WELL-BEING IN A SUSTAINABLE ECONOMY REVISITED

Is sustained growth still possible for industrial societies?

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Abbreviations and Acronyms

Abbreviation	Fully written
AC	After Christ
AE	Advanced economies
BMI	Body Mass Index
CO_2	Carbon dioxide
EMDE	Emerging markets and developing economies
EU	European Union
G7	Group of Seven (largest advanced economies)
GDP	Gross Domestic Product
HIC	High income countries
Kcal	Kilo-calories
LIC	Low income countries
LMC	Low-middle income countries
NCD	Non-communicable diseases
OECD	Organization for Economic Cooperation and Development
PM2.5	Particulate Matter 2.5
TFP	Total Factor Productivity
UMC	Upper-middle income countries
UN	United Nations
UPF	Ultra-Processed Foods
US	United States of America
WHO	World Health Organization

Statement of originality

This report contains original unpublished work except were indicated otherwise. The work of others and published material has been indicated through citation, quotation or both.

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Is sustained growth still possible for industrial societies?

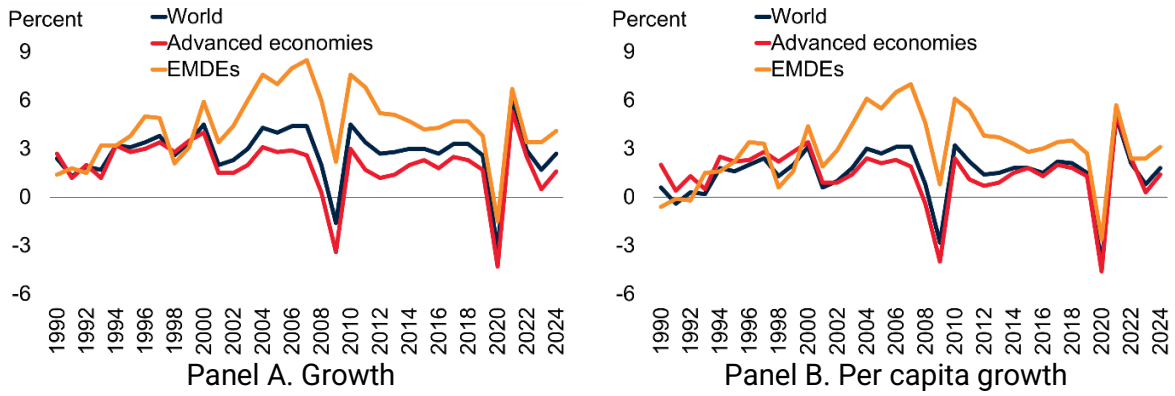
1 Introduction

The question of whether sustained growth is possible for industrial societies involves at least two aspects: the first concerns countries' ability to grow, given their macro-economic, socio-demographic, geo-political and institutional conditions. The second aspect is whether growth, as we experienced it over the last fifty years, is socially and environmentally desirable. In this paper we review the economic evidence on the possibility of sustained growth in industrial societies by focusing on recent trends of global GDP growth and on the factors contributing to its slowdown. Subsequently, we address the social and environmental desirability of growth. Available evidence indicates that sustained economic growth is achievable in industrial societies, but at high and growing social, environmental and economic costs to the point that its expected benefits might overweight costs. Although this observation is disappointing, it does not need to imply a regression in people's quality of life. On the contrary, it is possible to live satisfactory lives in socially and environmentally sustainable economies. This is possible by expanding people's well-being, rather than production and consumption of goods and services: societies can foster a virtuous cycle that promotes "good growth" by prioritizing the growth of well-being. Such growth would sustain social cohesion, environmental integrity, and equity, as opposed to "bad growth," which exacerbates inequality, depletes natural resources, and undermines collective well-being. This shift is the foundation for a creativity-led growth and a new paradigm of progress in the 21st century focusing on expanding people's well-being, equity and resilience.

2 Is sustained growth possible?

A recent publication by the World Bank (Kose et al., 2024) reviewed the evidence on long-term economic growth and reached pessimistic conclusions about the possibility of sustained growth in both mature and emerging economies (see Figure 1).

Figure 1. Growth rates of GDP – in aggregate (Panel A) and per capita (Panel B) terms – from 1990 to 2024 in the World, advanced economies and emerging markets and developing economies (EMDEs).



Source: World Bank, presented in Kose et al., 2024.

Panel A in Figure 1 indicates that Global GDP growth declined from a recent peak of 4.5 percent in 2010 to a projected low of 1.7 percent in 2023 (Kose et al., 2024). The slowdown affected both advanced and emerging economies: average annual growth was lower during 2011-21 than during 2000-10 in 80 percent of advanced economies and in 75 percent of emerging market and developing economies. The slowdown affected primarily emerging markets and developing economies (EMDE), leading to a decline in income convergence - the process by which these economies catch up with advanced ones. Between 2011 and 2021, per capita income in EMDEs grew 2 percentage points per year faster than in advanced economies. This was a significant slowdown compared to the previous decade (2000–2010), when per capita income in EMDEs grew at nearly double that rate, outpacing advanced economies by 3.4 percentage points annually.

Middle-income EMDEs experienced a somewhat harder impact compared to low-income countries (LICs). In middle-income countries, per capita income growth declined by 1.4 percentage points, dropping from 4.9 percent in 2000-2010 to 3.5

percent in 2011-2021. Meanwhile, LICs also saw a slowdown, with per capita income growth decreasing by 1.2 percentage points, from 2.9 percent in 2000-2010 to 1.7 percent in 2011-2021.

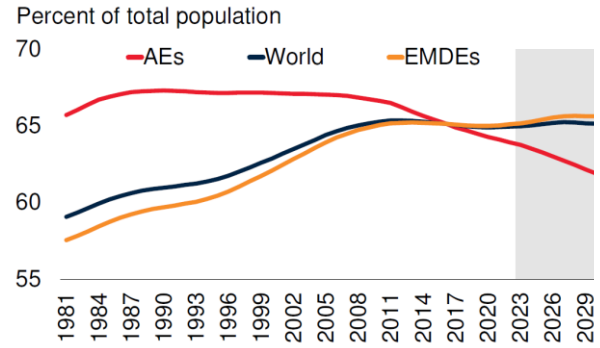
Kose and colleagues (2024) expect a decline in global potential growth rates, so that these could reach their lowest level in three decades by the end of the 2020s. The authors conclude that: "If current trends continue, the global rate of potential growth—the maximum rate at which an economy can grow without igniting inflation—is expected to fall to a three-decade low over the remainder of the 2020s." (pag. 1). This conclusion is consistent with the expectation of a long-term slowdown of national economies, a phenomenon known as secular stagnation (Summers, 2018; Eggertsson et al., 2019).). This conclusion is also consistent with evidence on global trends of total factor productivity growth, a primary driver of growth (Esfahani et al., 2024).

