

CHAPTER 4

This chapter concerns the role played by Financial Capital, as a component of Social Capital, and its interactions with other components of Social Capital and with Natural Capital. Modern money has no intrinsic value except for its function as a type of energy source for producing and distributing activities, goods, and services of value to individuals and among societies. The price of these goods and services is determined by balancing the price needed by the seller and the willingness to pay by the consumer. As a human construct the economy relies necessarily on the trust that mutual transactions will be fair and just, or penalized if not. Violations of this trust inspired by selfish competitiveness are preventing the construction of a just, stable and cooperative society, and are generating excessively more damage than good to Social and Natural Capitals. Several major dysfunctions and their consequences are discussed. The environmental costs incurred in the production of commodities and by the social costs incurred during their use and disposal are not included in the price. Our present economy breeds financial inequality in wealth and income, which then leads to social injustice, marginalization, and civil strife. This causal chain is repeated in other nations with severe financial inequalities, and it is casually linked to nearly all other Global Change issues. Because unregulated financial inequality is self-perpetuating and the governmental will and potential is correspondently weakened, the opportunity for a democratic approach for resolution, that is so requisite for the transition to global sustainability, may be lost.

FINANCIAL CAPITAL

4.1. Is the Economy Truly Unstable and Unsustainable?

4.1 YES, IT IS UNSTABLE AND UNSUSTAINABLE

Since the economy is still under dispute, and since the purpose of this document is to incite arguments pertinent to a needed discussion regarding sustainability, we encourage readers to have patience for perceived errors and inaccuracies, to which we encourage constructive responses.

4.1a The economy¹ is a human construct. The basic social purpose of an economy has answers. One suitable for this document is one that can distribute goods and services in a manner that minimizes their waste, optimises their accessibility, and insures a tolerable distribution of wealth and prosperity for human societies. In modern times, its structure has varied and taken on different versions. Historically most of its forms have failed society in one way or another, primarily because they fail to provide prosperity for all, and are eventually rejected. The current controversy is mostly whether to have a supply-side or a demand-side version of capitalism. This urgent question should go beyond this squabble and focus how can we restructure our existing version to be a sustainable economy that could most suitably assist us with managing our complex modern societies into the 21st century.

4.1b Brief History. In the post-war period, 1945 to 1975, the US imposed Keynesian regulations to create a mixed-economy² or Keynesian ‘wage-led’ growth model³ with the goal of encouraging the demand cycle (demand-side). The reasoning was to increase economic demand by focusing on reducing unemployment and on improving infrastructure, such that productivity could increase to a level that would sustain more wage growth and spur further demand. This succeeded in creating a healthy economic growth at all income levels until the growth began to slow and politicians decided to pass more responsibility to the financial sector and support a

transition to a neoliberal approach⁴. With the change from a trickle-up (demand-side) to a trickle-down (supply-side) approach, the financial sector began to dominate the economy with new policies such as: financial deregulation, a focus on inflation instead of full employment, corporate globalization, international capital mobility, privatization, smaller government, regressive taxes, minimizing unions and labor benefits, minimizing environmental regulation; and expanded credit flexibility on loans.

Proposing that the resultant, current economy is not a suitable candidate for this job of 'achieving 'prosperity for all' may seem sacrilegious to many, but not for the lack of evidence that the present economy is incapable to do so, nor for a lack economists having already proposed viable alternatives to our failing societal structure from of capitalism,⁵ A well-functioning economy is essential for the stability and preservation of our societies, so if it is a human construct, why can't we redesign an updated sustainable economy for this century?

4.1C.WHAT IS WRONG WITH THE NEOLIBERAL APPROACH? The economic sector is part of our overall governance as is our legislative sector to which it is subservient. The legislative sector has a constitution as a framework to govern our society with as set of laws to protect the human rights and security of our citizens. The economic sector is guided, instead, by a set of controversial practices, originating from theory of capitalism⁶ with the intent of furthering the prosperity of our citizens. During the approximately 250 years that these two sectors have functioned, our social system has changed enormously in its composition, its scale, its norms, its means of livelihood, its limits, and its mode of human interactions.

Despite these changes, the legislative sector has maintained its constitutional framework and extended it through a self-correcting process of amendments and a set of precedent judicial

decisions all referenced to the original constitutional goals. In contrast, the economy has also kept its capitalistic base and experimented with different practices without converging on a version that is stable and that sufficiently satisfies the goal of tolerable prosperity for all. In fact, the US experimentation of Neoliberal Approaches implemented since the 1970s are proving to be seriously destabilizing for the US and the world.

4.2 TOO MANY UNSUSTAINABLE ASPECTS

4;2a Major Flaws. Since the good qualities of our economy are often flaunted and accepted as norm, the growing focus on its flaws has received little recognition. The public expresses dissatisfaction, but hasn't been exposed enough to public discussion until the recent 2016 election cycle when politicians, like Bernie Sanders⁷, were able to explain to a mostly younger portion of the electorate the situation that must be redressed to reverse the many degrading global trends, for which the economy is largely responsible. In other words, the economy's dynamics are generating more problems than they can solve, such as climate change, inequality, resource limitation, etc. Whether this entails an overhaul and a restructuring, the recognition of its flaws deserves the utmost scrutiny and priority. Here, we briefly mention several of the economy's flaws, which are supported by current policies and are putting our societies at risk:

- 1) It overvalues consumption and undervalues natural resources, and thus it cannot serve as an instrument for solving environmental issues putting the world in greater ecological risk, as **Climate Change**.
- 2) It does not consider Social Capital into its accounting and thus cannot properly address social issues, which then requires government intervention to avoid marginalizing sectors of society, as **Inequality**.
- 3) It has allowed the financialization⁸ of the financial sector, which has permitted the wealthiest 1% to grow faster than the GDP, to avoid just taxation, to accumulate capital, and to reinvest

it in themselves instead of reinvesting in new businesses and in improving infrastructures of lower quintals, all of which wrongly distributes wealth to the point of wage stagnation and stifles young businesses of those in the lower four quintiles. The result is that 80% of the population has been deprived of the benefits of the nation's economic growth for several decades, and has been forced into an unsustainable consumer debt, as **Economic Crisis**.

- 4) It unbalances democratic representation, by facilitating the wealthy to gain political influence and distort political decisions in their favour and at the expense of the middle and poor income sectors, as **Corruption**.
- 5) Its growth is measured as the aggregate of the total economic production (GDP), and the ratio of GDP per-capita value is improperly interpreted to indicate the mean standard of living of a country's population, as **Inaccurate**.
- 6) It prioritizes short-term growth over long-term benefits and costs, by wasting and discounting the future values of resources that are critically important to future human populations and ecosystems, such as Island Nations, African Elephants, Blue Whales, Alpine Glaciers, Phosphorus, Drinking Water, or Deserts, as **Ecocide**.
- 7) It operates more on competition than cooperation, which results in an unjust favouring of financial gain of a few over a collective wellbeing for all, as **Greed**.
- 8) Its corporate structures are only responsible to their private owners and shareholders, and therefore are not necessarily responsible for the common good of the society they serve or for the environmental damage they generate, as **Oppression**.
- 9) It encourages gambling⁹ on the savings or assets of others, which is immoral and destabilizing, e.g. reinvesting mortgage agreements without consent of the owner, or making money on money without contributing to societal well-being, as **Unjust**.
- 10) Its financial inequality inhibits social mobility and generates **Classism**.

4.2b Wrong direction. These flaws are interlinked, and they all relate to the lack of self-regulating mechanisms between the economic subsystem and the social sector that supports it and the natural systems that serve it. In addition, these flaws are all causal to the major CG issues that are destabilizing our societies and the earth's natural habitats. In recognition of this causality,

policy decisions should not use the criteria of whether it “*is it good for the economy?*” when considering an issue of social or environmental relevance because what is good for our economy is quite often bad for the health of the environment and, consequently bad for the wellbeing of human society. These flaws have given birth to a plutocratic marriage between large corporations and politicians.

In sum, every step to preserve our economic plutocracy is a step away from the urgent and extensive restructuring that is needed for an economy that would promote sustainable development. Any restructuring of the economy will need an incremental strategy each step of which would have the net effect of advancing sustainable development (cf. Chap. 7). The restructuring goal must change from a production for profit through exploitation of human and natural resources to a production for quality goods and services that improve the habitability for humans and conserve natural life. The ultimate construct must be self-regulating and in synchrony with concomitant changes toward sustainable governance (cf. Chap.7). The positive dynamics of the economy can be retained and its negative dynamics replaced with a new set of positive dynamics that will achieve the sustainable-development goals. The incremental transition process would be analogous to replacing and reorganizing the large rocks in a wall without it collapsing.

4.2c Climate Change. These economic flaws relate directly to our response to CC. They do so quite directly because the present economy cannot solve the CC issue, because it favours and depends on increasing consumption of fossil fuel. The new economy must be self-regulating against certain thresholds, such as, overfishing, poverty, over-combustion of fossil fuel, etc. Since stability of the human habitat is the goal, the resolution of CC and the restructuring of the economy must go hand in hand. Examples of positive and negative dynamics relative to the proposed above would be to:

- 1) **Positive.** That the government impose an increasing revenue-neutral carbon fee¹⁰ on sources of FF,, favour the development of renewable energy, and encourage the public to divest in FF assets in favour of investment in renewables and their infrastructure, and encourage activities that absorb CO₂ by promoting terrestrial carbon sinks in urban, agricultural, forest and grass lands, would be positive dynamics.¹¹
- 2) **Negative.** That corporate and governmental resistance continues to strengthen policies committed to continue to promote FF energy up to its last expensive drop , and that governmental resistance to upgrading and supporting new technologies for renewable energy and methods for increasing energy efficiency, throughout society, would be negative dynamics.

4.3. What Needs Restructuring?

A restructuring and rescaling of the economy is a prerequisite to the goals of a stabilised climate and of a sustainable planet. In the following subsections, we briefly describe several broad dysfunctional characteristics of the economy that are interfering with the resolution of the CC and GC goals, and thereby securing planetary sustainability.

4.3a The Economy is Not Self-Regulating. The present version of our capitalistic economy is not self-regulating in two essential aspects:

- 1) It cannot achieve a steady financial equilibrium by internally controlling potentially risky practices that are not effectively responsive to governmental controls, and that often have societal side effects.
- 2) It cannot serve as a reliable effective instrument invisible hand¹² for resolving complex social or environmental problems at a modern scale.

Because the economy's is not capable of self-regulation, the government tends to impose regulations. Since such regulations are not integrated into the dynamics of the economy, they can provoke unintended consequences. The economy basically lacks an internal system of constructive

feedback loops activated by thresholds and switches that can dampen destabilizing fluctuations. Instead of internal controls, instabilities require political intervention, which are often controversial and not sufficiently effective to avoid serious setbacks in the wellbeing of society.

Current manifestations of financial instability in national and global economies provide evidence that the economy cannot self-regulate sufficiently even with governmental intervention as, for example, by persistent bubble-bust financial cycles and reoccurring recessions. The 2008 'housing crisis' well demonstrates the mistake of assuming the economy would be self-regulating and social responsible, under the guidance of the invisible hand would come to the rescue.

Concerning the 2008 event Paul Samuelson¹³ remarked:

“And today we see how utterly mistaken was the Milton Friedman notion that a market system can regulate itself. We see how silly the Ronald Reagan slogan was that government is the problem, not the solution. This prevailing ideology of the last few decades has now been reversed. Everyone understands now, on the contrary, that there can be no solution without government.”

And Russell Roberts⁹ commented:

“The most culpable policy has been the systematic encouragement of imprudent borrowing and lending. That ‘type of’ encouragement came not from capitalism or markets, but from crony capitalism, the mutual aid society where Washington takes care of Wall Street and Wall Street returns the favour. Over the last three decades, public policy has systematically reduced the risk of making bad loans to risky investors. Over the last three decades, when large financial institutions have gotten into trouble, the government has almost always rescued their bondholders and creditors. These policies have created incentives both to borrow and to lend recklessly.”

4.3.b The Economy is Crippling our Democracy. The lack of self-regulation provides an avenue for the self-perpetuation of wealth, which then leads to monopolisation and ultimately self-destruction unless checked. When wealth is allowed to accrue to relatively few people faster than it accrues to the rest of the population, it increases the economic inequality and effectively starves

its own consumer base, as if it were a zero sum game. The lack of self-regulation provides an avenue for the self-perpetuation of wealth, which then leads to monopolisation and ultimately self-destruction unless checked. As Piketty¹⁵ points out, when wealth grows faster than the general economy, inequality increases and because wealth is relative, it starves its own consumer base, as if it were a zero-sum game.

