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Some Reflections on Climate Change in a Keynesian Spirit

by

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Abstract

Over the next few decades humanity and countries around the world will be facing three major challenges. First, artificial intelligence will fundamentally reshape work and greatly impact employment and labor markets. Second, varying national and regional demographic trends will reshape global population, creating migration pressures. Third, progressing climate change threatens to become an increasingly disruptive force in the global economy. The paper treats the climate challenge as the most essential – perhaps existential – global challenge facing humanity, with the AI and demographic challenges substantially complicating the situation, but with varying national and regional connotations. While a looming climate crisis was clearly not on Keynes's radar in 1936, *The General Theory*, and Keynes's thought more generally, may still provide guidance to help countries coping with the triad of challenges as they unfold.

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1. INTRODUCTION

Keynes's *General Theory* was published at a time of mass unemployment and high inequality due to severe economic crises and insufficient growth, nourishing the widespread rise of extreme nationalism and geopolitical tensions that ended catastrophically with WWII. Today, in many countries, extreme inequality may be a greater problem, rather than acute unemployment. But the rise of extremist nationalistic movements and geopolitical tensions is once again observed in the context of vast socio-economic dysfunction. Against this backdrop, already charged with tension, humanity and countries around the world will be facing three major challenges in the coming decades. First, in the era of artificial intelligence, technology will once again fundamentally reshape work and greatly impact employment and labor markets. Second, diverging national and regional demographic trends will reshape global population, potentially creating intense migration pressures. Third, progressing climate change threatens to become a tremendously disruptive force in the global economy.

The paper treats the climate challenge as the most essential – perhaps existential – global challenge facing humanity, with the AI and demographic challenges substantially complicating the situation, and with varying national and regional connotations. While a looming climate crisis was clearly not on Keynes's radar in 1936, *The General Theory*, and Keynes's thought more generally, may still provide guidance to assist countries coping with this threesome of overriding challenges as they unfold.

The analysis proceeds as follows. Section 2 briefly revisits *The General Theory* highlighting Keynes's chief points of attack on contemporary orthodoxy. Section 3 elaborates on Keynes's thought by providing context to his anniversarial revolutionary macroeconomic theory, focusing on four critical themes that seem most relevant in coping with the trifecta of looming challenges, namely: uncertainty, finance, population, and growth. Section 4 then zooms in on the economics of the climate crisis, while section 5 discusses the political forces that seem to delay countries from addressing it. Section 6 offers some concluding reflections.

2. THE GENERAL THEORY IN ESSENCE

The year 2026 marks the 90th anniversary of the publication of *The General Theory*, the culmination of Keynes's theorizing on money and uncertainty.

While Keynes's first published book on money analyzed India's colonial monetary and financial arrangements as part of the British Empire in pre-WWI times, his subsequent trio of monetary works was the product of decades of monetary instability and British decline that followed WWI. The Tract, still based on Cambridge quantity-theoretical foundations, focused on the price level instabilities in the immediate aftermath of WWI, presenting an early blueprint for modern-day monetary policy. The Treatise on Money presented Keynes's (1930a,b) first attempt at developing a full-blown monetary business cycle theory together with sophisticated policy analyses of how to stabilize a credit money economy by deliberate monetary policy. *The General Theory* then marked his second attempt at such a theory, albeit now squarely focused on how the level of employment is determined at any time.

Britain's interwar experience of persistently high unemployment could be interpreted through a Treatise-on-Money lens as a lack of competitiveness, stemming from rigid money wages, on the one hand, and tight money, as dictated by the gold standard and monetary orthodoxy, on the other. The experience of the Great Depression, the worst of which Britain itself escaped from by going off gold early (in September 1931), taught Keynes to more fundamentally question the classical notion of some inherent tendency towards full employment if only money wages were flexible.

In *The General Theory*, Keynes describes the two fundamental flaws of capitalism as unemployment and inequality, then zooms in on exploring the former flaw to its core. At a time when political extremism had taken over much of continental Europe, it is apparent that Keynes also saw successful full employment policies – “managed capitalism” – as a means toward ameliorating inequality and help maintain social and political stability.

Investigating capitalism's conspicuous failure to keep employment full, Keynes concentrates his critique of the “classics” on the role that market-driven wage and interest rate adjustments are supposed to play in mainstream economic thought. Keynes rejects two central “classical” propositions, namely: first, that unemployment results from a failure of money wages to fall under recessionary conditions and, second, that the rate of interest would provide an automatic market adjustment mechanism that equilibrates saving and investment, and supposedly at full employment (unless hindered by rigid money wages). The first proposition features a fallacy of composition, Keynes shows, while the second rests on a fundamentally flawed theory (Bibow 2009).

Regarding the first proposition, Keynes argues that while an individual unemployed worker might attract a job offer by reducing their wage demands, a nation-wide decline in money wages in a closed economy was not only difficult to accomplish, but also more likely to produce the opposite result of declining rather than rising employment. This was the case because deflationary macroeconomic repercussions of wage deflation could easily overpower any supposedly stimulatory effects of a declining wage bill as experienced by individual firms. Regarding the second proposition, Keynes rejects the classical “loanable funds” theory of interest for profoundly misunderstanding the nature and role of money and finance in a monetary production economy, offering his liquidity preference theory of interest in its place. Investment depends not on saving, as the mainstream then and now would have it, but on finance. Obtaining finance means convincing either someone who has liquidity to part with it or a bank to newly produce liquidity – at a price, the rate of interest. Deflation through wage cuts due to unemployment, the classical medicine, would not help the process. Quite the contrary. As Keynes observed in 1931 that “there was a level of deflation that no bank can stand” (Keynes 1931; Bibow 2020).