2.1 Why is the world economy on a declining path?

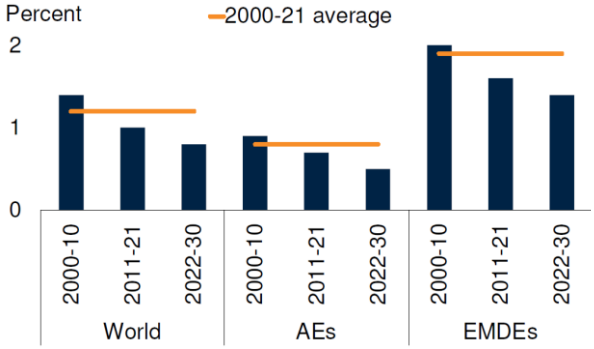
Between 2011 and 2021, the global economy faced a significant deceleration in three fundamental growth drivers: Total Factor Productivity (TFP), labour supply, and investment (Dieppe, 2021). The slowdown in TFP growth is widely debated (Fernald et al., 2023). It has been attributed to a slowdown in technological diffusion, linked to increased productivity dispersion and decline in market competition, weaker innovation, inefficiencies in the (re)allocation of resources at firm and industry level, and decline in human capital (Andrews et al., 2016; Bloom et al., 2020; Decker et al., 2020; Andrews et al., 2024). As suggested in Figure 2, Panel B, rapid technological advancements that enabled sustained economic growth over decades in advanced economies during the 20th century - such as electrification, mass production, and computing - plateaued in key sectors like manufacturing and energy, leading to fewer transformative innovations to drive growth (Gordon, 2012). Similarly, the early digital revolution - marked by the adoption of personal computers, the internet, and mobile technologies - brought significant gains by automating tasks, improving communication, and reducing transaction costs. These technologies revolutionized industries, created new sectors, and improved efficiency at an unprecedented scale in the past. However, available evidence suggests that the pace of recent technological

advancements is such that we can exclude the hypothesis that recent innovation can deliver significant economy-wide productivity boosts (Nordhaus, 2021). There are at least two possible explanations: on one hand, innovations such as social media, streaming platforms, and many consumer-oriented digital technologies, for example, enhance convenience and entertainment, but contribute less directly to improving the efficiency of production processes or creating entirely new industries. On the other hand, advancements such as artificial intelligence and advanced automation – that have the potential to revolutionize production systems - have been adopted unevenly, benefiting specific sectors, like tech and finance, but not others – e.g. healthcare, education, and construction, relatively unchanged with significant consequences on unemployment and wage disparities (Acemoglu and Restrepo, 2020).

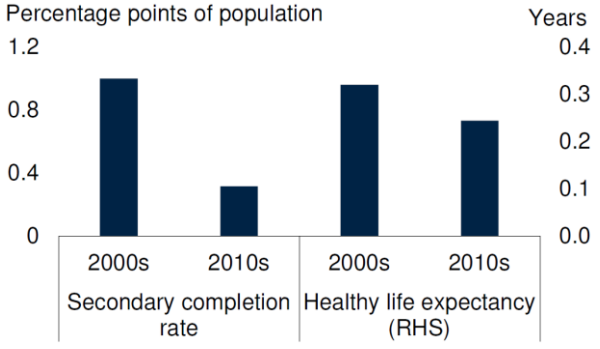
Figure 2. Weaker demographic, productivity and investment growth are among the main constraints on the possibility of sustained long-term growth.



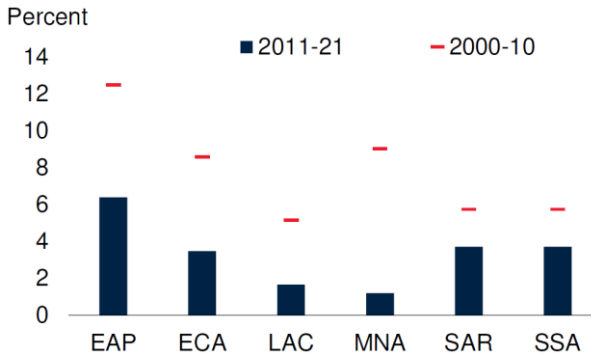
Panel A. Working-age population



Panel B. TFP growth



Panel C. Education and health worldwide.



Panel D. Investment growth, by region.

Source: World Bank, presented in Kose et al., 2024.

The growth in TFP is typically driven by within industry productivity gains, and between-industry inputs reallocation, including labour. Advanced economies, which transitioned to service-based economies, rely on incremental within-sector improvements, which however present decreasing marginal returns on investments (Sorbe et al., 2018). What's more, within-sector growth diminished as industries experienced weaker efficiency improvements and reduced innovation (Bloom et al., 2020).

Reallocation of production factors is widely regarded as a powerful mechanism of aggregate productivity growth. Emerging markets and developing economies (EMDEs) experienced dramatic structural transformation linked to the reallocation of production resources across macro sectors, and large productivity gains stemming from within- firm and industry efficiency improvements. However, gains weakened as labour shifted from low-productivity agriculture to low-productivity services, rather than high-productivity manufacturing (McMillan et al., 2014). As a result, EMDEs face slower economic growth and reduced technological advancement (Eichengreen et al., 2013).

Trade has historically been a powerful engine of growth, especially in the period 1990 to 2010. However, in the subsequent period trade growth barely kept pace with economic output, indicating a decline in the pace of global economic integration (Constantinescu, Mattoo, & Ruta, 2016). Rising trade barriers, deglobalisation, and persistent supply chain disruptions further undermined the benefits of trade (Rodrik, 2018; Katsaliaki et al., 2022; Kuhla et al., 2023; Rodríguez-Clare et al., 2023).

Another factor explaining declining productivity growth is that much of the technological development in recent decades has been directed toward incremental improvements that enhance current products without fundamentally transforming industries or creating entirely new markets (Park et al., 2023). Investment growth in emerging markets and developing economies (EMDEs) is projected to slow to an average of 3.5 percent per year, half the rate seen between 2000 and 2021, due to persistent challenges (see Figure 2, Panel D). These include policy uncertainty, which deters investor confidence, structural weaknesses in financial systems that limit access to credit, and the burden of high debt levels, which diverts resources away from

productive investments (McMillan et al., 2014; Summer, 2015). These factors collectively constrain the ability of EMDEs to sustain robust economic development. Finally, declining productivity growth can be the consequence of the growing market dominance of large firms in many industries, which stifles competition and innovation (Shambaugh et al., 2018; Aghion et al., 2021), while resources are increasingly directed toward financial activities rather than productive investments (Summers, 2015).

Figure 2, Panel C informs that the weakening of trade dynamics, and investment and productivity slowdown were accompanied by stagnation in human capital accumulation, as advancements in education and healthcare stagnated (Abegunde and Stanciole, 2008; Guan et al., 2019; Andrews et al., 2024). For instance, Guan and colleagues estimated that the economic value of health loss due to PM2.5 in China was 3205.05, 3223.51, and 3344.80 billion Yuan in 2015, 2016, and 2017, representing 4.34%, 4.07%, and 3.85% of the Chinese gross domestic product. Weaknesses in education and skill development systems can hinder workers' ability to adapt to technological changes, leading to labour market mismatches and slowing down the diffusion of innovations. Andrews and colleagues (2024) estimate that the decline in human capital growth predicts nearly one-sixth of the productivity slowdown observed in OECD countries. The authors identify in the use of smartphones and social media the culprit of the decline in human capital and propose responsible internet use programs and education policy reforms as solutions. Moreover, according to a study by the European Commission, an increase of 10 percentage points in skill mismatch is associated with a reduction of 19% in labour productivity across European countries, and of 23% within countries. The magnitude of the relationship is similar in size to the relationship between labour productivity and raising the level of high-skilled jobs in the economy by 10 percentage points. The same study documents that an increase of 10 percentage points in overqualification – a measure of individual skill mismatch – correlates with 11% less productivity (Vandeplas and Thum-Thysen, 2019).