Wealth in the present economy can be self-perpetuating: the wealthy class can buy power to influence policy, directly through lobbying and campaign financing and indirectly through funding the media and think-tanks that promote their political agenda. This seriously disqualifies the present economy. In fact, a history of the dangerous side-effects economic failures and government interventions is linked inescapably to the monetisation of politics and the politicisation of the economy. This unfortunate marriage of money to power ends up driving the economy and the nation against the stated goals of both the economy (a just if not equal distribution of wealth) and the democracy (a fair representation in government). Breaches in these goals are manifest today, to the degree that they are causing a transformation to a plutocratic government.

**The goal should not
be wealth for a few
but prosperity for all**

The path away from plutocracy to a sustainable democracy requires an informed public that elects informed, experienced, and honest officials. Environmental policymaking by such officials critically depends on the availability of an objective, scientific information base that can help them design and test policy options that are both pragmatic and sustainable. Because our form of democracy has enabled an abundant history of social and even economic experimentation, there is an enormous information base that could be integrated by a policy-support entity. This could be done with full transparency available to the public and policymakers and in conjunction with the 'Iron Triangle' that seeks to review new policies and seek the approval the three branches (see Ch. 3, Fig. 21.)

What is immediately important is for the public to better understand that our current economic and government are strongly increasing the risk of reaching an instability threshold, albeit in a more complex pattern. The self-defeating characteristic of unfettered capitalism is that it has an inherent tendency to self-perpetuate wealth to the point fostering financial inequality that translates into social instability and collapse. Or quoting Piketty again: "*growing inequality expresses a fundamental property of capitalism*".

4.3.c. Not the economy for the 21st century. The fact that the version of capitalistic economy has emerged as a 'winner', over the 'state-run' communist economy of the Soviet Union, does not imply that it has evolved to be the final version that could then serve as a model for the 21st century and beyond. This haunting projection has emboldened more critics to doubt the capacity of our present economy to maintain a more statistical normal distribution¹⁵ of inequality to be inclusive within approximately of two standard deviations (95%) such as to provide the wellbeing for a large middle class. Also strengthening this conviction is the growing recognition that our present economy is causal to Climate Change and other Global Change issues, which greatly broadens the question of its viability, and should intensify the need for an action-plan for economic transformation. However, stubborn resistance to the existing notion of a winning economy by many policymakers may result in only a patch-up approach that cannot fully allow preventive solutions to CC and other issues that require a more urgent and complete restructuring of the economy.

A lot depended on the 2016 US election, which is now pushing us into a tipping point with a short window of opportunity to reverse the potentially devastating global trends, while the real urgency of this dilemma is not sufficiently understood by the government, to invoke corrective action. Regardless of the controversy, the goal remains constant: a restructured economy that would maintain global financial stability and that would serve as an effective instrument for

sustainable development. Otherwise stated a new economy that would be financially self-regulating and dynamically interactive to conserve a sustainable habitat for human life on the planet.

Due to the changes in scale and complexity that our societies have undergone in the last 200 years, the dynamics of a new economy must also be complex and flexible enough in its dynamics and scale to provide for the distribution of goods and services within the limits of some stable equilibrium. For example, this complex goal will require an intelligent restructuring, through a collective consensus, cooperative implementation. It should observe a non-monetary relationship between individuals and entities of the financial and legislative sectors. It should have a resilience to function at contracted levels when disturbed by external disturbances, such as climate change, resource depletion, destructive human conflicts.

We already have the theoretical, experiential, technical information base needed for this restructuring, but not the political will nor a consensus among economists. The argument that the present economy is unsuitable lies in the fact that it hasn't evolved to match the scale and complexity of the local global problems we face. A central hypothesis of this document: that our development our present version of the economy is incomplete and corrupted because it has contributed to our out-of-scale consumption extreme inequality, and because it is incomplete by only accounting internally for financial capital and consequently externalizing natural capital and social capital. In its current form, it is the wrong instrument for saving the planet from of Global-Change issues and to successfully pursue the goal of sustainability for our future. A basic restructuring to a form '**tricapitalism**' that would harness the dynamics of the three capitals into self-regulating framework to maintain a sufficient equilibrium that that it can conserve our resources and serve our societies is fundamental to the survival of human habitat. See Chapter 7 for more aspects of a sustainable economy.

4.4. SERIOUS FUNCTIONAL PROBLEMS.

A restructuring and rescaling of the economy is a pre-requisite to the goals of a stabilized climate and of a sustainable planet. In the following subsections, we briefly describe several dysfunctional characteristics of the economy that are interfering with the resolution of CC and GC and endangering planetary sustainability.

4.4a Externalizing Values. The ‘mother’ problem of the economy is that by externalizing social and environmental values, the economy cannot resolve them. The attempts to correct this flaw have required legislative regulations to constrain the economy, which have been often cumbersome and not well tailored, to solve and environment problems. Instead, the dynamics of these problems need to be internalized into the economy, e.g., by an accounting the costs of the goods and services¹⁵ derived from natural capital of earth’s ecosystems, and those costs and benefits derived from social capital,¹⁶ for example, those derived from health, education, home-making, job skills, technology, social infrastructures, and perception of wellbeing. Figure 1 illustrates an example of how financial valuations of these goods and services could better guide the market to a more sustainable balance. So, the economy by internalizing these values, would address most of the unsustainable social and environmental concerns that are threatening our societies and ecosystems. On the other hand ,social capital has been mostly externalised by the economy under the premise that the economy would act to distribute financial capital sufficiently to satisfy social needs and generate sense fo wellbeing within the population. This responsibility is most neglected with a trickle -down economy and the evaluation of Social Capital¹⁸ is mostly dominated by the dimension of potential for profit rather than the dimensions of needs and wellbeing for the population (cf Chap. 6, 5.2b)

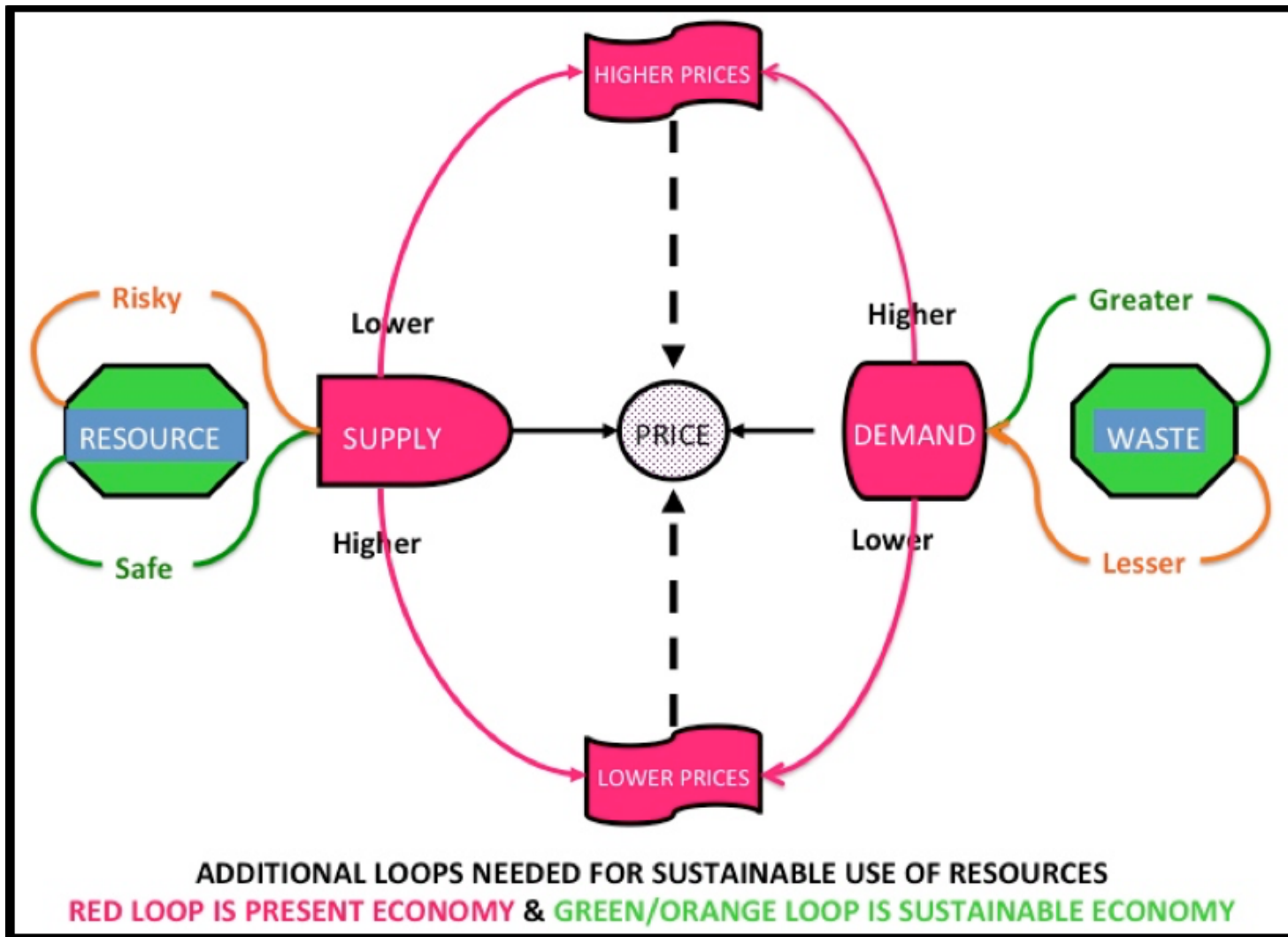


Fig. 1 A schematic of the supply-and-demand loop that determines market prices through a balance between consumer demand and market availability. The red loop is for the present economy. The inclusion of Natural Capital requires changes in the supply and demand controls. Products and services that create greater waste and damage should act to decrease demand and raise the price; conversely, the supply of products and services that degrade ecosystems, pollute, or are waste products that degrade our health and habitat. The profit that is generated from this consumption unfortunately accumulates in the richest tiers of the economy contributing to enormous wealth inequalities. Consumptive demand is generated by advertising, which is encouraged by tax-deductions, whereas information affecting product quality, environmental impact, or health hazard is much less available to the public and less propagated through non-profit advertisement and alternative -news and environmental group websites. non-renewable should act to lower supply and raise the price. The proper functioning of this dynamic depends heavily on public information on both demand and supply sides of the equation. Figure from SPICOSA¹⁷

4.4.b. Economic Growth. The existing economy depends on growth for stability, as a bicycle's equilibrium depends on its forward momentum; hence it pursues continuous growth by working to increase the number of consumers (through advertising, tax structure, and other incentives) and to expand the consumption of natural capital and of its services provided by social capital. It also requires growth in profit, allegedly to inspire innovations and investments to stimulate further consumption. The service sector also depends on natural capital through its consumption and combustion of fossil fuel for energy and through its consumption of carbon-based products such as plastic. Hence, nearly all of the economy is heavily dependent directly or indirectly on an unlimited, continuous supply of material resources.

