch to 'clean energy' won't be enough, especially as mining and refining alternative fuels and systems also require more fossil fuel energy. All the batteries, solar panels and windmills in the world won't lower fossil fuel demand in the near term. Internal combustion vehicles – commercial and passenger – use plenty of steel, but electric vehicles use a wider variety of more expensive metals. For example, the average internal combustion passenger vehicle uses less than 50 pounds of copper, whereas a Tesla uses about 180 pounds of copper wound up in its electric motors. Additionally, the batteries essential to electric vehicles rely on materials like lithium and nickel, which require intense electric and chemical outlays to process. All this means more fossil fuel production to mine more metals.

Market solutions like carbon pricing and carbon taxes will not deliver the required reductions in emissions. Market solutions will not work because it is just not profitable for capital to invest in climate change mitigation: «Private investment in productive capital and infrastructure faces high upfront costs and significant uncertainties that cannot always be priced. Investments for the transition to a low-carbon economy are additionally exposed to important political risks, illiquidity and uncertain returns, depending on policy approaches to mitigation as well as unpredictable technological advances»[13]. To save the planet and all species who live on it cannot be achieved through market pricing mechanisms or even more clever technology. Remember clever science gave us vaccines and medicines to save lives in the COVID pandemic, but it was capitalism and pro-capitalist governments that still allowed the pandemic to happen and were unable to stop around 20m 'excess deaths' globally.

To stop global warming, we don't need just clever new technology, we need to phase out old fossil fuel technology. And we need a global plan to steer investments into things

13 Available in https://www.imf.org/en/News/Articles/2022/04/26/sp-042622-shaping-the-frontier-of-sustainable-finance-in-emerging-markets

society does need, like renewable energy, organic farming, public transportation, public water systems, ecological remediation, public health, quality schools and other currently unmet needs. Such a plan could also equalize development the world over by shifting resources out of useless and harmful production in the North and into developing the South, building basic infrastructure, sanitation systems, public schools, health care. At the same time, a global plan could aim to provide equivalent jobs for workers displaced by the retrenchment or closure of unnecessary or harmful industries. But such a plan requires public ownership and control of fossil fuel companies and other key energy and food sectors. Without that, there can be no plan.

As the war in Ukraine rages on, we should be reminded that the biggest emitters of greenhouse gases are the military. The US military is world's single largest consumer of oil, and as a result, one of the world's top greenhouse gas emitters.[14] The Pentagon's greenhouse gas emissions annually total over 59 million metric tons of carbon dioxide equivalent. If it were a nation state, the US military would be the 47th largest emitter in the world., with emissions larger than Portugal, Sweden or Denmark.

And the US military is expanding all the time to protect US interests in oil and fossil fuel resources around the world. The Cost of Wars Project found the total emissions from war-related activity in Iraq, Afghanistan, Pakistan and Syria to be estimated at more than 400 million metric tonnes of carbon dioxide alone (Crawford, 2019). Thus global warming and fossil fuel exploration, production and refining are inextricably linked by military spending. Wars and increased spending on arms are not just killing people and destroying lives and homes, but also adding to the climate disaster that is engulfing humanity globally. World peace would not only save lives and livelihoods, but also contribute to saving the planet and nature.

Science can help us to understand what is happening. As Engels (1883) said, «with every day that passes we are learning to understand these laws more correctly and getting to know both the more immediate and the more remote consequences of our interference with the traditional course of nature. [...] But the more this happens, the more will men not only feel, but also know, their unity with nature, and thus the more impossible will become the senseless and antinatural idea of a contradiction between mind and matter, man and nature, soul and body». But as Engels said*:* «To carry out this control requires something more than mere knowledge». Science is not enough. «It requires a complete revolution in our hitherto existing mode of production, and with it of our whole contemporary social order» (Engels, 1873-1883/2010).

First and foremost, it's not enough to end the government subsidies and financing of fossil fuel sectors by governments around the world (and that is still going on)[15]. Instead, there must be a global plan to phase out fossil fuel energy production. But how can a really successful plan to stop global warming work unless the fossil fuel companies are

14 Available in https://www.sciencedaily.com/releases/2019/06/190620100005.htm
15 Available in https://thenextrecession.wordpress.com/2021/07/22/global-warming-planning-not-pricing/

brought into public ownership? The energy industry needs to be integrated into a global plan to reduce emissions and expand superior renewable energy technology. This means building renewable energy capacity of 10x the current utility base. That is only possible through planned public investment that transfers the jobs in fossil fuel companies to green technology and environmental companies, where there will be many jobs.

