A Corporate Managerial Framework for Collaboration Skills Training of Employees From Formerly Oppressed Communities

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It is widely recognized that countries scoring high in capitalism, democracy, and the rule of law (CDR) tend to have impressive levels of real per capita gross domestic product (GDP) adjusted for purchasing power parity (GDPppp). However, the key to the rule of law is collaboration, and the ability to work together may have been eroded in communities that have experienced past traumas such as forced labor, excessive discrimination and exposure to harmful chemicals. These distressing outcomes can be inherited by future generations through negative epigenetic transgenerational psycho-sequela, leading to poor academic and employment performance, low income, self-harm, negative community relations, and increased aggression. This paper aims to explore the development of a managerial framework for rehabilitating psychological health that aims to revive lost collaboration skills. The originality of this work lies in the managerial framework that facilitates the restoration of collaboration skills, which are fundamental to exceptional economic growth and higher average income countrywide.

Keywords: collaboration, CDR economic model, gross domestic product, managerial training, psychological health rehabilitation

INTRODUCTION

Systematic challenges, sustainable business enterprise, and competition for what is perceived as limited resources have long since crippled collaboration among formerly oppressed communities. Contrary to this Malthusian confusion (Malthus, 1978), scarce resources are only a short-run phenomenon in modern economic terms. Scarcity goes away as soon as innovation finds new discoveries and new ways. Collaboration facilitates the exchange of knowledge and strategy, amplifying voices advocating for social justice, equal opportunity, and systematic change. When absent, the potential for improved socio-economic conditions, increased representation, and a more equitable distribution of resources are compromised, impacting overall gross domestic product (GDP) growth, and development. By leveraging diverse talent and perspectives, communities strengthen their alliances and enhance productivity which drives innovation

and entrepreneurship. What results are communities that create sustainable businesses, generate more employment opportunities, boost economic growth, and attract investments leading to a more inclusive and prosperous society. When formerly oppressed communities work together, they contribute to more than their economic advancement, but also to the broader economic landscape for a more just and supportive future.

Collaboration and cooperation are often confused. As is the role of the rule of law and property rights in economic growth and development that depends on collaboration. Therefore, we establish the following definitions:

- *Cooperation* is a plan and execution by participants, each with their own self-interest and economic gain in mind yet yielding unintended mutual benefits.
- *Collaboration* is a plan and execution thereof by participants for their intentional mutual benefit of shared goals, objectives, and rewards.

Unlike other beings, humans collaborate in a manner that results in attaining extraordinary accomplishments. According to Tomasello's (2001, 2009, 2019, 2005, 2012) research, animals can't quite grasp the concept of collaboration, but humans thrive in it. In fact, collaboration is responsible for some of the most amazing inventions and innovations in human history. Adam Smith (1776), the father of modern economics, recognized the power of cooperation when he advocated for the division of labor and trade. Such cooperation raises the standard of living of all parties, unintentionally. In this instance, only a typical economic advancement exists, representing ordinary economic growth. However, when individuals collaborate and work towards a common objective, it results in mutual benefits for everyone involved, leading to extraordinary economic growth, development, and a large increase in GDP. Collaboration is all about investing in the human imagination and creativity (Ridley and Nelson, 2022a, 2022b). Through collaboration, individuals bring new products, ideas, and concepts to life, which leads to the establishment of new businesses. While knowledge is centered on the past, entrepreneurship is focused on the future. Therefore, when people collaborate, they intentionally work towards a shared goal of developing lucrative business opportunities that lead to the overall prosperity of an entire nation.

Collaboration can significantly lead to an increase in GDP by fostering economic growth in several ways. At the outset, collaboration encourages exchanging ideas and knowledge among individuals and organizations (Arce, 2019). This leads to innovation, new products and services, and increased productivity that boosts economic activity (Prasanna et al, 2019). Collaboration also entails pooling resources, whether labor, capital, or expertise (Yang et al, 2018). Efficient resource allocation also leads to cost savings and higher economic output (Ekins et al, 2016). Collaboration also helps businesses access new markets, leading to expansion and increased sales and revenue, increasing GDP (Lindič et al, 2012). Collaborative supply chain management also results in more efficient and cost-effective production processes, reducing waste and improving delivery times (Ponte et al, 2018). Optimizing the supply chain also impacts your bottom line and GDP (Treiblmaier, 2019). Regarding globalization, collaboration helps businesses become more competitive, attracting foreign direct investment partnerships (Alfaro, 2017). These partnerships inject capital into our domestic economies, increase exports, and enhance a country's trade balance, all leading to increased GDP (Masipa, 2018). Collaboration leads to job creation, increased income, greater consumer spending, and a higher GDP (Alshubiri, 2019).

Research Question

This research sheds light on the importance of collaborative skills training as a fundamental component of psychological health rehabilitation for formerly oppressed communities. We intend to show how to recover lost collaborative skills by implementing a managerial framework to raise CDR, thereby increasing GDP and average incomes, nationwide. By proposing the implementation of key managerial frameworks, we seek to address the unique needs of these communities, emphasizing empowerment, cultural sensitivity, and collaboration as critical tools for healing and recovery. By developing strong collaborative skills, individuals not only overcome the legacy of oppression but also thrive and contribute positively to their communities and society. This research opens the door to a promising avenue for intervention and healing in the context of historical and contemporary oppression.

The remainder of the paper is organized as follows. The next section is a review of related literature. This is followed by an explanation of collaboration and its relationship to the CDR economic growth model developed recently to explain GDPppp (standard of living) globally (an appendix is provided to illustrate the CDR economic growth model). This is followed by discussing corporate job training methodology and job design for developing and applying collaboration skills. The final section contains some conclusions and suggestions for future research.

RELATED LITERATURE

Historical oppression, marked by traumas, has left lasting imprints on communities, shaping their experiences and influencing future generations. While the direct transmission of trauma is complex and involves various factors, including cultural, environmental, and societal aspects, research suggests that exposure to severe stressors can lead to epigenetic changes that have an intergenerational impact (Lehrner & Yehuda, 2018). This review of related research explores the multifaceted consequences of past traumas on oppressed communities, such as forced labor, excessive and harmful discrimination, and exposure to harmful chemicals. It further posits the negative epigenetic transgenerational psycho-sequela that leads to the erosion of collaborative skills, poor academic and employment performance, and lower income levels. Understanding these dynamics is crucial for devising effective strategies to break the cycle of disadvantage and foster inclusive economic growth.

Communities that have experienced historical oppression endure a legacy of trauma that transcends individual experiences. This trauma is embedded in collective memories and can manifest at the genetic level, passing from one generation to the next through epigenetic mechanisms (Masterpasqua, 2009). Epigenetics studies how behaviors and environments alter gene function (CDC, 2022). This means that factors in an individual's external environment, such as stress from neglect, the type of food consumed, and even trauma, may impact the expression of their genes (Jones et al., 2021). Therefore, the intergenerational transmission of trauma contributes to a cycle of psychological distress akin to trauma caused by forced labor, discrimination, and exposure to harmful chemicals. This research asserts that trauma not only contributes to a cycle of distress but also impedes the development of collaborative skills in future generations.