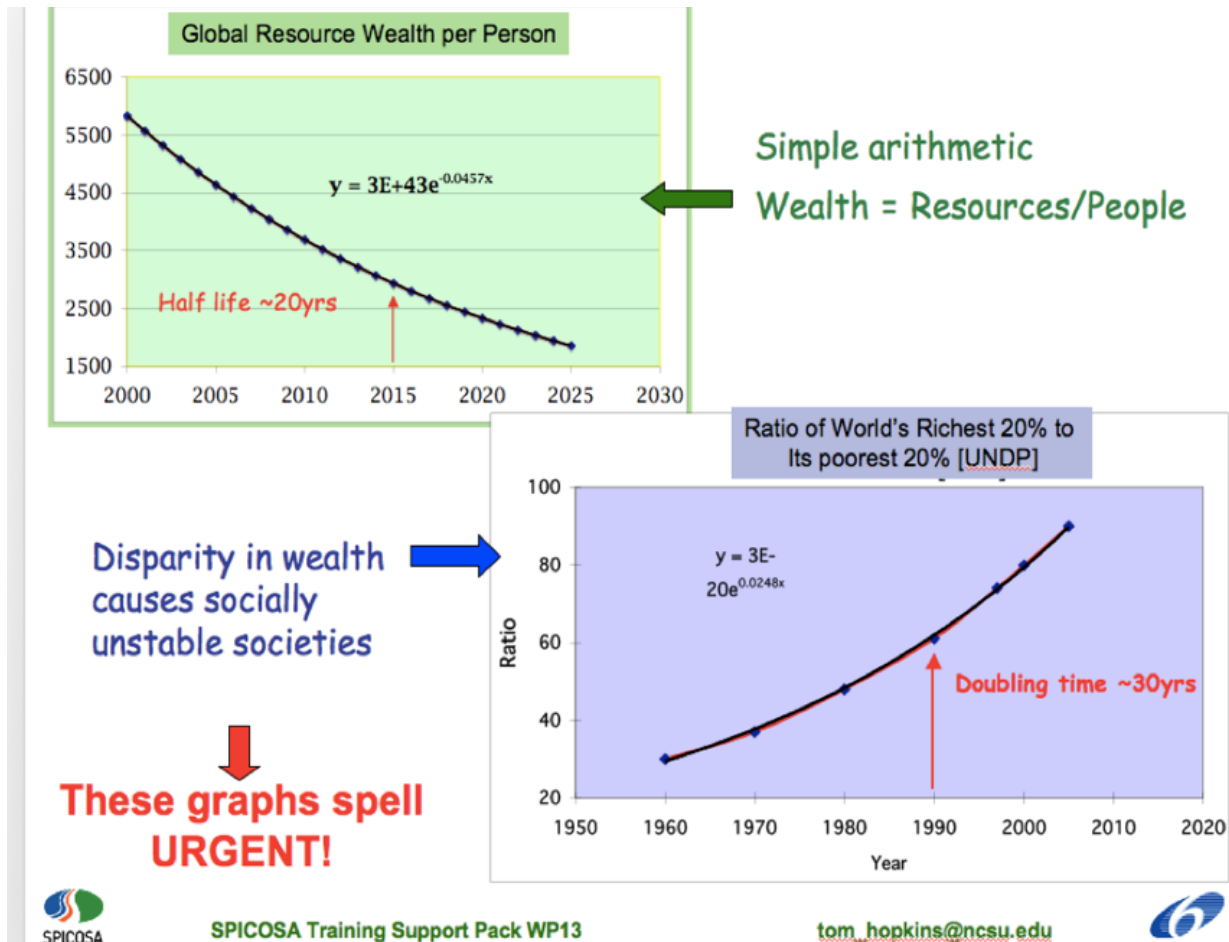


Fig. 2. A schematic of the supply-and-demand loop that determines market prices through a balance between consumer demand and market availability. The red loop is for the present economy. The inclusion of Natural Capital requires changes in the supply and demand controls. Products and services that create greater waste and damage should act to decrease demand and raise the price; conversely, the supply of products and services that degrade ecosystems, pollute, or are non-renewable should act to lower supply and raise the price. The proper functioning of this dynamic depends heavily on public information on both demand and supply sides of the equation. Figure from SPICOSA¹⁶.

Figure 2 illustrates the exponential decline in resources per capita brings to mind an image of the economy devouring the bio production of the earth (Figure 1 of Chapter 1). This is our consumptive demand, and through inefficiencies, it generates an enormous quantity of waste that degrades our health and habitat. The profit generated from this consumption unfortunately accumulates in the wealthiest tiers of the economy (a handful of families and the largest corporations) that further contributes to creating greater wealth inequalities. Consumptive demand is generated by advertising, which is encouraged by tax deductions. In contrast, information about product quality, environmental impact, or health hazards is much less available to the public and much less propagated through non-profit advertising, alternative-news, and environmental-group websites.

The common measure of economic growth is based on a financial index of the Gross Domestic Product¹⁸ (GDP), which is a simple indicator of monetary activity during a year divided by the population. It effectively ignores a significant proportion of non-monetary economic transactions that contribute to or damage the economic base of the population and its resources. Despite this flaw, the GDP continues to be used as an indicator of positive growth for the economy and an indicator of improving quality of life.

To correct this, Daly and Cobb¹⁹ proposed the use of Index of Sustainable Economic Welfare (ISEW), which mostly considers changes in natural capital. A more recent indicator, the Genuine Progress Indicator²⁰ includes more of the social-capital values. Comparisons of GDP and GPI (or ISEW) demonstrate that increased economic activity as measured by the GDP is not an accurate or sufficient indicator for measuring the population's standard of living after achieving a level of adequate wellbeing (Fig. 3). Both the GPI and the ISEW are not sufficiently comprehensive of all essential characteristics of sustainability to serve as an indicator of sustainable development, but they sufficiently demonstrate the grave mistake of equating the growth of the economic sector to the social sector and to environmental health..

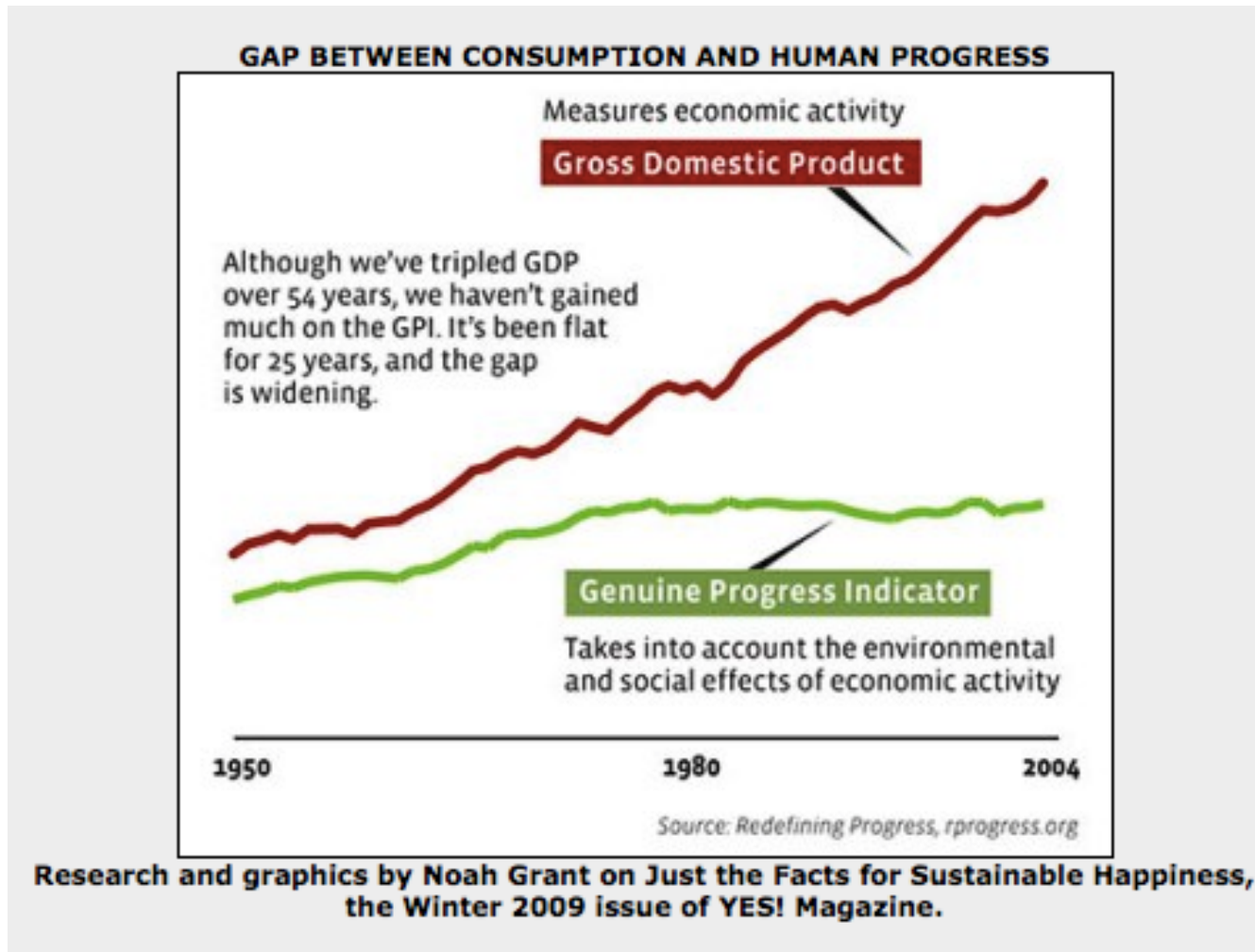


FIG . 3. Global Adjusted Global GPI/capital estimated from which data was available and GDP/capital in 2005 USD. Note the divergence between the two trends occurred in the 1970s when the US economy was changing to a trickle-down approach. From Kubiszewski, et al²¹

4.5. ECONOMIC INEQUALITY

5.1a. Drivers of Inequality. Wealth has no human value other than to provide satisfaction of ownership; but it does possess a potential to influence others with less wealth either positively or negatively. Another way to say this is that wealth is a form of power, or indirect governance (cf. Ch. 3). Wealth is well known for its capacity to directly interfere in otherwise democratic political processes. Less recognized perhaps is that indirectly wealth-components can have an existential influence in social interactions. Since wealth is allowed to grow unregulated, the distortions in its distribution can create corresponding distributions in social inequalities. These in turn indirectly drive distortions in government via campaign financing, which causes elected officials to bend legislation to the demands of their billionaire donors. They also undermine economic vigor by causing wage stagnation owing to the power imbalance between labor and capital. Low wages depress demand for domestically manufactured goods, which lowers the rates of return on productive investment and drives capital toward the use of deceptive schemes, see Sect. 3.4 . At the same time, the ever-growing lack of well-paid jobs destroys social wellbeing by generating poverty with all of its attendant ills—mental illness, domestic violence, substance abuse, and homelessness.

Such is the fate of several of today's advanced economies, particularly the English-speaking nations that adopted so-called Reagan-Thatcher or neoliberal economics during the 1980s. The associated deregulatory economic policies, along with other changing dynamics, such as globalization, technological advances, and financialization, pushed these economies past instability thresholds in their levels of inequality and in their very high GDP-to-Debt ratios, all of which are considered causal to the 2008 Great Recession.

Piketty¹⁴ has brought a focus on these dynamics by compiling an enormous database that allowed through comparisons of the historic recessions, in particular, and the two major recent ones in 1928 and 2008. His central point on inequality is that, when the *rate of return on capital is greater than the rate of economic growth*, then wealth accumulates faster for the wealthier and generates a growing unequal and unjust distribution of wealth. A second point is that wealth and income should be considered separately in economic analyses and policies. Krugman²² in citing Piketty's research reminds us that the big dynastic fortunes are taking an ever-growing share of total, national wealth because they can accumulate wealth faster, at 4 to 5 percent, than the average GDP growth, which was 3.2%, for the 1985 to 2014 period.

Consequently, wealth over-accumulates at the top because it grows faster than it permeates down to the middle and lower economic layers of the economy through reinvestment or indirectly through government spending of tax revenue, which should provide be sufficient to provide the fundamental social support for the economy. The less money that trickles down, the less money is available for social development and sustenance. The fact that the “trickle-down” economic strategy is still being touted by right-wing politicians and ideologues, when after forty years, has never fulfilled its promises, clearly demonstrates a missing dynamic of the economy to self-regulate. This unfortunate conundrum persists not because of public ignorance of the cause, but because of the lack of political will to change the faulty dynamic. That is: a mutualistic bargain between policymakers and the wealthy, in which the wealthy, who fear losing self-serving policies, and the politicians who fear losing financial support of the wealthy. In this morally corrupt bargain both parties lose their social responsibility to the nation they serve.

The additional dynamic in this bargain are the tax-evasion schemes e financial sector that the government tolerates and by which it could greatly increase its funding for the more neglected components of social capital (cf. Ch. 5-SC) needed to offset some of the social injustice generated

by the very economic inequality created by the financial sector itself. Thus, a rapidly growing financial sector sequesters wealth at the top that then deprives workers of sharing the benefits of the total economic growth. It is important to remind ourselves that the nation's 'economic growth' is a measure per capita such that a growing top-heavy distribution of wealth distorts the numerical value of the GDP as being representative of bulk of the wage earners. In other words, GDP growth has not represented correctly the wage stagnation of four-fifths of the population. This situation demands an economic overhaul, with built-in self-regulations for tolerable limits on inequality and instability, an action that is opposed by those benefiting by it but not-yet sufficiently understood by those that suffer from it.

What is immediately important is that our current economic health has strong symptoms of nearing an instability threshold, albeit in a more complex pattern. The self-defeating characteristics of unfettered capitalism are that it has an inherent tendency to self-perpetuate wealth to the point fostering financial inequality that translates into social instability and collapse. Or quoting Piketty¹⁴: *“growing inequality expresses a fundamental property of capitalism”*. Or, as Karl Marx²³ put it pungently 150 or so years earlier with a comments like: *“capitalism accumulates wealth at one end and misery at the other end”*.

