# Inequality as a Systemic Risk

## The threat, its causes and potential solutions

*Time and again, history has demonstrated that extreme levels of inequality can undermine a civilization's ability to thrive—even shattering society itself. Today, the United States faces extreme levels of inequality that pose clear threats to its society and economy. Yet, alternatives to violent upheaval exist. A far more sustainable and equitable society is not only possible—it presents enormous opportunity.*

*Present day civilization has the tools to create its own five centuries of prosperity. 'It will never work' is not an excuse.*

Green Alpha ADVISORS

# About Green Alpha

*We have been redefining asset management since 2007 by* ***Investing in the Next Economy™****—a global economy in which solutions to systemic risks drive economic growth and enable populations to thrive. We believe that investing in companies creating innovative solutions to climate change, resource scarcity and degradation, and widening inequality is the greatest wealth creation driver of the twenty-first century.*

# About the Authors

***Garvin Jabusch*** *is Green Alpha's Chief Investment Officer and chair of the Investment Committee. As a former archaeologist, his mix of science and business experience brings a unique understanding of long-term systemic risk and societal collapse to portfolio management.*

***Arina Abbott*** *supports the Investment Committee by carrying out responsibilities such as proxy voting and content creation. Her academic background in International Political Economy offers valuable perspective on intersecting global trends.*

***Jeremy Deems****, Chief Financial Officer, is the co-portfolio manager on all Green Alpha investment strategies. Jeremy brings extensive finance, accounting and mutual fund industry experience to Green Alpha's investment committee, including managing fossil free strategies with Garvin since 2002.*

***Betsy Moszeter*** *is Green Alpha's Chief Operating Officer and participates on the Investment Committee throughout the stock picking and account investing processes. She has been in investment management for more than 18 years and has served in virtually every role possible.*

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## Key Highlights

- **Societies of the past illustrate risks posed by extreme inequality.** Civilizations across history demonstrate that wealth and income inequalities can and do rise to the level of 'dangerous risk,' most often manifesting in the form of eroding social cohesion and even civil strife.
- **Inequality in the U.S. is reaching an extreme.** As both the richest and one of the most unequal countries in the world, the United States may be particularly fertile ground for the destructive outcomes of this rising risk. According to Pew Research Center, U.S. income inequality has been increasing steadily since the 1970s, and now has reached levels not seen since 1928.
- **Solutions to inequality present opportunities economy-wide.** Some possible means of mitigating inequality: prepare people for jobs that add value in a digital age, create human-empowering tech and distribute ownership, invest in a diverse workforce and leadership, and develop protective and equitable policies.

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# Inequality as a Systemic Risk

**Continually evaluating global systemic risks and finding innovative solutions to them are processes at the core of Green Alpha's investment approach.**

Strong markets rely on a thriving economy, and in turn, **a successful economy requires a stable climate, ecosystems, resources and social systems.**

Thus, the most significant threats to the long-term wellbeing of the global economy are:

1) the outcomes of global warming,
2) resource degradation and scarcity, and
3) widening, destructive levels of inequality.

This paper examines the risks posed by inequality, thereby assimilating this understanding into Green Alpha's economic thesis and ultimately portfolio construction processes. To that end, **this paper reviews some principal causes of inequality in a historical context and contemplates some means of mitigation**. How this can be integrated into the investment process deserves its own paper. Therefore, it will not be covered here.

The base reason inequality is identified as a key economic risk is simple: **"when the distribution of income spreads apart, a society begins to malfunction."**[1] To income, it is necessary to add that excessive *wealth* inequality is likely even more destructive over the long-term, and such economic factors are catalyzed by and intertwined with other forms of privilege (e.g., race, gender identity, ability).

Indeed, many institutions are sounding the alarm. The World Economic Forum's *2018 Global Risks Report* lists growing inequality as a fast-increasing and critical concern, alongside climate, environmental, and resource risks.[2] The Federal Reserve Bank of Chicago warned in a 2018 note that **wealth inequality may limit the economy's ability to recover from downturns**.[3] Marsh & McLennan Companies warns that "These are not just economic risks…we should not be surprised if this has wider political and societal effects. The idea that 'the system is rigged' has gained electoral traction in recent years, and research suggests that concerns about inequality rest on more fundamental worries about societal fairness."[4]

What makes inequality a true 'threat'? What makes it a problematic phenomenon and not just 'a fact of life,' as some argue? How can stability be found?

## Historical Context

Inequality has long ebbed and flowed across civilizations. As global inequality continues to widen, the concentration of wealth in the United States is reaching one of its historically high points.[5]

> *"Civilizations across history demonstrate that wealth and income **inequalities can and do rise to the level of 'dangerous risk,'** most often manifesting in the form of eroding social cohesion and even civil strife."*

Civilizations across history demonstrate that wealth and income inequalities can and do rise to the level of 'dangerous risk,' most often manifesting in the form of eroding social cohesion and even civil strife. Income and wealth disparities have existed at least since humans began practicing agriculture[6] and sedentary community life.[7] Civilizations have always muddled along through it all. Except when they didn't.

The Roman Republic likely dissolved in part due to unrest and violence ignited by extreme levels of wealth inequality. During wars of conquest abroad, the senatorial elite reaped the spoils of war, while poorer citizens' land—an essential building block of wealth—fell into disrepair while they were abroad on military tours. The rich then bought out much of this land between approximately 140 and 130 B.C., thereby expanding the divergence of wealth.[8] As one succinct variation puts it, "Being Roman eventually meant being whatever wealth said it was, and shorn of the old ties that kept the rich and poor together out of a mutual sense of common destiny, they soon turned on one another."[9]

Recent research indicates that the Roman Republic began its long fall around this same time, during a "series of civil wars and political strife, spanning 134 B.C. to 27 B.C., that brought the Roman Republic to an end— [and] were associated with a broad period of economic stagnation and disintegration." The violence of the crisis was the end of the Roman Republic and resulted in reduced inequality among Romans for a time, as the Roman Empire that succeeded it enjoyed 206 years of almost uninterrupted peace and economic vitality, the Pax Romana.[10]

The Roman Empire would later suffer from its own rise of inequality. Roman elites came to prioritize concentrating their power and assets, rather than the well-being of the state or their fellow citizens—ultimately to their own detriment. According to James William Ermatinger in his seminal *The Decline and Fall of the Roman Empire,* "[the elites'] disinclination to lead may have been caused by forced exactions, confiscations, business concerns, tax pressures, or general economic fears, which made protecting one's own interests seem more prudent than looking out for the interests of others."[11] In other words, it was 'me first, empire second, if at all.'