Forced Labor

Forced labor has a long and complicated history with different forms of institutions emerging and evolving. It is important to note that the engagement in slavery has been multifaceted and varied across regions and historical periods. It was shaped by economic factors that were often central, social, cultural, and political depending on the society. We also recognize that there were forms of legal slavery that varied across nations but differed in their social structures. While the abolition of these systems occurred in different territories at different times and legal frameworks exist to criminalize and combat slavery, globally, some countries may face issues of enforcement of these laws. This has led to instances of modern slavery or human trafficking experienced by various ethnicities that exist even today. A grave violation of human rights has resulted in profound and lasting consequences, including potential negative epigenetic effects.

The earliest mentions of forced labor date back to the beginning of Egyptian civilization in 3100 BC where records suggest slavery in Mesopotamia where individuals were captured in warfare and sold into servitude due to debt (Dowlah, 2021). Slavery was also widespread in ancient Greece and Rome with slaves serving in various roles including labor household tasks, and entertainment (Hunt, 2017). According to Fage (2019), the Arab slave trade transported the first Africans among others to the Middle East in the seventh century while the Viking Age from the eighth century to the 11th century brought Scandinavia thralls, which were captives of wars, raids, or trade (Raffield, 2019).

Serfdom in Medieval Europe began in the late Roman Empire during the early Middle Ages in the fourth through 10th centuries (Davies, 2014). Serfdom acknowledged a system where peasants, called serfs, worked the land in exchange for protection from the landowners (Blum, 1957). The prevalence of slavery in parts of Asia in the 15th century also prompted the Indian Ocean slave trade which involved the movement

of even more individuals being detained to work across the Indian Ocean (Nicolaas & Bosma, 2020). According to Moon (2014), serfdom became prevalent in Russia, after slavery for several centuries as well as the enslavement of the English by the Romans followed by the enslavement of the Irish by the English (Donoghue, 2017). North Africans soon followed the lead of the English with the Barbary Slave Trade (Callow, 2017). The Barbary slave trade involved slave markets in the Barbary states. European slaves were acquired by Muslim Barbary pirates in slave raids on ships and by raids on coastal towns from Italy to the Netherlands, Ireland, and the southwest of Britain, as far north as Iceland. The Barbary corsairs forced both the Irish and the English to convert to Islam and subjected them to both forced labor and sexual slavery (Capp, 2022; Tucker, 2018). Fear of the pirates led to migration, the depopulation of people in coastal communities, and the indentured servitude of nearly 457,000 people across 4,000 miles of dangerous ocean to settle and work the new colonies (Wareing, 2017).

Meanwhile, the Age of Exploration in the West epitomized the 16th through 19th centuries. Portuguese European merchants initiated the transatlantic slave trade by exporting commodities such as gold and ivory from West African kingdoms (Green, 2019). Since these same merchants soon became sources of desirable goods such as textiles, iron, copper bars, firearms, and other weapons, the demand from European powers increased (Whatley, 2012). Up until then, few traders traveled too far inland to avoid disease and violence. Still, with access to high-demand artillery, more and more explorations of the New World could take place even if it meant inciting wars and forcibly transporting millions of Africans to the Americas to create a new workforce on plantations (Thomas, 1997).

As a result, the transatlantic slave trade that subjected millions of Africans to large-scale capture, kidnapping, and subsequent forced labor in the Americas has had enduring effects on African American communities, contributing to health disparities, socioeconomic challenges, and persistent racial inequality (Keestra, 2023; Jackson et al., 2018; Burke-Maynard, 2016). Indigenous communities in North and South America also experienced forced labor under colonial rule, contributing to historical trauma and impacts that have been transmitted across generations, affecting mental health, socio-economic conditions, and overall well-being (Baedke & Delgado 2019; Kirmayer et al., 2014). The 19th century brought Chinese immigrants, particularly those involved in constructing the transcontinental railroad in the United States, to face harsh working conditions and discriminatory practices (Zeleke & Levers, 2022; Anemone, 2019). Soon following, Japanese Americans, during World War II, were forcibly interned in the United States, leading to economic losses, psychological trauma, and the disruption of familial and community structures (Messer, 2021; MacWilliams, 2020).

While the specific impact on epigenetics in the cases mentioned above may not be universally documented in every scenario, the historical trauma and systemic oppression associated with forced labor have had profound consequences on individuals' collaborative skills within the workplace. The experience of coercion and exploitation disrupts the foundational elements of collaboration, leading to the erosion of trust and the creation of hostile work environments. Individuals subject to forced labor often face conditions that prevent open communication, teamwork, and mutual support. In addition, their intrinsic motivation to contribute to collective effort is undermined**,** resulting in a lack of enthusiasm for work. This perpetuates a cycle of isolation and disengagement among workers. The power dynamics inherent in forced labor situations can breed fear**,** hindering the development of healthy collaborative relationships in future generations. Forced laborers may be reluctant to share ideas or express concerns for fear of retribution or exploitation. This sheds light on why efforts to restore collaborative skills must be intentional by creating safe and inclusive work environments that provide social and psychological support to those who have been affected.

Discrimination

There also exists a linkage between discrimination, negative epigenetic effects, and intergenerational transmission. While this represents a complex and evolving area of research, there is evidence to suggest that chronic exposure to discrimination and systemic oppression can have lasting impacts on individuals and communities. African Americans have faced systemic discrimination, racism, and inequality throughout U.S. history, from slavery to segregation and ongoing structural racism (Brown et al., 2019).

Studies suggest that experiences of racial discrimination can contribute to stress-related health disparities and potentially impact future generations (Mulligan, 2021; Conradt et al., 2020). Indigenous communities across the globe have experienced discrimination, forced assimilation, and the loss of cultural heritage (Gilbert, 2017). The historical trauma associated with colonization has been linked to mental health challenges and adverse health outcomes, with potential implications for subsequent generations (Smallwood et al., 2021). Discrimination against Mexican Americans and Latino communities has been prevalent, with impacts on education, employment, and access to resources (Findling et al., 2019). Chronic exposure to discrimination in the Latino community can contribute to stress-related health issues and potentially affect future generations (Martínez et al., 2022). South Asian communities, including those of Indian, Pakistani, and Bangladeshi descent, face discrimination based on race, religion, or ethnicity (Talpur et al., 2023). Studies suggest that experiences of discrimination in South Asia influence mental health outcomes and well-being (Qureshi et al., 2023).