Second, public investment is needed to develop the technologies of carbon extraction to reduce the existing stock of atmospheric emissions. The IPCC says that going beyond net zero by removing large quantities of carbon from the atmosphere *«might be able to reduce warming»*, but carbon removal technologies *«are not yet ready»* to work at the scale that would be required, and most *«have undesired side effects»*. In other words, private investment is failing to deliver on this so far.

Decarbonizing the world economy is technically and financially feasible. It would require committing approximately 2.5 percent of global GDP per year to investment spending in areas designed to improve energy efficiency standards across the board (buildings, automobiles, transportation systems, industrial production processes) and to massively expand the availability of clean energy sources for zero emissions to be realized by 2050. That cost is nothing compared to the loss of incomes, employment, lives and living conditions for millions ahead. End fossil fuel production through public ownership and a global investment plan – this is just utopia, critics may say. But then, market solutions of carbon pricing and taxation, as advocated by the IMF and the EU, are not going to work, even if implemented globally – and that is not going to happen.

The geopolitical

Contrary to the views of the mainstream, capitalism cannot expand in a harmonious and even development across the globe. On the contrary, capitalism is a system ridden with contradictions generated by the law of value and the profit motive. One of those contradictions is the law of uneven development under capitalism – some competing national economies do better than others. And when the going gets tough, the stronger start to eat the weaker.

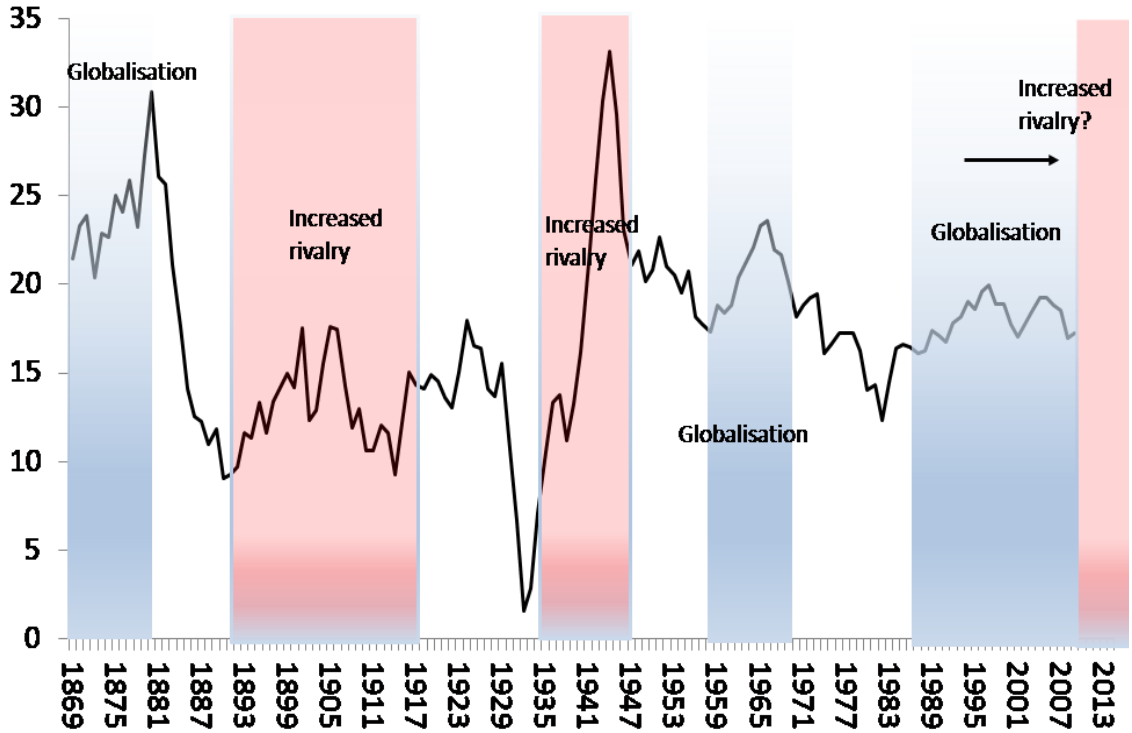
As Marx once said, «capitalists are like hostile brothers who divide among themselves the loot of other people's labour» (Marx, 1861-1863/2010). Sometimes brothers are fraternal and globalisation expands, as in the late 20th century; sometimes they are hostile and globalisation wanes – as in the 21st century. In Marxist theory, 'globalisation' is really the mainstream word for expanding imperialism. The 20th century started with world capitalism increasingly divided between an imperialist bloc and the rest, with the latter unable (with very few exceptions) to bridge the gap to the top table over the next 100 years. In the 21st century the grip of imperialism remains and if the imperialist economies start to struggle for profitability as they are now, then they start to fight and not cooperate, laying the basis for conflict and division[16].