A clear cycle of inequality-violence-relative equality-repeat appears across the long span of Roman civilization, and, in fact, this pattern is historically common among human societies.

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In the case of the Mayan civilization, one standard theory is that resource pressure brought about by a prolonged drought precipitated collapse,[12] but recent archeological evidence also suggests "intensified elite competition, socio-political instability, and warfare" were the primary drivers of the Mayan downfall in the Petexbatun Region.[13] The evidence offered by scholars suggests that both social inequity and some environmental pressures played their parts.

With these time and geography spanning societal collapse-driving variables in mind, one team of researchers came up with a "Human and Nature Dynamics" mathematical model, which determined that both "Economic Stratification or Ecological Strain can independently lead to collapse, in agreement with the historical record." In one scenario that most closely reflects today's societal reality, the researchers concluded:

> "Eventually the Commoners [the poor] collapse completely, followed by the Elites [the rich]. It is important to note that in both of these scenarios, the Elites – due to their wealth – do not suffer the detrimental effects of the environmental collapse until much later than the Commoners. This buffer of wealth allows Elites to continue "business as usual" despite the impending catastrophe. It is likely that this is an important mechanism that would help explain how historical collapses were allowed to occur by elites who appear to be oblivious to the catastrophic trajectory (most clearly apparent in the Roman and Mayan cases)."[14]

Ultimately, civilization is likely to meet its demise when inequality becomes severe, and a compromised habitat expedites the process.

## Inequality and the Environment:

How climate change and environmental degradation impact vulnerable groups

**1/5** children **suffer from asthma** in Imperial County, California — where terminal lakes like the Salton Sea are drying up, producing debilitating dust layers that cause the most extreme forms of asthma, lung infections, and bronchitis. A 27-year-old resident was said to have the lungs of an 80-year-old and was even considered for a lung transplant. Because **25% of the population lives in poverty**, many are unable to relocate.

**6,171** oil and gas wells exist in Los Angeles, a city that has been sued for discriminatory drilling permitting practices. Plaintiffs argued that **drilling sites in majority-Black and Latino neighborhoods were dirtier, louder, and did not protect residents** from pollution. Residents of these neighborhoods experience some of the **highest cancer rates** in Southern California.

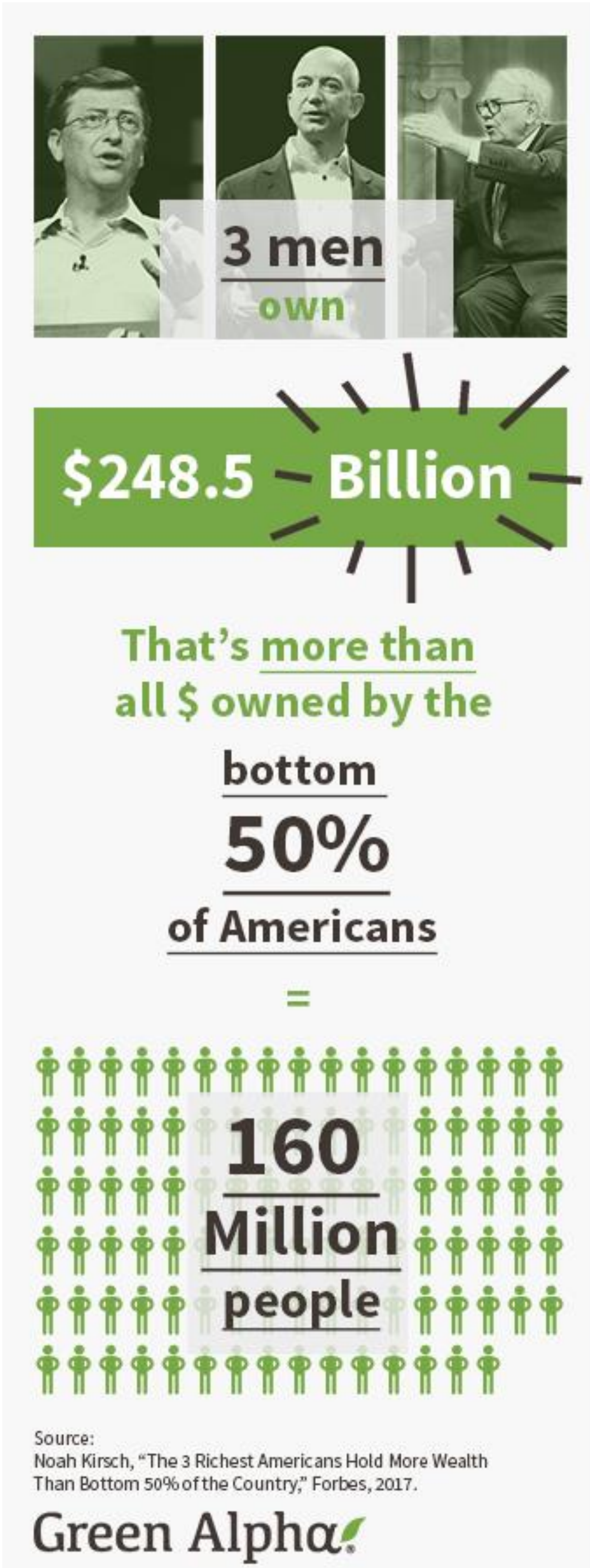
**45-80%** of all food production in developing countries is produced by **women farmers**. As traditional food sources become scarcer and more unpredictable with climate change, **women are more likely to face loss of income and food**. In periods of such scarcity, the health of women and girls has been found to decline more than male health.