4.5b Wealth Inequality. The tendency of financial capital to aggregate in the top tiers of wealth distribution should be considered a major defect of laissez-faire or neoliberal capitalism because it generates serious destabilizing socioeconomic defects, such as monopolization, government corruption, and social upheavals such as riots (Ch. 4-SC). The growth of one's wealth depends on one's existing wealth plus ones other income, such as salary income, net investment gains minus paid taxes. Wealth tends to grow if invested, and , in the absence of intervening controls, it continues to accumulate. In general, the more wealth one has, the more investment income one n gain from it. If one compares two non-working men, one who has a million dollars to

invest and the other only a thousand, at common interest of 1%, the richer man's principal would increase by ten thousand the first year, whereas the poor's would grow by one dollar the first year gain only one hundred dollars. Even if the poorer man had an income sufficient to cover his expenses, his relative inequality with the wealthy man would continue to increase every year. Hence, existing wealth only exacerbates the inequality problem, since a relatively poor man could have the same income as a rich man, but only rarely would a man with wealth, have less income than a poor one. Hence, we have the adage that inevitably "the rich get richer and the poor get poorer". Not only is the wealth discrepancy evident among nations (Ch. 1, Fig. 3), but also it is also increasingly including the United States, which has an enormous wealth inequality (Fig. 4).

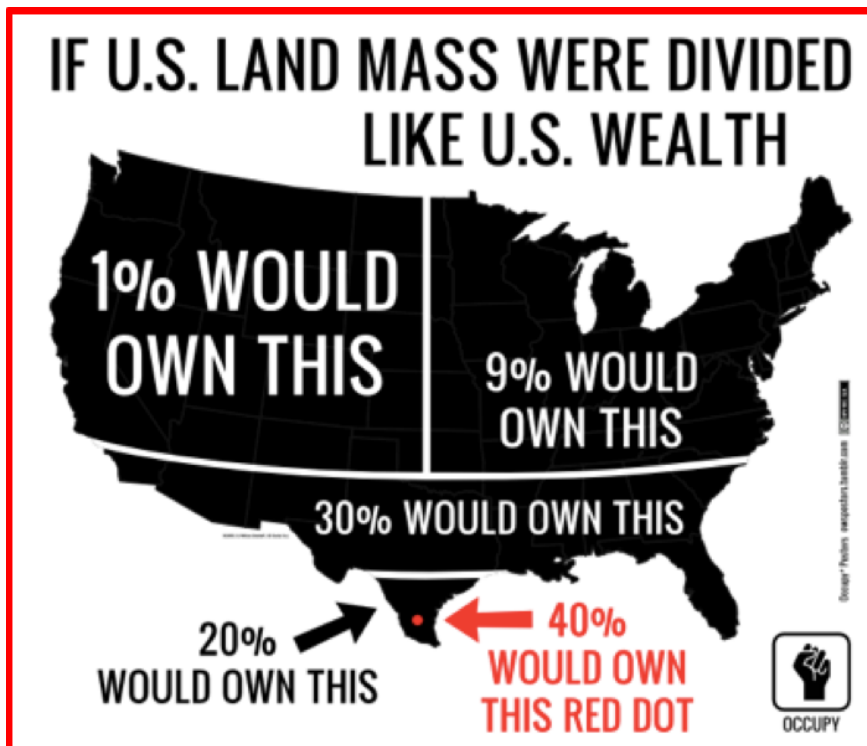


Fig.4. **US Wealth Distribution.** US wealth is depicted in proportion to its land area. The red dot represents a barely visible area of 130 million people, who are financially marginalized from the US society, and constitute a stability-risk the nation. Figure from Occupy Wall Street²⁴.

Source: Census Bureau
Data from 1967-2014

Real (Inflation-Adjusted) Mean Household Income By Quintile and Top 5 Percent

dshort.com

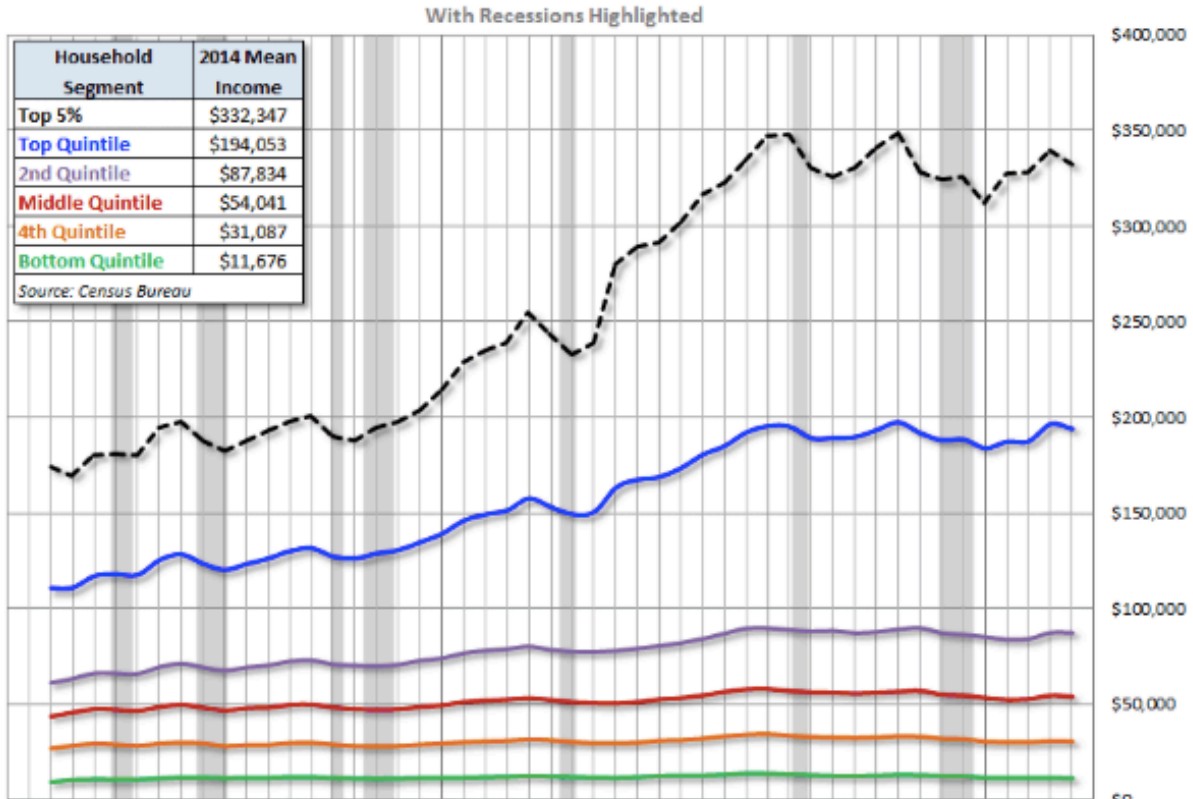


Fig. 5. Household income growth, 1967 to 2014. For the cumulative household income growth by segment over the past 47 years, the adjacent table shows the real, inflation-adjusted, difference between 1967 and 2014. The average incomes in dollars for each quintile are shown in the insert. The black dotted line represents the top 5%, the blue line, the 5th, purple the 4th, red the 3rd (middle), orange the 4th, and green the 1st (bottom). The shade vertical strips mark periods of recession. From US Census Bureau.

Figure 5 illustrates how the incomes of the population-quintiles have separated since the 1970s in terms of percent growth. Starting in the 1940s, income growth was well correlated between the bottom four quintiles until the mid-1980s, when the highest 5th quintile began to separate from the lower four quintiles. The top 5% separated from the 5th quintile in 1990 and grew by 90% in 2014, whereas the middle quintile (half of the population) grew by 23% and the bottom quintile by only 18% over the period. The richest quintile grew too fast during the 1990s and recovered faster, after the depression of 2001, than did the lower quintiles, which remained practically stagnant. The rapid separation demonstrates the dynamic cited: a person who starts without wealth cannot catch up with wealthy person of the same income. The corollary to the divergence in incomes does not necessarily imply that the upper income group were more productive, nor that of the lower 1% were less. This inability to close this gap relates strongly to the potential for economic mobility (upward) and is expressed mathematically by intergenerational changes within families of total income (cf. Ch. 4-SC or Corak and Miles, 2013²⁵).

4.3c. Wage Stagnation. The median wage from 1983 to 2014 grew only 5% as opposed to 78% for the GDP growth. An iniquitous consequence of present inequality has been the continuous wage stagnation for four-fifths of the working population since the 1970s shifts in economic policies through to the present, as shown in the flat growth trajectories in Fig. 5. Inexcusably, not only did the general public remained uninformed about this condition, but also politicians apparently could not or did not want to resolve it. The system of campaign finance, together with the economic-class background of many of the legislators, are likely causes.

A different perspective on this problem is shown in Fig. 6 where the labor sector becomes a decreasing fraction of the total economy. Both total incomes and individual wages have gradually become a smaller fraction of the total economy. Consequently, Labor was effectively

being marginalized by the growth of the financial sector; and it became less well represented by weaker or no unions, less able accumulate savings, and able to keep up with rising prices on food, education, healthcare, home maintenance, and vacations. This trend unjustly moves our population away from prosperity and creates further Social Capital debt. Workers who theoretically should be sharing the economic growth of the nation have not shared it, and are rightfully angry with politicians for not having recognized or rectified this injustice. This situation has remained, due to continued governmental opposition to progressively higher tax rates for the top income tiers, and it strongly testifies to the need for a radical restructuring of the meconomy. Figure 6 gives ore evidence that the GDP growth is not not well reflected in Household incomes.

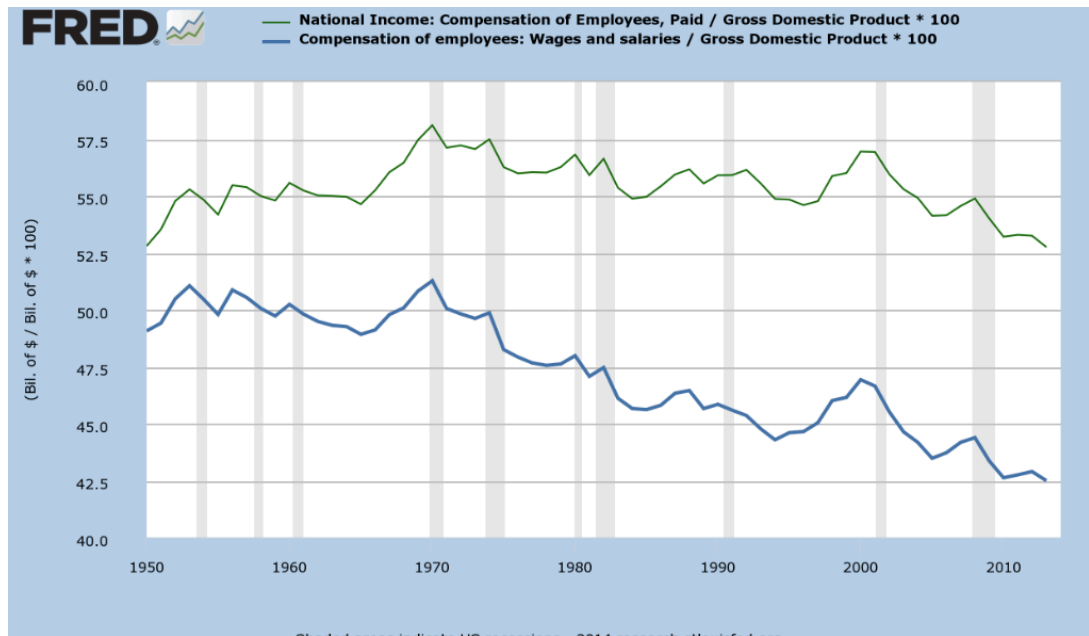


Fig. 6 US Total Compensation from 1950 to 2013. “U.S. total compensation and wages/salaries (green line), and that of only the earners (blue line), with each relative to GDP, for 1950-2013. These are a proxy for the share of national income going to the labor sector as opposed to financial sector. It shows the relative share of GDP for labor slightly growing up to 1970 and then declining until 2013”, Graph from Wikipedia, source FRED.