16 Available https://thenextrecession.wordpress.com/2021/09/30/iippe-2021-imperialism-china-and-finance/

Even the mainstream is now aware that free trade and free movement of capital that accelerated globally over the last 30 years has not led to gains for all – contrary to the mainstream economic theory of comparative advantage and competition. Far from globalisation and free trade leading to a rise in incomes for all, under the free movement of capital owned by the trans-nationals and free trade without tariff and restrictions, the big efficient capitals have triumphed at the expense of the weaker and inefficient – and workers in those sectors take the hit. Instead of harmonious and equal development, globalisation has increased inequality of wealth and income, both between nations and also within economies as trans-national corporations move their activities to cheaper labour areas and bring in new technology that requires less labour[17].

These outcomes are down partly to globalisation by multinational capital taking factories and jobs into what used to be called the Third World; and partly due to neo-liberal policies in the advanced economies (i.e. reducing trade union power and labour rights; casualization of labour and holding down wages; privatisation and a reduction in public services, pensions and social benefits). But it is also down to regular and recurrent collapses or slumps in capitalist production, which led to a loss of household incomes for the majority that can never be restored in any 'recovery', particularly since 2009. The capitalist world was never flat even in the late 20th century – and it is certainly mountainous now (Figure 8)[18].

Figure 8. US rate of profit (%), globalisation and imperialist rivalry.



Source: Roberts, 2016.

17 Available https://thenextrecession.wordpress.com/2016/12/10/trump-trade-and-technology/

18 The author is referring here to the book *The World is Flat. A Brief History of the Twenty- first Century* de Thomas L. Friedman published in 2005 by Picador/Farrar, Straus and Giroux, New York.

The beginning of the 21st century brought to an end this wave of globalisation. Profitability in the major imperialist economies peaked by the early 2000s and after the short credit-fuelled burst of up to 2007, they entered the Great Recession, which was followed by a new long depression. Like that of the late 19th century, this brought to an end globalisation. World trade growth is now no faster than world output growth, or even slower.

Globalisation (the extension of world trade and capital flows) was an important counter-tendency for imperialist economies to falling profitability of productive capital domestically in the last two decades of the 20th century. But globalisation, the expansion of untrammelled imperialist capital flows and trade, stuttered in the 21st century, and under the impact of the Great Recession, went into reverse. World profitability fell to near all-time lows. This is the underlying cause of intensifying economic crises and geopolitical conflicts in the last two decades.

And just as there was long-term 'scarring' of capitalist economies from the Great Recession of 2008-and the COVID pandemic slump of 2020, the Ukraine-Russia conflict is adding more damage. This apparently 'regional' war that has been revved into a world issue. It could fundamentally alter the global economic and geopolitical order as energy trade shifts, supply chains reconfigure, payment networks fragment, and countries rethink reserve currency holdings. After the Trump period US protectionist tariffs against China, Mexico and Europe, now there is this increased geopolitical tension, which further raises risks of economic fragmentation, especially for trade and technology.

So the counteracting factor to low profitability offered by exports, trade and credit has died away. This threatens the hegemony of US imperialism, already in relative decline to new ambitious powers like China, India and Russia. Then the COVID pandemic slump happened and the world economy suffered a severe contraction. Now, just as the major economies were staggering out of the pandemic, the world has been hit again by the Russia-Ukraine conflict and its ramifications for economic growth, trade, inflation and the environment.

The 2020s looks more like the period leading up to WW1, with rival economic powers struggling to gain a chunk of profits ('hostile brothers'). Writing in the late 1880s, Engels forecast, not harmonious global expansion as German Social-Democrat leader and theorist Karl Kautsky thought, but increased rivalry among competing economic powers resulting in a new European war: «the depredations of the Thirty Years war (of the 17th century) would be compressed into three to four years and extended over the entire continent… with an irretrievable relocation of our artificial system of trade, industry and credit (Roberts,2020:129)».

