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Article

Addressing Inequality: The First Step Beyond COVID-19 and Towards Sustainability

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Abstract: The COVID-19 pandemic has impacted billions of lives across the world and has revealed and worsened the social and economic inequalities that have emerged over the past several decades. As governments consider public health and economic strategies to respond to the crisis, it is critical they also address the weaknesses of their economic and social systems that inhibited their ability to respond comprehensively to the pandemic. These same weaknesses have also undermined efforts to advance equality and sustainability. This paper explores over 30 interventions across the following nine categories of change that hold the potential to address inequality, provide all citizens with access to essential goods and services, and advance progress towards sustainability: (1) Income and wealth transfers to facilitate an equitable increase in purchasing power/disposable income; (2) broadening worker and citizen ownership of the means of production and supply of services, allowing corporate profit-taking to be more equitably distributed; (3) changes in the supply of essential goods and services for more citizens; (4) changes in the demand for more sustainable goods and services desired by people; (5) stabilizing and securing employment and the workforce; (6) reducing the disproportionate power of corporations and the very wealthy on the market and political system through the expansion and enforcement of antitrust law such that the dominance of a few firms in critical sectors no longer prevails; (7) government provision of essential goods and services such as education, healthcare, housing, food, and mobility; (8) a reallocation of government spending between military operations and domestic social needs; and (9) suspending or restructuring debt from emerging and developing countries. Any interventions that focus on growing the economy must also be accompanied by those that offset the resulting compromises to health, safety, and the environment from increasing unsustainable consumption. This paper compares and identifies the interventions that should be considered as an important foundational first step in moving beyond the COVID-19 pandemic and towards sustainability. In this regard, it provides a comprehensive set of strategies that could advance progress towards a component of Sustainable Development Goal (SDG) 10 to reduce inequality within countries. However, the candidate interventions are also contrasted with all 17 SDGs to reveal potential problem areas/tradeoffs that may need careful attention.

Keywords: COVID-19; earning capacity; environment; essential goods and services; future of work; inequality; labor; safety net; universal basic income; sustainable development goals (SDGs); sustainability

1. Introduction

The COVID-19 pandemic has impacted billions of lives across the world and has revealed and worsened the social and economic inequalities that have emerged over the past several decades. As governments consider public health and economic strategies to address the crisis, it is critical they also look beyond the pandemic and address the weaknesses of their economic and social systems that inhibited their ability to respond comprehensively to the pandemic. This paper identifies over 30 interventions that should be seriously considered when adopting an integrated strategy for increasing earning capacity, providing all citizens with access to essential goods and services, and improving the environment and mitigating global climate change. These include: (1) Income and wealth transfers to facilitate an equitable increase in purchasing power/disposable income; (2) broadening worker and citizen ownership of the means of production and supply of services, allowing corporate profit-taking to be more equitably distributed; (3) changes in the supply of essential goods and services for more citizens; (4) changes in the demand for more sustainable goods and services desired by people; (5) stabilizing and securing employment and the workforce; (6) reducing the disproportionate power of corporations and the very wealthy on the market and political system through the expansion and enforcement of antitrust law such that the dominance of a few firms in critical sectors no longer prevails; (7) government provision of essential goods and services such as education, healthcare, housing, food, and mobility; (8) a reallocation of government spending between military operations and domestic social needs; and (9) suspending or restructuring debt from emerging and developing countries. Any interventions that focus on growing the economy must also be accompanied by those that offset the resulting compromises to health, safety, and the environment from increasing unsustainable consumption.

The interventions explored in Section 2 operate over different timeframes and have different economic, societal, and environmental impacts. Even before the COVID-19 pandemic, not all the interventions could have been adopted immediately and some would have been, and still will be, met with significant business, political, or cultural resistance. However, addressing the pre-existing social (inequality) crises [1], now exacerbated by the pandemic, requires new thinking and new or redesigned institutions. This paper contributes to the options that must be considered as an important foundational first step towards a sustainability transition. It also offers a useful set of strategies to advance a component of SDG 10 to reduce inequality *within* countries but is less focused on strategies to reduce inequality between countries.

Two of the current authors addressed sustainability in our book *Technology, Globalization, and Sustainable Development: Transforming the Industrial State* [2]. In this work, sustainable development is described as resting on three pillars: Competitiveness, environment, and employment/earning capacity, and we argue that policies to advance all three pillars should be co-optimized in order to advance sustainability. In this article, we assert that, above all, there is now a need to ensure inequality is addressed *before* taking actions aimed at improving the environment and competitiveness. While some interventions can co-optimize all three dimensions, the fact that inequality within countries had steadily worsened over the past several decades indicates that efforts to address environmental concerns and promote economic growth have failed to benefit all citizens. High levels of inequality also undermine efforts to promote an economic democracy, which limits the diversity of voices in our economic and political decision-making processes, effectively locking us into existing development trajectories [2]. Therefore, we believe addressing inequality is a fundamental first step to opening up space for new ideas and ways of thinking that will be critical to addressing sustainability. In this article, we explore a continuum of interventions that range from only targeting inequality to more holistic approaches that could lead to a sustainable economic transformation. Further, some interventions may undermine efforts to protect health, safety, and the environment. We welcome this complexity and highlight where additional interventions (or thinking) may be needed to address known or expected problems.

The following sections look at a number of approaches to addressing inequality that have held a dominant position in the public policy discourse or are currently emerging. These include addressing inequality through public policy interventions, green growth agendas, future of work initiatives, reforming the financial sector, providing a universal basic income (UBI), establishing a Green New Deal, enhancing public–private partnerships, and promoting the Sustainable Development Goals (SDGs).

1.1. Addressing Inequality Through Public Policy Interventions

Joseph Stiglitz [3] has opined that continued inequality will stymie future economic growth and that public policy initiatives utilizing changes in governance and the law need to be focused on "rewriting the rules" [4] to encourage changes in our approach to industrial growth (see Table A1 in Appendix A for a summary of Stiglitz's main recommendations that we endorse). However, these new rules are silent on how to go green. Integrated solutions will be critical to resolving the systemic problems we face.

An important observation that carries implications for both growth and redistribution policies is the fact that a greater amount of wealth does not equate to a greater amount of real capital. Varoufakis [5] has criticized Piketty's failure to distinguish increases in wealth from increases in capital capable of producing goods that can be enlisted in the production of other goods. The latter—but not necessarily the former—is regarded as being essential to economic growth, i.e., growth in GDP. Redistribution of wealth does not necessarily easily translate into increases in purchasing power. However, increased revenue to the government from taxing wealth can provide essential goods and services that would benefit ordinary citizens. At the same time, expectations of future economic growth are being called into question and other methods of improving wellbeing are emerging—see Banerjee and Duflo [6] and the work on "degrowth" by Kallis [7] and Burkhart et al. [8].

The COVID-19 pandemic has clearly revealed how industrial economic systems are heavily weighted towards benefitting the wealthy and corporate health and profit to the disadvantage of ordinary citizens and workers. The planned response of governments to the crisis—e.g., cash payments by the government as payer-of-last resort to individuals who lose their jobs, are put on reduced hours (called partial idling) or furlough, or who run out of state-provided benefits such as sick-leave—is not only too short-term for what will turn out to be a long-term pandemic, but will pale in comparison to the social welfare provided to corporations and big business bailouts that will further exacerbate inequality [9]. In the aftermath of the pandemic, it is critical that systemic economic changes are made to rebalance the scale and reduce inequality through a portfolio of reinforcing or complementary interventions. If properly implemented, these interventions could significantly increase the economic resilience of workers and citizens during the next crisis and limit its potential negative economic impacts. These interventions will also grow the arsenal of policy options open to governments and increase the speed at which they can respond.

1.2. Addressing Inequality Through Green Growth

Prior to the pandemic, faith in the next industrial revolution (following four previous periods of boom and bust) had been expressed by Carlota Perez [10], with the proviso that industrial systems "go green" without addressing the fact that all prior industrial revolutions owe their origins to an increasing supply of cheap energy [11,12]. Ulrich Hoffman [13] argues that going green is not enough and Parrique et al. [14] write that "decoupling" growth and environmental sustainability is unlikely to be achieved. For a more optimistic view on "going green", see Bivens [15].

Techno-optimists argue that the past is prologue for the future of industrial societies, but are we on the right path? D'Alessandro et al. [16] recently ran a set of scenarios to address two crises facing industrial or industrializing societies: Inequality and global climate challenges. They concluded that governments can only achieve improvements in both areas if there are increases in government deficits/spending. We argue that a better way to address these challenges is to reformulate the crises as the need to increase earning capacity, improve the environment with a focus on toxic pollution and global climate disruption, and provide all individuals in society with more access to essential goods and services. This could happen either through increasing disposable income or alternatively by government directly providing social benefits such as education, healthcare, housing, food, and mobility. Today, the COVID-19 pandemic has complicated the challenges before us, but the potential set of solutions remain the same.

1.3. Addressing Inequality Through the Future of Work

The Future of Work initiatives being undertaken by MIT [17], the European Union [18], the OECD [19], and others [20,21] address the crisis of inequality in the context of emerging technologies such as artificial intelligence (AI) and computer-driven growth, but concerns relating to the environment sometimes take a backseat to employment-focused policies. For computer-related changes, these studies are quasi-optimistic about the future of work and thus often frame the needed policy responses as ensuring that workers have the right education and skills to match the emerging technological changes [22].

Prior to the COVID-19 pandemic, enthusiasm and even cautious optimism by the private sector, government, and academia that AI and computer-driven changes will create enough well-paying and permanent jobs, dominated the news and academic literature with rare exceptions [2,23–30]. However, we have yet to be convinced that these drivers of change will result in sufficient, well-paid, and meaningful jobs for the majority. No serious alternative plan is envisioned in the event that sufficient well-paying and permanent jobs do not materialize in a timely manner. In this paper, we argue that the future of work is embedded in the future of the economy, and work-related initiatives and policies cannot be separated from those that address the economy and the environment.

Recognizing that the COVID-19 pandemic presents new challenges to the world financial system, Project Syndicate [31] has argued for the formation of a Digital Bretton Woods to rethink global institutions in the context of future impacts and challenges of AI and data-driven societal change. While we are sympathetic to the need for this reform, more immediate challenges face us that require less sophisticated global responses emanating from country-specific interventions.

1.4. Addressing Inequality Through Financial Reforms

The COVID-19 pandemic has not only created twin shocks affecting the supply and demand of the real economy; it has also unleashed chaos in financial markets. See the important analysis of Singh [32] in a series of essays in Exploring Economics [33]. These essays contribute a rich treatment of monetary and fiscal interventions, as well as those that address the health challenges presented by the pandemic. A critical concern is that the response to the pandemic will reinforce an economic model that had serious faults to begin with—a model that fails, for the most part, to address the inequality it creates. Steve Keen [34] describes the current market economy and mainstream economics as propagating "the dismantling of the state and the globalization of production—both of which make the crisis now so devastating". One essay, which is the most consonant with ours by Bőhm et al. [35], provides a contrasting perspective that includes the state providing a universal basic income and basic universal goods, increasing the minimum wage, direct state-financing by central banks, instituting capital controls to minimize capital flight, debt relief, creating an international central bank, and increasing the role of the IMF. In this paper, we focus on the role of the state—rather than the market—in addressing the fundamental inequalities. The subtitle of a recent editorial in the Financial Times makes the point: "Radical reforms are required to forge a society that will work for all" [36].

1.5. Addressing Inequality Through a UBI

In a recent paper, we compared the many renditions of government providing a universal basic income (UBI)—with the majority of approaches requiring a redistribution of current income or wealth—with a binary economics approach, which democratizes credit and involves a redistribution of *future* income or wealth [30] (see Section 2.1.3). Both require changes to the tax code and statutory approaches to profit-sharing and investment involving research and development. Both also require serious and mandatory safeguards to discourage unsustainable environmental consequences from increased production and consumption made possible by increased purchasing power/disposable income. Many have raised questions as to whether there is enough money to fund serious UBI initiatives and how the fair and timely allocation of those initiatives will be based on true need [37,38], while others have questioned whether an environmentally sustainable ownership-based system can be achieved without statutory and other broad-based UBI initiatives [39]. In any event, having many people dependent upon government welfare and out of work for extended periods may not be a desirable permanent solution from a societal perspective. This argument is typically used to set a basic income at a level where essential needs could be covered, but additional income would be needed to support all livelihood needs.