Simultaneously, demographic changes, including aging populations (see Figure 2, Panel A), can constrain the expansion of labour supply with a consequent contraction of the share of working-age individuals. Kotschy and Bloom (2023), for instance, investigate the consequences of changes in working-age shares for economic growth

and conclude that “While a growing working-age share thanks to aging has been a source for economic growth, contracting working-age shares now threaten to turn the former demographic dividend into a demographic drag” (Kotschy and Bloom, 2023, p.23). Additionally, the authors warn that migration and technological progress, including automation and creating age-friendly jobs, will not be sufficient to counteract the demographic drag alone thus raising a warning of future economic slowdown. Lee and Mason (2017) propose another mechanism through which an aging population can contribute to secular stagnation. The authors argue that firms may reduce domestic investments because slower future population growth, declining labour force and consumption anticipate the slowdown of future output and consumption. The reluctance to invest arises from concerns about the long-term profitability of investments in an environment where economic expansion is expected to weaken. Under these conditions, even aggressive monetary policies by central banks, such as driving interest rates below zero, may fail to stimulate sufficient economic activity. Instead, the economy could remain trapped in a state of persistent stagnation characterized by low growth and high unemployment.

At the same time, higher dependency ratios - where a greater share of the population is elderly or dependent on the working-age population - divert resources toward care and social services. This leaves fewer resources available for productivity-enhancing investments, such as education, infrastructure, or innovation, further constraining economic growth. For example, in Japan, one of the most rapidly aging societies, the working-age population fell by nearly 12% between 2000 and 2020, leading to a labour shortage and increased dependency ratios. Similarly, in the European Union, the working-age population as a percentage of the total population dropped from 66% in 2008 to around 64% in 2021. These demographic trends contributed to a higher dependency ratio in many regions, reducing economic potential. For example, a study examining 35 OECD countries found that increased spending on healthcare and pensions for an aging population limits the resources that could otherwise be invested in productivity-enhancing activities (Lee and Shin, 2021). The COVID-19 pandemic and the subsequent geo-political tensions further contributed negatively to these issues, causing learning losses, further stagnating human capital development, reducing the

opportunities for productivity-enhancing trade and international cooperation which, coupled with rising protectionism and regional trade blocs (Hanushek and Woessmann, 2020; Baldwin and Freeman, 2022; International Monetary Fund; 2022), cast serious doubts about the prospects for sustained economic recovery.

2.2 Additional explanations of secular stagnation

There are additional explanations for secular stagnation besides those mentioned in the previous section. These explanations are, in general, complementary and compatible with each other.

2.2.1 Energy and Resource Limits

Economic growth is fundamentally tied to the availability of cheap energy and of natural resources. Limitations in their supply poses a significant constraint on production (Murphy, 2022). Historically, industrialization and economic expansion have relied on abundant, cheap energy sources, such as fossil fuels, and natural resources. However, as these resources become scarcer and their extraction costs rise, economies face higher energy prices, which reduce profitability and slow industrial output (Brown et al., 2011; Stern, 2011). Extracting resources such as oil and copper now requires significantly more effort and investment as high-quality reserves are depleted. For example, by 2015, global copper was being mined from ores with historically low concentrations, requiring more energy-intensive extraction processes and creating greater environmental damage (Daly & Farley, 2011). As the effort required to obtain resources increases, the energy and capital available for running industrialized economies shrink, leaving fewer resources for productive economic activities (Bems et al., 2023). This phenomenon is evident in the mining sector, where declining ore grades necessitate more energy-intensive extraction processes, thereby increasing operational costs and reducing the net energy available for other economic activities (Liu et al., 2008). In addition, over the past two centuries, fossil fuels have been the backbone of industrialization, enabling investments in infrastructure and goods that fuelled economic expansion (Jacobs, 2021). During the early phases of industrialization, these investments contributed to creating infrastructure, such as

railroads, factories, schools, and hospitals, which facilitated further growth (Agénor, 2010; Dinlersoz and Fu, 2022). In recent decades, however, there has been a shift away from investment in infrastructure toward increased government consumption. For instance, public investment as a share of GDP in advanced economies has been declining since the mid-1980s, while government consumption has remained steady or increased (Gupta et al., 2014; Abiad et al., 2014). This trends contributes to explaining why, despite some progress in decoupling GDP growth from CO_2 emissions, energy use continues to grow alongside economic output (Haberl et al., 2020; Hubacek et al., 2021; Leitão et al., 2022).

Furthermore, the environmental costs of resource exploitation—such as pollution, habitat destruction, and climate change—create additional burdens (Ajibade, 2021). Governments and firms are increasingly required to invest in mitigation and adaptation measures, thus increasing their operational costs (Jackson, 2009; Hein & Rudelle, 2020).

The transition to renewable energy also presents significant short-term challenges, although it is central for long-term sustainability. Developing and deploying renewable energy systems, such as solar and wind power, requires large upfront investments in new technologies and the transformation of existing energy infrastructure (Hansen et al., 2017). These costs can place considerable strain on both public and private budgets, particularly in economies already facing fiscal constraints.

What is more, despite global commitments to transition toward renewable energy, fossil fuel consumption has continued to grow faster than renewable energy adoption, except during brief periods of economic contraction. This indicates the structural difficulties of decoupling economic growth from resource depletion. These trends are compounded by the environmental limits of fossil fuel dependency. The experience of two centuries of economic progress has been shaped by the one-time exploitation of 500 million years of stored solar energy in the form of fossil fuels (Brown et al., 2011; Steffen et al., 2007). As these finite resources are depleted, the conditions that enabled modern economic growth are unlikely to be replicated. Additionally, the transition to renewable energy by countries that rely heavily on fossil fuel exports is particularly

vulnerable (Rempel and Gupta, 2021; Gopalakrishnan and Miller, 2024). For instance, declining global demand for fossil fuels can reduce export revenues, destabilizing economies that depend on these funds for public services and infrastructure. A study by the International Institute for Sustainable Development (IISD), for instance, estimates that six emerging economies could face a combined revenue gap of USD 278 billion by 2030 due to reduced fossil fuel demand (Laan and Maino, 2022). The United Nations Development Programme (UNDP) identifies 40 heavily fossil fuel-exporting economies that are projected to lose more than 60% in oil rents between 2023 and 2040 under a net-zero 2050 global decarbonization scenario, compared to a 'business as usual' approach (Jensen, 2023). The shift from economies oriented to fossil fuels to renewable energies can be difficult and expensive, especially in countries lacking diversified industries. The transition also risks rendering fossil fuel infrastructure obsolete, creating stranded assets and financial losses (Hansen, 2022). Research from the Grantham Research Institute on Climate Change and the Environment indicates that to limit global temperature rise to well below 2°C, a substantial proportion of existing fossil fuel reserves would need to remain unburned, resulting in stranded assets (Welsby et al., 2021). These economic pressures can exacerbate political and social instability, especially in countries with weak institutions. Additionally, limited access to capital and declining revenues hinder investments in renewable energy infrastructure, leaving these countries ill-equipped to compete in emerging low-carbon industries. Finally, external pressures, such as international climate policies and trade restrictions, put further pressure on countries to adapt, making the transition particularly challenging for fossil fuel-dependent economies (Heinberg, 2010).

2.2.2 The Middle-Income Trap

The Middle Income Trap concerns developing economies that experience an initial economic take-off, enabling them to progress from low- to middle-income status, but subsequently face challenges in achieving high-income levels. Low labour cost, resource exploitation, the import of technology from advanced economies and foreign direct investments allow the economic take-off in the early stages of development. These factors allow for rapid industrialization, export-driven growth, and provide

significant improvements in income levels, thus pushing countries from low- to middle-income status (Glawe & Wagner, 2016). However, as wages rise and economies mature, the advantages that initially allowed the take-off diminish, reducing the competitive advantage of middle-income economies with respect to low-income countries - in terms of lower costs - and high-income countries - in terms of innovation and high-value production (Eichengreen et al., 2013).