When individuals experience discrimination, whether based on race, gender, ethnicity, religion, or other factors, it can create a hostile and divisive environment that hinders effective collaboration, fear of judgment or backlash may lead individuals to withdraw, resulting in a breakdown of communication, which is crucial for effective collaboration. This leads to creating divisions within a team, leading to cliques or isolated subgroups. This fragmentation can impede the development of a cohesive team identity, making it challenging for members to work together toward common goals. When individuals feel unfairly treated or targeted, they become wary of their colleagues and hesitate to share ideas, information, and resources. Team members then refrain from expressing themselves because they feel undervalued or unfairly treated, making them more disengaged and less motivated to contribute to collaborative efforts. This can result in a decline in performance, which erodes the foundation of any type of teamwork and drives talented individuals away from a team or organization, hindering long-term productive relationships. To foster collaborative skills, organizations need to promote inclusivity, diversity, and a culture of respect. Addressing and preventing discrimination through policies, education, and a commitment to equality can contribute to a positive and collaborative work environment.

These examples of ethnicities that have historically faced discrimination and the ongoing research on potential intergenerational effects set up the relationship between discrimination, epigenetics, and intergenerational effects as a complex and evolving area of study. While there is evidence of associations, more research is needed to fully understand the mechanisms and nuances of how discrimination may impact the biological and psychological well-being of individuals and their descendants over time.

Exposure to Harmful Chemicals

Numerous cities worldwide have experienced instances of chemical exposure in oppressed communities, contributing to environmental injustice. In the 1980s, Warren County, North Carolina became a symbol of environmental racism when a PCB landfill was established in a predominantly African American community leading to protests and raising awareness about the unequal distribution of environmental hazards (McGurty, 1997). In Bhopal, India, the infamous Bhopal gas tragedy of 1984 involved a chemical leak at the Union Carbide pesticide plant that exposed nearby communities to toxic methyl isocyanate, resulting in thousands of deaths and long-term health effects (Chang et al., 2021). Flint, Michigan gained international attention due to lead contamination in its water supply that affected a majority of low-income and predominantly African American communities. Certain low-income neighborhoods in São Paulo, Brazil experienced pollution from industrial sources, affecting air and water quality. Kabwe, Zambia is one of the world's most polluted cities due to historical lead and zinc mining (Nakayama et al., 2011; Mwaanga et al., 2019). The contamination has had severe health consequences for residents, particularly children, leading to developmental issues and long-term health problems (Bose-O'Reilly et al., 2018; Yabe et al., 2015).

Research consistently demonstrates a concerning connection between chemical exposure and the erosion of collaborative skills among individuals in various settings. In a study conducted to assess historical exposure to toxic chemicals, it was noted that advocates lack trust in public authorities that failed to address environmental injustices. Instead, they leaned on academic scientists to inform on public health

and policy (Johnston et al., 2019). While the specific incidents and circumstances may vary, these examples underscore the importance of recognizing and addressing environmental injustices, advocating for the rights of affected communities, and implementing policies to prevent future occurrences of chemical exposure in oppressed areas.

Epigenetic Transgenerational Psycho-Sequela

Recent research has shed light on the intricate relationship between trauma (forced labor and family separation, discrimination, exposure to chemicals) and epigenetic modifications, leading to transgenerational psycho-sequela (Ridley & Nelson, 2022b). Epigenetic changes, such as DNA methylation and histone modifications, can influence gene expression and contribute to the inheritance of stress-related behaviors and vulnerabilities (Ventura-Junca & Herrera, 2012; Schiele et al., 2020). In the context of oppressed communities, negative epigenetic transgenerational psycho-sequela may compromise mental health and social adaptation, thereby affecting collaborative skills.

The Erosion of Collaborative Skills

The erosion of collaborative skills in oppressed communities is a multifaceted phenomenon rooted in historical traumas. The transmission of trauma through generations, coupled with socioeconomic disparities, can lead to a breakdown in social cohesion and trust (Johnston et al., 2019). As collaborative skills are nurtured through positive social interactions, the persistent trauma within these communities impedes the development of effective communication, teamwork, and conflict resolution skills, hindering their ability to thrive in academic and employment settings.

These oppressive experiences hinder effective collaboration, create divisions, and impede team identity. It can lead to communication breakdown and impede team identity. The unfair treatment makes team members hesitant to share ideas, leading to disengagement and a decline in performance, driving talented individuals away and hindering long-term relationships. Individuals become disengaged and less motivated to contribute, leading to decreased performance. To foster collaborative skills among the oppressed, organizations must promote inclusivity, diversity, and a culture of respect by addressing and preventing discrimination through policies, education, and a commitment to equality.

Academic and Employment Performance

The impact of historical oppression on academic and employment performance is evident in the struggles faced by individuals from affected communities. Compromised collaborative skills and systemic barriers and discrimination contribute to lower educational attainment and reduced access to employment opportunities (Baker, 2023). As a result, individuals from these communities often face challenges in securing stable employment, perpetuating a cycle of economic disadvantage. If individuals do secure employment, there exists an erosion of trust, which creates a hostile work environment. Laborers face conditions that prevent teamwork and mutual support, leading to a lack of enthusiasm for work and perpetuating a cycle of isolation. Restoring collaborative skills requires creating safe and inclusive work environments that provide social and psychological support to those affected.

Income and Economic Growth

Historic oppression and its negative impact on collaboration skills and academic and employment performance culminate in low-income levels within affected communities. The economic repercussions extend beyond individual households, influencing broader economic indicators for the country. The inability of these communities to contribute significantly to economic growth exacerbates socio-economic disparities and hampers the nation's overall progress.

Addressing the complex interplay of historical oppression, epigenetic transgenerational psycho-sequela, and the erosion of collaborative skills becomes paramount for breaking the cycle of disadvantage. Interventions that focus on mental health, education, and economic empowerment can mitigate the long-term effects of trauma, fostering resilience and facilitating the development of collaborative skills. By

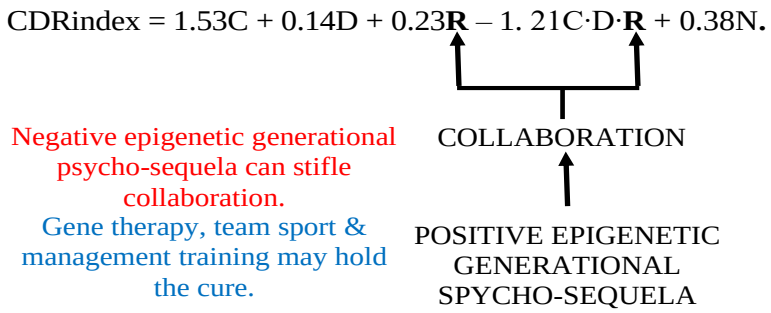
understanding and addressing these interconnected issues, policymakers and communities can work towards creating a more equitable and prosperous future for all.