Zelenko, Michael, "Dust Rising," *The Verge,* 2018.

Colgan, David, "Passion for environmental justice fuels urban oil drilling study," *UCLA Newsroom*, 2017.

Editorial Board, "The Danger of Urban Oil Drilling," *The New York Times,* 2015.

"Women, Gender Equality and Climate Change," *UN WomenWatch.*




## Indicators of Severe Inequality in the United States

Although the primary concern of this paper is to identify risks that stem from growing economic inequality in the U.S., it important to note that the condition is globally systemic. According to the Credit Suisse Global Wealth Report, the richest one percent of the population worldwide now owns half of global wealth, up from 45.5 percent at the start of this millennium.[15] The newest *World Inequality Report* shows inequality is rising or remaining stable at extremely high levels in *every* country.[16]

**As both the richest and one of the most unequal countries in the world,[17] the United States may be particularly fertile ground for the destructive outcomes of this rising risk.** The evidence demonstrating that the United States has a severe problem—historically high levels of wealth and income inequality[18]—is plain: one percent of Americans own approximately twice as much as the bottom 90 percent.[19] In 2013, Pew research reported that "U.S. income inequality has been increasing steadily since the 1970s, and now has reached levels not seen since 1928."[20] In the intervening five years, the problem has become worse.[21]

Thought about another way, consider what it takes to invest in the S&P 500 Index. According to data from IFI research, the number of hours an individual needs to work in order to buy one share of the S&P 500 Index at an average U.S. salary has risen from about 19 hours in 1982 to 121 hours today.[22] This is the result of a higher S&P valuation but also of wage stagnation. It means fewer Americans now have the opportunity for ownership of economic drivers and are falling behind elites in wealth accumulation.

The wealthiest three people in the United States—Jeff Bezos, Bill Gates, and Warren Buffett—now own as much wealth as the bottom 160 million.[23] It seems former Labor Secretary Robert Reich could be right when he says Americans are living in a new gilded age.

Exactly 'at what point does wealth concentration become a crisis' is an open question. As Matthew Stewart writes for *The Atlantic*, "the 9.9 Percent Is the New American Aristocracy. The class divide is already toxic, and is fast becoming unbridgeable. You're probably part of the problem."[24] An opposing view from *Slate* argues, "Actually, the 1 Percent Are Still The Problem…*The Atlantic* trots out a familiar argument blaming the upper-middle class for income inequality. It's wrong."[25] However one sorts America's inequalities, the fact that members of the media are now parsing levels of blame indicates mounting concern for a now-visible threat.

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## Sources and Impacts of Severe Inequality

If something is to be done about inequality, the sources of the problem must be identified. Otherwise, many tend to fall back on the popular belief in individual fault that attempts to explain away systemic economic inequality,[26] rather than searching for substantiated reasons to explain the situation.

Leaving aside the unsupported individual fault narrative, some of the most frequently cited explanations for systemic inequality in the U.S. are:

- Education isn't keeping up with technology,
- Jobs are being offshored and/or automated,
- Discrimination of marginalized groups is institutionalized,
- and U.S. government policies have built an institutional framework that has led to increasing inequality, via shifts like de-regulation, de-unionization, tax changes, federal monetary policies, and short-termism in corporate and economic policies[27]

**In short, wages are not keeping up with overall productivity gains, and institutionalized, societal rules are making advancement very hard for anyone who has not come into privilege or does not own the intellectual property that is generating the productivity gains.**

In an increasingly automated world, workers are no longer the primary means of economic production (with major exceptions for professions that require considerable creativity and relationship management[28]). Even if a person is working hard, the human worker is incapable of adding nearly as much economic productivity as a machine in completing a repeatable, physical task.

One good way to measure the productivity of something—in this case, the human worker—is versus its relative contribution to GDP. Wages and salary income in the U.S. are now near as low a percentage of GDP as the have been since the Federal Reserve has kept track.[29] Compounding the problem, inflation-adjusted wages have fallen in the year from August 2017 to August 2018 for non-management workers, according to the Bureau of Labor Statistics."[30]

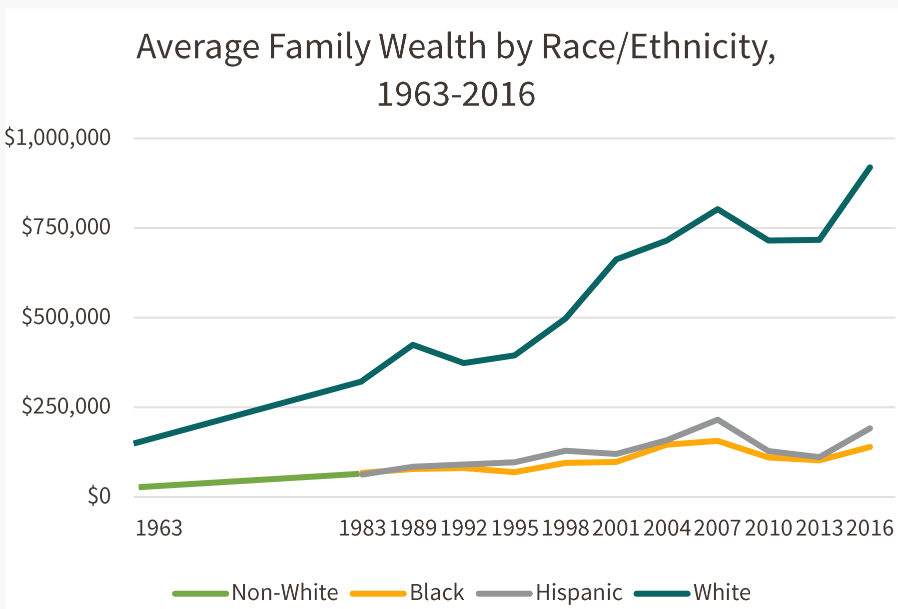
W2 earners are not making what they used to, and intellectual property owners are earning more than ever. One group feeling the effects of wage stagnation are millennials, who, for the first time in generations of Americans, have only a 50 percent shot at earning more than their parents[31] and are today 'worth' about half what their parents were at the same age.[32] Not only are wages not rising in tandem with general economic productivity, they are not rising with personal wealth generation.