Escaping the middle-income trap requires a transition to a more knowledge-intensive, innovation-driven economy. This shift depends on significant investments in education, research and development, institutions, and infrastructure (Ke, 2024). However, many middle-income countries face institutional weaknesses, poor governance, and inadequate financial systems, which limit the access to and mobilization of the necessary investments (Temple, 2024). Corruption and fragile fiscal structure, for instance, can hinder economic progress. The World Bank (2024) highlights that institutional fragilities in middle-income countries can lead to a lack of rule-based governance, impeding the shift from investment-led to innovation-led growth. Additionally, the Lucas Paradox illustrates that despite higher potential returns, capital does not flow from rich to poor countries – as predicted by neo-classical economic theory - partly due to institutional deficiencies, governance issues, and perceived risks such as economic volatility and regulatory uncertainty (Alfaro et al., 2008). Strong institutions and sound governance are pivotal to attract foreign investment necessary to progress beyond the middle-income status. Corruption and weak legal systems not only deter foreign direct investment, but also undermine domestic economic activities across various at firm and industry level (Svensson, 2005). These systemic weaknesses, combined with external constraints, limit the resources available to fund the structural transformations needed to escape the middle-income trap, further entrenching economic stagnation. As a result, many countries remain stuck in the middle-income trap for decades without achieving the consistent growth required to reach high-income status (Glawe & Wagner, 2016).

2.2.3 Consumer-Side explanation

A less known and discussed explanation of secular stagnation focuses on consumer-side factors (Aoki and Yoshikawa, 2002). This explanation departs from the neo-classical assumption of non-satiation, which posits that consumers always prefer more of a good or service, as increased consumption enhances utility. This assumption implies that individuals are never fully satisfied and will continue to seek additional goods and services as long as they are affordable (Pettini and Musikanski, 2023). Consumer-side explanations suggest that the slowing down of national economies is the consequence of the limited individual capacity to absorb an ever-growing supply of goods and services (Osenton, 2004; Bleischwitz et al., 2018). As incomes rise, the additional utility gained from consuming more goods and services – what economists refer to as the marginal utility of consumption - declines. For instance, Layard and colleagues (2008) analyse data from six different surveys covering over 50 countries and time periods between 1972 and 2005, and document that the marginal utility of income declines faster than in proportion to the rise in income. The decreasing marginal utility of additional income (and consumption) suggests that, as people meet their basic needs and many of their desires, they allocate a smaller proportion of their income toward consumption. In affluent societies, this effect is intensified by income and wealth inequality (Fischer et al., 2020). A substantial portion of resources becomes concentrated among high-income groups, who tend to save or invest a larger share of their income rather than spend it, as their consumption needs are already saturated (Auclert & Rognlie, 2018). In contrast, lower-income groups, who have a higher propensity to consume, hold a relatively smaller share of income and wealth. In other words, rising inequality shifts income from lower-income households, who are more likely to spend additional income, to higher-income households, who are more likely to save it. The consequences of raising inequality compound with the effects of labour market deregulation and automation to compress the salaries of large portions of the population further weakening purchasing power (Summers, 2018; Eichengreen, 2015).

The result is a weakening of aggregate demand, as the economy produces more goods and services than can be absorbed by consumer spending (Bernstein, 2016). This

demand shortfall leads to underutilized production capacity, with businesses operating below their potential output. The consequences on growth are two-fold: first, underutilized production capacity discourages investment and innovation, as firms have little incentive to expand production when consumer demand remains weak. Second, it drives companies to allocate more resources to advertising and marketing efforts in an attempt to compete for a share of increasingly saturated markets (Conchar et al., 2005; Peterson and Jeong, 2010; Auclert & Rognlie, 2018).

The mechanisms illustrated so far to explain secular stagnation are not mutually exclusive and can reinforce each other. Weak productivity growth and structural constraints limit the potential for economic expansion, while demand-side mechanisms reduce productive efficiency as proportionally more resources are allocated to marketing goods and services rather than investing in innovation and capacity building. Energy and resource constraints intensify these challenges by driving up production costs and forcing businesses and governments to allocate resources toward addressing environmental damage, resource depletion, and energy transitions, rather than investing in innovation or expanding productive capacity.

Together, these mechanisms explain why the current paradigm of infinite growth cannot continue indefinitely unless of huge innovations, that do not appear feasible in the near future, or environmental and social costs that could completely offset any gains from economic growth. Addressing secular stagnation requires a change of paradigm from expanding material production to improving quality of life. Introducing a distinction between good and bad growth, that is growth that contributes to quality of life from the one that detracts from it, is an important step in the right direction.

2.3 The parable of the Maya

The parable of the Maya is a warning against the dangers of failing to address modern challenges because we refused to change. Despite impressive achievements, they responded to growing environmental and social pressures by doing more of the same - building higher pyramids, granting greater power to kings, forcing harder work on the masses, and escalating warfare - ultimately accelerating their own collapse. (Wright,

2005). Similarly, persisting with business as usual, despite the limits of the natural and social systems, can accelerate our own downfall. This cautionary tale underlines the need to rethink how we define, measure, and foster progress. Instead of pouring all our efforts into growth and hoping benefits trickle down, we shall embrace a new paradigm centred on expanding genuine human well-being.

For centuries the Maya civilization flourished in the modern southern Mexico and northern Central America. At its height, between 250 and 900 A.C., it counted more than 19 million people. Mayan communities were extremely advanced, both technically and intellectually: they predicted celestial events accurately; they were among the first to develop positional numerals, including the concept of zero; they developed a complex hieroglyphic writing system; and they had a rich artistic tradition, as revealed by their sculptures, murals, and pottery. However, beneath this advanced civilization lay a story of natural and societal exploitation that eventually led to its collapse (Diamond, 2011; Stromberg, 2012). Around 695 A.C., the collapse of several cities, such as Tikal, in present day Guatemala marked the onset of the extinction of Mayan civilization (Martin and Grube, 2000).

As the Maya expanded, so too did their cities, cutting deep into the surrounding jungles to make room for cornfields, palaces, and pyramids. Archaeological and demographic research indicates that Copan, in present day Honduras, began as a small village of about 5,000 people. Within just 150 years, its population reached about 28,000 inhabitants, plus an additional 10,000 in surrounding rural areas. This demographic expansion, proportional in scale to the world population growth between 1850 and 2000, transformed the city into a major political and cultural hub. However, shortly after reaching its peak, its population started decreasing, and by 1200 A.C., the city was abandoned (Wright, 2006). What happened? Pollen analysis reveals a dramatic reduction in tree pollen and a corresponding increase in maize pollen, indicating large-scale deforestation to make way for agriculture. Researchers estimate that between 70% and 80% of the original forest cover in the central Maya lowlands was cleared during the Classic Period, when Mayan decline begun. In addition, biodiversity diminished, and game became scarce (Carrillo-Bastos et al., 2012; Turner and Sabloff,

2012). By the 8th century the natural systems that sustained Mayan communities began to deteriorate, increasing their vulnerability to natural shocks, such as droughts.

The combination of environmental degradation and overpopulation also affected water management systems, which were critical in the Maya lowlands due to the region's seasonal rainfall patterns. The analysis of lake sediments and stalactite isotopic analysis indicates the collapse of water management systems during prolonged droughts – whose frequency increased in the Classic period (Hodell et al., 2005; Douglas et al., 2015; Evans et al., 2018).

In other words, the Maya saw the increased frequency of natural disasters and their diminished ability to cope with them. Yet rather than addressing the environmental and social strains - by reducing their expenditures on royal and military endeavours, implementing agricultural reforms, or encouraging population control – the Maya chose to maintain the status quo and to intensify their existing strategies (Peterson and Haug, 2005). They built higher pyramids, demanded greater sacrifices from the masses, concentrated more power in the hands of the kings, and waged more warfare and political competition with other city-states (Turner and Sabloff, 2012), contributing to the collapse of their civilization (Wright, 2006).