1.6. Addressing Inequality Through a Green New Deal

Recent proposals for a Green New Deal in the U.S. [40], EU [41], and UK [42] present comprehensive strategies to decarbonize the economy, promote innovation, create jobs, and support a just transition. While such Keynesian spending programs are likely to result in a net gain in employment in the near term (see Section 2.1.6), their focus on an energy revolution means that reductions in inequality may be limited to those individuals with green-energy-related jobs. While these jobs would spread across different infrastructure systems and sectors of the economy, attention also needs to be given to the full complement of interventions that could comprehensively address inequality in *all* economic sectors, for *all* job categories. We consider the interventions explored in this paper as expanding the potential impact and scope of the Green New Deal agendas.

1.7. Addressing Inequality Through Public-Private Partnerships

Laplane and Mazzucato [43] have emphasized the importance of the state in undertaking high-risk innovation-driven projects that the private sector alone would be unlikely to invest in. These projects go beyond what could emerge from the government acting to correct market failures. Laplane and Mazzucato [43] argue that what is needed is "market-co-creating and shaping" innovation policy, whereby policy measures institutionalize rewards through public–private partnerships in which both the risks and rewards of public investments are shared appropriately between public and private actors. Described as "legal institutionalism", this intervention not only has the government invest in high-risk innovation, but through legal interventions (such as taxes, regulation, and other means) and the removal of legal barriers, forces the rewards (and power) to be shared (financially) with the public in a redefined partnership with business. This optimistic view of public–private partnerships ignores the capture of government by the private sector and the curtailment of competing innovations by entities outside the established system. In our view, the present private–sector orientation of both the administrations in the U.S. and UK, have demonstrated an inability to find a proper "balance" that benefits all sectors of the public. What will be needed in post-COVID-19 recovery are policies that ensure the "least advantaged" are made relatively better off, to borrow a phrase from the legal philosopher John Rawls [44].

1.8. Addressing Inequality Through the Sustainable Development Goals (SDGs)

While widespread adoption of the Sustainable Development Goals (SDGs) would achieve improvements in social and environmental welfare, their voluntary nature leaves much to be desired. The literature reveals slow progress in achieving these goals [45]. Further, much attention has been given to the SDGs being "more dynamic, integrated, natural and human system models that incorporate the dynamics of stocks, flows, trade-offs, and synergies" [46], but this real-world complexity comes at a cost. For example, the relationship between one SDG target or another is likely to vary by geographic location, governance structures, and available technology [47], revealing the importance of allowing nations to advance their own set of solutions based on their own priorities [48]. There is also evidence that it will be impossible to achieve all 17 SDGs based on previous development trajectories [49–51], highlighting the critical importance of disruptive innovation/change and opening up the decision-making space for new ideas and voices [2]. The COVID-19 pandemic has also severely compromised the ability of nations to achieve many of the SDGs [52].

Of particular interest in this article is SDG 10 to reduce inequality both within and among countries. While the latter aspect falls largely beyond the scope of this paper, it could be argued that addressing disparities within countries would be a first step towards reducing inequality between countries.

Saiz and Donald [53] use an SDG 10 lens to argue that social exclusion and economic inequality are deprivations of human rights—including the erosion of labor rights, the weakening of public services, and the capture of democratic decision-making by elites—and recite the Post-2015 Agenda exhortation to "Leave No One Behind". They define "substantive inequality" as being concerned with the results and outcomes of laws and policies. Their work is comparable to that of Stiglitz [4].

Mariotti [54] provides a more focused look at the application of SDG 10 in the UK, and argues that not only is inequality "bad for economic growth", but "reducing inequality would be more effective at eradicating extreme poverty than increasing economic growth" [54].

What Saiz and Donald [53] and Mariotti [54] do not endorse is the dominant historical model that assumes that equitable sustainable growth and employment can be achieved primarily through R&D, innovation, and the training of workers. Our paper is premised on the same conviction.

In addition, an increased awareness of systemic racism, militarization, and over-sized budgets for domestic policing, on top of the COVID-19 pandemic, has focused public attention on intersecting racial, gender, health, and economic inequalities—"leaving no one behind"—within and among all countries. This emergent international social movement is occurring at a time when income inequality is at its highest levels, perhaps indicating that the "social peace line" [55] is being reached in many nations. This line reveals the lowest standard of living acceptable by citizens, below which social unrest, populism, and polarization start to appear. The social peace line is a function of the real wages in an economy, which are inversely related to the competitiveness of a country abroad and the living standards of the people in the country, which in turn is a function of domestic demand and the supply of essential goods and services by the government. Hence, there are multiple ways to ensure that citizens close to the "social peace line" live well, while countries maintain their competitiveness. These interventions will be explored throughout this paper.

A closer look at the SDG 10 targets helps frame the focus of this article. SDG target 10.1 states that "By 2030, progressively achieve and sustain income growth of the bottom 40% of the population at a rate higher than the national average", and SDG target 10.4 highlights the need to "Adopt policies, especially food, wage and social protection policies, and progressively achieve greater equality". The interventions presented in this article have the potential to directly address these targets. Further, Section 3 considers how each of the interventions presented in Section 2 are likely to impact the 17 SDGs. As the comparative assessment shows, a number of interventions are likely to undermine environmental goals if other measures are not taken to counteract increased unsustainable consumption.

1.9. Summary

The above discussion reveals a diversity of approaches that can address inequality. While some target inequality directly, others consider inequality as a component of a larger transformation process. The purpose of this article is to combine the promising elements from these approaches with other emerging or established ideas to provide decision-makers with a comprehensive portfolio of options. In doing so, a broad range of interventions are outlined that hold the potential to increase earning capacity, reduce inequality, and improve access to essential goods and services within countries, without compromising health, safety, and the environment. These interventions could be used by governments to advance the component of SDG 10 focused on reducing inequality within countries.

In Section 2, we describe the individual interventions without attempting to relate them to one another in order to familiarize the reader with the nature, strengths, and weaknesses of each measure in isolation. Section 3 of this article presents a comparative assessment of these interventions in terms of their political feasibility; the significance of their economic, social, and environmental impacts; and whether they are likely to reinforce or undermine the SDGs. The final section of this article offers a conclusion.

2. Interventions

This section outlines more than 30 recommended interventions across nine different categories that governments could deploy as part of a targeted approach to reducing inequality and laying a foundation for a transition towards sustainability. While the goal of SDG 10 is to "reduce inequality within and among countries", the devil is in the details, which is the focus of this article.

2.1. Income and Wealth Transfers

A broad range of strategies exist to enhance purchasing power for *essential* goods and services (e.g., healthcare, education, housing, food, and mobility) through income and wealth transfers without increasing the deficit. These include increasing the minimum wage, progressive changes in the taxation of personal income and wealth, a universal basic income/negative income tax, paying those doing unpaid work, taxing pollution and energy and reducing the effective per capita tax on labor, green Keynesian spending, and increasing the tax on corporations, especially those making excess profits and/or shifting production/the provision of services/ownership abroad.

Currently, the federal government estimates that in fiscal year (FY) 2021, it will receive $3.863 trillion in revenue, primarily from income or payroll taxes [56]. The revenue breakdown is as follows:

- Income taxes: $1.932 trillion (50% of total receipts);
- Social Security, Medicare, and other payroll taxes: $1.373 trillion (36%);
- Corporate taxes: $284 billion (7%);
- Excise taxes and tariffs: $141 billion (4%);
- Earnings from the Federal Reserve's holdings (i.e., interest on U.S. Treasury debt acquired through quantitative easing): $71 billion (2%);
- Estate taxes and other miscellaneous revenue: $62 billion (2%).

Revenues from corporations contribute relatively little to finance the overall social benefit, despite corporate profits being at an all-time high. The options explored in this first set of interventions include those that appropriately reallocate the tax burden among ordinary citizens, the very wealthy, and business operations (both corporate and non-corporate), providing citizens with more disposable income and hence more purchasing power.

Addressing income disparities by redistributing purchasing power through tax reforms suggested by Piketty and Goldhammer [57,58], Stiglitz [3], Standing [25], and Zucman and Saez [9] envisages more consumption of essential goods and services by those at lower income levels. Increasing disposable income among the less-affluent is associated with increased consumption, which outstrips the ability of technology to reduce greenhouses gas emissions [59]. Both discouraging consumption of environmentally destructive goods and services and advancing technology development to reduce emissions are needed. Aside from the fact that increasing affluence increases consumption, if "labour productivity continuously rises, then aggregate economic growth becomes necessary to keep employment constant, otherwise technological unemployment results" [59].

While redistributing purchasing power will address fundamental inequalities, such interventions must be accompanied by those that offset the resulting compromises to health, safety, and the environment from increased unsustainable consumption [60]. Other options include those that have the government shoulder the burden of directly providing essential goods and services (see Section 2.7), with or without an increase in deficit spending to finance social programs (see Section 2.8).

2.1.1. Increase the Minimum Wage

Studies of the effect of raising the minimum wage in U.S. cities and states show that, contrary to the reservations of some economists, economic growth actually increases with an increase in the minimum wage [61–64]. A study conducted by the Economic Policy Institute showed that a gradual rise of the minimum wage in the U.S. to $15 per hour by 2024 would improve the salaries of more than 40 million American workers by almost $3000 per year, a significant amount for those who fall within the low-income bracket [65]. A rise in salaries means more money is circulating in the economy, which, based on the multiplier effect, will increase demand and consumption, which in turn drives economic growth. Furthermore, raising the minimum wage can act as a mechanism to improve health outcomes [66]. A recent study in the U.S. found that an increase of $1 in the minimum wage could have led to a decrease in suicides rates ranging from 3.4% to 5.9% over the period 1990–2015 among adults aged 18–64 years with a high-school education or less [67]. Another study examined 24 OECD countries for 31 years and found that higher minimum wages (with a 10% increase in the Kaitz index) led to an increase in life expectancy (by 0.44 years) and a reduction in death rates (by 21.95 per 100,000 individuals) [68]. Similarly, research in the U.S. found that improvements in birth weight [69,70] and postneonatal mortality [69] can be attained with higher minimum wages.

An increase in domestic wages is likely to increase demand for both domestic and imported products [71]. Thus, changes in the minimum wage need to be considered or coordinated with trade policy and other strategies that target the provision of essential goods and services (see Section 2.3). Countries other than the U.S. are seriously considering raising the minimum wage [72], and there is likely to be significant variation in how it is implemented.

2.1.2. Progressive Changes in the Taxation of Personal Income and Wealth

In recognition that wealth accumulates and passes on within families [57], a wealth tax will dampen the effects of inherited wealth, as well as provide revenue for others, potentially closing racial and generational wealth gaps through redistribution. However, other interventions may also be needed to lessen the influence/control of the wealthy elite of political agendas and government [2,73]. In addition, progressive taxation of personal income and an increased capital gains tax would address growing trends in inequality and generate funds for critical social programs.

Using a model inspired by Piketty, Hartley et al. [74] examined policies to reduce inequality under conditions of low or no growth and concluded that "except in the case of complete wealth equality, any strategy to prevent increasing income equality must reduce returns to wealth below the rate of growth". They also argue that interventions designed to prevent rising inequality under zero, declining, or negative GDP growth are likely to require reductions in the income of the wealthy—a scenario that the wealthy are likely to oppose given their disproportionate influence on political decision-making.

2.1.3. Universal Basic Income (UBI)/Negative Income Tax

In response to growing inequality trends over the past several decades, the idea of providing workers/citizens with a guaranteed universal basic income (UBI) is gaining traction. According to the Economic Policy Institute, CEO pay has risen 940% since the early 1980s against 12% for a typical worker over the same period. Two other reasons for growing inequality, captured by The Aspen Institute, relate to uncertainty around the technological displacement of well-paying jobs and inefficiencies in the U.S. system of transfer programs [38]. Those in favor of a UBI tend to defend the idea from the perspective of social justice, individual liberty, and financial security [75]. Those opposing a UBI tend to raise concerns about its affordability, its cost to taxpayers and the related potential suppression of growth-enhancing investment, and the disincentive it may pose to work.