STANDARD OF LIVING FROM CDR

This research is a follow-up that aims to find solutions to the problems identified in Ridley, Lee, and Nelson's (2023) study that uses the CDR economic growth model as a basis. Interestingly, there is a commonly held view that wealth just exists and that the government's role is to distribute it. However, the source of wealth is the exogenous human capital of imagination and creativity. This means that every rational person is a capitalist seeking to maximize the payment they receive for their effort. This idea is consistent with the epistemologies of Ayn Rand's (1990) objectivist libertarianism and Friedman & Friedman (1980) consequentialist libertarianism. Capitalism is organizing capital for profitable investment, converting human capital into endogenous capital stock of knowledge, machines, recordings, computer programs, and more, which are then used to convert raw materials into goods and services. This process is measured as real per capita gross domestic product (GDP) adjusted for purchasing power parity (GDPppp), also known as the standard of living. After consumption, machinery depreciation, and knowledge obsolescence, this contributes to wealth. Ridley, Lee, and Nelson's (2023) primary example of the impact of collaboration on the rapid soaring standard of living is Singapore (see Appendix A). One interesting point is that knowledge is finite, but ignorance is infinite. However, human imagination and creativity are unlimited, meaning wealth is unlimited. While there may be a fixed number of atoms in the world, the number of ways they can be combined is incalculable.

A variety of economic growth models have been developed to estimate GDP. According to Ridley's (2020a, 2023) most recent model, GDPppp can be calculated using the CDRindex provided in Figure 1 and Figure 5 in the Appendix (as reproduced from Ridley (2020a, 2023). The positive coefficients of the C, D, and R policy variables all contribute to GDPppp, but there is also a negative interactive term (-1.21CDR) to consider. This term measures the impact of excessive democracy and over-regulation on decision-making and investment opportunities, which can ultimately lead to a reduction in GDPppp. As Thoreau (1849) famously said, "that government is best which governs least."

FIGURE 1
YEAR 2014 CDR INDEX AND MODEL FOR 79 COUNTRIES



This model was re-estimated for the years 1995 to 2016 with similar results. For additional comments on the countries included see Ridley (2020a, 2023). R requires collaboration skills which requires positive epigenetic generational sequela. Reproduced from Ridley, Lee, and Nelson (2023).
Click here for animation. https://www.youtube.com/watch?v=lf8Gm9m-WIY

COLLABORATION SKILLS TRAINING IN SOCIETY

It is believed that intelligence, traditionally measured by intelligence quotient (IQ), is undoubtedly crucial for individuals. However, according to Ridley (2023), collaboration is an even better predictor of a nation's standard of living (see also Surowiecki, 2005). While collaboration is an innate quality unique to

humans, it must be developed before it is fully functional. Ridley (2023) and Ridley & Nelson (2022b) have suggested exploring best practices for restoring lost collaboration skills due to negative epigenetic effects. The PISA 2015 (OECD, 2015) tests for collaboration can be used to examine its progress. Collaborative problem-solving competence is defined as an individual's capacity to effectively engage in a process whereby two or more agents attempt to solve a problem by sharing the understanding and effort required to come to a solution and pooling their knowledge, skills, and efforts to reach that solution.

The advantages of working in teams cannot be overemphasized. Since the dawn of humanity, homo sapiens discovered that more food, protection, and common goals can be achieved when collaboration is implemented. Nowadays, at the corporate level, better results are gotten when interprofessional skills are organized and focused in the same way. History is witness to how collaboration contributes to society's development. Alexandru (2018) explained how multiple workers with different backgrounds and skills obtain higher outcomes when interprofessional collaboration exists. She described how interprofessional education is gaining momentum in the world. Interprofessional education appeared for the first time in the work of WHO (1988). It is defined as a process where students of different specializations learn together, sharing knowledge.

According to Bell (2010), project-based learning can significantly improve communication skills for learners. This was demonstrated in junior high school students with a special tool based on several teaching models. A model including university and school activities was presented by Richards et al. (2003). They developed a model for teachers aimed to increase collaboration. In their model "Candidates collaborated in pairs to identify and assess learning challenges in students, intervene and evaluate the effectiveness of the intervention". In this model, 77 candidates are exposed to collaborative problem-solving methods, to teach a block of courses. The collaboration project was elaborated in several phases: (a) training in the collaborative process, (b) disability simulation activities, (c) training in data collection, and (d) training in instructional and curriculum adaptations. Although the experience was successful, they noted several issues for future research.

Collaboration in learning settings is also verified in Prichard et al., (2006), where three groups of students were evaluated and those who received team-skills training and worked together, outperformed the other two groups of students doing the same assignment without this collaboration instruction. Costaguta et al., (2011) reported similar results in a Computer Supported Collaborative Learning system, using a multi-agent model developed to recognize conflicts in a group dynamic. The metrics used showed a high degree of efficiency. Ridley, Ngnepieba & de Silva (2021) show how collaborative learning transforms calculus test scores from a multimodal nonnormal distribution to a unimodal normal distribution while raising the scores.

Dean Sybil Collins Mobley (1925-2015) was a successful leader who introduced grooming and professional development skills into higher education at the Florida A&M University School of Business (Hale, 2016). The program included intensive team activities and corporate interactions, which helped students develop collaboration skills. As a result, the program was highly recognized by America's largest corporations and saw a phenomenal rate of recruitment.

Illustrating the pivotal role of collaboration in team sports, NBA star Scottie Pippen recounted his experience with Michael Jordan before joining the Bulls, highlighting Jordan's initial struggles as a player (Li, 2023a). Pippen remarked, "I saw Michael Jordan before I joined the Bulls; you all saw him play; he was a terrible player and difficult to play with. It was all about individual performance, and taking poor shots. But then, as we united as a team, we began to thrive, and our collective success overshadowed his previous shortcomings." This anecdote underscores how Jordan's transformation into a great player coincided with his embrace of collaboration within the team dynamic (Li, 2023b).