Instead, financial success is primarily determined by how much one's family owned to begin with. Achievement by merit, despite many Americans' beliefs, is hard to attain and actually quite rare.[33] Net family wealth is the best predictor of individual success[34] which is then sustained over generations via inheritance. Net worth is also best predicted by existing familial wealth along with IP-ownership and innovation contributions, which are the new drivers of economic growth. The picture can be summarized thus: "People who already hold wealth have the resources to invest or to leverage the accumulation of wealth, which creates new wealth."[35]

The compounding nature of wealth is thrown into sharp relief when examining how the economic wealth gap looks for marginalized groups. Just like the myth of a purely merit-driven economy, institutionalized discrimination and its impact on wealth is a difficult but necessary risk to reckon with.

Some examples of what wealth disparities and unequal pay look like:

- In 1963, the average wealth of white families was $121,000 higher than the average wealth of families of color. By 2016, the household wealth **gap between white and families of color grew to over $700,000**.[36]
- For **women**, the pay gap ranges anywhere from approximately **79 percent** of white men's earnings for white women **to 54 percent of white men's earnings** for Hispanic or Latina women.[37]
- Research points to **significant disparities in earnings for gay and transgender workers** due to high rates of discrimination in hiring, firing and wages.[38]




Source: "Nine Charts about Wealth Inequality in America (Updated)," Urban Institute, 2017

These gaps do not act in isolation. Consider how wage gaps affect long-term wealth-building like home ownership or how they make debts like student loans a greater burden to bear. Wealth gaps have a cumulative impact over generations, meaning the divide has deepened over time.

Economic inequalities in the U.S. simply cannot be fully evaluated or tackled without addressing how they play out across demographics, including race, ethnicity, gender identity, sexual orientation, age, and (dis)ability.

All of these sources of inequality are in large part initiated and preserved by policy (see Piketty for exhaustive coverage[39]). Economist Joseph E. Stiglitz writes,

> "A closer look at the successes of those at the top of the wealth distribution shows that more than a small part of their genius resides in devising better ways of exploiting market power and other market imperfections—and, in many cases, finding better ways of ensuring that politics works for them rather than for society more generally."[40]

These policy advantages go a long way toward explaining why wealth inequality has not improved in decades. For example, the Urban Institute finds that "about two-thirds of homeownership tax subsidies and retirement subsidies go to the top 20 percent of taxpayers, as measured by income. The bottom 20 percent, meanwhile, receive less than 1 percent of these subsidies."[41]

Policies work to protect wealth, but not everyone's wealth. Today, a low-income mother that opens a college savings account for her children risks losing social assistance benefits; a more well off family that starts a college savings program gets incentives.[42] The estate tax has been reformed to exempt the first $11.18 million per individual of transfer of wealth upon death.[43] The very wealthy—only one in 5,000 families qualify for this level of estate tax exemption—get a cost of living adjustment built into the law for their beneficiaries, but no one else does.

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Thus, inequality widens in a way that has nothing to do with productivity or merit.

For the vast majority of the U.S., policy structure means that whatever wealth a family has is generally unprotected. There is no requirement for paid maternity or paternity leave in the U.S. There is no mandate for paid sick leave. Retirement savings, dental insurance, and medical insurance are all deemed to be at private risk in the U.S. If you fall afoul of one of these problems in the United States, and you are not privileged to have a legacy of wealth as a safety net, your prospects of becoming better-off quickly fall to zero. On the contrary, enough bad breaks and you could become homeless, even if you are working full time.

There is a feeling that the game is rigged—that unless you were born rich, you are screwed. It is this real, physical and emotional experience of unfairness—that you can live in the most abundant society in history and still walk on the edge of disaster—that stresses people to the point that they begin to believe their government and institutions of order do not matter. This belief is frequently validated when people hear, for example, news that the Federal Reserve thinks wage raises are not economically beneficial but, on the contrary, a source of inflation and therefore something to be discouraged.

People who are pressured in this way often suffer from poor health. They run at a continual cortisol peak (the 'fight-or-flight' hormone) and can easily be stressed into making extreme decisions. It can feel as though there is no better alternative to drug use, crime or other destructive behaviors. It is probable that rising inequality is instrumental in the recent sharp decline in American life expectancy, particularly among the working class.[44]

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An *Economist* review of the book *The Spirit Level* by epidemiologists Kate Pickett and Richard Wilkinson describes the overarching health-inequality relationship:

"The steeper the income gradient, the less secure everyone becomes, in both their self-respect and their sense of the community's esteem. And so people compensate. They take pills, to steel their nerves or dull the pain. ... Some adopt a more submissive posture, avoiding contact with others. Yet such withdrawal can feed on itself, depriving recluses of the social interaction that is important to mental health, undermining relationships and careers and contributing to economic hardship."[45]

Are unequal countries on track to correcting the problem? One study of European countries—which experience lower degrees of inequality than the United States[46]—suggests they are not. Researchers suggest that rising inequality is only strengthening its grip; if members of the one percent see popular will going against the wealthy's interests, they can contribute to politicians and buy media outlets. With their power and information monopolies, the one percent can tip the policy scales further in their own favor. At the same time, public concern about widening inequality continues to increase. This is the type of disconnect that undermines democracy and social cohesion, thereby risking stability for *everyone*. *The Economist* writers conclude,

"The evidence that concentrated wealth contributes to concentrated power … suggests that reducing inequality becomes less likely even as it becomes more urgent. It implies that a vicious cycle of rising inequality may be developing, with a loss of democratic accountability as a nasty side-effect."[47]

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## How Has Inequality Been Reversed in the Past?