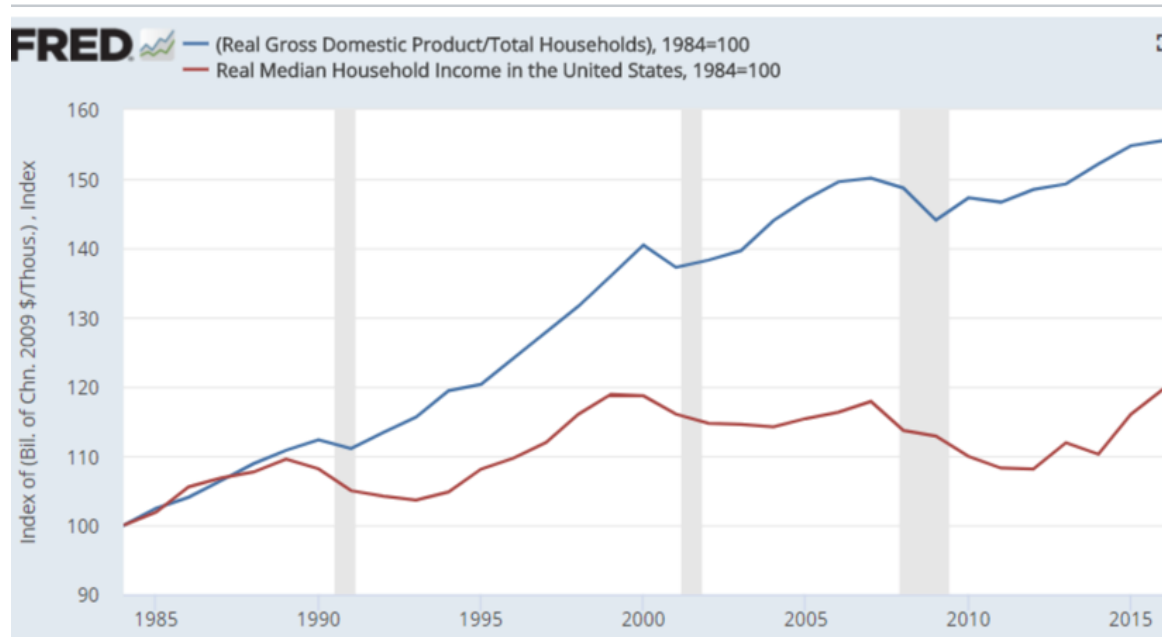


Fig.6. GDP per household capita and median wage compared. This chart shows how U.S. economic growth is not translating to higher family incomes. U.S. real GDP per household, a measure of average total income per household, has increased since 2000 while the real median income per household did not regain 1999 levels again until 2016, indicating a trend of greater income inequality the graph illustrates how the average wages for each quintile have changed since 1970s. The median of the wage distribution for all household incomes would be numerically higher than the overall average (not shown). It is also slightly lower than that of Fig. 4, which calculates it for only full-time workers. From the US Federal Research of Economic Data (FRED)..

4.3d Household Debt. From 2003 to 2015 the cost of living rose faster, at 29% than the median of income growth did, at 26%. These added a further debt-stress to the wage-stagnate households and force them to borrow to support their cost of living. During this period, many common household expenses grew at higher rates, such as medical costs by 51% and food and beverage prices increased by 37%²⁶. The household debt rose to a maximum in the 2009 crisis and lessened under the deleveraging policies of the Obama administration and a general belt-tightening in response to the crisis. By 2015 the inflation adjusted household debt, was still growing grew 15% faster than household income. (Fig. 7)

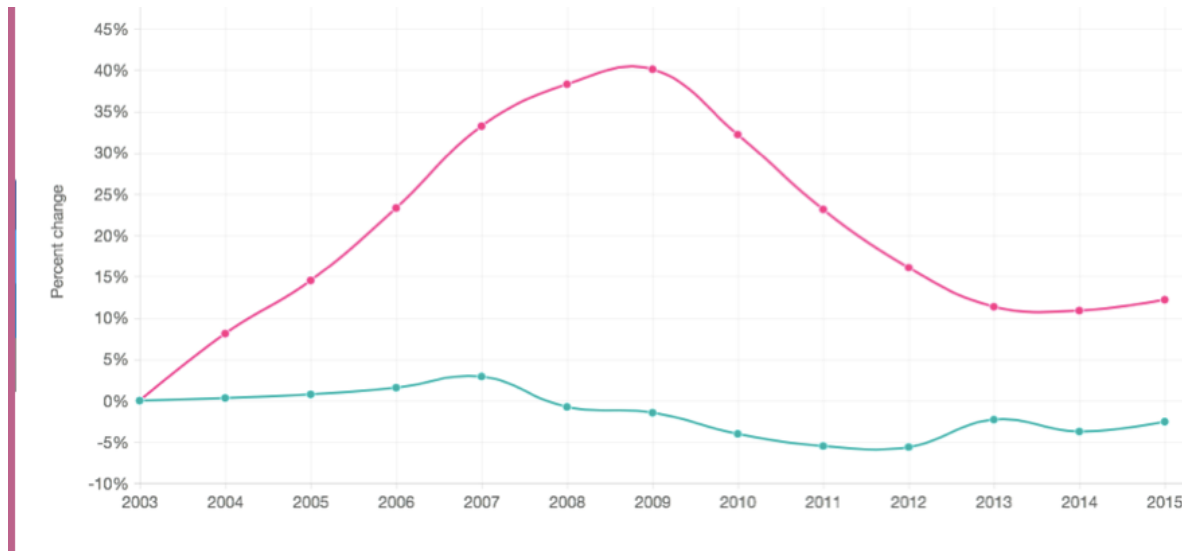


Fig. 7 Real Medium Household income vs. Real Average Household Debt.

The annual growth rate of the inflation-adjusted, average household debt peaked in 2009, and dropped to 10% in 2015; while the average medium income remained mostly stagnate and ended up 5% less in 2015, and growing 15% slower than household income did in 2003. From FRED.

Historically, the household debt increased from a low of 23 % of GDP in 1952 to its maximum in late 2007 of 96% and decreased to its current value of 79% or 12.12 trillion dollars. In 2015 the average U.S. household had an income of \$75,591 and a debt of \$130,922 on which it paid \$6,658 in interest or about 9% of its income. The breakdown of the consumer debt is shown in Fig.8. The two highest debt sectors are mortgages and student Loans and are presumably the sectors most in need and most easily abated through government safeguards.

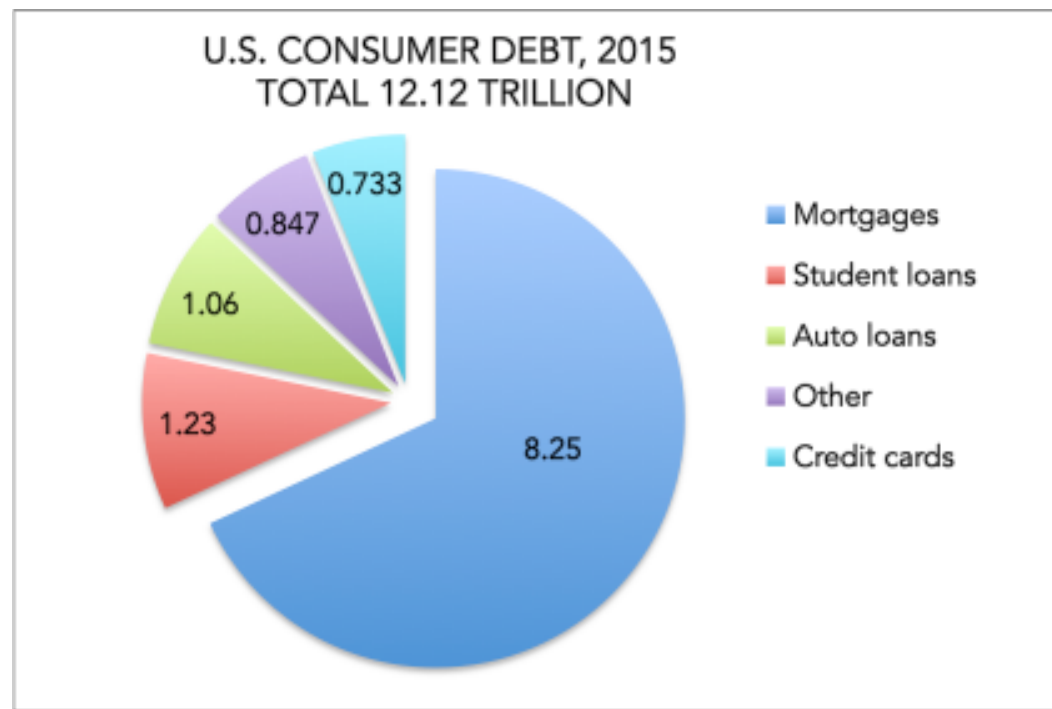


Fig. 8. U.S. Consumer Debt Income. Breakdown of 2015 consumer debt. Author generated from El Issa's data²⁶

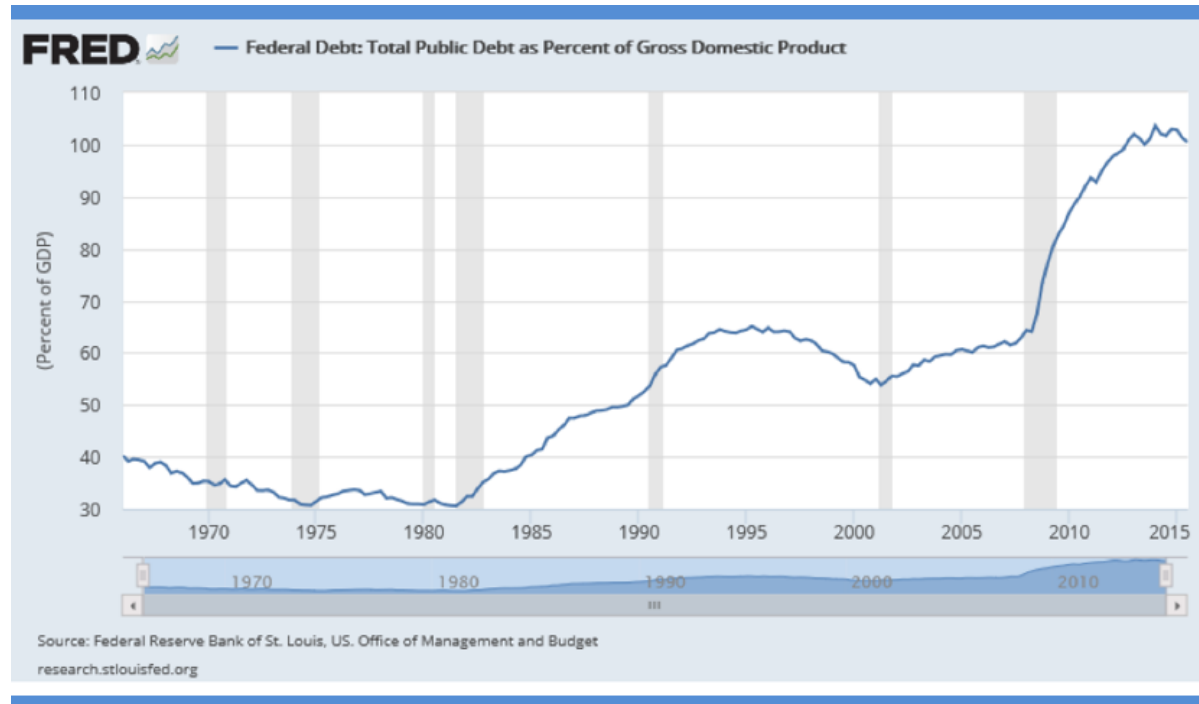


Fig. 9. The 2016 United States Public debt-toGDP Ratio. This ratio was estimated at 71.8%, or at 104.5 % when including external debt. From the IMF.

3.3e Total Public Debt as Percent of Gross Domestic Product. The Debt-to-GDP ratio compares what a nation owes to what it earns, and indicates its ability to repay debts. *“Two thirds of US public debt is owned by US citizens, banks, corporations, and the Federal Reserve Bank; approximately one third of US public debt is held by foreign countries particularly; China and Japan. [Wikipedia]. Generally, the higher the ratio, the more risk there is that a country cannot repay its*

external debts, in which case creditors seek higher interest rates when lending. If a country defaults on its payments it can cause havoc in the markets. Establishing a safe level for a nation is difficult, depending on its credit rating and how it estimates its income". International Monetary Fund²⁷(IMF) studies indicate that an average of ratio of 60% is a prudent limit for developed countries. This suggests that crossing this limit will threaten a nation's fiscal reliability and stability . From a mathematical point of view the numerical value of the percent is equal to the number of years it would take a country to pay back its debt, which would be 60years.

The American Dream is a promise for a better future, a promise we all share. Our economy depends on trusting this promise. If we invest money in an enterprise, we expect its future value to increase; or if we borrow money to get a higher education, we expect have a better income to pay off the loan. Wikipedia sites that: *"On November 7, 2016, debt held.by the US public was \$14.3 trillion or about 76% of the previous 12 months of GDP (Fig. 9). The external was \$5.4 trillion, making the total gross national debt \$19.8 trillion about 106% of the previous 12 months of GDP \$6.2 trillion or approximately 45% of the debt held by the public was owned by foreign investors, the largest of which were Japan and China at about \$1.09 trillion for Japan and \$1.06 trillion for China as of December 2016"*. So, what happens if the investment or the hoped-for income decreases in value, and what happens when a country owes more than its income?

By betting on a better future, we have fostered a debit economy that has now generated a very unstable credit crisis that is vulnerable to a rush-for-cash, or an asset sellout or devaluation of fossil fuel, for example. The promise for a better future also includes increased wages and retirement pensions, which are expecting to be realised by a 'growing economy' that Instead is not exactly or hardly happening. So, what happens when you owe more than you can pay? – more loans, more risks, or Bankruptcy!