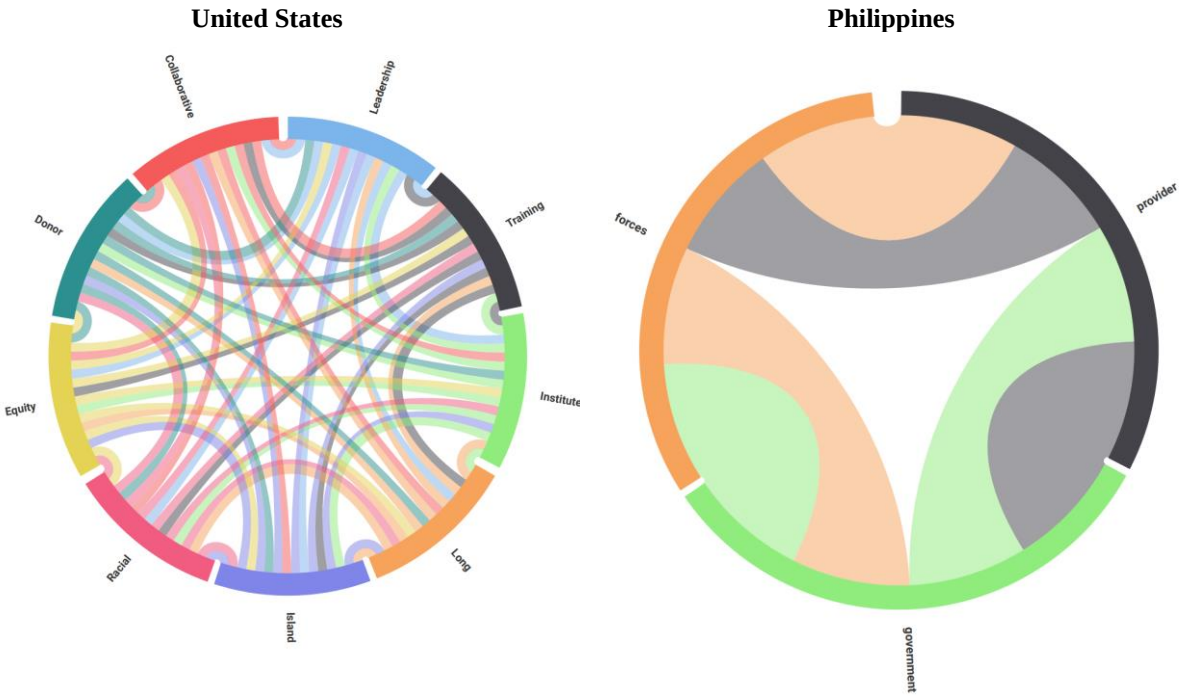
Engineering teams benefit significantly from collaborative work. Due to engineering projects' interdisciplinary and distributed nature, it is crucial to orchestrate fluid processes to achieve projects on time and under budget. Riel et al. (2012) studied the collaboration of integrated design engineers working in various industrial sectors of Europe. They describe the process of the identification of an initial set of skills based on a survey of young Romanian graduates with experience in international corporations. The

study concludes that this kind of engineer performs better using collaboration along with virtual technology tools. This is due to the complexity of the projects and the diversity of disciplines involved.

The perspective that people have about collaborative skills training was searched on a public database[1], where the news in multiple sources about this subject is analyzed using machine learning and natural language processing to reveal the meaning of text within the data, extracting information about people, events, and sentiments of the news. This site provides insightful text analysis of millions of news items from all leading news sources for the last 10 years. The search results are summarized through different views, discovering interesting relationships and highlights.

The view is filtered by country or region, and comparisons are made to reveal special patterns about the subject of the research. Figure 2 shows the relationship wheel for "collaboration skills training" in the USA and Philippines, from March 24, 2022, to January 30, 2023.

FIGURE 2
RELATIONSHIP WHEEL FOR NEWS ON COLLABORATION



It is remarkable in Figure 2, that in the USA the news reveals connections of collaboration to more elements (9) and a more specific treatment, relating collaboration to elements like "racial", "equity", and "leadership", while in the Philippines the relationships are more limited, relating the general words (3): "government", "provider" and "forces".

Google provides a tool called "trends" where the people interested in a subject can be searched. Using the phrase "Collaboration Skills", figure 3 shows the results for the USA and Philippines in the last 5 years. It is remarkable how interest has increased in recent years. Furthermore, the level of interest shows a greater correlation in recent years, implying greater contemporaneous alignment.

FIGURE 3
WEB INTEREST IN COLLABORATION SKILLS IN THE LAST 5 YEARS

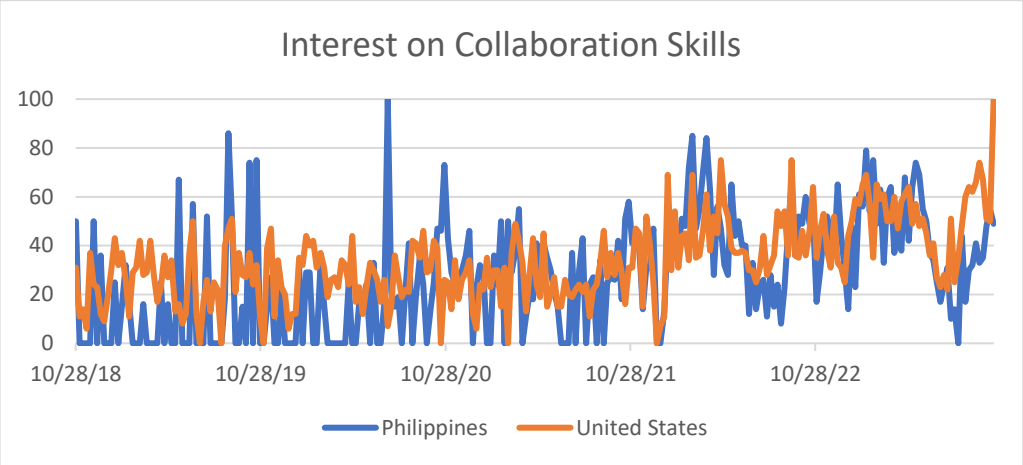
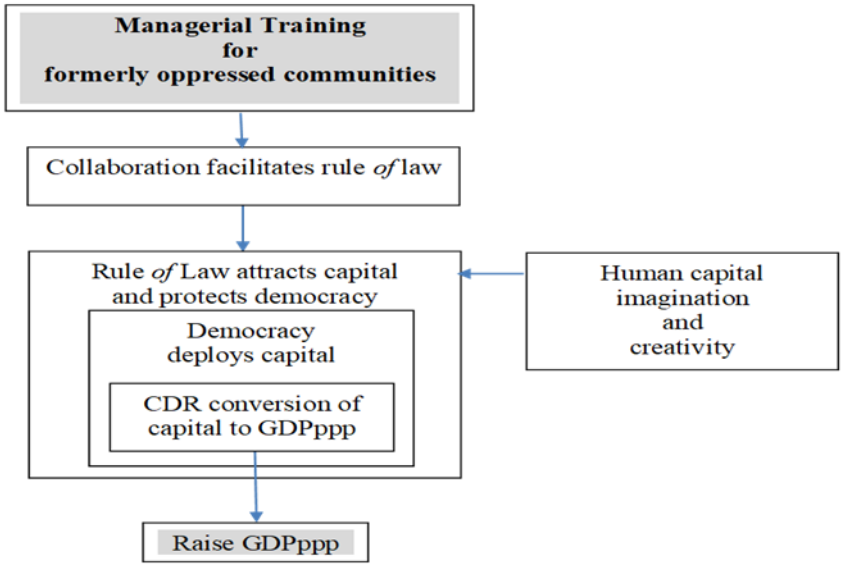


FIGURE 4
MANAGERIAL TRAINING TO PROMOTE RECOVERY OF COLLABORATION SKILLS



COLLABORATION SKILLS TRAINING IN CORPORATE MANAGEMENT

Ridley and Nelson (2022a, 2022b) show that collaboration is essential for developing the rule of law. They propose mandatory collaboration skills training via school team sports. However, adults will have already graduated from school and will need corporate management training to enhance their job performance. Figure 4 depicts managerial training to promote collaboration that facilitates the rule of law that attracts capital, protects democracy, and deploys capital for the generating of GDPppp.