What reverses inequality in a society? Frighteningly, perhaps the only element ever to have caused a meaningful reduction in severe inequality is state-level collapse. **This is what makes inequality a risk at the highest, systemic level.**

"It is almost universally true that violence has been necessary to ensure the redistribution of wealth at any point in time," historian Walter Scheidel has said, summarizing the thesis of his book *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*.[48] In an interview, Scheidel elaborated, "Everywhere I looked, over hundreds of thousands of years, I found that every single time you observe such a compression…it was always linked to some very massive, violent shock that usually cost millions of lives."

It turns out that societal collapse has always been very effective at and, in the past, perhaps the only means of promoting equality—but at a high cost to human life and wellbeing. It diminishes inequality because almost everyone ends up being extremely poor after a civilizational collapse. "If you destroy state structures, then the rich simply have more to lose,"[49] Scheidel explains.

As long as there is nothing to slow or reverse the accelerating consolidation of U.S. total national wealth into fewer hands, present levels of inequity will become more severe. Everything is at risk.

Clearly, there must be better answers than violence, and they must be implemented soon to avoid much worse outcomes. Like climate change, a problem as ingrained as systemic inequality needs to be confronted at all angles. Tackling these risks offers immense economy opportunity, and thus the hope for a stable, thriving economy and populace is not lost.

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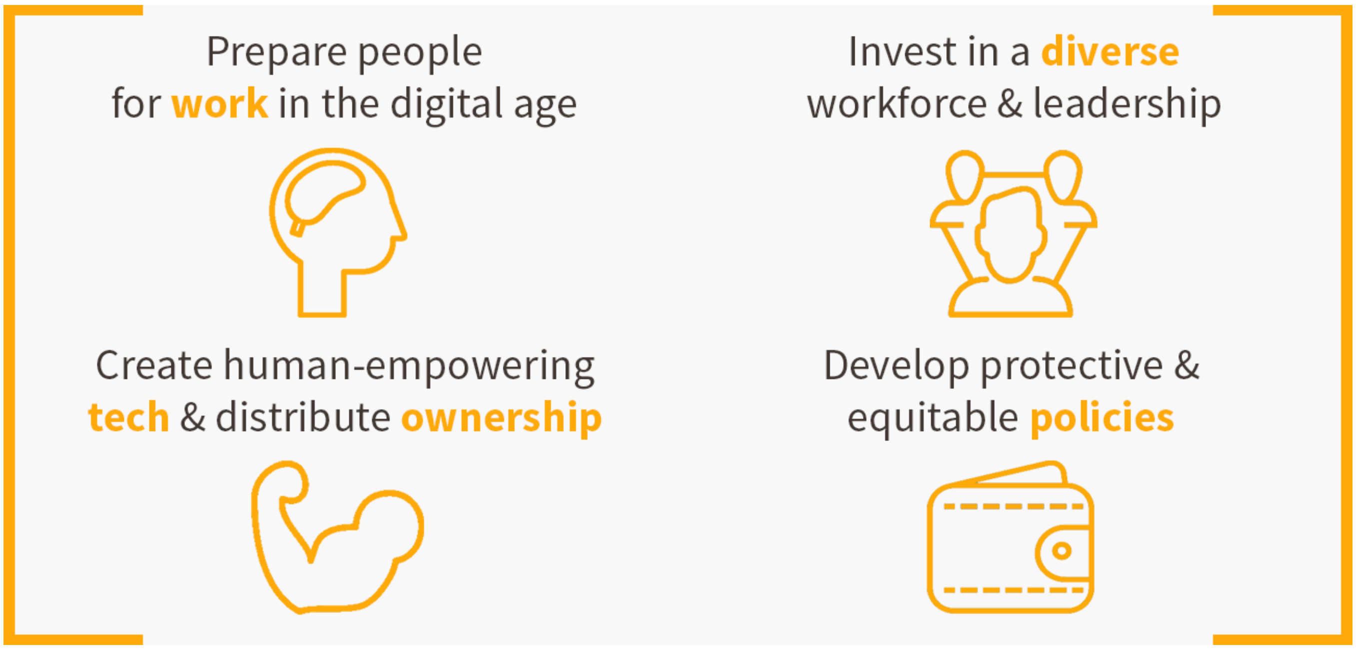
## What is To Be Done? Social Equity as Economic Opportunity




Everyone alive today is running the same Stone Age operating system on hardware (the human brain) that is anatomically indistinguishable from that of our ancestors of 200,000 years ago. Given the human species' track record, it seems unlikely that people are capable of overcoming millennia of the individual and group-level selection that gave rise to tribalism and the desire to accumulate wealth.

**What *is* different now is the panoply of new tools in human hands thanks to the cumulative results of millennia of technological progress.** Evolutionary hard-wiring remains, but these technological advancements are powerful.

As with the power of compounding interest on money, compounding millennia of human innovation has brought society along with its global economy to the precipice of unprecedented change. In an article featuring technologist and futurist Ray Kurzweil, *Big Think* captured the grand potential of exponential innovation: "Problems that may seem intractable now could become eminently solvable in the near future. Not only should this inform investing and planning for the future, it should also change what you think of as possible for humanity. Soon, things which we could barely have imagined decades before might be within reach."[50]

Many of these 'things' may help address key systemic risks, including inequality and climate disruption. For example, the technological progress that serves a more ecologically efficient economy can be used to more equitably allocate wealth. A more diverse workforce can come up with creative energy and climate solutions that serve the many rather than the few. To build an economy that can thrive over the long-term, solutions to these risks must go hand-in-hand.