4.4 DYNAMICS OF ECONOMIC INEQUALITY.

4.4a Controls and Abuses. Because the economy is a complex system, changing one external control, such as a tax rate cut, will not necessarily result in a proportional change in the targeted problem, and economic growth is a good example. Economic researchers try to understand the complex dependencies of controlling parameters by using empirical studies of past situations, new theories, and/or computer simulations. These approaches are useful and can produce differing results because, for example, empirical data is often incomplete, and simulations cannot model human behaviour well. In addition, real-life economic comparative experiments made more complex by the changing in-situ political and cultural environment in which they are conducted.

Historically, we have a multitude of in-vivo experiments from differing international governmental and economical systems and, importantly, on the relation between them. These experiments have been conducted on differing scales from local to national, from which researchers have extracted useful information. In question is how to design transitional approaches compatible with the recent mega-changes in scale (Globalization) and in communication technologies (Internet). Since both governments and economies are human constructs the we use to manage our societies, they will remain controversial, ineffective, and auto-destructive until society dedicates itself to an overarching goal of prosperity for all instead for a few. It seems our culture remains ambiguous over this by professing the former and doing the latter.

The Kansas Experiment ²⁸ is a clear example where the results of changing tax reforms through the Legislature that included across-the-board income tax reductions to demonstrate a

positive effect on economy, when instead the cuts caused nearly a \$900 million budget gap. In any case, the one-dimensional income bracket configuration system of assigning taxes based on income is unjust by not reflecting the social value or complexity of earned income earned, for example a doctor or a teacher contribute to society than does a financial intermediary.

4.4b. Taxation. Economic tax policies can play an important role in controlling inequality. The United States presents a good example in terms of economic tax policies on the inequality issue. By considering data both on wealth (what is owned) and income (what is earned), the results of Piketty's analyses, of tax data from the US and other nations, have contributed considerably to the understanding of how inequality develops in economies and how it might be controlled. His and other's results have also stimulated an expanded discussion about the dynamics of inequality. This has been demonstrated by Piketty's data set in Figure 10 that portrays a time history from 1913 to 2013 of US to compare the changes in the top 1% income group's and the lower 99% group's income, with the concurrent changes in income tax policies. There is an obvious negative correlation between low taxes for the top 1% and high inequality for the rest of the population. With the implementation of high taxes in 1932 the growth of the 1% group began a decline along with the 99% group until the seventies. Then in the 1970s with the Reagan-Thatcher tax policy reversal in the 1970s to lower tax rates, the 1% group began a variable but steep rise through the next three decades. As Piketty notes, the US top 1% income group more than doubled from the seventies to the oughts and reaching up to 20% of the total pre-tax income; while the bottom 99% of total income maintained a fairly steady income growth, thanks to the contribution of the fifth quintal (see, Fig. 5). Piketty attributes this skewed income distribution to the policy shift from Demand-to-Supply side policies.

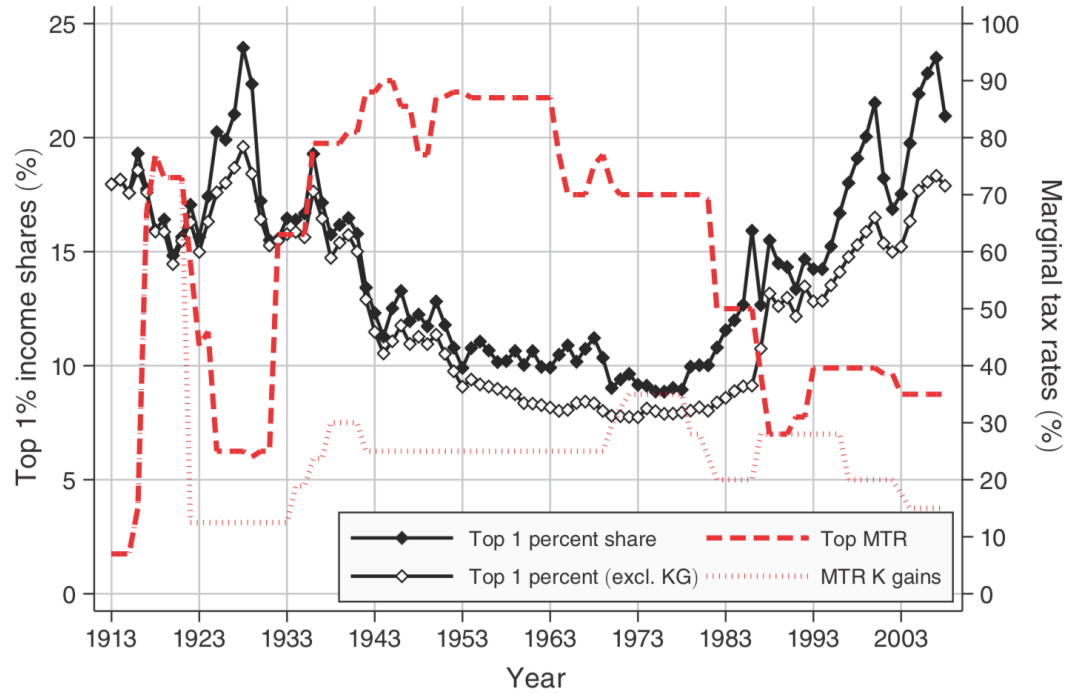


FIG. 11. TOP MARGINAL TAX RATE (TMTR)¹⁴. From the 1940s through the 1960s, the bottom 99% of taxpayers experienced fairly consistent income growth, under high tax rates from 88 to 70 percent, while the highest 1% group had much slower growth rates. In contrast the bottom 99% slowed but retained—thanks to the upper quintile (cf, Fig.5)

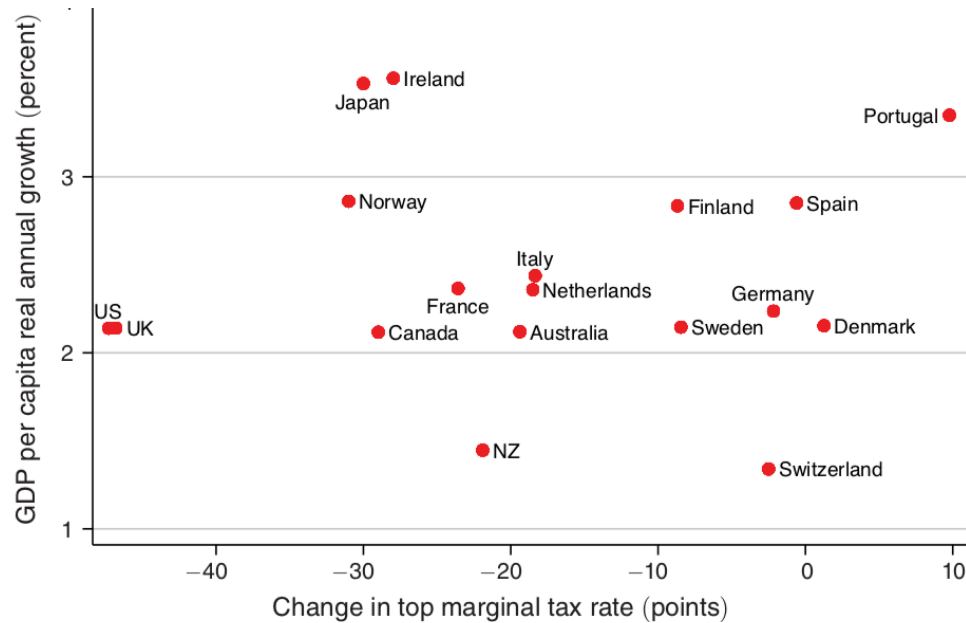


Figure 11. Plot of the annual real GDP per capita growth from 1960–1964 to 2006–2010 against the change in the top marginal tax rate for 18 OECD countries. Note that for both the US and the UK experienced negligible economic growth between the two time-periods. The plot uses the initial GDP per capita as of 1960 to calculate its change due to tax cuts through to 1964. From Saez²⁹

Another important result of Piketty’s research is that there appears to be no significant change in the economic growth of nations that have made similar large reductions in top tax rates as the US and UK who had made much larger cuts under the Reagan-Thatcher economic policies. (Fig. 11). The simple interpretation of this is that from a per-capita point of view an increase in the top income group’s share of the economy acts to decrease the per-capita share of the lower income groups. As former Wallace Turbeville³⁰ puts it, “*The economy is becoming a zero-sum game*

between the financial wealth holders and the rest of America”, which means, that if the financial sector grows in wealth the lower economic sectors Ns Government will have less.

4.4c Dealing with the Excess. The rationale for supply-side policy that reducing top income taxes stimulates economic growth by simulating the reinvestment of increased profits into plant and equipment, infrastructure, and wages that would then stimulate overall economic growth. This has not happened, which poses two vital questions:

- 1) Do these results support of a policy return to a type of Keynesian demand-side economic policies?
- 2) If instead we want to retain the supply-side policies, how can we utilise the spiralling profits at the top to support growth at the bottom?

Answering these simple questions would likely invoke very turbulent controversies, given the current severe political polarization on the subject. Arguably, given the failure of supply-side policies to achieve their stated goal over four decades, this polarization is actually a cover for conflicts between sectors, for example, the working class and the small businesses sector and the large corporation and financial sectors. Only a high-level conference of experts could recommend a transition plan that combines, the advantages of both approaches and eliminates all the negative aspects. A simple breakdown of the opposing options for both the Government and the Economy would be:

- 1)** The **government** could use the extra tax income from higher TMTR to stimulate growth and quality in other economic sectors and on public infrastructure, and thereby stimulate an increase in the general economy; Or instead,
- 2)** The **government** could lose considerable income from lower TMTR which might cause it to borrow more, increase its national debt, and drive greater economic inequality, and
- 3)** The **economy** could ensure that the top 1% group reinvest its profits in the lower income sectors of the economy and thereby help increase the economy of the bottom 99%. Or instead,

4) The **economy** could allow the top 1% group to reinvest its profits in the financial sector (financialization) and would thereby increase economic inequality, drawdown funding from other sectors, and increase the risk of financial collapse.

The rationale for supply-side policy is that reducing top income taxes would stimulate economic growth by funding investments in the lower economic tiers, such as, human services, agriculture, mining sectors infrastructure, such that consumption and wages would also grow and would then stimulate overall economy. This has not happened, which poses two vital questions on how to manage the financial capital:

- 1)** Do these results support of a policy return to a green type of Keynesian demand-side economic policies?
- 2)** If instead we want to retain the supply-side policies, how can we utilize the spiralling profits at the top to support growth at the bottom?

With the current US political atmosphere, answering these questions likely invokes very turbulent controversies, which given the already strong political polarization of 'world views', on policies when the facts are rejected. A good example is the failure for supply-side policies to succeed in achieving a just distribution wealth after four decades, and in defence with, a subjective rejection of the facts and a coverup arguments that accuse the working class and the small businesses sector for the inequality instead of the large corporations and financial sector. Only a high-level conference of experts, including natural, social, economic, and legal could recommend a transition plan that combines, the advantages of both approaches, eliminates all the negative aspects, perhaps sponsored by a non-profit, non-political institutes, e.g.the Brookings Institute³¹ and others.

A simple breakdown of the opposing options for both the Government and the Economy might be:

- 1) The **government** could use the extra tax income from higher TMTRs to stimulate the growth and quality of the lower economic sectors, on public infrastructure, and thereby generate a more robust general economy; Or instead,
- 2) The **government** could lose considerable income from lower TMTRs that might , weaken the productivity of the lower economic sectors, cause it to borrow more and thereby increase its national debt and drive greater economic inequality, and
- 3) The **economy** could ensure that the top 1% group reinvests its profits in the lower income sectors of the economy and thereby help increase the economy of the bottom 99%. Or instead,
- 4) The economy could allow the top **1% group** to reinvest its profits in the financial sector and thereby increase economic inequality, drawdown funding from other sectors, and increase the risk of financial collapse.

4.4d. Tax Evasion. Tax evasion is the illegal evasion of taxes by individuals, corporations, and trusts. It entails taxpayers deliberately misrepresenting the true state of their affairs to the tax authorities to reduce their tax liability and includes dishonest tax reporting, such as declaring less income, profits, or gains than the actual amounts earned, or overstating deductions. The last estimate of US Gross IRS Tax Gap 2006 was \$450 billion, which broken down into three components:

1. Non-filing, which accounted for \$32 bn;
2. Underreporting, which accounted for \$376 bn; and
3. Underpayment, which accounted for \$46 bn.

