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The Effects of Economic Growth on the Ecosystem and Future Generations

1. Introduction

Balancing human development with sustainability is a complex challenge without a simple solution (Pathiranage, 2024). While economic growth improves living standards and provides essential goods and services (Roser, 2021), it often comes with environmental damage and social inequality (Population Matters, 2024). As endless economic growth continues, there is a worldwide ecological overshoot, illustrating that finite natural resources cannot sustain infinite growth (Population Matters, 2024). Given that the environment is the basis of human existence (Yan et al., 2022), there is a pressing need to rethink current economic growth models–not only for current generations, but also posterity, as we all share a responsibility to future generations who will likely face worse climate change effects (Syropoulos & Markowitz, 2023).

This paper will examine whether economic growth is always harmful to the planet and future generations, or if a desirable balance between development and sustainability can be achieved. Based on the existing literature, I address both sides of the coin by comparing the positive and negative impacts of economic expansion. The evidence provided in this paper support the argument that an optimal scale of the economy that addresses societal needs within ecological limits is crucial for long-term sustainability.

The remainder of the paper proceeds as follows. Section 2 details the negative impacts of economic growth, including increased carbon emissions, climate change, and inequality, while Section 3 discusses the positive impacts, including human welfare and environmental benefits. Section 4 addresses the urgent need for society to find a balance between economic growth and environmental sustainability and Section 5 concludes.

2. The Negative Impacts of Economic Growth – Is it Worth the Cost?

2.1 The Industrial Revolution and Carbon Emissions

Humanity has always influenced the landscapes that it inhabits; however, the impacts of climate change resulting from anthropogenic activities are of central concern (Ahmed et al., 2022). The Industrial Revolution is often considered the start of modern-day climate change due to the increased extraction of resources to produce goods (Ahmed et al., 2022). Fossil fuel combustion resulted in carbon dioxide (CO_2) emissions that are now much higher than pre-industrial levels (Ahmed et al., 2022). Rapid urbanization furthered pollution, creating unsustainable demands on natural resources, leading to the climate crisis (Ahmed et al., 2022).

The Industrial Revolution paved the way for the current rate of economic growth and hence CO_2 emissions, which reached 409.8 parts per million (ppm) in 2019, the highest peak in the last 800,000 years (Ahmed et al., 2022). Over the last century, the significant increase in CO_2 emissions has been the central cause of climate change (Ahmed et al., 2022). This can be traced back to the growth limit theory, which states that as the industrial output increases, natural resource consumption, waste accumulation, and pollution will increase, causing continuous environmental deterioration (Yan et al., 2022).

2.2 Economic Growth Climate Change Effects

The Environmental Kuznets Curve (EKC) hypothesis is a tool often used when analyzing the relationship between economic growth and sustainability (Pathiranage, 2024). It states that environmental degradation will illustrate a U-shaped curve with economic development, meaning that during the early initial phases of economic growth, environmental damage will increase (Pathiranage, 2024). However, as economic growth continues and countries become wealthier, they will invest in more sustainable technologies and enforce stricter environmental regulations, resulting in declining emissions (Pathiranage, 2024). This is seen in high-income countries; however, developing countries do not support the theory, as their emissions increase despite efforts towards green technologies due to lower investments and technological advancements (Pathiranage, 2024). This challenges the universality of the EKC, as economic growth does not always lead to declined environmental damage (Pathiranage, 2024).

As the human population grows, ecosystems are being transformed to accommodate demand through deforestation, wetland filling, and road construction to continuously increase wealth (Rafferty, 2025). Half of the Earth’s hospitable land, approximately 51 million square km, has been converted to agriculture, resulting in a 60 percent decline in biodiversity (Rafferty, 2025). This has had severe and often irreversible impacts, such as ecosystem vulnerability (Rafferty, 2025). As humans continuously disrespect environmental limits, natural resources are being consumed faster than they can regenerate, leading to scarcity or extinction (Rafferty, 2025). As ecosystems are depleted and biodiversity declines, the production of ecosystem services, such as water purification, which humans rely on, will be threatened (Rafferty, 2025). This will endanger global food security as well as the development of pharmaceuticals to fight future diseases (Rafferty, 2025).

Protecting the environment for future generations is an issue with increasing popularity, as these generations will likely face worse climate conditions due to current behaviours (Syropoulos & Markowitz, 2023). We are already experiencing the negative impacts of human-induced climate change, including increased extreme weather events and mental health issues such as depression (Syropoulos & Markowitz, 2023). According to current climate science, these circumstances will worsen for future generations, with exact extents being uncertain, if humanity continues to ignore the need for large-scale action against CO_2 emissions (Syropoulos & Markowitz, 2023).

2.3 Economic Growth Inequality

The gains of economic growth are unevenly distributed, particularly in highly globalized areas, resulting in larger inequalities between different economic classes (Milanovic, 2016). The poorest populations see no gains at all, while obvious beneficiaries, such as China, are called the "emerging global middle class", as when they are compared to Western middle classes, they are still relatively poor (Milanovic, 2016, p. 19). This group has the highest real economic growth; however, some individuals are made worse off, and some are better off (Milanovic, 2016). Then there are rich economies, such as the United States, considered to be "the lower middle classes of the rich world" that experience income stagnation (Milanovic, 2016, p. 20). Finally, there is "the global top one percent" with continuously increased real incomes within rich economies, such as a portion of the United States and Europe (Milanovic, 2016, p. 22).