Amidst the current COVID-19 pandemic, public and political support for a UBI has been gaining ground in many nations around the world. For example, Spain has announced the adoption of a UBI for about 1 million of its poorest citizens, although final details are being drafted at the time of writing of this paper [76]. Concurrently, leaders across the U.S. are becoming more vocal on the merits of a UBI [77,78], largely due to the influence of Andrew Yang's Democratic Presidential campaign that put forward the Freedom Dividend, which would provide every U.S. citizen (over the age of 18) with $1000 every month [79].

What these positions reveal is the need for a comprehensive, integrated, and system-wide perspective of how a UBI could be financed and fairly allocated. For example, the progressive taxation of personal income and wealth (discussed above) is one approach. However, many other proposals exist on how to finance and deliver a UBI, including whom should receive the basic income [30]. There is also the question of whether an expansion in the nature and extent of the "social safety net" could accomplish the same goals of a UBI more efficiently (see Section 2.1.4).

2.1.4. Pay Those Doing Unpaid Work Such as Child Raising/Caring for the Elderly

One argument for providing a UBI is that it would correct the distortion of what is considered "work" by providing equitable compensation for *unpaid* work. If the political will does not exist for a UBI, creating a mechanism to compensate individuals for socially beneficial unpaid work could nonetheless be a realistic option (see Neva Goodwin [80]).

Two key areas of unpaid labor are caring for children and caring for the elderly or disabled, but unpaid labor can also include other tasks that keep households functioning, such as cooking and cleaning. This work is disproportionately undertaken by women, who account for around 75% of the world's total unpaid work [81]. Though there is obvious value to this work, it does not presently contribute to the measured GDP, and has, in fact, been conservatively estimated to be valued at as much as $10 trillion per year, or about 13% of global GDP as of 2015. In the United States alone, the value of the unpaid care work carried out by women is about $1.5 trillion a year [81]. According to a Pew Research Center analysis of U.S. Census Bureau data, in 2016, more than 11 million U.S. parents, or 18% of parents, did not work outside the home, effectively providing unpaid labor in the form of childcare. There are many drivers behind this, with one being the fact that childcare expenditures rose 40% from 1990 to 2011, or twice as fast as overall inflation [82], even with childcare workers being paid remarkably low wages themselves. There is a distinct absence of a national solution for childcare in the U.S. for children under the age of 5, though there are a variety of "First Five Years" policies being proposed [83].

At the other end of the age spectrum, due to a fundamental demographic shift in the U.S., adults aged 65 or over will soon outnumber children under the age of 18 for the first time in U.S. history [84]. According to the AARP's 2019 Valuing the Invaluable report, as of 2017 "an estimated 41 million caregivers in the United States provide 34 billion hours of unpaid care to adult loved ones", which is equivalent to $470 billion in labor assuming an average wage of $13.81 per hour [84]. Though there are some federal efforts to better support caregivers, such as the Caregiver Advise, Record, Enable (CARE) Act and the RAISE Family Caregivers Act of 2018 (Public Law 115–119), U.S. efforts related to the support and compensation of caregivers is generally characterized by a patchwork of programs at all levels of government. These efforts provide some nominal compensation for those providing informal care to disabled or elderly family members, effectively converting them into formal, or paid, caregivers, though normally at extremely low rates of pay. Some of the most robust plans are those enacted by the Department of Veterans Affairs (VA), including the VA MISSION Act (Public Law No: 115–182), which provides "eligible family caregivers with a financial stipend, training, access to health insurance, counseling, respite care, and legal and financial planning services" [85].

Compensating unpaid work would not only recognize the valuable contribution these individuals make to society, but also provide an important income to those who typically lack resources.

2.1.5. Tax Pollution and Energy, and Reduce the Effective per Capita Tax on Labor

Ecological economist Herman Daly was one of the most vocal advocates for taxing the "bads", such as non-renewable resource extraction and pollution, and reducing taxes on the "goods", such as employment. If designed well and made adaptive over time, this form of a Pigouvian tax could be revenue-neutral.

A new paper by Acemoglu et al. [86] finds that "the U.S. tax system favors excessive automation. In particular, the heavy taxation of labor and low taxes on capital encourage firms to automate more tasks and use less labor than is socially optimal". Thus, changing the calculus of a firm's investments by incentivizing employment through reducing its cost relative to capital and pollution abatement costs, would be an important component of any overhaul of the tax code.

2.1.6. Jump-Start the Economy Through Green Keynesian Spending

The development of a green Keynesian spending program, which could result from fiscal policy initiatives such as a Green New Deal [40–42], an Evergreen Action Plan [87,88], or a green infrastructure program [89], would create employment opportunities and wage income in the near term, but their long-term viability may be limited [90,91]. The main idea behind these types of interventions is to influence aggregate demand and investment in the economy through higher government expenditures and lower taxes/higher personal disposable income. In response to this strategic infusion of government funds, additional investment is expected to come from the private sector, pension funds, and other investors.

Keynes's idea of two budgets, the current budget and the capital budget, suggests that governments can run deficits in the capital budget by engaging in long-term investments where private capital fails to participate. These interventions can be funded by a surplus in the current budget as the economy reaps the benefits of higher competitiveness and wage stabilization that stem from those long-term investments and which can work as automatic stabilizers when economic conditions deteriorate. During the current global state of emergency and threat of a prolonged recession, Keynesian spending is one of the tools that governments have to support aggregate demand and restart the economy. The globally coordinated liquidity injections of all the major central banks provides an environment favorable for borrowing due to the historic low-interest rates, a situation that is likely to persist for the foreseeable future.

While the details of the various green Keynesian spending programs differ, they all focus on mitigating climate change by revolutionizing energy systems to decarbonize the economy, investing in more sustainable/resilient infrastructure systems, creating meaningful and well-paid jobs, and addressing social and environmental inequalities (what some connect with a just transition). What differs is the extent to which they also focus on issues such as regulating banks and the financial system or promoting shared ownership [42], international trade policies relating to clean energy and labor and environmental standards [87], or a specific sector such as transportation [89].

With regards to this article's focus on inequality, a critical question is whether the proposals are limited to energy-related jobs or whether their scope will impact *all* jobs in *all* economic sectors. Interestingly, the proposed U.S. Green New Deal [40] and the Evergreen Action Plan [87] reach similar recommendations to those outlined in this paper with regards to enabling strong unions and worker rights to organize and collectively bargain (see Sections 2.5.4 and 2.5.5), but they are framed through an energy-transformation lens. We believe that an inequality lens provides a more valuable economy-wide perspective since it targets change for all workers, regardless of whether they are working in a green or dirty sector of the economy.

2.1.7. Increase the Tax on Corporations and Redistribute Revenues to Individuals or Alternatively Have Government Provide the Needed Goods and Services

Many corporations and privately owned businesses pay hardly any tax when compared to the taxes employees pay relative to their income [9,92]. In parallel with progressive taxation of personal income and wealth, increasing taxes on corporations can contribute revenue towards a UBI, compensate unpaid work, and/or pay for essential goods and services. However, corporate strategies such as retaining earnings and purchasing stock for owners, which do not result in tax revenues, will need to be addressed to ensure loopholes are not exploited. Furman [93] suggests a scheme to reform the U.S. tax code that could raise revenue more equitably and in a growth-friendly manner. It is estimated that the domestic corporate taxation proposal would (efficiently) generate $1.1 trillion over the next decade in a way that does not negatively impact low-paid workers. The main components of the proposal are included in Box 1. As mentioned in Section 2.1.5, Acemoglu et al. [86] have written that the present tax code favors automation over labor.

Box 1. Furman's [93] corporate tax code proposal (p. 2).

- **Making expensing of investment costs permanent and expanding it to more categories of investment**. Applying expensing not only to equipment but also to structures and intangibles would ensure that different types of investment are not taxed at different rates. At the same time, interest deductibility for new investments would be eliminated to prevent negative rates on new investment.
- **Eliminating the tax preference for business pass-throughs**. Large businesses would be required to file as C corporations.
- **Eliminating wasteful corporate loopholes, including tax extenders**. Closing loopholes would not raise additional revenue relative to current law, but it would prevent further revenue loss and remove distortions from the tax code.
- **Expanding the tax incentive for R&D**. Increasing the alternative simplified credit rate from 14 percent to 20 percent while repealing other credits would simplify the tax code and help spur investment in R&D.
- **Raising the corporate tax rate from 21 percent to 28 percent**. This rate increase would place the U.S. on par with other advanced economies and, when combined with expensing and R&D incentives, offer a growth-increasing and welfare-enhancing reform.

2.1.8. Tax Excess Profits While Closing Tax Loopholes and Redistribute Revenues to Individuals or Alternatively Have Government Provide the Needed Goods and Services

Taxing excess profits, as an alternative to raising the general corporate tax rate, can redistribute excessive income/wealth from the owners of firms (who are profit-takers, but do not necessarily invest profits in more production) with more disposable income (and purchasing power) to workers. This measure requires a simultaneous action to close any possible accounting loopholes that corporations can use to decrease their tax liability, such as increasing their tax shield through higher interest payments, accelerated depreciation, or other allowable reductions. If planned effectively, it is expected that taxing excess profits will have a positive net effect on tax receipts. Taxes on excess profits are designed to tax the proportion of profits that were derived from some external event not of the company's making [94]. The COVID-19 pandemic could be interpreted as such an event. In addition, corporations are likely to increase their capital expenditures, effectively reinvesting part of their excess profits into production. Such ideas have recently seen a revival in the context of the corporate bailouts associated with the COVID-19 pandemic [95,96]. Alternatively, rather than redistributing income/wealth to individuals, the government could directly provide a greater safety net through the establishment of healthcare, education, housing, food, mobility, or other services (see Section 2.7).

2.1.9. Tax Corporations That Shift Production/Services/Ownership Abroad, and Redistribute to Individuals or Alternatively have Government Provide the Needed Goods and Services

Taxing corporations that shift their activities or ownership overseas not only redistributes income, but can also create more domestic production, employment, and higher wages at the cost of diminished corporate profit from economic activities abroad.

Clausing [97] suggests a scheme that would reform the taxation of multinationals to generate more investment, profit, and domestic tax revenue. Box 2 outlines several policy options that can be enacted immediately without comprehensive changes in the current tax code, as well as options to be pursued over a longer time horizon. It is estimated that these changes to the tax code would generate \$1.4 trillion over a 10-year period.

Clausing [97] also makes a compelling case for adopting a sales-based formulary apportionment approach to the taxation of multinational corporate income. Whereas companies currently account for their income and expenses in each country in which they operate, a formulary apportionment approach would tax a company based on its global income and distribute this tax to each country in proportion to the company's total percentage of global sales in each country. Such an approach is considered to reconcile the competing priorities of keeping a country, such as the U.S., internationally competitive while also protecting its corporate tax base. The implementation of such a mechanism would require policymakers to build international consensus around a reformed international corporate tax regime, which is likely to be problematic given the recent trade wars.

Box 2. Clausing's [97] corporate tax code proposal (pp. 250–251).

- Increase the corporate rate from 21 percent to 28 percent. This should raise about $700 billion over 10 years. [. . .]
- Strengthen the GILTI [global intangible low taxed income] minimum tax by either moving to a per country version at 21 percent or keeping a global version but harmonizing the rate to the U.S. rate of 28 percent. The first option is estimated to raise about $510 billion over 2021–2030.
- Reform the GILTI by removing the 10 percent exemption for returns on foreign assets. This would raise an unspecified amount of revenue.
- Repeal FDII [foreign-derived intangible income]. This will raise $170 billion over 2021–2030.

In a subsequent essay, Clausing [98] argues that technological change has been the major source of job loss, followed by declining unionization rather than trade. Arguing against protectionism and tariffs, she not only advocates reforming the corporate tax system for firms operating both here and abroad, but also encourages immigration and pathways to citizenship. Additionally, she supports decreasing government borrowing rather than trying to reduce the deficit by other means.