The IRS managed to recover \$65 bn for a total net gap of \$385 bn or 85% compliance. Note: these figures should not be compared with those for 2015, in Sect.. 3.d. above

4.4e Tax Noncompliance. Taxation on the top earners proves to be an inefficient process, for the government, due to differing strategies the wealthy have for reducing the amount of taxes paid. Between 2001 and 2014 corporate profits increased nearly threefold, while government revenue only doubled. In 2015 corporate profits of \$2,300 bln under a TMTR 39.6% would have brought the government \$910 billion, but at the actualized tax rate of 17% brought in only \$400 bln leaving 83% or \$1,900 bln of untaxed profits to use at their discretion. For comparison, the amount of under reported income was \$387 bln out of the total of \$406 bln is comparable with the estimated 2015 net IRS tax gap³², of \$406 bln. This amount would be equivalent of tax rebate of about \$3,000 per taxpayer, or 138 million, which could help pay for a Universal Basic Income Program (UBI) ³³.

According to Saez and Piketty³² the top earners have mostly avoided reinvestment of their profits into the general economy in favour of other strategies to reduce their tax burden and to their wealth accumulation, and according to Robert Reich³³, the 1000 largest US corporations are hoarding one trillion in cash in foreign accounts. These constitute an important losses of government revenue that obviously could be spent for urgent sustainable expenditures. Other important tax-evading practices are summarized in the following descriptions:

4.4f. Tax Avoidance. Tax avoidance is the use of tax laws to reduce one's tax burden. This is generally accomplished by claiming the permissible deductions and credits. This practice differs from tax evasion, which uses illegal methods, such as underreporting income to avoid paying taxes. Most taxpayers use some form of tax avoidance. For example, individuals who contribute to employer-sponsored retirement plans with pre-tax funds are engaging in tax avoidance because the amount of taxes paid on the funds when they are

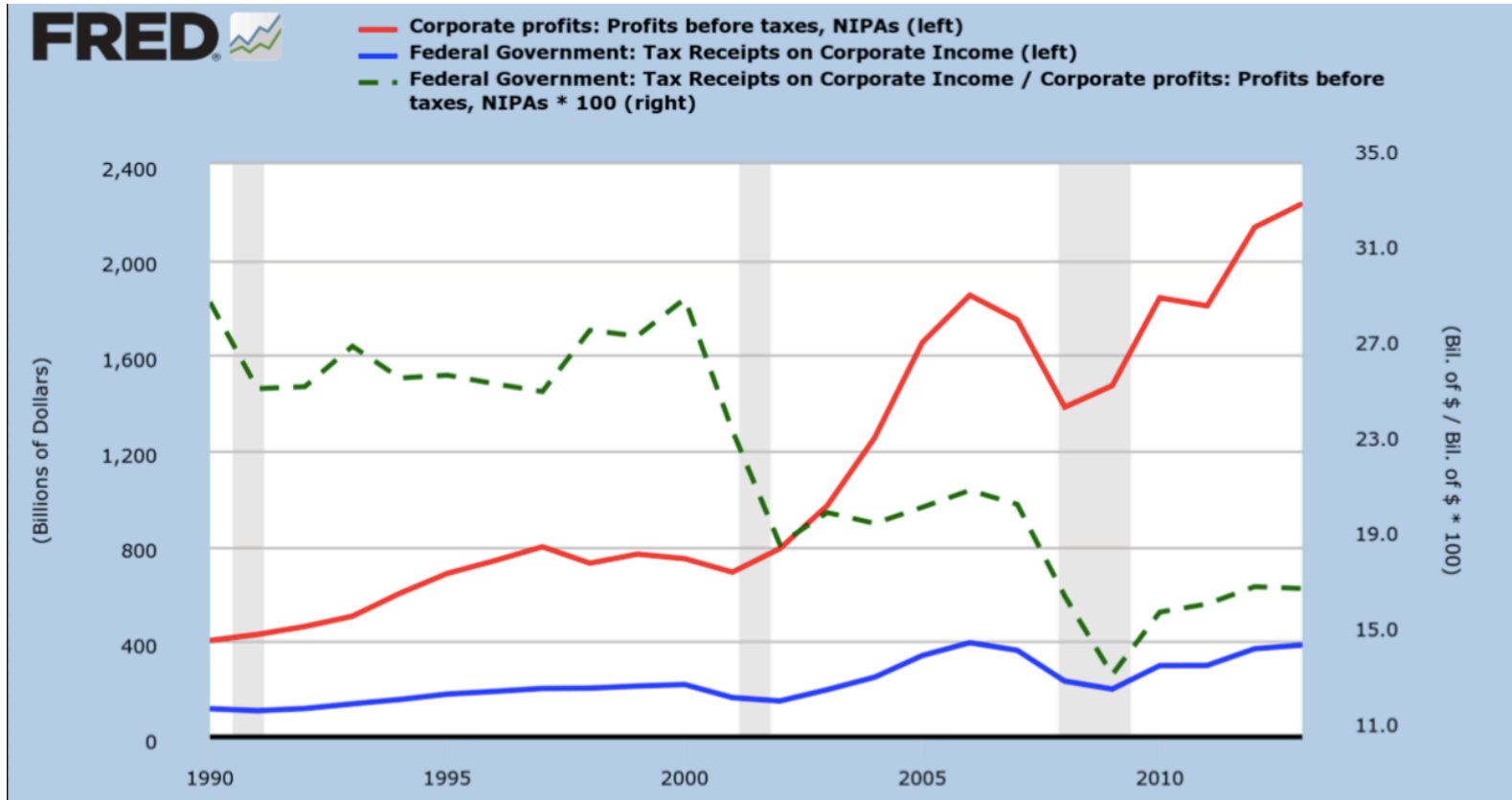


Fig. 12. Corporate Income and TMTR. Compares corporate income before taxes (red line, value in billion on left), federal government income from corporate taxation (blue line, value in billion on left), ratio of corporate tax income vs. corporate profits (dotted green line, value in per cent). From FRED.

withdrawn in retirement is usually less than the amount the individual would owe, and furthermore, retirement plans allow taxpayers to defer paying taxes until a much later date, which allows their savings to grow at a faster rate. (From *Investopedia*)

4.4h. Earnings Stripping. As part of earnings stripping, a foreign-controlled domestic corporation (or, a U.S. corporation headquartered in a foreign country) makes a loan to its U.S. subsidiary for operational expenses. Subsequently, the U.S. subsidiary deducts interest payments related to this loan from its overall earnings. The reduction in earnings has a domino effect on its overall tax liability because interest deductions are not taxed. Considering that the average corporate U.S. tax rate is 35%, the reduction can translate into a substantial amount of tax savings for the corporation. (From Investopedia)

4.4i. Corporate Inversion. Corporate inversion refers to re-incorporating a company overseas in order to reduce the tax burden on income earned abroad. It is used by companies that receive a significant portion of their income from foreign sources, since that income is taxed both abroad and in the country of incorporation. Companies undertaking this strategy are likely to select a country that has lower tax rates and less stringent corporate governance requirements. (From Investopedia)

4.5 Other Economic Aspects of Concern

5.1a. Unintended Consequences. These large financial inequalities also generate large social-capital debts, whereby the poor suffer from lack of food, healthcare, adequate living conditions, and education. This generates marginalization and consequent lack of contribution to society. In the longer term, it causes social unrest and political instability, cf. Ch. 6-SC. The economy is trading the financial profit of a few for the social loss of many. Large corporate profits are not justly being shared by the workforce. Thus, the lesson is that if your economy does not account for Social Capital, it will come back to bite you.

Advocates of retaining a neoliberal economy also externalize social and natural capital, and when pressed they often use resort to specious arguments that inequality is generated by the bottom, poorer portions of the population who are lazy, incapable, or living off social welfare. (Racism is often implicit and now increasingly explicit in these arguments.) These are socially biased claims that in earlier forms have been around as long as capitalism, should be set against the fact that the overwhelming majority of the poor are employed for miserable wages, and with the fact that in contrast the wealthy don't have to work to earn an income, use intermediaries to handle their wealth, and are subsidized by the government with low taxes. Moreover, the rich have good health care, good schools, better transportation, and in general every possible advantage. The point is that a single mother with two kids isn't lazy, and does contribute to social capital through the care-giving of her family to the limit of her resources. Also, those workers that lost their jobs, through outsourcing and are not specialized or too old for other occupational opportunities, are not lazy or unwilling to work. These contrasting arguments are central to the political divide over economic policy and profoundly relevant to the question of why our democracy hasn't been able to correct this immense and destructive problem of economic inequality, despite many efforts by charitable and non-profit organisations.

Economic Inequality originates at the top and not at the bottom!

5.1b. Should Money and Policy be Divorced? Absolutely yes! These trends testify that our economic policies were redesigned starting in the late 1970s according to the neoliberal approach, which in effect focused on growing the financial sector, and consequently neglected the needs of the social and environmental sectors by leaving them to the waving of the laissez-faire, invisible hand. Much has been written and said about this unacceptable situation, but not enough, to demonstrate the growing social risks to future generations and to stimulate sufficient political will

for socioeconomic change. Without question this situation reveals the corrupt marriage of money and power, or more specifically of capital gains and political influence. While these moneyed interests continue to 'have it their way' and suppress any reform that would challenge their control, they remain a real and eminent dysfunction for democratic promise of equal representation.

The capture of policymakers by moneyed interests has formed an economic oligarchy that controls our economy. The evolution of US economic policy over the last several decades helps explain how today's fragile, unjust economic situation has developed. A detailed discussion would be far beyond the scope of this document. What is important and relevant is a lesson of how we should govern the financial sector, such that it can contribute to, rather than to erode the process of achieving a just, sustainable equilibrium with tolerable limits of justice. Several aspects of this process continue in the following paragraphs.

5.1c Interest Rates. Assigning interest rates to borrowed money is an ancient custom designed to provide an incentive to the debtor to pay up and allowing the creditor to use brutal means to collect. The assumption that interest rates can be arbitrarily assigned, without due consideration, is unfair and socially unacceptable practice. An interest rate puts a price on borrowed money, the creditor gains and the debtor pays. This has the consequence of allowing money to inflate, debts to grow, and to increase financial inequality. Our modern society could find more humane ways by which to enforce repayment or debts, for example in the case of student loans and home mortgages. In the US, the Federal Reserve Bank uses interest rates to control inflation and deflation, which is somewhat effective in stabilizing the economy. However, in other sectors (mortgages, funds, dividends, etc.) the interest rate is more-or-less connected to what the market allows. For example, Banks use an array of factors to set interest rates. The truth is, they are looking to maximize profits through the a (Net Interest Margin), for their shareholders.³³ Is

there a rational reason for not placing limits on interest rates proportional to a specified risk scale and not on maximizing them for profits? More just ways of establishing interest rates do exist, like linking interest rates dynamically to the economy, e.g. to the economy itself or income of the debtor, etc. Some recognition of this problem comes from the recent issue of US student loans in which the interest had been set arbitrarily at a fixed rate, but now is being changed to be linked to the federal interest rates. A much graver example comes from the 2008 economic collapse, when it was understood that the government would backup bank lenders, which then allowed bank to take far-greater risks than they should have.

5.1d Technology. Technology can affect the economy in many important ways, both good and bad with respect to environmental and social capital. Technology can reduce labor costs and thereby increase profits, but the wealth so gained does not necessarily go to those labourers displaced and becomes another factor increasing the wealth gap. Technology can increase the supply of resources or of their processing, thereby promoting greater consumption of natural resources. On the other hand, technology acts to distance the consumer from the reality of resource limitation and can make resources seem more abundant and available, than they really are, for example, apples from South Africa, tar-sands oil from Canada, aluminium from Australia. This distorted perception is abetted by the availability of 'cheap energy'³⁴ to process and transport the products. The response to the use of technology and of cheap energy is similar to a dose-curve (Fig.13), in which too little energy restricts the function of a system and too much energy chokes the function of the system with waste. For example, cheap energy, which is subsidized, has resulted in a decreased energy efficiency of industrial agriculture. For example, by using 7-10 calories of energy to produce 1 calorie of food, due to the expanded use of cheap energy for intensive growing practices, storage, transporting, and food processing³⁵.

5.1e Monetary Reference. Another problem is that the market economy is referenced to an arbitrary unit of value that throughout history has been a commodity money system connected to a natural resource, e.g. from an bushel of grain, number of slaves, ounces of gold, barrels of oil, amount of real estate, etc. Eventually when these physical resources became limited or the trade value of these resources could not keep up with the needs of the economy, a commodity backed money system evolved in which banks issued notes representing a specific value of the commodity held. These had no value but could be traded in for gold or silver held by the bank. The global modern monetary system is a fiat-based system in which money represents stored purchasing power. The value of the money is legal tender backed the full faith and credit of the nation that issues it. Its value relative to other nations is based on valuation by markets and central banks based on the perception of how a nation is governing itself and displaying economic stability. The stability of each nation's currency susceptible to malpractices, governmental debts, trade deficits, large-scale corruption, and lack of trust between creditors and borrowers can precipitate financial instabilities. Instability in one nation can affect the stability of other nations, and it can cause a financial-crash situation that we have recently witnessed, with. the 2008 crash.