As humanity faces this era of change, it is necessary to look honestly at where the economy is headed and how humans fit into the picture.

People are genuinely afraid that the tech-based, automated future will be jobless.[51] A new study by the Brookings Institute finds that automation has not yet significantly shifted employment, but "it has reduced labor's share in value-added."[52] The activities most susceptible to automation—including middle- and high-skill activities—make up 51 percent of economic activities, amounting to almost $2.7 trillion in wages.[53]

If policymakers and business leaders continue thinking only in terms of the past—where old-economy jobs like coal mining are prioritized over transitioning workers to long-term work, and basic income is dismissed because many remain tethered to the idea that humans will only understand 'hard work' if they receive a paycheck—then Americans will indeed have something to fear.

Yet, there are alternatives. It is time to prepare people from all backgrounds for jobs in the digital age, making sure they have an adequate safety net and much greater opportunity to own the means of production.

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>
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## Prepare People for Jobs That Will Add Value in the Digital Age

This unfolding economy is increasingly based on innovation-generated and technology-leveraged productivity expansion. If effectively executed, this offers unprecedented opportunity while simultaneously shrinking the economy's environmental footprint. Environmental damage is a system-level risk in its own right, but it also exacerbates inequality.[54] By improving efficiency across the economy, it is possible to mitigate every individual's ecological impact, ultimately to the point where everyone has good standards of living without civilization crossing planetary boundaries (see E.O. Wilson[55]). The law of accelerating returns shows it is possible to achieve far more economic output from far fewer inputs, driving wealth creation *and* sustainability, while reducing extreme poverty, if not wealth inequality itself.[56]

An innovation-driven economy can also elevate the value of human creativity. The jobs most vulnerable to machine automation, for now, are primarily those that are using people as machines. Artificial Intelligence expert Fei-Fei Li has identified an unfolding trend "toward automating those elements of jobs that are repetitive, error-prone and even dangerous… [leaving] the creative, intellectual and emotional roles for which humans are still best suited.”[57]

Artists, scientists, designers, engineers and business strategists fall into this category.[58] Jobs that are highly unpredictable or ones that require building complex relationships with people—nurses, client service professionals—are also here to stay.

Automation may turn out to be much less threatening and more emancipatory than many have thought, especially when combined with a safety net such as basic income, deliberate diversity initiatives and distributed ownership. A highly-automated economy will likely offer greater opportunities to leverage human relationship-building and creativity to advance innovation.

Setting up people up for success in the economy of the future will be a necessary component of diminishing inequality. **This requires making deliberate private and public investments in educating and transitioning people so they can fill these creative, intellectual and emotional positions that are so necessary for a healthy economy.[59]** As Roderick Benns, former Vice Chair of the Ontario Basic Income Network noted, “We have to ask what else we are doing as a society to get people to reimagine what they can do with their lives.”[60]

## Create Human-Empowering Technologies and Distribute Ownership

If all of these advanced means of productivity generation are primarily owned by the one percent, will elites share their massive new windfalls? The answer is, they probably will not without deliberate planning. Those that inherit large sums of wealth tend to protect it rather than spend or invest it, so the idea that they will immediately start using it to pay and raise wages does not hold up. Traditional supply-side or “trickle-down” economics has never and will never do much to reduce inequality. What are some possible antidotes in the tech space?

New technological platforms must, in some part, become common goods, as with the internet. The more people that share in the productivity dividend, the lower the risk from inequality.

**Blockchain and similar transparency-driven exchange technologies have the potential to disintermediate powerful monopolies and other authorities.** They enable peer-to-peer value exchange in the form of cryptocurrencies, as well as IP and innovation in ways that allow everyone to participate. Applications built on blockchains are governed by users, rather than any single entity like a technology company, a bank or a government. Instead, they can potentially be governed by every user. As such, blockchain also provides transparency, making inequality-worsening corruption more difficult.[61] It also allows maintenance of high-level systems without any one person owning a database. Imagine, for example, if you owned and could monetize your own social media data, instead of Facebook owning and getting paid for it.

From a viability point of view, blockchain is still untested compared to what it can become. It is both a business model and a technology, which is almost unprecedented. Today, it is difficult to say what applications may or may not emerge from blockchain's development and practical use. From an asset management point of view, potential investors need to stay tuned, have a long timeframe, be prepared to pivot and consider hiring technical due diligence.

Thought leaders, including philanthropist and investor Nicolas Berggruen, have begun to explore how blockchain can create a "pre-distribution" rather than "re-distribution" ownership model.[62] In other words, blockchain can shift "from redistributing wealth to distributing value and opportunity fairly in the first place, from cradle to grave," Alex Tapscott and Don Tapscott write for the *World Economic Forum*. The possibilities for economic empowerment are endless, including "enabling citizens to own and monetize their data (protect privacy) through owning their personal identities" and "creating [a] true sharing economy by replacing service aggregators with distributed applications on a blockchain."[63]

This "cradle to grave" principle is being considered in the Artificial Intelligence (AI) and Artificial General Intelligence (AGI) space as well. Elon Musk's Open AI endeavors to "ensure AGI's benefits are as widely and evenly distributed as possible," because Musk's team expects "AI technologies to be hugely impactful in the short term, but their impacts will be outstripped by that of the first AGIs."[64] The CEO of the Allen Institute for AI, Oren Etzioni, has even proposed a Hippocratic Oath for AI practitioners, wherein they swear to do no harm.[65]