2.2. Broadening Worker and Citizen Ownership

Individual earning capacity can be enhanced by some combination of increasing wages and the return to capital through broadening the ownership of the economy's productive capacity. The latter can be accomplished in a number of ways, some restricted to workers, some accruing more broadly to workers and citizens, and others focusing primarily on citizens. The measures we address here are expanding worker ownership through ESOPS, changing workers and citizens into owners through the tenets of binary economics, and promoting and investing in B or Benefit corporations.

New legislation and structural changes may be required in some cases. In others, increased political will may suffice. In all cases, as discussed above, increased consumption must not compromise health, safety, and the environment, i.e., that consumption is environmentally sustainable [60].

2.2.1. Institute Worker Ownership Through ESOPS

The first employee stock ownership plan (ESOP) was implemented by Louis Kelso in 1956 with a company known as Peninsula Newspapers in Palo Alto, California. Since then, around 7000 ESOPs have been created in the U.S. as a way to broaden capital ownership. Put simply, an ESOP turns workers into worker-owners, with the advantage of creating greater labor commitment to the enterprise. It is estimated that some 2.34 million businesses are likely to sell or close in the next decade as baby boom entrepreneurs retire [99]. This "silver tsunami" presents a unique opportunity to transfer the ownership of their firms to workers through ESOPs.

2.2.2. Change Workers (and Citizens) into Owners—Through Changes in Business Ownership and Corporate Structures by Allowing them to Acquire Capital with the (Future) Earnings of Capital (Two-Factor Economics)

The ESOP is part of a much larger approach to broadening capital ownership known as binary (or two-factor) economics [100]. Through this approach, workers (and citizens more generally) acquire capital with the future earnings of capital, in much the same way that well-capitalized individuals are able to. The approach is based on the premise that if the effect of technological innovation is to both replace and vastly supplement the work of labor with increasingly productive capital, such as AI and automation, the only way to ensure that everyone benefits from this transformation is to enable workers and citizens to obtain a capital ownership stake in the job-displacing capital. Hall et al. [30] argue that "like well-capitalized people, everyone needs the competitive opportunity to acquire capital, not merely with the earnings of labor, but also increasingly with the earnings of capital". While the basic premise of the approach is clear and it could impact all citizens, since it is relatively unknown, it may take time for this intervention to gain broad support.

2.2.3. Promote and Invest in 'B or Benefit Corporations' as an Alternative Enterprise Model

Designing "next generation enterprises" is necessary to create a sustainable and equitable society [101]. A 2020 Report from The Democracy Collaborative's "Fifty by Fifty" initiative [101], recommends enterprise models that combine mission-driven employee-ownership (e.g., ESOPs) with B or benefit-corporation principles. Fifty by Fifty is an initiative focused on promoting employee ownership (specifically increasing the number of employee-owners in the U.S. from 10 million to 50 million by 2050) as a way to create a more inclusive economy. A benefit corporation rejects profit maximization as the primary lens on corporate decision-making and replaces this with a mission to create public benefit and sustainable value while minimizing negative social and environmental impacts. Converting the millions of businesses that are about to undergo an ownership transition into employee-owned benefit corporations holds the potential to shift investments from unsustainable or unnecessary economic activity to business enterprises that prioritize the planet and people alongside reasonable profits.

An interesting idea would be to provide finance for these employee-owned benefit corporations through financial institutions that also prioritize the public good. Neva Goodwin identifies credit unions and co-operative banks as avenues for constructive investment and highlights Paul Raskin's description of the ideal new economy situation:

> "Publicly controlled regional and community investment banks, supported by participatory regulatory processes, recycle social savings and tax-generated capital funds. To receive funds from these banks, capital-seeking entrepreneurs must demonstrate that their projects, in addition to financial viability, promote larger social and environmental goals"
>
> (Raskin, as cited in Goodwin [102]).

The Bank of North Dakota (BND) is a proven model of public ownership that has been in operation for 100 years, providing a positive return on assets (ROA) while prioritizing the public good and strengthening community investment. BND's ROA came in above the national average of 1.01% at 1.54% in 2014 [103]. The BND provides a local banking alternative for state funds and individual and institutional deposits. The BND invests to benefit the people of the state and, as exemplified during the 2008 financial crisis, these investments are more secure than investments with banks focused on profits [102].

2.3. Changes in the Supply of Essential Goods and Services

In addition to reshaping the ownership of the real economy, a range of proposals exist that could change the supply of essential goods and services to advance more rooted and sustainable activities and provide workers with an ability to claim a greater share of the wealth being created. Here, we focus on encouraging anchor institutions, investing in labor-intensive production and services, designing work back into production and the provision of services, encouraging the preferential design and production of essential goods and services, and limiting the importation/use of goods/services that decrease domestic employment and unnecessarily increase energy and material use. Unlike other categories of interventions, all these measures can be advanced concurrently, as explained in the final section of this paper.

2.3.1. Encourage Anchor Institutions (e.g., Hospitals, Universities, Government Agencies, Industry) to Purchase Local Goods and Services, Ideally from Employee-Owned Benefit-Corporations

So-called "anchor institutions" such as universities and hospitals can be leveraged to support local purchasing while providing jobs. Kelly and Howard [99] write that anchor work is a "sophisticated community organizing strategy". The Democracy Collaborative is putting significant energy into the building of three anchor networks in healthcare, higher education, and place-based anchor collaboratives. The healthcare anchor network is made up of 40 nonprofit hospital systems that together employ over 1 million people, spend $50 billion in goods and services, and hold $150 billion in investment assets. Representing 8.7% of U.S. GDP, hospitals and universities have incredible potential to distribute wealth locally, but it requires the slow work of changing mindsets, aligning with the multi-year contract cycle, and public investment [99].

2.3.2. Invest in Labor-Intensive Production and Services

One strategy to reverse the increasing share of GDP going to capital rather than labor, is to shift investment in, and utilization of, goods and services from capital to labor. This outcome could be achieved by shifting subsidies from capital to the utilization of labor through a revision of the tax code (see Acemoglu et al. [86] and Section 2.1.5). This approach could also be coupled with the establishment of worker-owned benefit corporations that serve anchor institutions.

2.3.3. Increase Labor's Claim on Profits from Production/Services by Designing Work Back into Production and Services

The "efficiency agenda" is relentless in its objective of achieving more with less. In a business context, this agenda has resulted in less labor being used in the production of goods or the delivery of services. Growth in labor productivity can occur through efficiency gains from enhanced worker skills/knowledge, the use of more efficient technology, or some combination of the two. In reality, it is likely that the vast majority of labor productivity gains can be attributed to shifts to more technology (or capital), which means that those who own the capital are able to claim a greater share of the wealth being created. If wages are to remain the main mechanism for distributing wealth (notwithstanding efforts to broaden capital ownership—see Section 2.2.2), specific attention needs to be paid to designing labor back into production and services. Such action, over time, is likely to increase the claim of labor on profits and labor's share of GDP.

2.3.4. Encourage the Design and Production of Essential Goods and Services (and Discourage non-Essential Production and Consumption Systems)

Identifying opportunities to shift investment from unsustainable or unnecessary economic activity to more essential goods and services is likely to be an essential component of a transition to a more sustainable economy. One strategy could be to leverage anchor institutions such as healthcare providers or institutions of higher education, or place-based anchor collaboratives more generally, to encourage the design, production, and delivery of essential goods and services (see Section 2.3.1). Another complementary approach could be to identify ways to meet the essential needs of consumers in a different way, such as through a shift away from products to product services (i.e., replace the need to purchase a private car with a comprehensive mobility service).

The COVID-19 pandemic has exposed many of the prior problems that existed with essential systems. For example, a communiqué from the International Panel of Experts on Sustainable Food Systems revealed how, in a matter of weeks, "COVID-19 has laid bare the underlying risks, fragilities, and inequities in global food systems, and pushed them close to breaking point" [104]. Thus, it is important that when responding to the pandemic, public and private entities focus on creating sustainable and resilient systems that provide essential goods and services.

Rather than adopting reforms that are premised on getting the economic system working better and changing the way markets operate, Rodrik and Stantcheva [105] put the responsibility on firms to reorganize production by internalizing externalities and changing *what is produced* and *who gets a say in these decisions*—i.e., a radical departure in the narrative of how market economies should work. While many benefit corporations and other socially and environmentally responsible business entities/cooperatives could advance such an agenda, we are less convinced that the needed scale of change would result from such an approach. Government intervention is likely to be essential.

2.3.5. Limit the Import of Goods/Services to Increase Domestic Employment and Environmental Sustainability

Prior to sustainable development, the idea of "eco-development"—ecologically sound, regional development—was gaining popularity [2]. However, with the emergence of an interconnected and globalizing economy, the concept was soon replaced by sustainable development, which advanced a more globalized agenda. Today, the ongoing trade disputes and global COVID-19 pandemic are refocusing attention on strategies that grow local production systems and employment. If combined with the principles of eco-development, the circular economy, and degrowth, such interventions could shift investment away from unsustainable or unnecessary economic activity from imports, towards more sustainable and essential goods and services produced domestically that may not be currently or adequately provided by imports.

2.4. Changes in the Nature of Demand

Changing the nature of demand involves both "bottom-up" approaches where personal preferences can be changed by cultural shifts due to education, public messaging, etc., or by "top-down" approaches where government reigns in commercial advertising embodying "producer-created demand". Alternatively, the government can shift the nature of consumption patterns and exposures to harmful substances and practices by taxing luxury goods, and other "bads", or taxing and otherwise discouraging excessive consumption from an environmental perspective [106]. Strengthening and enforcing regulations can also shape demand by ensuring prices adequately incorporate negative externalities and risk/uncertainty.

2.4.1. Educate Workers/Consumers for a Slower Growth Economy

Educating workers/consumers on the benefits of sustainable consumption, may decrease overall levels of consumption, especially with other interventions like reigning in advertising and taxing the "bads", and thus shift consumption towards more sustainable goods and services.

2.4.2. Regulate Advertising

The regulation of advertising may create less consumption overall, as well as promote more sustainable consumption of goods and services. Galbraith [107] famously coined the term "producer-created demand" whereby through advertising, supply and demand are not in fact independent entities. Advertising needs to be reined in.

2.4.3. Tax the "Bads" and Discourage Excessive Consumption

Taxing material and energy intensive (i.e., unsustainable) goods and services—or excessive consumption—needs to be part of a sustainability strategy [60]. For example, instead of rewarding high electricity/water consumers with discounts, a surcharge should be applied for their higher levels of consumption. In addition, pricing policies could be adopted whereby producers are allowed more profit by rewarding them for selling less—or providing less services—while consumers pay more for excessive or unsustainable consumption. This involves decoupling profit from production, and in the process, decoupling profit from consumption indirectly [108].

2.4.4. Strengthen Health, Safety, and Environmental Regulation

An important strategy to shape the demand of consumers, citizens, and workers for goods and services is to strengthen health, safety, and environmental regulation [106]. Adopting both the polluter pays principle [109] and the precautionary principle [110] in the design and review of regulation would be an important first step. Further, reducing the influence of cost–benefit analysis and economic considerations in establishing and enforcing regulatory standards in both the U.S. and abroad is also necessary. Regulatory targeting can also be an effective strategy to induce innovation for sustainability [2,111].

2.5. Stabilize and Secure the Workforce

Both volatility of the economy and the "sunk costs" of substantial permanent employment are increasingly important factors in destabilizing or making even permanent employment less desirable by employers. Even when using labor as a factor of production may be cheaper, employers may prefer using energy and physical capital in volatile times because workers are less "movable". This helps explain both the decrease in wages and the precariousness of employment. There are, however, interventions that can stabilize or restabilize employment.

We addressed the intervention of shortening the workweek in a prior article [112] and argued there were both positive and negative effects on total consumption, but here we will examine recent developments that have experimented with these policies. In addition, we add the following interventions: (1) Advance the coverage of U.S. labor law; (2) advance the practice of "technology bargaining" between employers and unions/workers; (3) increase unionization; (4) subsidize college loans and lower tuition to train workers for the new economy; and (5) extend and expand antitrust law and enforcement to AI and platform-based emerging industries. In the latter case, it is argued that increased labor market power, which suppresses wages and worsens working conditions, now predominates antitrust activity by firms and deserves to be reversed [113]. Because the reader may not be as familiar with these measures as those addressed earlier, we go into some detail in this section.