Presently, many countries have their currency pegged to the dollar and indirectly to petroleum, neither of which is exactly stable! At present the oil and gas drilling sector makes up between 4.6% and 6.5% of the global economy. The recent oil glut has driven crude oil prices to a decadal low, which gives a false signal about its reliability as an energy source. Action on Climate Change could determine what happens next and it could be critical to financial stability. Social mobility is also well correlated with wealth inequality, cf. Chap. 6, Sect. 5.5c This is counter to the American Dream conception of the US being the land of opportunity (to rise in wealth and in society). Understanding how this should allow us to correct our mistakes - an argument that supports a major restructuring.

5.1f Scale. Economic globalization assumes that the simple balance between supply-&-demand can be expanded to larger scales, from local to national to international. At some level of expansion this assumption fails and the consumer-producer feedback loop is broken due to the barriers of distance, lack of communication, legal constraints, etc. For example, a consumer in one nation must unknowingly accept the labor conditions used to produce a commodity, the origin of the resources, and relinquish any possible feedback to the producer. Because resources are externalized, the information about the ecological level of supply or of the level pollution is not conveyed to a consumer distant from the production of a commodity. Thus, through expansions in scale, the responsibility and information about environmental or human impacts in the production process are externalized and lost such that the consumer cannot be guided in choosing a commodity and influence the demand side of the market equation, referred to as Market Power³⁴. Of course Market Power has positive and negative attributes for example if it leads to a shared collaborative market, or if leads to monopolisation of the market that diminishes consumer quality, diversity choice, and weakens consumer feedback. Global Market Power also weakens cultural of a nation and between nations (good or bad).

5.1g Negentropic Growth³³. An economy can foster negentropic (qualitative) growth and thereby reduce unnecessary environmental and social impacts. Technological advances in energy efficiency can lower the energy required to achieve optimal function of a system. Intelligent design and monitoring of energy that keeps the use of energy within an optimal range of efficiency that can result in negentropic growth. Utilizing this dynamic, allows for growth without damaging the larger system. For example, a factory that learns how to make a product with less energy without sacrificing the quality of the product's function; or like changing a life-style that is just as satisfying without having a bigger ecological footprint. Another aspect of achieving negentropic growth is through the recycling of waste (cf. Chap. 5, E2.1f) or sharing surpluses and deficiencies of

resources or products between consumers and producers. Progress toward reducing entropic growth can be monitored and directed by a set of simple guidelines used in comparative terms of whether an activity, action, or product tends to emphasize:

- 1) Quantity or quality,
- 2) Lowering energy use or increasing it,
- 3) Producing waste or reducing it,
- 4) Useful function or useless function,
- 5) Producing content or discontent, or
- 6) Generating cooperation or disunity.
- 7) Elevating wellbeing or lowering it.

Sohisticated quantification of these differences provides a useful measure for sustainable development. For example, an integrated measure of 'Ecological Throughput³⁸ that indicates the net efficiency of a community. By measuring the energy and materials used minus those wasted, This is the counter part to the 'Ecological Footprint' (Chap.Fig.1) that which measures the amount natural resources needed to in order to maintain and serve it's community. Both are essential indicators of a sustainable community. Chapter 7 discusses further dynamics of the transition to a sustainable economy.

CHAPTER 4-FC END NOTES

- 1. Economy.** For the purpose of this document, 'economy' refers to that in current use, mostly that of the USA. Other versions will be distinguished by an adjective, such as 'green' steady-state', 'growth', etc.
- 2. Mixed Economy:** "An economic system that includes a mixture of capitalism and socialism. This type of economic system includes a combination of private economic freedom and centralized economic planning and government regulation". Investopedia.com

3. **Keynesian 'wage-led' growth model'. Palley, T. I. 2014.** *Making Finance were the Real Economy* . In: *Governing for Sustainability, State of the World*. Worldwatch Inst. Ch. 16, 174-180 pp.
4. **Neolibrialism** is a recent restructuring of the economy reflecting the changes introduced in the 70s and 80s as mention in the text such as to reduce income taxes, government interference and to enhance the economy of the private sector, free trade, fiscal austerity.
5. **Smith, R. 2014. *Green Capitalism: The God That Failed***. Truthout/News Analisis. <http://truth-out.com>
<http://truth-out.com>
Smith claims: "*In what scientists have called "The Great Acceleration," the engine of global capitalist economic development since 1950 has now engulfed nearly the whole world and accelerated at an ever-faster speed, overwhelming our small blue planet's finite natural resources and limited ability to withstand pollution in a last great fire sale of global upper and middle-class overconsumption.*"
 - **Chouinard**, Y. J. Ellison, and R. Ridgeway. 2011. *The Big Idea: The Sustainable Economy*. Harvard Business Review, October 2011.
6. **Adam Smith. 1776.** *Wealth of Nations*. Pub. W. Strahan and T. Cadell, London.
7. **Bernie Saunders.** Candidate for US President, 2016 National Election. Popular critic who along with Elizabeth Warren were able to inform a large majority of population about risks and inequities of the current corporate domination of the economy and of the electoral process.
8. **Financialization.** Financialization is an increase in the size and importance of a country's financial sector relative to its overall economy. Financialization has occurred as countries have shifted away from industrial capitalism. This impacts both the macroeconomy and the microeconomy by changing how financial markets are structured and operated and by influencing corporate ehavior and economic policy. In the United States, the size of the financial sector as a percentage of gross domestic product has grown from 2.8% in 1950 to 7.9% in 2012. Financialization has also caused incomes to increase more in the financial sector than in other sectors of the economy. Individuals working in the U.S. finance sector have experienced a 70% increase in their incomes relative to workers in other sectors since 1980. From Investopedia.

9. **Roberts R. 2010.** *Gambling with Other People's Money, How Perverted Incentives Caused the Financial Crisis*. <http://mercatus.org/publicgambling-other-peoples-money>.
10. **Citizen's Climate Lobby.** is an international grassroots environmental group that trains and supports volunteers to build relationships with their elected representatives in order to influence climate policy. www.citizensclimatelobby.org/
11. **Hawken, P. 2017. Drawdown,** *The most compressive plan ever proposed to reverse global warming*. Penguin Random House, NYC, NY
12. **Invisible Hand** is a term Adam Smith used to describe the unintended social benefits of one's activities. *The Theory of Moral Sentiments*. (1759) in Part IV, Chapter 1. Cf. Wikipedia.
13. **Samuelson, Paul. 2009.** *Don't Expect Recovery Before 2012-With 9% Inflation"* interview by Nathan Gardels, *New Perspectives*. Quarterly 27, (Spring 2009)
14. **Piketty, T. .** *Capital in the Twenty-First Century*.
15. **Statistical normal distribution.** If a data distribution is approximately normal then about 68 percent of the data values are within one standard deviation of the mean (mathematically, $\mu \pm c$, where μ is the arithmetic mean and c is the standard deviation), about 95 percent are within two standard deviations ($\mu \pm 2\sigma$), and about 99.7 percent lie within three standard deviations ($\mu \pm 3\sigma$) . Wikipedia
16. **Costanza, R., I Kubiszewski, D. Ervin, R. Bluffstone, J. Boyd, D. Brown, H. Chang, V. Dujon, E. Granek, Stephen Polasky, V. Shandas, and A Yeakley.** 2011. *Valuing ecological systems and services*. F1000 Biol Rep. 2011; 3: 14. Published online Jul 1, 2011. doi: 10.3410/B3-14
17. **Parteous, L .** 2011. *Social Capital, Health and Wellbeing: a planning and evaluation toolkit*. Edinburgh Health Inequalities Standing Group, Edinburgh Print Services, pdf. 35 pp, and
 - **Williamson, A. and Feldstein, L.M.** 2007. *Social Capital Impact Assessment: Collaborating to Bring Community Concerns to the Policy Agenda*. New Hampshire Charitable Foundation. pdf.

- 18 **SPICOSA.** The Integrated Project, Science and Policy Integration for Coastal Systems Assessment, funded by the EU's Sixth Framework Programme, (Climate Change and Ecosystems) initiated in February 2007 with the aim to develop and test a self-evolving, operational research approach framework for the assessment of policy options for the sustainable management of coastal zone systems.
19. **Gross domestic product (GDP)** is the monetary value of all the finished goods and services produce within a country's borders in a specific time-period, usually annually. The GDP includes all private and public consumption, government outlays, investments, and exports minus imports that occur within a defined territory. Put simply, GDP is a broad measurement of a nation's overall economic activity.
20. **Daly, H.E.** 1991. *Steady-State Economics.* Island Press, Washington, DC, 297 pp.
21. **Talberth, J., C. Cobb, and N. Slattery.** 2007. *The Genuine Progress Indicator 2006, A Tool for Sustainable Development, Redefining Progress.* 1904 Franklin Street 6th Floor, Oakland, CA 94612. www.rprogress.org
22. **Kubiszewski, I., R. Costanza, C. Franco, P. Lawn, J. Talberth, T. Jackson, C. Aylmer.** 2013. *Beyond GDI: 20 Measuring and achieving global genuine progress.* *Ecological Economics*, 93 57-68.
23. **Krugman, P. 2014.** *New York Times Economic Journalist. What the 1% Don't Want You to Know.* Bill Moyers & Company. Video Report
24. **Marx, K. 1818-1883** Karl Marx was a German philosopher, economist, historian, political theorist, sociologist, journalist and revolutionary socialist. Born in Trier to a middle-class family, Marx studied law and Hegelian philosophy [wikipedia] <https://www.brainyquote.com/authors/karl-marx>.
25. **Occupy Wall Street,** Refers to the public protest in the financial district of New York City on 17 September 17 2011.. "The main issues raised by Occupy Wall Street were social and economic inequality, greed, corruption and the perceived undue influence of corporations on government—particularly from the financial services sector." Quote from Wikipedia. While it eventually faded, due to lack of funding and connections, it made an unforgettable impression by permeating the

consciousness of the US and foreign nations about the atrocious inequality our economy has generated. <http://occupywallst.org/>.

26. Corak, M. 2013. *Income Inequality, Equality of Opportunity, and Intergenerational Mobility.* University of Ottawa and IZA. Discussion Paper No. 7520. July 2013. IZA. Also, <ftp.iza.org/dp7520.pdf>

27. El Issa, E. 2015 Household Debt vs. Household Income. American Household Credit Card Debt Study.

28. International Monetary Fund (IMF). An international organization headquartered in Washington, D.C., consisting of "189 countries working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty

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• **Optimal GDP-to-Debt Ratio** . The developing world is poorer than we thought, but no less successful in the fight against poverty, World Bank, August 2008. <http://www.globalissues.org/article/26/poverty-facts-and-stats>. <http://voxeu.org/debates/commentaries/there-optimal-debt-gdp-ratio>

29. Kanas City Experiment. In May 2012, Kansas Governor Sam Brownback signed into law one of the largest income tax cuts in Kansas' history. Brownback's objective was to stimulate job creation and economic growth, to demonstrate how the supply-side policy tax cuts would pay for themselves by increasing revenue by boosting the state's economy. The experiment thoroughly failed to raise employment and to fund social capital. It was repealed in 2017. [Wikipedia].

30. Saez, Emmanuel. 2004. "*Reported Incomes and Marginal Tax Rates, 1960–2000: Evidence and Policy Implications.*" *Tax Policy and the Economy* 18: 117–73. *American Economic Journal: Economic Policy* 2014, 6(1): 230–271 <http://dx.doi.org/10.1257/pol.6.1.230>

31 Gale, W.G. and Samwick, A.A. *Effects of Income Tax Changes on Economic Growth*. The Brookings Institute. <http://www.brookings.edu/research/papers/2014/09/09-effects-income-tax-changes-economic-growth-gale-samwick>

32. Gross IRS tax gap is “the amount of true tax liability that is not paid voluntarily and timely and composed of three components: non-filing, under-reporting, and underpayment.” <http://www.forbes.com/sites/timtodd/2016/04/29/irs-issues-406-billion-net-tax-gap-estimate/#35642b358235>

33 Reich, Robert, 2013. The Three Biggest Lies About Why Corporate Taxes Should Be Lowered. Truthout, Friday, 09 August 2103. messenger@truthout.org.

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34. Negentropy is a term to express disorder or chaos, the opposite of entropy (order). Negentropic biological systems are well organised in terms of composition, structure, and function;

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