Modern industrial societies are in a similar situation. Social, economic and environmental crises are happening more and more frequently. The prevalent attitude is to hold tight and make sacrifices to revitalize economic growth without – however – solving the problems that brought us to this point. Like the Maya, we are at a crossroad: will we adapt to create a more sustainable future, or will we stubbornly push forward on a destructive path?

History provides many examples of civilizations, like the Maya, that disappeared because their model of growth undermined the ecosystems supporting them. However, it also offers encouraging examples of societies that overcame similar crises. One of these is about Japan in the 17th century. During that period, Japan faced a deep crisis due to deforestation. Wood – the primary material for construction and heating – became scarce, and soil erosion affected crops and favoured frequent floods

that destroyed villages and fields. Crop failures and famines became frequent in the XVIII century. The Japanese society saw the crisis and adapted: it enforced strict regulations on tree cutting and initiated large-scale reforestation. Recognizing the existential threat, the entire society cooperated to restore its forests (Diamond, 2011). Two centuries later, Japan had recovered its woodlands to the extent that we still admire today. In sum, we are not experiencing the first ecological crisis of our history, and we are not destined to extinction. Our future depends largely on our ability to adapt, collaborate, and pursue common goals in the face of environmental challenges.

2.4 Take-home message on the possibility of sustained long-term growth

The convergence of economic, demographic, and geopolitical challenges makes the prospect of sustained long-term growth uncertain and, considering the costs and the environmental consequences of its past 50 years, perhaps undesirable. While estimates suggest that global potential GDP growth could be increased by as much as 0.7 percentage points annually through coordinated reforms, innovation, and international cooperation, achieving such gains would require a “herculean” effort (Kose et al., 2024). This appears unlikely in the current climate of geopolitical uncertainty, fragmented governance, and weakened multilateralism. Accelerating environmental crises and the limits of resource-intensive growth further complicate the feasibility of reversing the current economic slowdown.

However, even if sustained growth of the past 50 years were achievable, its desirability is not clear. The pursuit of growth at any costs risks exacerbating environmental degradation and depleting finite resources as the technology required for green growth is not there yet, and it is unclear whether it would be sufficient to entirely decouple growth from its environmental impacts. The historical model of economic expansion, heavily reliant on resource-intensive practices of the last 50 years proved to be socially and environmentally unsustainable. Figure 3 shows the well-known worldwide association between economic growth and CO_2 emissions, and adds a disquieting detail: the periods of major economic recessions (indicated with grey bars). It is only in correspondence with these periods that the growth rates of CO_2 emissions were

negative. Figure 3 is disquieting because its message is that historically we managed to reduce CO_2 emissions only during recessions. Shall we hope to live in permanent economic crisis to save the planet?

Figure 3. Growth rates of CO_2 emissions and real GDP worldwide.

Source: author's own elaboration of Our World in Data. Grey bars indicate periods of economic recessions.

In the light of the social, environmental and economic costs illustrated above, the slowdown of the current model of economic growth is not necessarily bad news. Rather than clinging to outdated growth paradigms, we have the opportunity to rethink economic priorities, shifting the focus toward expanding well-being while promoting social cohesion, equity, and resilience. Evidence from multiple studies and disciplines suggests that we can shift from income as a pre-eminent measure of progress to promoting well-being. This shift can lead to substantial behavioural and systemic changes to enable social and environmental sustainable economies in which people can lead satisfactory lives (Sarracino and O'Connor, 2023; Bartolini and Sarracino, 2024a). This is great news for the future prospects of our species on planet Earth because it indicates that there is no conflict between the well-being of current

generations and the future. The key to sustainability is empowering people to act pro-socially and pro-environmentally by prioritizing their well-being in decision-making.

3 Economic growth in practice

Much of the discussion, and the disagreement, around the possibilities to lead satisfactory lives in slow or no-growth economies arise from a fundamental misconception about economic growth. Many argue that life would be miserable without growth, but this is not necessarily the case. To illustrate the point, let's make an example of what economic growth means in practice.

Experts generally consider GDP growth rates of approximately 2 to 3 percent per year as necessary for a healthy, well-functioning global economy. This range supports economic expansion without triggering significant inflationary pressures. Growth rates exceeding this threshold can lead to overheating, potentially resulting in economic bubbles and subsequent downturns. Conversely, growth below this range may indicate economic stagnation or recession and reduce social welfare.

What does a 3% yearly growth rate of GDP per capita mean in practice? In 2021, the world GDP stood at 101 trillion US dollars (see Table 1). With a growth rate of 3%, world GDP in 2022 would increase by about 3 trillion dollars – nearly the equivalent of French GDP: imagine all the cars, fuel, buildings, financial services, champagne and baguettes purchased in 2021 in France. In 2022, one year has passed, and the world GDP has grown by an additional 3%, rising from 104 to 107.1 trillion dollars, which is additional 3.1 trillion dollars – an amount equivalent to the GDP of India. In other words, during 2022 the world GDP added to its initial level (104 trillion dollars) the equivalent of all the cars, fuel, clothes, micro-chips, backoffice services and chicken tikka masala purchased in one year in India.

At this pace, by 2030, the global GDP is projected to reach 131.7 trillion dollars, after having added to its previous level the equivalent of the GDP of Brazil, Russia and South Africa together. To reach this point, the world economy has to grow each year by a little more than 3 trillion dollars. From this point of view, a 3% growth rate looks modest

or manageable. However, it conceals the fact that each year the global economy is adding an ever-growing volume of goods and services to its existing levels of production and consumption. This is because economic growth reflects the additional value created in a given year compared to the previous one.

Table 1. The practical meaning of a 3% growth rate of GDP.

Global GDP in 2021	Yearly growth rate of 3%	Global GDP in 2022	Yearly growth rate of 3%	Global GDP in 2023	...	Yearly growth rate of 3%	Global GDP in 2030
$101 trillion	+$3 trillion (> 1.01x FR 2021 GDP)	$ 104 trillion	+$3.1 trillion (~ 1.0x IN 2021 GDP)	$ 107.1 trillion		+$3.84 trillion (~ 1.0x BR+RU+ZA 2021 GDP)	$ 131.7 trillion

Source: Authors'own elaboration.

The world population is not growing rapidly enough to justify such levels of output. The global population growth rate has been declining since its peak in the 1960s, when it exceeded 2% per year. As of 2022, this rate has fallen to 0.8% and is projected to turn negative (Vollset et al., 2020; Ritchie, 2024; United Nations, 2024).

Such economic growth trajectory can be sustained only if individuals expand their capacity to consume. To maintain a 3% annual GDP growth rate, people must purchase and replace items at an accelerating pace. They need to buy new cars, clothes, mobile phones, computers, home theatres, weapons and security systems at faster and faster rates to absorb economic production. The push for faster consumption pace is consistent with the consumer-side explanations of secular stagnation reviewed in section 2.2.3: growth needs a perpetually increasing demand, yet natural limits - such as time, resources, and human needs - constrain how much individuals can consume. The result is an economic system that loses efficiency because it allocates an increasing share of its resources to encouraging people to consume. This is achieved through aggressive marketing campaigns designed to stimulate artificial demand, planned obsolescence that shortens the lifespan of products to prompt faster replacement, and the widespread availability of easy credit to facilitate immediate purchases (Utaka , 2000; Iizuka, 2007; Hodson et al., 2014; Jaiswal and Gupta, 2015; Wong and Lynn, 2017).

Granted, this reasoning excludes the critical issue of global poverty: millions of people worldwide could greatly benefit from accessing even a small portion of the growing economic pie. However, the inequality that characterizes the global economic system makes the benefits of such growth even more questionable. While a fraction of the population in the global north drowns in material abundance - consuming far beyond its basic needs – communities in the global south are left to grapple with scarcity and the burden of dealing with pollution, environmental degradation, and the consequences of climate change.