2.5.1. Discourage the Elimination of Jobs (~Germany's Kurzarbeit) and Supplement the Shortfall in Paid Wages during Economic Downturns

During the aftermath of the 2008 financial crisis, Germany, Austria, and several other European countries were able to leverage their 'Kurzarbeit' (short work) policies, which encourage employers to retain workers—for 6 to 18 months—during periods of economic decline. The Kurzarbeit policies can be considered as an insurance policy to protect jobs when businesses are faced with the need to make redundancies. During a period of economic decline, workers could either be put on furlough or a shorter work schedule with any shortfall in income being covered by a government fund that employers contribute to during periods of economic growth. In some cases, employees on furlough have undertaken training to enhance their skills, which could prove to be extremely helpful during a recovery period. Saez and Zucman [95] have recently raised the issue of government support for workers laid off as a result of the economic dislocations in response to the COVID-19 pandemic.

With the potential for significant growth in employee-owned benefit corporations (see Sections 2.2.1 and 2.2.3), Kurzarbeit policies could provide an essential lifeline to these organizations, which must follow more stringent social, environmental, and fiduciary responsibilities than a regular corporation. The introduction of Kurzarbeit policies could also reduce the demand for contract or contingent workers during an economic downturn.

2.5.2. Adopt a Four-Day Workweek (and Possibly Expand Employment), but Maintain Work Pay Parity

The idea of a four-day workweek is not a recent one; it has been analyzed, proposed, and critiqued by many industry professionals and scholars over the last 30 years—see [112,114,115]. One of the first academics to raise this idea was Juliet Schor in her book *The Overworked American* [116]. The premise for her argument was that despite Americans working longer hours today than they did prior to the Second World War, their relative income has been declining on an annual basis. Today, studies show that the argument for a shorter workweek is not simply a method to give people more free time, but a viable solution to partially address income inequality, mental and physical health problems related to overall wellbeing or to being overworked [117], productivity loss, and environmental damage [118]. After the 2008 financial crisis and the subsequent widening gap between low- and high-income workers, the idea of a shorter workweek has been receiving more attention due to the potential further elimination of jobs (especially lower-skilled jobs) driven by AI and computer-driven changes in the workplace. In a 2015 report entitled The New Work Order, the Foundation of Young Australians showed that 60% of young adults are currently training for jobs that will be obsolete in 10 to 15 years.

The intervention of a shorter workweek delivers equal or improved enterprise output while increasing the extent of labor participation due to the partial allocation of jobs to more people. It is also likely to result in more sustainable consumption of goods and services when coupled with other interventions. In their review of wellbeing and productivity, Isham et al. [118] showed that high physical and mental wellbeing levels result in higher levels of labor productivity. Further, findings from shorter workweek pilot programs reveal that the first reported improvement is lower stress levels among employees. Some of the most recent examples of shorter workweek pilot programs are presented in Box 3.

Box 3. Recent examples of a shorter workweek implementation.

United States: In 2008, the state of Utah ran the first and most extensive pilot of a four-day 10-h workweek in the U.S. Surveys conducted by a third party agency at the time revealed that the new four-day schedule was well-received among state workers and boosted productivity, while a majority of citizens were also found to be in favor of the program. However, after three years of implementation, in 2011, Utah reverted back to the traditional five-day eight-hour workweek based on an internal report that found mixed results from the program.

In 2004, Google offered its employees the option to pursue any projects they wished during the week using 20% of their work time, equivalent to one workday each week. Despite controversies around the impact of this idea on employees' performance and wellbeing, the goal was to provide employees with time to work on something other than their assigned tasks and become more creative and productive.

In 2016, Amazon followed a slightly different approach offering some of its employees the option of a four-day workweek, though at reduced pay with the hope of attracting more talent who value flexible working hours.

New Zealand: In 2018, the Perpetual Guardian, a 240-employee financial advisory company, reduced—for a period of 8 weeks—the workweek from 40 to 32 h, resulting in a four-day workweek, while maintaining their employees' salaries. At the end of the pilot, employee stress levels were reduced from 45% to 38%, work-life balance was reportedly significantly improved, and overall job performance was not affected by working one day less each week.

UK: In 2019, Simply Business, a private home and small business insurer was the largest UK company to launch a trial to reduce its call-center operators' workweek from five to four days without a loss in pay. Reportedly, this decision was made after consulting with other companies, such as Perpetual Guardian in New Zealand, that had already implemented this measure and were comfortable with the results.

Japan: In August 2019, Microsoft in Japan implemented a four-day workweek without a reduction in worker pay. At the end of the one-month pilot, the company reported a 40% increase in productivity, with employees taking 25% less time off during the month, while costs dropped by 23%.

Ireland: In 2016, Pursuit Marketing, a B2B telemarketing consulting firm adopted a four-day workweek without a reduction in basic salaries. The company's decision to change the workweek was based on an internal analysis that revealed employees were mostly achieving their KPIs between Monday and Thursday, and Fridays were the least productive.

2.5.3. Advance/Extend the Coverage of Labor Law to Contract and Contingent Workers and Strengthen the Reach and Enforcement of Labor Law to Workers in General

As a result of decreasing unionization and the weakening of labor law generally, workers have continuously lost ground in terms of wages, pensions, and other benefits they once received. Guy Standing has characterized contingent workers as "the precariat" [25] and interventions are required to reverse the balance of power in industrial relations.

Advance/extend the coverage of labor law to all workers: Despite the successful enactment of legislation providing protections and rights to workers during the New Deal era, the history of labor law in the U.S. has been characterized by strong opposition to the establishment of these laws, resulting in the exclusion of workers and the deteriorated ability of unions and collective bargaining mechanisms to safeguard workers' best interests. The 1935 National Labor Relations Act (NLRA) is a prime example of the aforementioned exclusions; in the NLRA, farm and domestic workers, who were predominantly African American, were excluded due to a compromise the New Dealers made with Jim Crow Southern Democrats [119–121]. Today, the list of excluded workers also includes supervisors, independent contractors, professional employees, graduate students, employees of religious institutions, and immigrant workers. An additional group of workers who are not explicitly exempted, but are effectively unprotected, are employees of subcontractors, temporary workers, and franchisees. An amendment to the statutory definitions of employment has the potential to facilitate the expansion of the provision of NLRA protections to these workers. On 10 February 2020, the U.S. House of Representatives expanded the protections offered under the NLRA by passing the Protecting the Right to Organize Act (PRO Act—H.R.2474), which adjusted the definition of independent contractors and supervisors. Under the definition of an independent contractor, in the PRO Act, more workers in the "gig-economy" would be classified as employees and be granted NLRA protections. Similarly, the misclassification of workers as supervisors would also be addressed. By departing from a more judicious definition of supervisor, employers can design work duties in ways that could prevent workers from NLRA rights. Andrias and Rogers [120] provide an example of how nurses are misclassified as supervisors because they assign tasks to nursing assistants. The same misclassification happens with manager positions. Additionally, the PRO Act amended the definition of an "employee" in order to ensure more workers are covered by existing labor law. However, the Act still has to pass the Senate, where it is expected to encounter strong opposition. The PRO Act represents one approach to expanding labor coverage and also highlights the growing support for reconsidering the current state of labor law in order to reverse the failure to hold employers accountable for failing to guarantee basic labor standards for workers.

Sectoral bargaining: In the U.S., bargaining agreements are based on the concept of a single bargaining unit, meaning that the impact of collective bargaining agreements is restricted to individual companies and workplaces. Conversely, European countries and Australia adopted sectoral bargaining, which enables governments to extend the bargaining agreements' terms to non-unionized workplaces [122]. Although sectoral bargaining can lack the flexibility needed to address employer-specific matters [123], it presents an effective way to cover workers who are currently unprotected by labor law. It would also be a better fit to address the challenges posed by the current fissured workplace [124], where firms driven by capital markets (i.e., short-term financial pressures, cost reduction) are strongly encouraged to shed employment to outside contractors, franchises, and suppliers. The idea of sectoral bargaining is supported by key actors in the labor movement, as demonstrated by the fact that it has the stated support of the Service Employees International Union (SEIU) and the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO). Andrias and Rogers [120] have also proposed that Congress encourage sectoral bargaining by empowering "the Department of Labor to set wages and minimum terms" and by extending the limited rights that the NLRA provides to workers to "organize, collectively bargain, strike, and strike at the sectoral level".

2.5.4. Strengthen Unions and Encourage Collective Bargaining

Strengthening unions and encouraging collective bargaining would improve wages for both union and non-union workers and result in increases in disposable income. Proposed solutions include reducing employer opposition to unionization, making it easier for workers to organize and bargain collectively, the creation of wage boards, repealing "right-to-work" laws, and implementing a codetermination system with work councils.

Reduce employer opposition to workers' organization: The rules administered by the National Labor Relations Board (NLRB) have shown the inability of the NLRB to protect the rights of workers to organize and to prevent employers from engaging in unfair labor practices. Between 2016 and 2017, two out of five union campaigns charged employers with violating federal law [125]. At this point, minimal monetary penalties and fines only require employers to post notices of infractions in the workplace. These modest penalties are not sufficient deterrents to prevent employers from violating federal law. One of the tools that employers can use to discourage workers from organizing is the concurrent use of anti-union campaigns in the workplace and denying union members access to the facility. A conservative estimate found that between 2014 and 2018, employers spent $340 million a year to hire consultants to advise them on how to undermine unionization [125]. Although the current rules provide employers with an advantage over workers who wish to unionize and collectively bargain, taking measures to reduce employers' opposition to unionization and to make it easier for workers to organize is possible through the enactment of legislation that amends the rules that govern the NLRB process. It is important to recognize that throughout history, U.S. labor efforts have been successful when workers have leveraged the system of government for their benefit, but not when the administration in power was hostile to their concerns [126]. See Clausing [98] for her commentary advocating trade, unionization, and immigration.

Wage boards: Over the last four decades, workers in the U.S. have not benefited economically from higher productivity. As wages stagnated, the productivity–wage gap widened due to a deliberate reversal of a social contract that had been established in the 1950s. Had wages kept growing in tandem with productivity, the current minimum wage would be $24 per hour [127], far exceeding the current federal minimum wage of $7.25 per hour, or the state and city with the highest minimum wages in the country—Washington at $13.50 and Seattle at $15.45. In order to get U.S. wages on par with livable wages, the experience of New York State provides an illustrative example of how wage boards can improve wages within the context of the U.S. economy and labor law system.

Wage boards consist of representatives of the public, labor, and business that come together to set minimum standards (i.e., wages and benefits) for jobs in different sectors and regions [128]. Currently, five states in the U.S. have legislation that allows the creation of wage boards (Arizona, Colorado, California, New Jersey, and New York), but in order to implement them at the national level, changes in U.S. federal law would be necessary [129]. In 2015, the NY state labor commissioner found that wages for fast food workers were deficient, which led the New York Governor to empanel a tripartite Fast Food Wage Board (FFWB). The FFWB Report [130] found that fast food workers did not have any health benefits and that wages in New York State corresponded to poverty levels among the workers that would make them eligible for public assistance programs. Therefore, the FFWB established that an hourly rate of $15 in the State of New York met labor law requirements. The biggest success of the FFWB in New York is that it was able to increase the minimum wage not only for fast-food workers, but for all workers in New York. The FFWB also set a wage floor, which is a useful tool for preventing the suppression of wages by employers [131,132].

Considering that the number of workers represented by a union "is now well less than half where it was 40 years ago" covering 11.7% of workers (16.4 million) [133], the creation of wage boards can encourage workers to work together and organize. Additionally, the ability of wage boards to set new standards that can be applied across an industry (or a state), provides an effective way to cover workers who are spread across the economy in new alternative and contingent work arrangements, where they are likely to be unprotected by labor law.