Currently, there is a lack of research examining the correlation between managerial frameworks that use collaborative training for formerly oppressed communities that lead to enhanced economic development, contributing to increased GDP. Three primary managerial frameworks can aid in boosting economic productivity. The first framework prioritizes investments in education and skill development to enhance the capabilities of the workforce (Arias et al., 2019). This is an essential driver of productivity that

focuses on the alignment of educational systems to meet the needs of the labor market, which equips the workforce with the skills necessary for a knowledge-based economy (Hazelkorn, 2020). The second framework encourages strategic infrastructure development projects through effective public and private partnerships (Biygautane et al, 2019). This framework promotes private sector involvement in transportation, energy, and communication networks that lead to improved connectivity, efficiency, and overall economic productivity (Zhao, et al, 2019). The third framework, investments in innovation, drive productivity gains and enhance competitiveness, promoting the widespread adoption of technology across sectors (Wadho and Chaudhry, 2018). By fostering a culture supporting research and development initiatives, businesses can facilitate the adoption of cutting-edge technologies, ultimately leading to increased global competitiveness and attracting foreign direct investment partnerships.

The goal of implementing managerial frameworks emphasizing collaboration is to create an ecosystem that fosters ongoing creativity, technological advancements, and entrepreneurship. Coordinated efforts from government, business, and other stakeholders are necessary to successfully integrate these frameworks and create environments that are conducive to sustainable economic growth. Building trust and promoting unity among formerly oppressed communities are crucial to overcoming century-old historical wounds, and this requires a commitment to open dialogue.

Corporate Strategies for Collaboration

Numerous corporations have implemented job design strategies to promote employee collaboration skills for long-term success. Implementing management theories to enhance collaboration skills is essential for organizations seeking to improve business performance across various metrics such as return on investment (ROI), gross domestic product (DDP), and profitability. Collaboration fosters synergy among team members, leading to innovative problem-solving, efficient workflow processes, and better decision-making (Farooq et al., 2023). By using management theories, companies can cultivate a culture of open communication, trust, and mutual respect among employees, which enhances teamwork and productivity.

Effective collaboration facilitated by management theories enables companies to capitalize on diverse perspectives and skills within their workforce, resulting in higher-quality outputs and faster project delivery. Moreover, collaboration encourages knowledge sharing and continuous learning, essential for adapting to market changes and staying competitive in dynamic business environments (Antunes & Pinheiro, 2020). Ultimately, improved collaboration skills enhance operational efficiency, cost savings, and increased profitability (Quinn et al., 2020). Companies that prioritize collaboration through implementing management theories position themselves for long-term success and sustainable growth in today's interconnected global economy.

Microsoft Corporation

Microsoft has embraced various methodologies, notably Agile and Scrum are project management tools to enhance collaboration within its teams and improve organizational efficiency (Denning, 2015a). Agile methodology emphasizes close collaboration between cross-functional teams, aligning well with Microsoft's focus on rapid software development and innovation (Denning, 2016). Scrum, a framework under the Agile umbrella, is widely utilized at Microsoft to structure development cycles into manageable iterations called *sprints* (Alavandhar & Nikiforova, 2017). Through Scrum, teams set clear goals for each sprint, collaborate closely on tasks, and hold regular meetings, such as daily stand-ups, to track progress and address impediments (Kaur & Iftikhar, 2022). This framework enhances team transparency, accountability, and communication, fostering a culture of collaboration and shared ownership of project outcomes (Tyagi et al., 2022).

Microsoft also implemented a "One Microsoft" strategy, encouraging cross-functional collaboration and breaking down silos (Park, 2020). Their emphasis on collaboration has contributed to increased innovation, faster product development cycles, and a more integrated approach to addressing customer needs. A McKinsey Quarterly article (Cross et al., 2006) reports on an engineering company's high-performing group in which a small number of construction managers and engineers accounted for 35

percent of all the collaboration occurring within it. Collaboration software tools enabled the raising of construction revenue by 244% from $80 million to $275 million in a single year.

The promotion of agile and scrum technologies in addition to the implementation of "One Microsoft" strategies, are akin to the concept of sociotechnical systems theory (STS) which views organizations as interconnected systems where different parts work together to achieve common goals (Imran et al., 2021). STS combines the social and technical aspects that highlight the interdependence of various organizational components and stresses the importance of collaboration among departments, teams, and individuals to optimize organizational performance (Sony & Niak, 2020). Microsoft's commitment to embracing this example of management theory not only enhances collaboration but also accelerates Microsoft's commitment to innovation, its time-to-market improvement, and delivers on its promise of high-quality products that meet customer needs effectively (Moniruzzaman & Hossain, 2013).

International Business Machines (IBM) Corporation

It is a little-known fact that IBM introduced the concept of working from home back in 1979 with just five employees (Zachariah et al., 2022). Hill et al. (2003) have since studied and advocated for hybrid work approaches combining physical and virtual collaboration, citing strategic emphasis on reduced costs, increased job performance, and job satisfaction (Hill & Weiner, 2003). A hybrid workplace is a flexible work model that supports both in-office and remote work. It was used sparingly before the COVID-19 pandemic, but now more companies are adopting it temporarily and may continue to use it based on its effectiveness. For decades IBM has encouraged flexible work arrangements, virtual project teams, and collaborative technologies to connect employees globally. Its job design strategy has supported a culture of collaboration, allowing employees to work across time zones and cultural differences, leading to increased efficiency and a diverse range of perspectives in problem-solving (Agudio, 2022). The McKinsey Global Institute (Hassell & Shah, 2013) recently found that 72 percent of companies use social technologies of which 90 percent report business benefits. Potentially, up to 1.3 trillion US dollars of annual value can be unlocked by using social technologies. Knowledge worker productivity has the potential to improve by 20 - 25 percent.

IBM's advocacy of a hybrid approach is consistent with the Virtual teams' theory and recognizes the importance of leveraging technology to support collaboration among geographically dispersed team members. A hybrid approach combines virtual collaboration tools with occasional face-to-face interactions to build trust, enhance communication, and foster team cohesion (Garro-Abarca et al., 2021).