In sum, economic growth does not necessarily equate to better lives (Easterlin and O'Connor, 2022). If economic growth were to halt, it would not mean that we would not have houses, food, clothes, energy or healthcare. Instead, it would indicate no addition to the existing stock of goods and services. In other words, people's ability to meet their needs would remain unchanged. Moreover, economic growth undermines well-being when it erodes social relations, degrades the environment, dismantle social safety nets, and exacerbates inequality (Mikucka et al., 2017; Sarracino and Mikucka, 2019; Sarracino and O'Connor, 2021). In addition, the pursuit of growth can impose substantial psychological stress and contribute to mental health issues because it requires formidable consumers - individuals compelled to replace their mobile phones, shoes, cars, and even their spouses at an accelerating pace - to absorb every year an additional amount of goods and services.

4 Keeping the pace

How can individuals keep the pace with the increasing supply of goods and services, and why? Is it to satisfy genuine, unmet needs, or is economic growth an end in itself? The original goal of economic growth was to meet the needs of an expanding population, providing the goods and services necessary to improve their lives. However, as consumers meet their fundamental needs, consumption seems to take on a new role: rather than being a means to improve well-being, it turns into a mechanism to sustain economic growth. Individuals are enticed to consume because their consumption keeps the economic system functioning, and not because they

derive significant personal benefit or satisfaction from doing so - as suggested by the evidence on decreasing marginal utility of additional consumption. In other words, consuming is more about ensuring that the broader economy does not stagnate, rather than fulfilling individual needs and desires.

For instance, recall what happened in the immediate aftermath of the tragic attack on the Twin Towers on 9/11. While fires were still being extinguished, political leaders urged citizens to respond to the collective shock and fear by spending money and stimulating the economy rather than through unity, volunteering, or donations. President George W. Bush urged Americans to support the economy by engaging in leisure and travel[1]. He framed this call as a way to preserve the American way of life, urging families to "enjoy life the way we want it to be enjoyed." Vice President Dick Cheney called on the public to symbolically defy the terrorists by maintaining their usual routines, emphasizing that their "normal level of activity" should not falter in the face of fear.[2] Major corporations quickly backed this economic call to arms; for example, General Motors promised to "keep America rolling" with interest-free financing[3], and Ford vowed to "do their part to move America forward" through similar incentives[4]. As Tsai (2010) reports, even a national tragedy of such magnitude could be commodified, repackaged, and sold as a way to sustain economic momentum, making consumption a form of patriotic duty.

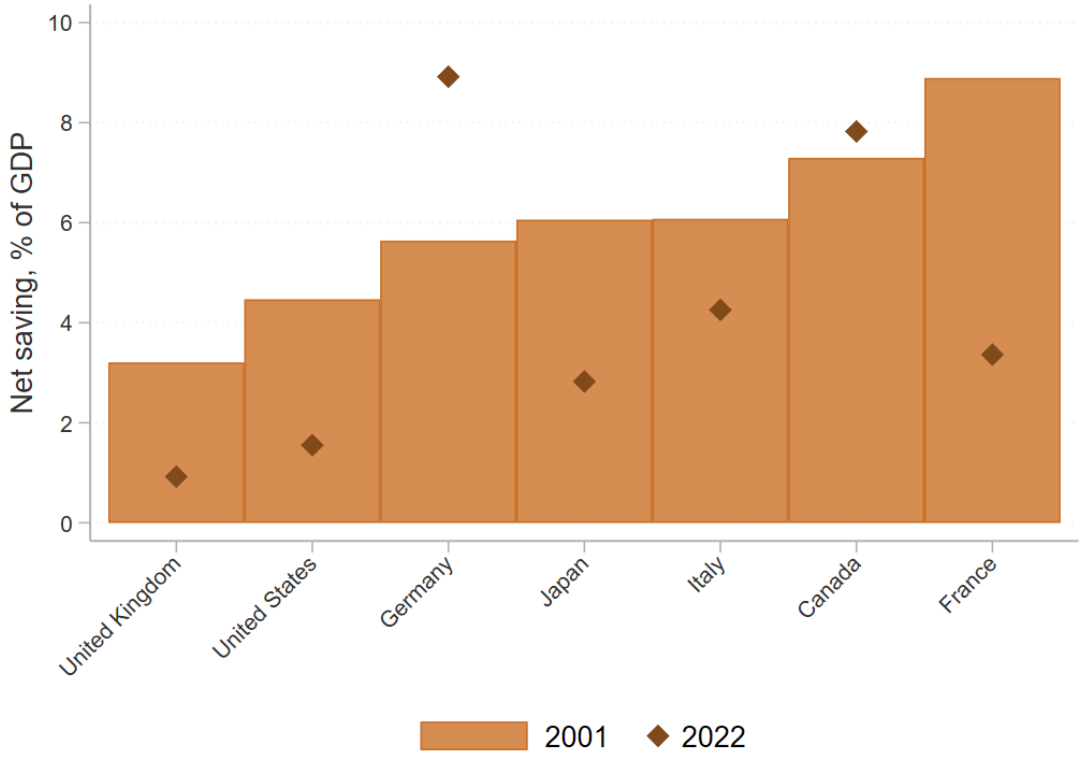
These campaigns were driven by an economic concern: the fear that the attacks might paralyze the economy if people interrupted their usual activities. As David Wyss of Standard and Poor noted: "There is a risk of a sudden attack of prudence. […] If people stop living beyond their means, this could turn into a recession." (reported in Scanlon, 2005).

The consumerist push proved effective: Americans, one of the populations with the lowest saving rate among the world's richest countries, complied with the call. In 2001, the United States had the second lowest net saving rate among G7 countries, just

[1] A NATION CHALLENGED; Excerpts From Bush Speech on Travel - The New York Times
[2] The Vice President appears on Meet the Press with Tim Russert
[3] Opinion: What 9/11 can teach us about marketing in the time of coronavirus | Ad Age
[4] American Cars: Patriotic Consumption After September 11th

above the United Kingdom (see figure 4). This indicates that American consumption, as a percent of GDP – hence after isolating the wealth differences across countries, was among the highest at the time. Over the years, this trend intensified. The diamond in figure 4, which indicates the level of consumption in 2022, shows a decrease in the share of net savings relative to the economy.

Figure 4. Net saving as a percent of GDP among G7 member states.



Note: difference between disposable income and final consumption expenditure. It reflects the part of disposable income that, together with the incurrence of liabilities, is available to acquire financial and non-financial assets. The saving rate presented here corresponds to net saving, which is saving net of depreciation.
Source: OECD National Accounts at a Glance, (DSD_NAAG@DF_NAAG_II) NAAG Chapter 2: Income

Consumer patriotism, the idea that consumption becomes a form of civic participation in times of crisis, is understandable. For instance, during the COVID-19 pandemic, there were numerous initiatives aimed at encouraging people to support local businesses recovering after the prolonged disruptions caused by lockdowns. However, the attack on the Twin Towers was a different kind of crisis, marked by a sudden and intense shock over a relatively limited period of time. Although it was a tragedy that changed

history, it is hard to believe that increasing consumption nation-wide was a form of civic participation in response to the attack. Furthermore, as COVID-19 demonstrated, consumer patriotism often benefits private fortunes, rather than the society at large.