Repeal Right-to-Work laws and expand funding sources for workers' organizations: The Taft-Hartley Act of 1947, amended the NLRA of 1935. Perhaps one of the most significant changes under this Act was related to Right-to-Work (RTW) legislation. RTW laws granted states the right to allow unionized companies to extend the benefits of union contracts to all employees without compelling those employees to pay any union dues, effectively hindering unions' ability to fund their efforts and creating a "free-rider" phenomenon by forcing the union to represent paying and non-paying workers equally. A total of 27 states and Guam have passed RTW laws. Although the impact of these laws on the decline in union density remains inconclusive [134,135], RTW laws have been found to constrain the financial effectiveness of unions. In order to enhance unions' financial stability, changes in legislation to address RTW laws and unions' sources of funding are necessary. By amending federal legislation that supersedes RTW laws, unions can collect the dues needed to cover the basic costs of representation (known as the "fair share" fee) and prevent the free-rider problem, as recommended by the PRO Act. Changing some rules can also improve unions' finances. Block and Sachs [136] have proposed changes in the law to allow working organizations to get funding from government, tax-exempt philanthropic and individual gifts, and training programs that are financed by the Department of Labor rather than by employers, which is how they are currently financed. However, the future of this Act is uncertain because it is considered dead on arrival in the Republican-led Senate. According to the Chairman on Health, Education, Labor, and Pensions, this act will not be considered until the following session and the White House released a statement threatening to veto this legislation on 5 February 2020.

Codetermination and work councils: Codetermination is "a system in which workers have the ability to elect members to the company's corporate board, giving them a voice in the company's high-level decision-making" [137]. Once workers' representatives are elected, these work councils are meant to serve as a vehicle to register concerns and resolve disputes with management, even in workplaces that are not union organized. Germany has adopted a two-tier system that enables workers to participate in the decisions made by a firm through work councils ("Betriebsrat") and supervisory boards ("Aufsichtsrat"). The work council provides workers with an actual say on "shop-floor" level issues (e.g., working conditions, scheduling, layoffs) and the supervisory board, composed of shareholders and workers' representatives, can influence issues such as executive compensation, appointment of management board members, supervising operations, and large investments. Thus, work councils can act as a vehicle to democratize the workplace.

A recent statement by the *DemocratizingWork* initiative, signed by over 3000 researchers from 650 universities, calls for the strengthening of work councils and the different forms of codetermination ("mitbestimmung") put in place after World War II [138]. Further, a recent poll found strong support for work councils and codetermination among workers who also expressed a significant power imbalance in relation to their employers [139]. This aligns with the fact that U.S. workers wish to have an actual say on core business strategies (such as the quality of goods and services provided by a firm, employer values, and the adoption, and potential impact, that new technologies can have on jobs) and not only on wages, working conditions, and benefits [140]. This shared-governance system is attractive because it does not have a high price tag and it is free-market-esque in nature, as no government officials are involved [141]. Also, giving workers a seat on the board can be viewed as a vehicle for wealth redistribution and it represents a shift from shareholder to stakeholder capitalism. This commitment to stakeholders was supported in August 2019 by a statement issued by the Business Roundtable redefining the purpose of a corporation. When adopting codetermination, a few key details need to be considered. For instance, work councils should be mandated rather than being voluntary because these committees are likely to stop operating in times of hardship [142]. Work councils should also not be viewed as a replacement for unions and collective bargaining, but rather a complement that allows firm-level matters to be addressed [142].

2.5.5. Encourage Technology Bargaining with Unions in Negotiations before Introducing New Technology

Encouraging technology bargaining with unions before a new technology is introduced both strengthens and expands the substance of bargaining and lessens the possibility of unnecessary displacement and lowering of wages of workers. American labor law distinguishes *mandatory* from *permissive* subjects of collective bargaining. Under present law, management may substitute energy and physical capital for workers in their operations; they need bargain with labor only about the effects (e.g., worker displacement) of their decision, usually after implementation. While labor law has not changed in this regard for decades (see Ashford and Ayers [143]), the introduction of AI and computer-driven changes make the issue even more important today. The labor share of profit has significantly decreased as of late [144]. In contrast, technology bargaining in parts of Europe, especially Scandinavia, continues to exist, although polarization of labor skills has had a negative effect on unionization [145]. Tech-savvy workers tend to be less sympathetic to unionization.

2.5.6. Train Workers for The New Digital Economy

The idea of training workers for the new digital economy dominates much of the discussion in the Future of Work initiatives referenced in the introductory section of this paper. While we do not deny its importance, we regard it as a supplementary measure and not one that deserves the attention it has received compared to other measures discussed in this paper, and which are not addressed sufficiently in the Future of Work discussions.

2.6. Extend and Expand Antitrust Law and Enforcement to Diminish Corporate Influence; Reduce the Dominance of Winner-Takes-All Firms

Extending and enforcing antitrust law has the potential to increase labor's share of GDP, as well as wages, through restructuring producer/supplier sectors. Autor et al. [144,146] have documented the rise of winner-takes-all or "superstar" firms across six major sectors of the economy—i.e., manufacturing, retail trade, wholesale trade, services, utilities and transportation, and finance. The result of these trends is that the monopoly or oligopoly power of these firms enables them to stifle competition, influence government power influence, and shape ideology. See also Azar et al. [113] and Zucman and Saez [9].

The labor share of profits from the mid-1980s to 2010 has fallen significantly in the U.S. and other countries [17] (see also Hemphill [147], Acemoglu and Restrepo [28], Weir [148], and Korinek and Stiglitz [149]). Autor et al. [146] attribute this greater concentration to greater productivity and innovation, rather than to significant (traditional) anti-competitive behavior. This does, however, reinforce the view that industrial dominance deserves a more central concern in antitrust law.

2.7. Subsidize Healthcare, Education, Housing, Food, and Mobility, as Well as Other Essential Goods and Services (Such as Access to Communication Technologies), thus Increasing the Social Safety Net

Expanding the government-supplied safety net is an alternative to increasing individual purchasing power in the market for essential goods and services, such as healthcare, education, housing, food, and mobility. While this may conjure up ideas of "big brother" and socialism, leaving the purchasing of essential goods and services to individuals who may be greatly influenced by producer-created demand [150] (see Section 2.4.2), may not result in the best outcomes for themselves or their families. One idea that gained traction among some of the candidates for the Democratic Presidential primary was to provide free college tuition, paid from increased taxes on the wealthy or corporations. If the interventions intended to directly increase income (see Sections 2.1 and 2.2) prove difficult to implement, expanding the government-supplied safety net would be an appropriate alternative or complementary approach.

2.8. Change the Nature of Government Deficit Spending from Supporting Military Activities to Providing Essential Goods and Services, Instead of Increasing Individual Purchasing Power/Disposable Income Through Discretionary Spending

Opponents of increasing social benefits, such as UBI, healthcare, environmental protection, etc., argue that doing so would increase deficit spending and hence are not viable. Aside from challenging this notion because the social benefits from education and healthcare may well exceed the expenditures needed, this intervention addresses the issue of increasing the resulting government deficit for social benefits while decreasing and deliberately down-scaling at least some unproductive and unnecessary military expenditures.

The U.S. federal budget consists of mandatory expenditures (e.g., Medicare and Social Security) and discretionary spending for defense, cabinet departments (e.g., the Justice Department), agencies, and interest payments on the national debt. Mandatory programs require about two-thirds of the federal budget. State and local governments spend an additional amount, about as large as the federal government. President Trump requested $1.485 trillion for Fiscal Year 2021, of which the Department of Defense was allocated $636.4 billion [151] (Box 4). To this amount, another $69 billion should be added to pay for the War on Terror, which includes military operations in Iraq, Syria, and Afghanistan [151]. A further $228 billion should then be added for the five defense-related agencies: The FBI, Cybersecurity under the Justice Department, the National Security Administration under the Energy Department, Homeland Security, Veterans Affairs, and the State Department.

Box 4. Trump's FY 2021 discretionary budget request (in billions) [151].

Department	Budget
Dept. of Defense (DoD)	$636.4
Dept. of Health and Human Services (HHS)	$96.4
Dept. of Education (DoE)	$66.6
Veteran Affairs (VA)	$105.0
Dept. of Homeland Security (DHS)	$49.7
Dept. of Energy	$35.4
Dept. of Housing and Urban Development (HUD)	$47.9
State Dept.	$44.1
National Aeronautics and Space Administration (NASA)	$25.2

The U.S. military budget is greater than those of the next seven largest foreign spenders combined. Defense spending creates half the number of jobs per dollar as education, and two-thirds the number created by clean energy and healthcare, all with arguably greater social benefit. Obviously, a shift from military spending to social programs should be subjected to a national debate, but the benefits are clear.

Shifting the nature of government deficit spending from military operations to social programs may well be preferred where other policies and interventions discussed earlier might find too much political and economic resistance.

2.9. Suspend and/or Restructure Debt from Emerging and Developing Economies

The financial crisis brought about by the COVID-19 pandemic has raised challenges related to deficits and debt, especially, although not exclusively, among emerging and developing economies [152,153]. Among developmental economists [152,154] there is a call for the suspension and restructuring (a partial debt default) of external debt payments, which we believe would be an important component of any effort to reduce inequality between countries.

3. Discussion

Table 1 summarizes the interventions explored in this article and estimates (1) the timeframe over which interventions would first be implemented, (2) who is likely to support or resist an intervention, and (3) the likely impacts that each intervention might have. In many cases, it is possible to argue an intervention could have both positive and negative support from government (given a particular political party), society, and business. Where a range of possible positions exist for the feasibility or impacts of an intervention, we made an estimate based on our perception of the most likely or dominant position. In some cases, support and resistance can co-exist in the same group of stakeholders. It is also possible that positions will evolve over time as more people understand a particular intervention/idea or a nation's dominant political party changes. Notwithstanding these dynamics, the bolded text in Table 1 highlights the 16 interventions below that we consider to be implementable in many developed economies. Figure A1 in Appendix A aligns the same set of interventions with the 17 SDGs. This table reveals the challenges that may arise when trying to implement a specific intervention. We have argued throughout this article that any interventions that focus on growing the economy, must also be accompanied by those that offset the resulting compromises to health, safety, and the environment from increasing unsustainable consumption. Thus, Figure A1 highlights where preventative actions/policies may be needed to minimize any tradeoffs that may exist among the SDGs. It is also important to acknowledge that the COVID-19 pandemic has setback the ability of nations to achieve the SDGs [52].

Short-term (1–3 years)

1. Increase the minimum wage (*potential negative impact on SDG 12*);
2. Progressive changes in personal income tax (*potential negative impact on SDG 12*);
3. Tax corporations that shift production abroad and redistribute (*potential negative impact on SDG 8 and 12*).

Short- to Medium-term (1 to 8 years)

4. Strengthen health, safety, and environmental regulation (*potential negative impact on SDG 10*);
5. Adopt a four-day workweek;
6. Suspend and/or restructure debt from emerging and developing economies.

Medium-term (4–8 years)

7. Pay those doing unpaid work (*potential negative impact on SDG 12*);
8. Tax pollution and energy; reduce tax on labor (swapping the sources of tax revenue);
9. Discourage the elimination of jobs/supplement wages during downturns;
10. Train workers for the New Digital Economy;
11. Extend and expand antitrust law;
12. Subsidize education, healthcare, housing, food, and mobility.

Short- to Long-term (1 to 8+ years)

13. Keynesian spending (~Green New Deal);
14. Promote and Invest in B or Benefit Corporations;
15. Encourage anchor institutions.

Long-term (8+ years)

16. Change the nature of government deficit spending.

The above list of 16 interventions indicates the complexity faced when trying to develop a portfolio of interventions to address inequality. First, the timeframes over which an intervention may first be implemented vary, which means attention needs to be paid to who is benefiting from a reduction in inequality (e.g., workers, unpaid workers, citizens, etc.) and whether additional measures are needed to support groups who are not benefiting. Second, a number of interventions may also undermine goals such as promoting sustainable production and consumption (SDG 12) or reducing inequality (SDG 10). For example, any increase in an individual's income (purchasing power) is likely to result in higher levels of consumptions (undermining SDG 10), all else being equal. Thus, additional interventions will be needed to change the nature of demand and grow the supply of sustainable goods and services. Such a strategy would benefit from "de-constructing" growth [108], with attention being paid to where to grow versus degrow the economy. Alternatively, strengthened regulations may increase the price of essential goods and services, offsetting gains in reducing inequality (undermining SDG 10). Thus, creating a portfolio of interventions that pays attention to and addresses the trade-offs that exist between approaches is important. Finally, several of the more transformative interventions—such as implementing a Green New Deal, growing the proportion of benefit corporations in the economy, building anchor networks, and/or reformulating government deficit spending—may only be realized over the long-term. This timeframe may span across political administrations, revealing the importance of working to find consensus on a desired portfolio of interventions.