Proctor & Gamble (P&G) Company

P&G implemented a collaborative innovation model where cross-functional teams collaborate to develop new products (Gutierrez et al., 2020). The company focuses on breaking down departmental barriers and encouraging knowledge sharing. Their collaborative job design has resulted in numerous successful product launches driven by interdisciplinary collaboration, such as creating the "Connect + Develop" open innovation platform (Zajko, 2017). The theory of collaborative advantage suggests that organizations can gain a competitive edge by collaborating with external partners, such as suppliers, customers, and other stakeholders (Huxham & Vangen, 2013). This management theory advocates collaboration as a strategic approach to leveraging complementary strengths, accessing new markets, sharing risks and rewards, and driving innovation and growth through partnerships and alliances (Brown et al., 2019).The extant management theory is associated with a job design that replaces silos with cross-functional operations that promote specialization and expertise. By implementing a strategy focused on cross-functional collaboration, organizations can break the inevitability of a siloed mindset, which can significantly impact the quality of the customer experience (Banerjee, 2021). As a result, emphasis on collaboration across external partners has contributed to increased innovation, faster product development cycles, and a more integrated approach to addressing customer needs.

These examples demonstrate how P&G has strategically redesigned jobs to promote collaboration, recognizing the long-term benefits of a more interconnected and innovative workforce. Effective

collaboration improves current processes and positions these companies for success in the rapidly evolving business landscape. These are all major contributions to GDP.

Netflix

Netflix has embraced various management theories, prominently including the concept of "Freedom and Responsibility," to enhance collaboration within its organization. This approach, championed by former Chief Talent Officer Patty McCord, emphasizes giving employees significant autonomy in their work while holding them accountable for results (McCord, 2019). Netflix believes that collaboration naturally flourishes by granting employees the freedom to make decisions and take ownership of their projects (Hastings & Meyer, 2020).

The "Freedom and Responsibility" approach at Google encourages open communication and idea-sharing among teams, as employees feel empowered to voice their opinions and contribute to projects without fear of micromanagement (Kaas-Ojavere, 2022). Similar to when individuals engage in the social exchange theory, individuals are drawn to cooperative behaviors that build and maintain mutually beneficial relationships, exchange resources, and achieve common goals (Tsai & Kang, 2019a). This collaborative environment fosters creativity and encourages cross-functional collaboration, as teams work together to solve complex problems and achieve common goals (Tsai & Kang, 2019b).

Google, LLC.

Google is well-known for its innovative and collaborative work environment, as mentioned by Edmonson (2018). The company has implemented open office spaces, communal areas, and cross-functional project teams to encourage spontaneous interactions and idea-sharing (Edmonson, 2018a). In modern organizational theory, creating a culture that values transparency, communication, and teamwork further reinforces collaboration by bringing together individuals from different departments or disciplines to work toward common goals (Paais & Pattiruhu, 2020). This collaborative job design has contributed to Google's culture of innovation, with employees from various functions working together on successful products such as Google Maps and Android (Edmonson, 2018b). According to a white paper by the International Data Corporation (IDC) (Kurtzman, et al. 2022), organizations using Google Workspace have experienced an average ROI of $103.77 million per organization ($282,300 per 100 Google Workspace users), with a projected three-year ROI of 412% and a break-even point in investment occurring in just 11 months. These benefits are due to higher productivity and direct staff efficiencies.

Motown Record Corporation

It is worth mentioning the example of Motown, which was founded in 1960. The name "Motown" is a portmanteau of "motor" and "town," as it started in Detroit, which was known for its automobile industry. This phenomenal music product was thought to be related to the fact that it started in Detroit and that Detroit was responsible for its continued success. Despite this, Motown recorded music in many venues outside of Detroit (Quispel, 2005). The Motown sound that captivated the world wasn't just about the music, but also the spirit associated with it, which came from the people who made it happen. Motown was the first and only music company to prioritize collaboration between music, vocals, and grooming for comportment and a totality of presentation (Wilsmore, R., & Johnson, 2022). Every performing artist had to attend two days per week of comportment training known as behavioral etiquette (or artistic development), which resulted in regal performances (Market, 2017). The result was the greatest music productivity known to mankind, greatly contributing to the GDP. The management theory associated with this cross-functional performance routine is to minimize temperamental primo uomos and prima donnas, which is a syndrome of exaggerated self-importance and expectation of special treatment that is tempered by group culture.

Supply Chain Management

In the example of supply chain management, cooperation maximizes the profit of the individual business units. But it weakens the chain such that the chain total profit is reduced. Collaboration maximizes the chain total profit. That maximum must then be shared among the individual business units in a justifiable

way. Collaboration involves active engagement, communication, and joint problem-solving among supply chain partners. Collaboration maximizes the chain's total profit by fostering innovation, streamlining processes, and optimizing resources (Arif et al., 2023). For instance, collaborative forecasting and planning enable more accurate demand forecasting, inventory optimization, and resource allocation, reducing excess inventory costs (Tadayonrad & Ndiaye 2023). Collaborative product development efforts can lead to introducing innovative products or enhancements that resonate with customers, driving sales and profitability. When supply chain partners collaborate effectively, they can share insights, expertise, and resources to identify and capitalize on cost savings, process improvements, and value creation opportunities. Overall, collaboration strengthens the supply chain by enhancing its resilience, responsiveness, and competitiveness, ultimately maximizing total profit across its various divisions.

DISCUSSION

It is important to note that the impact of historical oppression on GDP is complex and context dependent. This is due to the variety of interconnected factors that shape economic outcomes resulting from forced labor and separation, systemic discrimination, and even exploitation that have lasting effects on societies over time. For example, longer periods of intense oppression may lead to longer-lasting economic consequences that affect infrastructure in institutions. Another factor that may complicate the impact of oppression is how unjust laws and discriminatory policies hinder economic development. Still, other factors such as the dispossession of land, the weakening of social capital networks, and limiting access to education, healthcare, and skills development may hinder the accumulation of capital, access to resources, and the productivity of a labor force for generations. Due to the nature of these complexities that continue to plague the historically oppressed, it becomes more challenging to generalize its impact on GDP. However, with the combined implementation of proper managerial frameworks and the presence of effective policies, social reforms, inclusive initiatives, and even reparations, the effects of oppression may be alleviated and pave the way for equitable economic development, thereby increasing GDP. Therefore, ongoing efforts to address historical injustices, promote inclusivity, and advocate for policies that support marginalized communities are essential to counteract the lasting effects of oppression and foster a more robust and sustainable economy.

CONCLUSIONS

Ridley, Korovyakovskaya & Llaugel (2021) and Ridley (2022a) showed a collaboration deficit worldwide. The loss of collaboration skills accrued from epigenetic transgenerational psycho-sequela due to environment stresses including forced labor, excessive discrimination and exposure to chemicals. The result can be low academic and job performance, low income, self-harm, poor community relations, and high aggression. Companies can avoid employing people who demonstrate collaboration deficit or employ and utilize them in corporate job design that intentionally implements team action and collaboration. The result will be a good way for companies to achieve high productivity and generally excellent outcomes. Concomitant with said outcomes will be an increase in CDR, GDP and average income nationwide. Beneficiaries will include primarily low-income Americans in particular and all Americans in general. Future research may consider school education for children and gene therapy for adults both aimed at accomplishing the recovery of collaboration skills.

ACKNOWLEDGMENT

The authors would like to thank Lorin Lee for helpful comments and good discussions but take full responsibility for any errors and omissions even after the discussants made their views clear.