This illustrates the global unequal division of income in which globalization favours rich countries or groups that were already better off (Milanovic, 2016). Global income inequality is affected by this unequal distribution of gains, in which many people are in absolute poverty, resulting in poor education, food security, and medical care conditions; Meanwhile, the richest 1 percent possess more wealth than the rest of the world population combined (Howard et al., 2016).

This inequality hinders future generations as poorer and more vulnerable populations will be at a higher risk due to climate change (Bhargawa et al., 2023). The lowest-income countries, which produce only one-tenth of global emissions when compared to richer countries, will experience the worst impacts (Bhargawa et al., 2023). When compared to the 1980s, these countries have faced eight times as many disastrous weather events in the past decade (Bhargawa et al., 2023). This demonstrates that the gains of economic growth continue to favour the wealthy, as they will have the resources to protect themselves from the climate crisis, while poorer populations endure greater harm despite contributing far less (Bhargawa et al., 2023).

3. The Positive Impacts of Economic Growth – Why it is a Requirement for Society

3.1 Human Welfare

Even with the many concerning side-effects of economic growth, it brings certain benefits that are necessary for human well-being and success (Roser, 2021). With economic growth, consumers have higher average incomes to reduce absolute poverty, allowing them to consume more goods for a greater quality of life (Pettinger, 2019). This is due to lower unemployment, as with higher output, firms will employ more workers (Pettinger, 2019). Government borrowing is lowered as higher economic growth results in greater tax revenues, which also improves public services (Pettinger, 2019). There will also be increased investments from firms, fueling future economic growth and supporting future generations (Pettinger, 2019). There are more choices as economic growth allows for a diverse economy with many professions and lifestyles (Pettinger, 2019).

Without economic growth, the goods and services we want and need would be nonexistent (Roser, 2021). Increased health, education, and proper living conditions are just some of the essential aspects of human life that economic growth produces (Roser, 2021). These services were not always available, as roughly two centuries ago, about three-quarters of the global population did not have a small living space, satisfied appetites without malnutrition, or minimum heating due to poverty (Roser, 2021).

3.2 Environmental Benefits

It may seem like the economy has little potential to help the environment; however, with increased economic growth, more revenue can go toward environmental investments (Pettinger, 2019). As previously mentioned, the EKC indicates that at the beginning of economic growth, there will be increased environmental damage; However, as economic growth continues, emissions will decline with higher investments in sustainable initiatives (Pathiranage, 2024). Although controversial, it is not impossible if economic growth is conducted sustainably

(Pettinger, 2019). As well, there will be increased research and innovative development as firms will have more profits, allowing for higher investments (Pettinger, 2019). This can result in important sustainable developments, such as green technologies to move away from fossil fuels (Pettinger, 2019). This is morally important for future generations to ensure that economic growth can continue to support human welfare, but within ecological limits through innovation and green development (Pettinger, 2019).

4. The Balance of Economic Growth and the Environment - Why They Need Each Other

Humans cannot survive without natural capital, as the earth's ecosystems provide essential goods and services that humans rely on (Costanza et al., 1997). Thus, natural capital is a necessity for human welfare due to it being non-substitutable by non-natural capital (Costanza et al., 1997). The human economy would cease to exist without natural capital, resulting in the Earth's natural life-supporting systems being infinitely valuable to the economy (Costanza et al., 1997).

With current economic growth models promoting infinite development, the Earth's supply of natural capital is being depleted (Syropoulos & Markowitz, 2023). Future generations may be in the same position as past generations, in which essential economic goods and services were not available, which will occur if we do not maintain them sustainably (Roser, 2021; Pettinger, 2019). However, there is a potential to meet a balance between development and sustainability by converting to a sustainable model such as the doughnut framework (Doughnut Economics Action Lab, n.d.). This model shows how humans can be successful in the 21st century by meeting all human needs within ecological limits (Doughnut Economics Action Lab, n.d.). The framework illustrates a social foundation to ensure no one is left without life-sustaining essentials, along with an ecological ceiling to ensure that humanity does not surpass planetary boundaries (e.g., freshwater withdrawals) when fulfilling their needs, forming an environmentally safe and ethical space for humanity (Doughnut Economics Action Lab, n.d.). This removes illogical notions of infinite economic growth and instead promotes an inclusive and sustainable balance for the economy and the ecosystem, which can allow the economy to be used to benefit the environment (Doughnut Economics Action Lab, n.d.). With rapid population growth, innovation is needed more than ever to tackle climate change; with a responsible economy and all of humanity (present and future), functioning within ecological limits, we can pave the way to more sustainable technologies and consumption patterns (Doughnut Economics Action Lab, n.d.; Pathiranage, 2024).

5. Conclusion

As society wrestles with several unintended consequences of economic growth, it is clear that balancing economic growth and the environment is a “wicked” problem (Pathiranage, 2024). Improved living standards and essential goods and services (Roser, 2021) provided by the economy are important, but they often result in environmental damages and raises several ethical questions (Population Matters, 2024). The current economic growth models promoting endless development must be replaced if we are ever to remove the ecological overshoot, not just for ourselves, but for future generations (Population Matters, 2024; Syropoulos & Markowitz, 2023).

Through a literature review, this paper compared the positive and negative impacts of economic expansion on natural systems and future generations, concluding that the economy can achieve sustainable growth through a new doughnut framework, supporting humanity's past and future needs within ecological limits (Doughnut Economics Action Lab, n.d.). This supports the idea that the economy is not necessarily always bad; proper management of development shows that it can be used to improve the environment and that a beneficial relationship can be formed (Doughnut Economics Action Lab, n.d.; Pathiranage, 2024).

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