The following sections take a closer look at the comparative analysis in Table 1 and Figure A1 for each of the nine categories of change and highlight the interventions that are most likely to address inequality for all citizens and create a foundation from which aggressive sustainability programs can be built.

3.1. Income and Wealth Transfers

In the short run, increasing the minimum wage (perhaps, most likely at the municipal or state level), establishing progressive taxation of personal income or wealth, increasing the corporate tax rate, and taxing U.S. corporate activity abroad are likely to have political and societal support, but these interventions would also meet significant resistance from the business sector.

In the medium-term, paying those doing unpaid work and switching from taxing labor to taxing pollution would appear to have traction, while providing a universal basic income/negative income tax would likely take longer—over the medium- to long-term. The business sector is likely to resist these interventions and the political system (government) is unlikely to be universally enthusiastic. Keynesian spending could well be implemented from the short- to long-term with some governments and businesses being supportive, and others resistant.

Taxing excess profits would be a long-term intervention and unlikely to garner business and government support.

When looking at the SDGs, those interventions that would increase disposable income (directly impacting SDG 1, 2, 3, 8, and 10) could also undermine efforts to advance sustainable production and consumption (SDG 12), without other interventions designed to change purchasing behaviors. SDG 8 aims for continued global GDP annual growth of ~3% per year, likely contradicting several other SDGs, e.g., SDG 12 and 13 [155]. Thus, degrowth scenarios [7,156] need to be considered as well in crafting a socio-ecological transformation. A similar observation was found by Pradhan et al. [157]. The two possible exceptions are green Keynesian spending (e.g., a Green New Deal) and swapping the source of tax revenue from labor to pollution, which should directly impact production and consumption systems (SDG 12) as well as the other environmental goals (SDG 6, 7, 13, 14, and 15). While a Green New Deal could impact all of the economic SDGs and make infrastructure more resilient (SDG 11), changing the source of tax revenue would primarily target environmental outcomes.

Table 1. Summary of potential interventions.

Intervention	Timeframe	Feasibility			Impacts		
		Political	Societal	Business	Inequality	Env.	Social
INCOME & WEALTH TRANSFERS							
Increase the minimum wage	Short	+	++	−−	+	−	+
Universal basic income/negative income tax	Medium-Long	−	+	−	++	−	++
Progressive changes in personal income tax	Short	+	++	0	++	−	++
Progressive changes in the taxation of wealth	Short	−	+	−	+	0	+
Pay those doing unpaid work	Medium	+	++	+	++	−	++
Tax pollution and energy; reduce tax on labor (swapping the sources of tax revenue)	Medium	+/−	+	−−	+	++	+
Keynesian spending (~Green New Deal)	Short to Long	+/−	+	+	+	++	+
Increase corporate tax and redistribute	Short	−	++	−−	++	0	++
Tax excess profits while closing loopholes and redistribute	Medium-Long	−	++	−−	++	0	++
Tax corporations that shift production abroad and redistribute	Short	+	++	−−	++	+/0	++
BROADENING WORKER & CITIZEN OWNERSHIP							
Institute worker ownership through ESOPS	Medium-Long	0	+	−−	+	0	+
Change workers (and citizens) into owners	Long	−−	+	−	++	0	+
Promote and Invest in B or Benefit Corporations	Short to Long	+	+	+	+	+	++
CHANGES IN THE SUPPLY OF ESSENTIAL GOODS & SERVICES							
Encourage anchor institutions	Short to Long	+	+	+/−	+	0	+
Invest in labor-intensive production & services	Medium-Long	−	+	−−	+	0	+

Table 1. *Cont.*

Intervention	Timeframe	Feasibility			Impacts		
		Political	Societal	Business	Inequality	Env.	Social
Design work back into production and services	Long	0	+	−−	+	0	+
Encourage the sustainable design/production of essential goods and services	Medium	−	+	−−	+	++	+
Limit the import of goods/services to increase domestic employment and environmental sustainability	Medium	−	0	−−	+	++	+
CHANGE THE NATURE OF DEMAND							
Educate workers/consumers for a slower growth economy	Medium-Long	−	+/−	−−	+	++	+
Regulate advertising	Medium	−	+	−−	0	+	+
Tax the "bads" and discourage excessive consumption	Medium-Long	−	−	−−	0	++	+
Strengthen health, safety, and environmental regulation	Short-Medium	+	++	−−	++	++	++
STABILIZE & SECURE THE WORKFORCE							
Discourage the elimination of jobs/supplement wages during downturns	Medium	+	++	−	+	0	+
Adopt a four-day workweek	Short-Medium	+/−	+	−−	+	0	0
Advance/extend the coverage of labor law	Short	−	+	−−	+	0	+
Strengthen unions and encourage collective bargaining	Medium-Long	−	+	−−	+	0	+
Encourage technology bargaining	Medium-Long	−	+	−−	+	0	+
Train workers for the New Digital Economy	Medium	+	+	+	+	0	+
EXTEND & EXPAND ANTITRUST LAW	Medium	+	+	−−	0	0	+
SUBSIDIZE EDUCATION, HEALTH CARE, HOUSING, FOOD, & MOBILITY	Medium	+/−	+	-	+	0	+
CHANGE THE NATURE OF GOVERNMENT DEFICIT SPENDING	Long	+/−	++	+/-	++	+	++
SUSPEND &/OR RESTRUCTURE DEBT FROM EMERGING & DEVELOPING ECONOMIES	Short-Medium	+/−	++	−−	++	0	++

Key: The bolded text highlights the interventions that are considered to be implementable in many developed nations. ++ Extremely Positive; + Positive; 0 neutral; − Negative; −− Extremely Negative. Short = 1–3 years; Medium = 4–8 years; Long = 8+ years.

3.2. Broadening Worker and Citizen Ownership

Instituting worker ownership through ESOPs is a medium to long-term intervention and could receive societal endorsement but is likely to be met with significant business resistance. Attention should also be given to dispelling the myth that ESOPs are established to rescue failing companies [158]. While this may have been the case for a handful of companies during the 1980s and early 1990s, ESOPs now present a competitive option for owners looking to retire and pass on their businesses to their employees [159]. The COVID-19 pandemic may generate additional interest in this form of legacy planning. Promoting and investing in B or Benefit Corporations could receive support over the short- to long-term from all quarters because of its strong social mission, but is most likely to be successful in regions and cultures that prioritize the community over the individual. Changing workers and citizens into owners through the democratizing mechanism of binary economics is likely to be a long-term prospect, if at all, primarily because it is not well-understood by its potential beneficiaries. However, it is the only intervention in this category that could benefit all citizens.

While all three interventions could increase incomes (SDG 10) and stimulate economic development (SDG 8), B Corporations could also promote regionally sound production and consumption systems (SDG 12). It is also possible to envision a binary economics approach that could finance a closed-loop economy [30], but the mechanism of how to restrain the spending of capital income on the inherently sustainable goods and services financed by the approach requires further research. The analysis in Figure A1 assumes that that spending would not be constrained.

3.3. Changes in the Supply of Essential Goods and Services

Encouraging the sustainable design and production of essential goods and services—which would contribute to a circular economy—and limiting the import of those goods and services that are either unsustainable or are job-displacing are medium-term interventions supported by ecological economists and labor unions. However, they are likely to receive resistance by government and businesses that want to continue producing (and selling) in the same old way. In contrast, society is likely to support these measures.

Investing in labor-intensive production and services and designing work back into the production and services systems are medium- to long-term interventions, long advocated by ecological economists and worker organizations, but not on the radar of government and business. Encouraging anchor institutions is likewise an under-appreciated medium- to long-term intervention and requires considerable cultural change to bring it into governmental focus, except in specific geographical areas. Limiting the import of goods and services (by changing trade practices) in order to safeguard employment and promote the consumption of more sustainable goods and services, is likely to be opposed by importers, but supported by domestic providers.

In this category of interventions, promoting the sustainable design and production of essential goods and services is likely to positively impact a majority of the social (2, 3, and 8) and environmental (12, 13, and 15) SDGs. In contrast, efforts to invest in labor-intensive production and services or design work back into these activities could increase or expand opportunities for labor income, and, hence, grow consumption undermining SDG 12. This observation reveals the need for a portfolio of interventions that could shift consumer demand towards more sustainable purchasing, the subject of the next section. Finally, limiting the import of goods and services through trade mechanisms may present a challenge for efforts to strengthen global partnerships (SDG 17).

3.4. Changes in the Nature of Demand

Educating workers and consumers for a slower-growth economy is essential to achieving an environmentally sustainable society. Notwithstanding its positive effect on the environment, such an intervention would be resisted by both business and the political system that are committed to increasing rates of economic growth. Reigning in advertising through regulation is an intervention favored by ecological economists to dampen consumer demand and contribute to slower economic growth, but business (and governmental) resistance is significant, which makes it, at best, a medium-term intervention. The economic system is premised on making more and selling more. Taxing the "bads" and discouraging excessive consumption, as well as educating workers and consumers for the future economy that cannot sustain continuous and large rates of growth, requires medium- to long-term efforts to enact what is a cultural, as well as an economic, shift.

A more immediate way to change the nature of what is available to satisfy the demands of consumers, citizens, and workers is to strengthen health, safety, and environmental regulation [106] (see Section 2.4.4). Regulatory targeting to achieve greater degrees of sustainability is essential [2].

Changing the nature of demand away from unsustainable goods and services and intentionally slowing growth, without compensating for the loss of income, could undermine the growth agenda (SDG 8) and impact efforts to reduce inequality (SDG 10). However, all the interventions in this category would have a potent impact on advancing the environmental SDGs (6, 7, 12, 13, 14, and 15). The national adoption and implementation of initiatives to advance the SDGs by all countries are also needed to avoid disparities amongst nations and ensure universal agreement. However, the interventions adopted by each nation to achieve the SDGs will certainly vary, highlighting the need for a comprehensive understanding of the potential policy interventions.

3.5. Stabilize and Secure the Workforce

Perhaps the greatest immediate and short-term need in stabilizing and securing the workforce is to advance and extend the coverage of labor law, which does not currently adequately protect contingent workers and has been weakened significantly over the last 40 years. Similarly, the inadequacy of unemployment insurance has been revealed during the current crisis in providing an incentive for employers to layoff rather than retain workers in order to allow employees the maximum benefit. The massive loss of jobs, workers' concerns for safer working conditions, and the economic uncertainty caused by the COVID-19 pandemic, have created a unique opportunity to rethink how the workforce can regain its voice and power in the economy [136,160].

In the short- to medium-term, adopting a four-day workweek with no loss of pay is increasingly being advocated and is likely to be adopted voluntarily and sporadically in the U.S. It is more likely to be widely adopted in parts of Europe before being adopted broadly in the U.S. In the medium- to long-term, strengthening unions and encouraging collective bargaining is needed, in parallel with strengthening labor law. Over the same time period, collective bargaining could be extended to include technology bargaining, but tech-savvy workers are not inclined to favor unionization, but there could be a cultural shift in their attitudes.

Much of the future-of-work initiatives seem to take large-scale technological changes such as AI as a given and argue for training and upskilling workers as a medium-term imperative [22]. This paper calls this solution into question in the face of increasingly precarious employment, both because it is a relatively inadequate and ineffective intervention and because it will take a long time to effectuate. Stabilizing the insecurity of employment could be aided by the medium-term intervention of prohibiting the elimination of jobs through collective bargaining and/or adopting labor/social security law reform that provides for supplementing wages during economic downturns.

All of the interventions in this category would have a direct impact on SDG 8, especially with regard to creating inclusive decent work for all and could reduce inequality (SDG 10). In addition, efforts to advance the coverage of labor law and strengthen unions would also advance efforts to "build effective, accountable and inclusive institutions" (SDG 16). Finally, adopting interventions such as a four-day work week could promote healthy lives (SDG 3) and open up opportunities for lifelong learning (SDG 4).