Economic inequality in the United States increased during the pandemic. Over 44 million people lost their jobs, and unemployment surged to nearly 15% between April and June 2020. However, the fortunes of the top five billionaires rose by $102 billion, representing a 26% increase in their wealth. Overall, the combined wealth of U.S. billionaires grew by over $637 billion during this time, reaching a total of $3.6 trillion - an amount that is larger than the entire wealth of all African countries together. Unfortunately, the accumulation of wealth among billionaires has been accompanied by decreased financial contributions to the community. In fact, tax obligations for American billionaires, measured as a percentage of their wealth, decreased by 78% between 1980 and 2018, even as their fortunes skyrocketed. From 1980 to 2020, billionaire wealth grew by 1130%, a rate of increase 200 times faster than the growth of median wages during the same period (Goldin and Muggah, 2020). Between 2007 and 2016, wealth became increasingly concentrated among the richest households in the United States. The median net worth of families in the top 20% grew by 13%, reaching $1.2 million. For the top 5%, the increase was smaller but still significant, rising by 4% to $4.8 million. Meanwhile, families in lower wealth brackets faced substantial declines in their financial standing. Those in the second-lowest fifth saw their median net worth plummet by 39%, dropping from $32,100 in 2007 to just $19,500 in 2016. In general, wealthier families became richer during this period, while others lost a significant portion of their already limited resources[5].

The post 9/11 period was not different: even though it is impossible to ascribe the American increase in income inequality after 2001 to the terrorist attack, fiscal policies, including tax cuts and increased defence spending, disproportionately benefited higher-income households while the wages of lower and middle-income workers stagnated[6], exacerbating income disparities.

[5] Six facts about economic inequality in the U.S. | Pew Research Center
[6] Trends in U.S. income and wealth inequality | Pew Research Center

4.1 Consumer sovereignty

Consumer sovereignty is often cited as an objection to the argument that consumption is necessary to sustain economic growth. The idea is that consumers hold the ultimate power to decide whether or not to consume, thereby implying that consumption levels are a reflection of individual choices rather than systemic pressures or economic imperatives. However, this argument is weak for several reasons. First, if consumers were truly in full control of their choices, why bothering to exhort them to maintain high levels of consumption? Second, the entire purpose of marketing research and advertising is to influence consumer behaviour. If people could not be persuaded to consume, these industries would be useless.

Similarly, product design and the arrangement of displays in shop windows are carefully engineered to encourage consumers to buy more. Planned obsolescence is another example of consumers' limited autonomy. It ensures products like electronics and appliances are designed with limited lifespans, making replacements inevitable. Even the use of credit cards correlates with easier spending compared to cash as a means of payment (Banker et al., 2021). In this context, the only limit to consumption is consumers' purchasing power. These practices show that consumption is heavily influenced by external pressures and disbelief the idea of consumer sovereignty.

The epidemics of obesity that affects every corner of the world offers another good example of limited consumer sovereignty (Popkin and Doak, 1998; James et al., 2001; Koliaki et al., 2023). In 1997, the World Health Organization (WHO) officially declared obesity a major public health issue and a global epidemic (Haththotuwa et al., 2020). Obesity, defined as a body mass index (BMI) of 30 or higher is a well-established health risk factor affecting every country irrespective of economic status. WHO data reveal that 2.5 billion adults were classified as overweight in 2022, with nearly 890 million meeting the criteria for obesity[7]. Adult obesity more than doubled since 1990, and adolescent obesity quadrupled over the same period. The age-standardized

[7] https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

prevalence of obesity increased from 4.6% in 1980 to 14.0% in 2019, confirming the acceleration of this health crisis (Boutari and Mantzoros, 2022).

The health and economic consequences of obesity are severe. In 2019, higher-than-optimal BMI contributed to an estimated 5 million deaths from non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, cancers, neurological disorders, chronic respiratory diseases, and digestive disorders (Murray et al., 2020). Obesity is particularly troublesome for children and adolescents. Beyond the immediate health concerns, such as an elevated risk for type 2 diabetes and cardiovascular disease, young obese people are more likely to remain obese in adulthood, facing an increased lifetime risk of NCDs. In addition, obesity can have adverse psychosocial consequences, as it is linked to stigma, bullying, discrimination, poorer school performance, and reduced quality of life in children and adolescents (Sørensen et al., 2022).

What is more, the global costs of overweight and obesity are projected to reach $3 trillion annually by 2030 and exceed $18 trillion by 2060. These costs reflect the increased healthcare expenditures due to obesity, but also the lost productivity and the broader economic consequences of obesity-related health conditions (Okunogbe et al., 2021).

Consumer sovereignty cannot explain the rising prevalence of obesity or other self-harming consumer behaviours. The mere availability of calories does not suffice to explain why people consume more than they need for a healthy life. To keep up with the growth of the food industry and ensure that individuals consume more food at a faster pace, demand must be artificially created and actively stimulated. This explains the huge investments in food marketing, engineering, and lobbying, to design, promote and sustain an economic organization that prioritizes growth over people's health, well-being, and environmental sustainability (Monteiro et al., 2021).

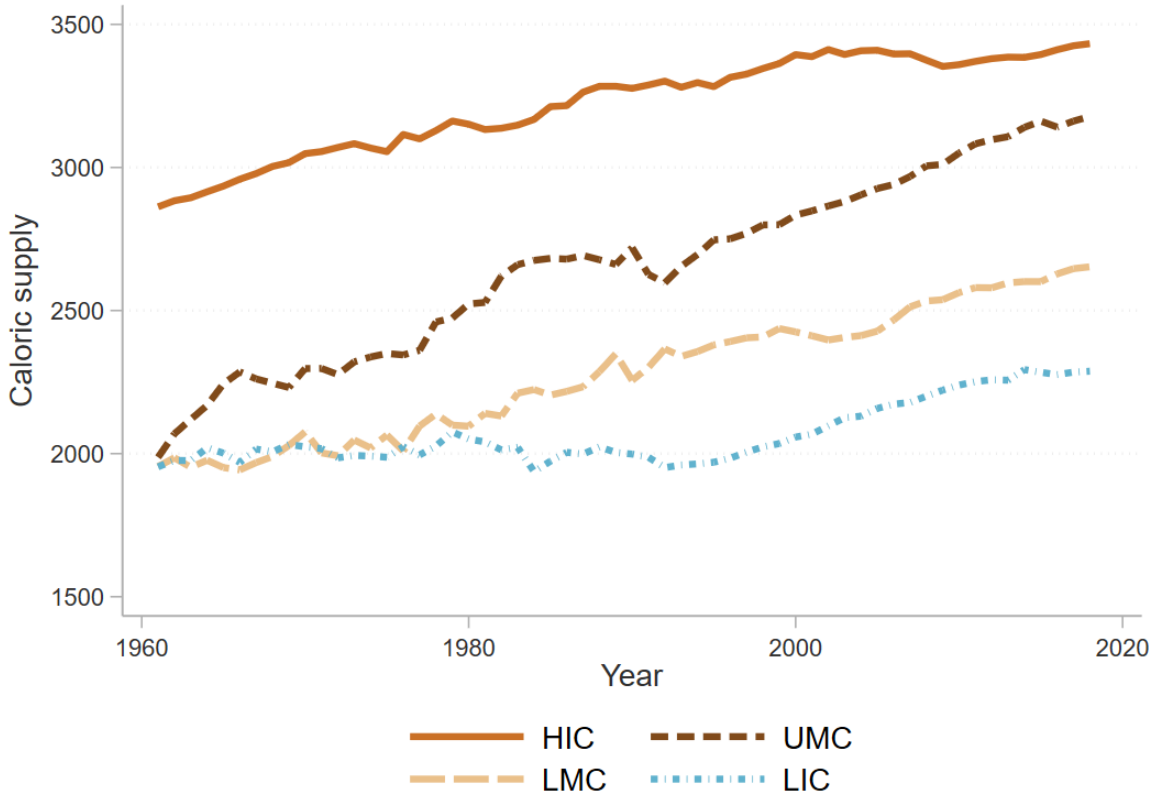
For example, the global food industry uses additives, like hydrogenated fats, salt and high-fructose corn syrup, to enhance flavour and extend the shelf life of snacks and meals. By minimizing fresh ingredients, manufacturers reduce costs and increase

profitability. A 2019 study used a randomised control study and documented that people consuming ultra-processed foods (UPFs) ate about 500 more calories daily, gained weight, and consumed less protein compared to those eating unprocessed diets.[8] In addition, the food industry spends billions annually on marketing UPFs and significant sums on lobbying - $106 million in the U.S. in 2023 alone, almost twice as much as the tobacco and alcohol industries combined - to influence regulations and promote food processing practices. Moreover, the industry allocates billions of dollars annually to marketing campaigns that encourage the consumption of ultra-processed foods. These marketing strategies often target vulnerable populations, such as poor people and children – which can explain the four fold increase in obesity among young people documented by the WHO.