AI may itself be a powerful force for mitigating inequality. The World Bank claims that AI can help them "end extreme poverty and boost shared prosperity,"[66] making innovations like cellphone-centered malaria tests instantly accessible to users in Uganda.[67] One leading researcher, Tomas Mikolov of Facebook AI Research, believes the benefits of AI far outweigh any risks. Mikolov considers how AI could help overcome human limitations, like the limited ability to make predictions, and he asks, "What if actually not achieving A.I. is the biggest existential threat for humans?"[68] At least one research firm, Gartner, is optimistic that "AI will end up in everyone's hands sooner than we think," suggesting that the technology will empower people across socioeconomic boundaries.[69]

> *"How many ideas have foundered because an entrepreneur could not get a meeting with a venture capital firm?* ***Business may not have to work like that anymore****."*

Other positive innovations include crowdfunding platforms, like Patreon and Kickstarter. The more open and equal the access to capital for aspiring entrepreneurs, the more potential for innovation and growth. For investors, even those at a small scale, crowdfunding can bring meaningful investment opportunity and more distributed ownership of the results to a far greater portion of the socioeconomic spectrum. Moreover, greater access to capital for business founders will spur more innovation overall. How many ideas have foundered because an entrepreneur could not get a meeting with a venture capital firm? Business may not have to work like that anymore.

Today, new technological platforms are often not meeting the ideal of being democratically owned; yet these advances may nevertheless help break out of

Scheidel's grim cycle of violence and inequality for perhaps the first time in history. Leveraging these powerful new tools may represent the best opportunity to achieve greater equality. As Stewart Brand has said, "You can't change human nature, but you can change tools, you can change techniques…you can change civilisation."[70]

## Invest in a Diverse Workforce and Leadership

On the human side of the wealth-concentration equation, there is a requirement to realize a more prosperous, equitable economy: addressing chronic underinvestment in businesses run by and for unrepresented groups, like women, people of color and LGBTQ+ people. As panelists at the Data for Black Lives Conference put it, "the next 15 years of advancement in the digital revolution will present a window of opportunity for people of color."[71] **If people who have been historically or recently marginalized are elevated on the eve of this digital revolution, a real dent can be made in inequality while generating economic growth.**

> *"When thinking about deliberately investing in diverse groups of people, the focus should be on* ***actualizing an immense economic and social opportunity****, each enabling the other in a virtuous cycle."*

As people access the resources they need, the opportunity to develop innovative solutions to inequalities will snowball. "People who've never had to navigate the inequities experienced…cannot create the solutions to these problems," says Piper Harron, a mathematician and panelist at the Data for Black Lives Conference.[72]

People who encounter inequities are some of the best candidates to identify and develop solutions to them. Having come from a small town in Mississippi with only one bank, Sheena Allen developed CapWay, an online banking and financial literacy app that serves the unbanked, underbanked and people living paycheck to paycheck. Allen aims to prevent people from getting sucked into "a cycle that's really hard to get out of,"[73] since many unbanked people struggle to build credit, buy homes and save when relying on wallet-draining services like payday loans and check-cashing services. Clearly, there are swaths of profitable and beneficial markets that have gone largely unnoticed by the predominantly white, male investment industry.

A more inclusive economy bodes well for the labor market, too. The number of women-owned small businesses is growing at twice the rate of small business growth overall. Given that small businesses have been responsible for nearly all net job creation since 1980,[74] it's unsurprising that women are having a major impact on economic growth.[75] Meanwhile, growing areas, such as the booming cybersecurity industry, are likely to face a labor shortfall in a hyperconnected economy.[76] Developing an inclusive economy that taps into a broader, more diverse set of workers would be an ideal way to fill this void.[77]

Of course, the value of diversity extends beyond creating direct solutions to inequality; it generates value and wealth across industries. Diverse groups are more creative,[78] evaluate more facts to inform better decisions[79] and are more likely to achieve both short- and long-term goals than more homogeneous teams.[80]

When thinking about deliberately investing in diverse groups of people, the focus should be on actualizing an immense economic *and* social opportunity, each enabling the other in a virtuous cycle. As Arlan Hamilton, founder of Backstage Capital, put it in a viral post back in 2015: "It's not about 'helping' founders, it's about fueling an untapped ecosystem so that you may be lucky enough to reap the rewards in years to come…Because of the blind spot investors have for this group of people right now, there's an enormous opportunity to invest at undervalued prices. It won't always be this way."[81]

## Develop Protective and Equitable Policies

Basic income—a type of program that provides guaranteed income—has garnered a great deal of interest in recent years and with good reason. Projects are springing up globally to test the idea of distributing funds that people can use as they see fit. **Early results have been encouraging.**

The Eastern Band of the Cherokee Indians has been putting basic income to the test since 1996. Extensive research conducted by Jane Costello of the Duke Institute for Brain Sciences reveals how it is working. Costello's team, which began studying Cherokee youth in 1993, found that the rise in household income of many Cherokee families translated to significant reductions in behavioral problems, drug addiction and alcohol addiction among children. The earlier the children received this infusion of cash, the greater the impact. One community member remarked that the income "changed the entire mindset of the community" over the course of 20 years.[82]

The Cherokee communities' labor participation questions typical assumptions about how basic income affects work. A 2010 analysis of Costello's data found a small increase in the share of people working part-time but no impact on overall labor participation.[83] This example counters the assumption that people receiving a basic income will stop working or looking for work.

Two basic income pilots in Madhya Pradesh, India were launched in 2010 and have shown how impactful such programs can be. By distributing benefits to 12,000 individuals, program organizers were able to attribute improvements in health and test scores to the policy. Here again, negative assumptions about how basic income influences worker behavior are challenged: “Contrary to a common criticism of cash transfers, cash grants were associated with an increase in labour and work. Cash grant households were twice as likely to have increased their production work as non-transfer households.”[84] The designers conclude, “Ultimately, basic income grants are potentially transformative for Indian families and communities. They can unlock constraints and enable people to gain greater control of their lives.”

Source: See footnotes 82-85.