3.6. Extend and Expand Antitrust Law

The shift to a greater concentration of firms in manufacturing reinforces the view that industrial dominance deserves a more central concern in antitrust law. Changes in antitrust law and enforcement are likely to require time, so these changes might occur over the medium-term. These interventions support the SDGs relating an inclusive (SDG 8) and equitable (SDG 10) economy, supported by institutions that advance justice for all (SDG 16).

3.7. Subsidize Healthcare, Education, Housing, Food, and Mobility

In the medium-term, expanding the government-supplied safety net is an alternative to increasing individual purchasing power in the market for essential goods and services, such as education (SDG 4), food (SDG 2), healthcare (SDG 3), housing (SDG 11), and mobility (e.g., SDG 3, 9, and 11). Government-supplied goods and services may be more efficient and less wasteful than leaving consumption decisions about essential goods and services to the vagaries of insufficient knowledge and the influence of advertising.

3.8. Change the Nature of Government Deficit Spending

Much resistance to providing more purchasing power to citizens through wealth and income transfers, or alternatively have government subsidize healthcare, education, housing, food, and mobility comes from concerns about increasing the deficit. The U.S. military budget is greater than those of the next seven largest foreign spenders combined. Defense spending creates half the number of jobs per dollar as education, and two-thirds the number created by clean energy and healthcare, all with arguably greater social benefit. A shift from military spending to social programs should be subjected to a national debate and is a long-term solution, but the benefits are clear. Such a shift in spending could also promote SDG 16 that focuses on creating peaceful societies.

3.9. Suspend and/or Restructure Debt from Emerging and Developing Economies

While the interventions discussed in Sections 3.1–3.8 pertain to initiatives that all countries could initially adopt, emerging and developing economies are under extremely burdensome external debt exacerbated by the COVID-19 pandemic. These dire circumstances call for debt forgiveness and restructuring [152–154]. Given the more national focus of the other interventions, this intervention and SDG 10 are perhaps the only ones that require global cooperation and partnerships (SDG 17).

3.10. Constructing a Portfolio of Interventions

The selection of a portfolio of interventions to fully address worker and citizen inequality is likely to vary across regions/nations given the different socio-economic, institutional, and political contexts. While we have highlighted 16 interventions that we believe are implementable primarily in the U.S. and EU, those not selected also need consideration when developing a strategy to reduce inequality in a particular location.

The following factors need to be considered when developing a portfolio of interventions:

(1) The scope of each intervention—e.g., does it target a specific group of individuals such as those who undertake unpaid work, or will it benefit all citizens?
(2) The timeframes over which each intervention would be adopted and how these may impact the incomes of different groups.
(3) The strategies that may need to be undertaken to overcome any political, business, societal, and/or worker resistance to a selected intervention.
(4) How the interventions interact or complement one another to ensure that, for example, increased purchasing power does not promote unsustainable production and consumption.
(5) How the interventions could advance the SDGs, paying attention to what other programs may be needed to realize the larger sustainable development agenda.

In constructing a portfolio with wider impacts, care must be taken not to sacrifice potential improvements in inequality by increasing competitiveness and private-sector profiteering or adopting narrowly conceived environmental initiatives. It is possible to improve the economy and environment by the judicious choice of interventions that reward sustainable economic activity and use government deficit/reallocated military spending to achieve environmental and social goals.

4. Conclusions

This paper outlines a broad range of interventions that should be considered as an important foundational first step in moving beyond the COVID-19 pandemic and towards sustainability. These interventions hold the potential to increase earning capacity, reduce inequality, improve access to essential goods and services, and protect and improve the environment. Increasing the disposable income of the least advantaged members of society will increase the possibility of environmentally harmful consumption. This concern is why we emphasize that any intervention focused on growing the economy, must also be accompanied by interventions that offset the resulting compromises to health, safety, and the environment. Reducing inequality and improving the environment must be addressed together. Our analysis outlines potential pathways for change that may require serious adjustments in governmental and enlightened business leadership before they can be implemented. Solutions and improvements to the current inequality and environmental crises do exist, but they may not be applied in a timely fashion to avoid continuing and worsening problems. It is hoped that this paper facilitates a change in thinking and a change in action. This is especially important at a time when worldwide exposure to the Coronavirus has challenged and compromised expectations for employment, economic and social stability, and growth. There is a real danger that the way governments choose to address the COVID-19 pandemic will exacerbate fundamental inequalities and further entrench market capitalism as the dominant world model, compromising sustainable development at its core.

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Appendix A

Table A1. Recommendations from Stiglitz [4] "Rewriting the Rules for the American Economy: An Agenda for Growth and Shared Prosperity" (pp. 8–9) on how to address inequality, but not the environment.

TAMING THE TOP	GROWING THE MIDDLE
FIX THE FINANCIAL SECTOR • End "too big to fail" by imposing additional capital surcharges on systemically risky financial institutions and breaking up firms for which credible plans to liquidate a failed institution are not possible. • Better regulate the shadow banking sector. • Bring greater transparency to all financial markets by requiring all alternative asset managers to publicly disclose holdings, returns, and fee structures. • Reduce credit and debit card fees through improved regulation of card providers and enhanced competition. • Enforce existing rules with stricter penalties for companies and corporate officials that break the law. • Reform Federal Reserve governance to reduce conflicts of interest and institute more open and accountable elections. INCENTIVIZE LONG-TERM BUSINESS GROWTH • Restructure CEO pay by closing the performance-pay tax loophole and increasing transparency on the size of compensation packages relative to performance and median worker pay and on the dilution as a result of grants of stock options. • Enact a financial transaction tax to reduce short-term trading and encourage more productive long-term investment. • Empower long-term stakeholders through the tax code, the use of so-called "loyalty shares," and greater accountability for managers of retirement funds. MAKE MARKETS COMPETITIVE • Restore balance to intellectual property rights to encourage innovation and entrepreneurship. • Restore balance to global trade agreements by ensuring investor protections are not prioritized above protections on the environment and labor and increasing transparency in the negotiation process. • Control healthcare costs by allowing government bargaining over drug prices. • Expand a variant of chapter 11 bankruptcy to homeowners and student borrowers. REBALANCE THE TAX AND TRANSFER SYSTEM • Raise the top marginal rate by converting all reductions to tax credits and limiting the use of credits. • Raise taxes on capital gains and dividends. • Encourage U.S. investment by taxing corporations on global income and removing tax biases privileging offshore investment. • Tax undesirable behavior such as short-term trading or polluting and eliminate corporate welfare and other tax expenditures that foster inefficiency and inequality.	MAKE FULL EMPLOYMENT THE GOAL • Reform monetary policy to give higher priority to full employment. • Reinvigorate public investment to lay the foundation for long-term economic performance and job growth. • Invest in large-scale infrastructure renovation with a 10-year campaign to make the U.S. a world infrastructure innovation, manufacturing, and jobs leader. • Expand public transportation to promote equal access to jobs and opportunity. EMPOWER WORKERS • Strengthen workers' right to bargain by easing legal barriers to unionization, imposing stricter penalties on illegal anti-union intimidation tactics, and amending laws to reflect the changing workplace. • Have government set the standards by attaching strong pro-worker stipulations to its contracts and development subsidies. • Increase funding for enforcement and raise penalties for violating labor standards. • Raise the nationwide minimum wage and increase the salary threshold for overtime pay. EXPAND ACCESS TO LABOR MARKETS AND OPPORTUNITIES FOR ADVANCEMENT • Reform the criminal justice system to reduce incarceration rates and related financial burdens for the poor. • Reform immigration law to provide a pathway to citizenship for undocumented workers. • Legislate universal paid sick and family leave. • Subsidize childcare to benefit children and improve women's workforce participation. • Promote pay equity and eliminate legal obstacles that prevent employees from sharing salary information. • Protect women's access to reproductive health services. EXPAND ECONOMIC SECURITY AND OPPORTUNITY • Invest in young children through child benefits, early education, and universal pre-K. • Increase access to higher education by reforming tuition financing, restoring protections to student loans, and adopting universal income-based repayment. • Make healthcare affordable and universal by opening Medicare to all. • Expand access to banking services through a postal savings bank. • Create a public option for the supply of mortgages. • Expand Social Security with a supplemental public investment program modeled on private Individual Retirement Accounts and raise the payroll cap to increase revenue.

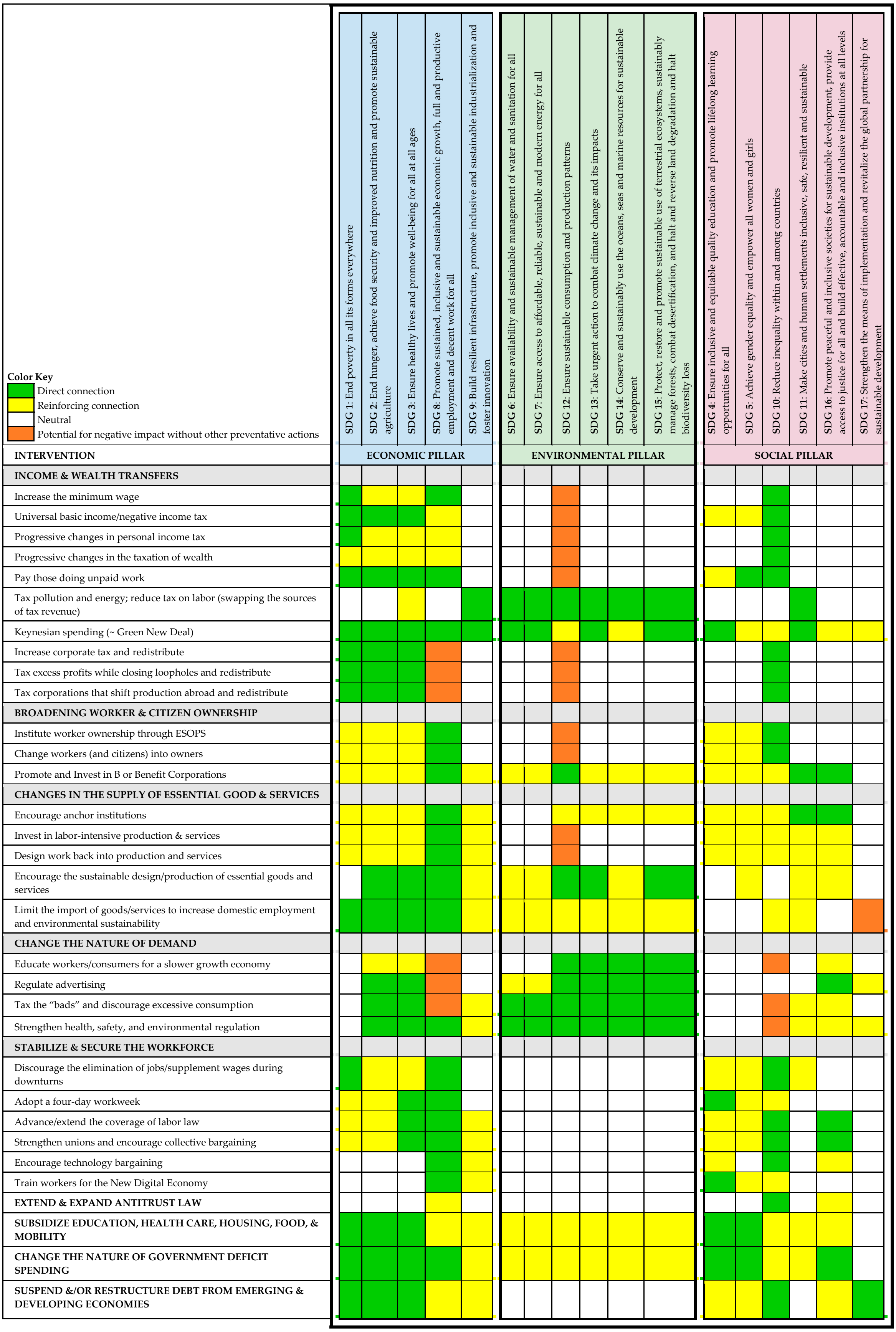

Figure A1. Comparison of interventions against the Sustainable Development Goals (SDGs).

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