The Food and Agriculture Organization estimated that in 2018 the minimum amount of daily dietary energy per person that is considered adequate to ensure a minimum weight for health was 1,924 kilocalories in High Income Countries (HIC), and 1,708 in Low Income Countries (LIC) (FAO, 2023). However, figures indicate that in the same year, the average daily supply of calories per person was 3,432.49 in HIC and 2,287.99 in LIC. In other words, on average every day in 2018 the supply of calories exceeded the minimum amount by more than 1,500 kilocalories. In fact, while the minimum amount does not significantly change over time, the daily supply has been steadily growing since the 1960s (see figure 5).

[8] Madeleine Speed, Ella Hollowood and Sarah Neville, "'Deny, denounce, delay': the battle over the risk of ultra-processed foods", Financial Times, May 23 2024.

Figure 5. Daily supply of calories per person by groups of countries from 1960 to 2018.



Note: Caloric supply is the average supply of kilocalories from food, measured per person per day.

Source: own elaboration of data sourced from Andre et al., 2024.

A surplus of 1,500 calories per day per person means the current global food supply could theoretically meet the caloric needs of nearly another individual for each person on the planet - 78% more, to be precise. Put differently, the current global caloric supply could sustain additional six billion people, without further expanding food production. From this point of view, obesity is not simply the consequence of people's choices, but mainly a necessary outcome of a system that places the needs of industry above those of people. The reason is that the food industry, like any other, must grow to attract investments, pay salaries and dividends. However, instead of focusing on improving quality – of output as well as of rewards - it prioritizes quantitative growth, often to the detriment of public health. For instance, Young and Nestle (2002) documented a substantial increase in the size of marketplace food portions in United States since the 1970s, with a sharp rise in the 1980s, far exceeding federal dietary standards. The

largest discrepancy was found in cookies, which were 700% larger than standard portion sizes. Significant increases were also noted for cooked pasta (480%), muffins (333%), steaks (224%), and bagels (195%).

Over time, even standard serving sizes have expanded. For instance, chocolate or beer were introduced in the US in just one size which was smaller than or equal to the smallest sizes available today. Current portions of french fries, hamburgers, soda, and other ultra-processed foods are 2 to 5 times larger than the originals (Young and Nestle, 2021).

A system focused on perpetual growth requires that each year people consume not only what they had consumed in the past, but also the surplus generated by new production. The food industry must therefore find ways to stimulate increased consumption, even when population growth is too slow to justify the rising levels of production. In sum, while individuals consuming more calories than they need are the immediate cause of obesity, the culprit is likely the ever-growing supply of calories - a direct consequence of the growth of the food industry. Aggressive marketing, engineered demand, and strategies that encourage overconsumption, often at the expense of public health and sustainability, reflect a system designed to sustain itself, not necessarily to meet genuine human needs or maintain ecological balance. This organization is bound to create new imbalances that become business opportunities and feed additional growth, but not better lives (Bartolini and Bonatti, 2008).

5. Conclusions

Economic growth, as experienced so far in developed and developing countries, is on a long-term declining trend. This phenomenon is known as secular stagnation. Changing this trend and promoting sustained economic growth, as typically envisioned, may be technically possible, but its social and environmental consequences cast serious doubts about its desirability. Current analyses indicate that raising global GDP by 0.7 percentage points annually would require a herculean effort.

Demographic trends, and structural changes in trade, investments and innovations limit the possibility to cooperate on policies to foster continuous, large-scale growth. The current wave of escalating geopolitical tensions, and surging nationalist sentiments further reduce the possibility to reinvigorate growth. Beyond these difficulties, economic growth of the past 50 years has, on average, negatively affected the natural environment and social cohesion.

In addition, the purpose of such growth is questionable: a yearly global per capita GDP growth rate of 3% means, in practice, adding the equivalent of the French GDP to the world output every year. After 10 years, this compounds to an additional output equivalent to the combined GDPs of Brazil, Russia and South Africa together. Such level of production can unquestionably raise people's living conditions in the early stages of development. However, once material comfort and safety are achieved, the improvements to living conditions from additional output diminish, as predicted by decreasing marginal utility of consumption. This also explains why countries at early stages of development grow faster than mature economies: in the latter group the low hanging fruits have already been collected and it takes increasing efforts to push consumption to keep up with production.

What is the purpose of a growth that entails unsustainable consumption practices, heavy deregulation, more competition, and growing inequality – factors that weaken social cohesion and harm the environment? Growth that destroys ecosystems, widens inequality, and undermines social relations and cohesion cannot be justified as progress - not all growth is equal. The obesity epidemic provides an example of the negative consequences of such growth and its disconnection from any idea of progress. Each year, the growth of the food industry makes available a growing supply of calories that consumers must absorb – or the food industry fails. As a result, the industry prospers, while the incidence of obesity among young people has quadrupled, likely impairing their psychological and physical health for the rest of their lives. The obesity epidemics is also an example of defensive growth - a self-reinforcing productive process that accrues from the negative externalities it creates (Bartolini and Sarracino, 2024b). In simple words, the economy grows by generating social and environmental damages (in this case, obesity) which then create new markets and

business opportunities to provide remedies (consider the booming industries of dietitians, pharmaceuticals, gyms, personal trainers, influencers, and cosmetic surgeons). The more economic growth is defensive, the less it is desirable.

In light of these considerations, the slowdown of the current model of economic growth is an opportunity to rethink our priorities. Rather than clinging to the status quo – and repeating the mistakes of many civilizations before the current one - we could adapt to changing realities by reorienting our societies towards a new paradigm of progress, one that prioritizes human well-being over unsustainable economic expansion. We should prioritize human well-being in policy making, rather than letting economic objectives take precedence. In this new vision, the economy would be a powerful tool to enhance quality of life, allowing to prioritize what truly matters for people's well-being, such as fostering social relationships, cultivating a sense of community, and protecting the environment – all aspects that are increasingly scarce in modern life.

In sum, before asking whether sustained growth in advanced economies is possible, we must clarify what, exactly, we want to grow and for what purpose. We can grow quality of life if we expand what truly matters to people: natural capital, social relations, equality, trust and confidence. Economic growth benefits people's well-being in countries where income inequality decreases, that protect social relations, and enhance social safety nets and public goods. This provides several insights for the prospects of sustainability. It indicates that sustainability and well-being are compatible – environmental protection does not entail any intergenerational conflict. Rather than coercing individuals into adopting sustainable behaviours - a strategy that did not pay so far – they should be empowered to act pro-socially and pro-environmentally by placing well-being at the core of decision-making. Decades of research on quality of life can inform decision-makers on how to promote well-being.

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