That is why the post-pandemic strategy of imperialism towards China is taking a sharp turn. This is the big geopolitical issue of the next decade. The imperialist approach has changed. When Deng came to take over the Communist leadership in 1978 and started to open up the economy to capitalist development and foreign investment, the policy of imperialism was one of 'engagement'. After Nixon's visit and Deng's policy change, the hope

was that China could be brought into the imperialist nexus and foreign capital would take over, as it has in Brazil, India and other 'emerging markets'. With 'globalisation' and the entry of China into the World Trade Organisation, engagement was intensified with the World Bank calling for privatisation of state industry and the introduction of market prices etc. (World Bank, 2013).

But the global financial crash and the Great Recession changed all that. Under its state-controlled model, China survived and expanded while Western capitalism collapsed. China was fast becoming not just a cheap labour manufacturing and export economy, but a high technology, urbanised society with ambitions to extend its political and economic influence, even beyond East Asia. That was too much for the increasingly weak imperialist economies. The US and other G7 nations have lost ground to China in manufacturing, and their reliance on Chinese inputs for their own manufacturing has risen, while China's reliance on G7 inputs has fallen (Baldwin and Freeman, 2020).

So the strategy has changed: if China was not going to play ball with imperialism and acquiesce, then the policy would become one of 'containment'. The sadly recently deceased Jude Woodward described this strategy of containment that began even before Trump launched his trade tariff war with China on taking the US presidency in 2016[19]. Trump's policy, at first regarded as reckless by other governments, is now being adopted across the board, after the failure of the imperialist countries to protect lives during the pandemic. The blame game for the coronavirus crisis has been laid to be laid at China's door.

The aim is to weaken China's economy and destroy its influence and perhaps achieve 'regime change'. Reducing Chinese exports with tariffs; blocking technology access for China and applying sanctions on Chinese companies, while turning debtors against China. All this may be costly to imperialist economies. But the cost may be worth it, if China can be broken and US hegemony secured.

China is at a crossroads in its development. Its capitalist sector has deepening problems with profitability and debt. But the current leadership has pledged to continue with its state-directed economic model and autocratic political control. And it seems determined to resist the new policy of 'containment' emanating from the 'liberal democracies'. The trade, technology and political 'cold war' is set to heat up over the rest of this decade, while the planet heats up too. After Ukraine, US imperialism, emboldened by the expansion of NATO from Europe to Asia and the weakening of Russia, will turn to its major target: China. And there the issue of Taiwan will replace the Ukraine as the conflict point. This is the major geopolitical confrontation of the 21st century.

The future of capitalism

The Long Depression of the 21st century may have begun in 2009, but the economic forces that caused it were underway as early as 1997 onwards. It was then that the average rate of profit on capital in the major capitalist economies began to fall and, despite some

19 Available in https://thenextrecession.wordpress.com/2018/04/04/trump-trade-and-the-tech-war/

small bursts of recovery (mainly driven by economic slumps and huge credit injections), the profitability of capital remains near all-time lows.

How can this depression be ended? There can be no permanent crisis; there is always resolution and new contradictions in the dialectics of history. There is no permanent slump in capitalism that cannot be eventually overcome by capital itself. Capitalism has an economic way out if the mass of working people do not gain political power to replace the system. Eventually, through a series of slumps, the profitability of capital can be restored sufficiently to start to make use of any new technical advances and innovation that will have been «clustering» down in the bottom of that deep lake of depression. Capital will resurface for a new period of growth and development, but only after the bankruptcy of many companies, a huge rise in unemployment, and even the physical destruction of things and people in their millions.

The Long Depression could end more like the nineteenth-century depression ended—with a new upswing in capitalism and globalization. But it would take another major slump to create the conditions for sustained recovery (a new «spring» phase for capitalism). Alternatively, the depression could provoke a social and economic response. The depression of the late nineteenth century provoked an imperialist rivalry that eventually led to World War I. The Great Depression of the 1930s led to the rise of fascism and Nazism in Europe, along with revolution and counter-revolution in Spain, militarism in Japan, and the consolidation of totalitarian rule in the Soviet Union that eventually led to a world war as the rising Axis powers threatened the global rule of Anglo-American imperialism.

That is the risk now. The current Long Depression may be ended by a conjunction of economic outcomes (slump, technological revolution, and a change of economic cycle) or by political action to end or replace the capitalist mode of production. Or it could provoke a new round of imperialist rivalry and war. Indeed, in the twenty-first century, capitalism is creating new contradictions for itself that threaten its survival as a dominant mode of production and social organization—and, for that matter, the very existence of a healthy planet.

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