ENDNOTE

1. https://worlddata.a

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APPENDIX

From Ridley (2020) the ordinary least squares (OLS) model is $g_i = \beta_0 + \beta_c C_i + \beta_d D_i + \beta_r R_i + \beta_{cdr} C_i \cdot D_i \cdot R_i + \beta_n N_i + \varepsilon_i$, where i represents the ith country, the coefficients and variables are dimensionless, and the errors ε_i are random and normally distributed with zero mean and constant standard deviation. We regress g on C, D, R, and N to obtain the ith country estimated g as follows.

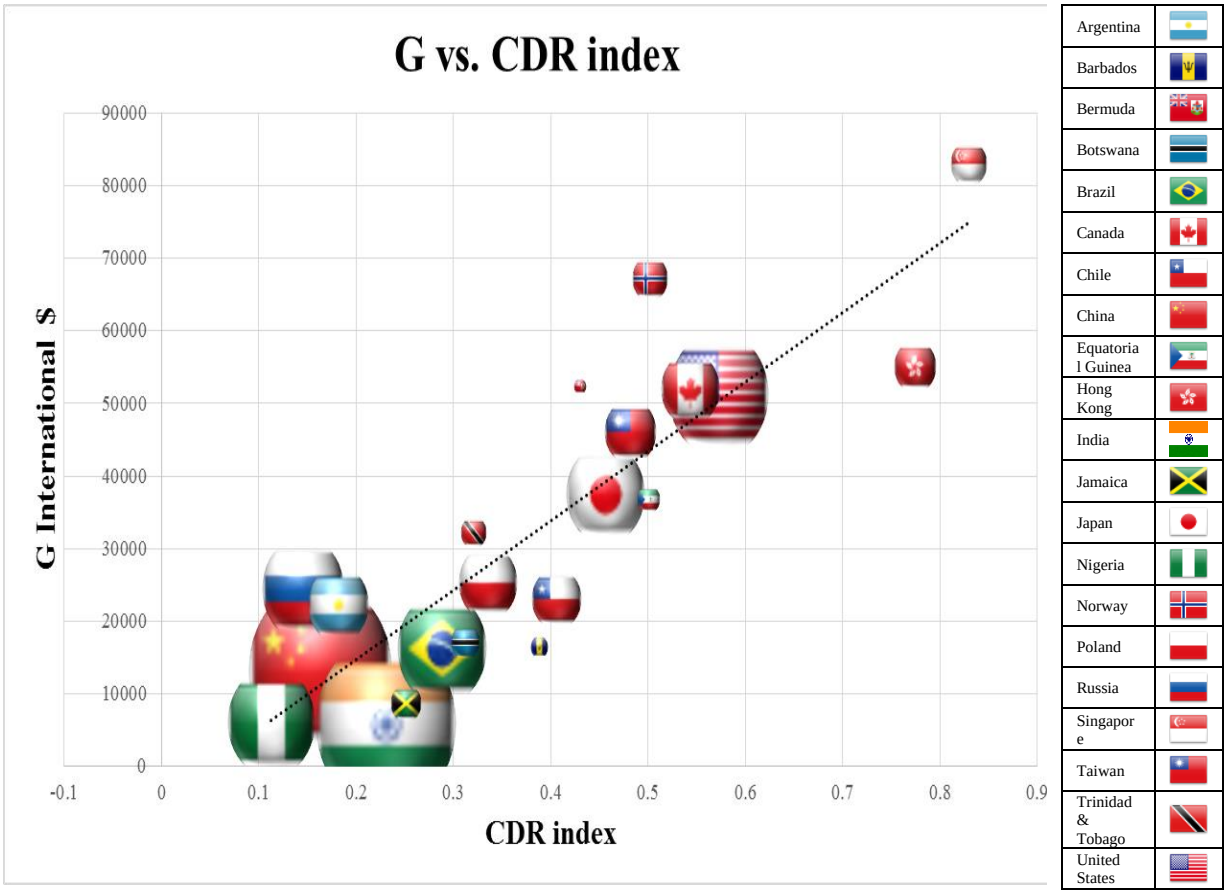
$$\text{Year 2014:} \qquad g_i = 1.53C_i + 0.14D_i + 0.23R_i - 1.21C_i \cdot D_i \cdot R_i + 0.38N_i$$

where to determine the relative contributions of *C*, *D*, *R* and natural resources (*N*), we standardize the variables to guarantee upper and lower bounds of $0 \leq g, C, D, R, C \cdot D \cdot R, N \leq 1$ as follows:

g	= (*G* -lowest *G*)/(highest *G* -lowest *G*), *G* represents GDPppp
C (Capitalism)	= (per capita capitalization-lowest per capita capitalization)/ (highest per capita capitalization - lowest per capita capitalization)
D (Democracy)	= (lowest democracy rank-democracy rank)/(lowest democracy rank- highest democracy rank)
R (Rule of law)	= (lowest corruption rank-corruption rank)/(lowest corruption rank- highest corruption rank)
N (Natural resources)	= (per capita total natural resource rents-lowest per capita total natural resource rents)/(highest per capita total natural resource rents- lowest per capita total natural resource rents).

Democracy and corruption are rank ordered, where the highest = 1 and the lowest = the number of countries. These transformations are all one hundred percent reversible: *G* = g(highest *G*-lowest *G*) + lowest *G*, highest *G*=$83,066, and lowest *G*=$1,112.

FIGURE 3
YEAR 2014 *G* VS CDR INDEX FOR 79 COUNTRIES (LINE)



Bubble size (21 countries) is the square root of population. This model was re-estimated for the years 1995 to 2016 with similar results.For additional comments on the countries listed see Ridley (2020a, 2023). Click on the bubble graph to see an animation: 4D CDR (google.com)

The CDR model is depicted in the vexillological chart in Figure 5. The CDR model flattens the world and creates a path to widespread and accelerated entrepreneurship.

To correct for bias due to the endogenous capital stock component of capital, a two-stage least squares (2SLS) estimate is conducted as follows.
The estimated 1st stage least squares model is

$$\hat{C}_i = 0.04 - 0.07L_i - 0.16D_i + 0.22R_i + 1.11C_i \cdot D_i \cdot R_i - 0.02N_i.$$

where $\hat{C}$ is the exogenous entrepreneurship component of capital and the instrumental variable (IV) is exogenous geographic latitude (L_i).
The estimated 2nd stage least squares unbiased model for estimating g from entrepreneurship capital ($\hat{C}_i$) is

$$\hat{g}_i = 1.30\hat{C}_i + 0.12D_i + 0.28R_i - 0.98\hat{C}_i \cdot D_i \cdot R_i + 0.39N_i.$$

The contributions to GDPppp (partial correlations) are as follows,
C: 59%, D: 5%, R: 10%, CDR: 3%, N: 6%, L: 4%.