A basic income trial in Kenya has seen similarly uplifting results among its recipients. In one of the country’s poorest regions, 21,000 adults receive US$22.50 per month from US-based charity GiveDirectly, which studies the impact of providing people cash with no strings attached. As *Nature* reports:

“The knowledge that GiveDirectly will deposit funds into their accounts every month for more than a decade has already begun to shift how some of them think about money. Each text alert [indicating a deposit] means a chance to invest in their own lives or their businesses with the security that they can still put food on the table. And that, they say, is priceless.”[85]

Stockton, California is initiating its own basic income experiment. The program’s funders are deciding how best to distribute US$500 per month to its citizens. “In this country, we have to have a conversation about who is deserving and what does ‘deserving’ mean,” Stockton mayor Michael Tubbs told *The Washington Post*. “For whatever reason, when we talk about the social safety net, our images don’t go to folks working hard, like a single parent working at Walmart. The image goes to someone using drugs…We want to push back against those stereotypes, by highlighting the stories and putting a face to this narrative,” he said. “It’s the mother who was able to pay for child care, it’s the student who was able to go to community college, the couple with credit card debt.”[86]

These test-sites demonstrate that basic income can help develop a thriving populace and economy by reducing psychological burden. For example, basic income can reduce the emotional instability and extreme behavior that psychologists have linked to economic insecurity.[87] As one prominent theory has it: “low-income people can be more successful if we take away everyday burdens… basic income should be seen less as a handout and more as ‘venture capital for the people.’”[88] A more successful population results in a more successful economy.

Moreover, economies grow when people spend. If widening inequality is not addressed at every socioeconomic and population level, it will be difficult for even the top one percent, much less everyone else, to continue enjoying the economic growth rate they have become accustomed to over the last couple decades.

As with all of these solutions, basic income will be most effective when paired with other solutions, like distributed ownership. If ownership structures are not meaningfully addressed and income continues to move from workers to owners, it is probable that a basic income would reduce but not reverse inequality.

Thus, to effectively mitigate the risks of wealth inequality, **pre-distribution and re-distribution should operate at the same time.** The effects would be synergistic; with a safety net of more expendable income that can cover necessities like food, individuals can think more seriously about becoming entrepreneurs—thereby owning part of the economy's production capacity—or they may have the new wherewithal to invest in someone else's business and become owners that way. **Basic income immediately addresses income inequality and provides the catalyst for diminishing wealth inequality as well.**

There are other emerging ideas about how to distribute ownership of wealth creation. If 'data is the new oil,' then an approach like one Facebook Co-founder Chris Hughes has suggested merits attention. Hughes' idea is to provide a basic income based on the vast, wealth-spawning datastream that is being collectively and continually created by social media, online shopping and Internet search histories.[89] His proposal would work in much the same way that Alaska provides a basic income for its citizens based on the state's oil wealth. Similar to a state oil fund, Hughes proposes a "National Data fund" as one way to let individuals monetize the data they currently give up for free, based on their ownership of their personal data, and thus prevent the entire data windfall from flowing only to the stream's current owners, usually large tech or ecommerce firms, or banks.

## Inclusive and Sustainable Prosperity at the Doorstep

These solutions require careful application, and the time to have debates about how best to apply them is now while these world-changing techs are still in their cradles. As Elon Musk has said, "When you're building something smarter than you, you have to get it right on the first try."[90]

Whatever the eventual map of the Next Economy™, one required consideration is this: **unless a technology or an algorithm is deployed in a way that improves lives, it is likely serving inequality expansion and, therefore, undermining social cohesion.** It is equally true that the only way to evade the worst outcomes of inequality (and climate change, and resource degradation and scarcity) will be to apply humanity's amazing capacity for compounding innovation, thereby using humans' innate adaptability to literally invent a better world. It is possible to create the conditions where everyone determines for themselves where they best fit into the economy and where they do not have to accept whatever machine-like job happens to be local to them.

**In terms of equity investing and portfolio construction, what can asset managers do about all this?** That is a topic worth of its own paper, but here are a few ideas:

- Asset managers can invest in solutions where they exist and buy leading companies driving the productivity revolution, while paying special attention to the companies that are directly addressing the potential social problems that come along with this major shift.
- They can endeavor to look for firms that are tapping into underserved markets and are driven by diverse leadership teams.
- They can buy companies with a strong program for employee ownership, and that value and invest in education for their employees and community.
- They can look for enterprises that have prioritized providing access to the information sphere, the distributed ledger and other technologies that counter inequality on a local or global scale.

Can the manner of public equity investing be equal to the task of addressing the economy's and society's largest problems? No, but it is one necessary part of the grand solution. It is key to remember that where capital flows is where rapid change occurs. Investing in de-risking the underlying economy is the likeliest path toward reducing *real* risk and therefore realizing long-term returns.

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## Conclusion: Can it Be Done?

*"Present day civilization has the tools to create its own five centuries of prosperity."*

This paper considers how dangerous inequality has proved to be for past human civilizations, but what about civilizations that may have avoided this trap? Examples of societies persisting for a long time without running into this risk are painfully scarce, yet recent evidence indicates there was one right here in North America that lasted for 500 years.

"New archaeological finds at Teotihuacán suggest something astounding: It flourished *without* a massive underclass," reads one headline. "How did the Teotihuacános accomplish this? …it's possible that the city's wealth from trading and other economic activity was spread throughout a population that lacked or even actively suppressed strong social class distinctions."[91]

Evidently, it can be done.

Whatever the means, some level of fair distribution is a critical component of a thriving economy. As *Evonomics* Publisher Steve Roth put it, "No country has ever joined the modern, high-productivity, rich-country club without massive doses of redistribution, and universal government programs for social support and financial security. Not one. Ever."[92]

However the Teotihuacános accomplished their equally shared prosperity, they did it without many of the means humanity now has at its disposal. Present day civilization has the tools to create its own five centuries of prosperity. 'It will never work' is not an excuse.

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