The upshot of his theoretical breakthrough was that the macroeconomy is not self-equilibrating as presumed by classical thinkers. Instead of a laissez-faire approach to government involvement

in the economy as conventionally promoted by the “classics” (and today's “libertarians”), the macroeconomy needed to be stabilized by appropriate economic policies. In particular, Keynes argues that the government needs to purposefully manage the “central controls” of the macroeconomy.

In all his monetary works, Keynes's primary emphasis is on monetary policy: central bank management of interest rates aimed at stabilizing the economy, employment and the price level; a “managed currency was inevitable” (Keynes 1923; Bibow 2023). But Keynes saw a clear role for fiscal policy too. When Britain faced long-term unemployment in the 1920s (following the return to gold at the pre-war parity that Keynes had unsuccessfully agitated against), Keynes pragmatically promoted the use of public works programs.

The General Theory then provided the theoretical foundation for his earlier pragmatism. Keynes observes in *The General Theory* that a “socialization of investment” might become necessary to secure full employment. In post-*General Theory* discussions he gives his nod of approval to James Meade's idea of anti-cyclical variation in social security tax rates and also notes the stabilizing forces that Beveridge welfare system reform would provide. He also makes the case for managing public investment under a “capital budget” that is to be debt financed and separated from the current budget (Keynes 1945).

At the start of WWII, once again positioned at HM Treasury, Keynes proposes to use taxation to restrain disposable incomes and spending rather than repeating the mistakes of WWI and using debt finance paired with high interest policies (Keynes 1940). And in 1944, he approves of the logic of Lerner's “functional finance” interpretation of *The General Theory*, albeit warning of practical difficulties in putting it into action.

Keynes thought of all these ideas as constructive reforms of the market economy, as taming the ills of individualistic capitalism, not as a blueprint for replacing it. He was horrified by both fascism and communism playing out in various forms across the channel at the time. Use of

central controls for macro management, but with reliance on markets, competition, and entrepreneurship, was his advice for solving mankind's "economic problem" and saving civilization against the threat of barbarism unfolding elsewhere.

Two aspects are particularly noteworthy here about *The General Theory* as the framework for assessing how best to deal with the trifecta of challenges facing us today: first, positive-sum games versus trade-offs, second, globalism in outlook and deterrence of beggar-thy-neighbor strategies.

In highlighting that the macroeconomy needs to be stabilized to secure operation at its potential, also as a bulwark against socio-economic dysfunction and political extremism, *The General Theory* defies the mainstream mantra that there was "no such thing as a free lunch".

Unemployment, and underemployed resources more generally, represent economic waste and permanent social loss. Clearly, preventing unemployment does present a free lunch to society. Denying people who want to work employment and income, is economically wasteful as well as socially/politically perilous.

Adam Smith identified the "division of labor" as the core engine driving rising incomes through development and sophistication, featuring productivity growth through collaboration as a win-win situation. David Ricardo's principle of comparative advantage extended this very idea, highlighting that specialization does not need to exclude backward areas. Keynes's principle of effective demand critically extends the scope of win-win by highlighting that focusing on the forces of supply alone – à la Say's Law – was not sufficient for obtaining optimum social outcomes. Instead, active government is needed to win the positive-sum game on behalf of society.

This important message of *The General Theory* should be borne in mind when investigating today's trifecta of challenges. Viewing economics as the search for win-win outcomes is contrary

to the usual framing of the climate challenge, in particular, presenting the energy transition in terms of costs – the allegedly nonexistent free lunch – that would reduce living standards.

Beyond its win-win perspective, *The General Theory* is also pertinent in another sense here, namely as a global theory, providing a global answer to a global crisis. While Keynes provides a fresh script for national macro policymaking, *The General Theory* is essentially a “global” macro theory – a theory of the global macro economy – by assuming, at least most of the time, a closed economy. Only on a few occasions does Keynes explicitly include international considerations in his analysis. For instance, in analyzing the case of a nation-wide decline in money wages, Keynes acknowledges that this would boost national competitiveness and foreign trade of the country experiencing such a decline, if, and only if, money wages were not also declining in its trading partners.

And that's precisely the point. For boosting foreign trade in this fashion does not provide any escape route from general (global) unemployment. It just shifts the burden of unemployment to other countries (or regions). In other words, similar in effect to competitive exchange rate devaluations, deflationary national wage trends provide an avenue for “beggar-thy-neighbor” policies that would only undermine the international cooperation that was badly needed to properly meet the global challenge of the day: global unemployment.

In the aftermath of WWI Keynes argued strongly for the rehabilitation of Germany as part of the project to achieve reconstruction and peace in a cooperative Europe. He saw his *General Theory* and its prescription of full employment policy as preempting economic rationales for warfare. Similarly, his proposals for the global monetary order at Bretton Woods were guided by the idea of creating global economic conditions for peaceful cooperation between nations.

In this sense, then, while *The General Theory* was not developed to specifically handle the climate challenge,¹ it certainly does promote the “global spirit” needed for humanity to come together to meet its challenge; and defy beggar-thy-neighbor approaches. For failure to cooperate effectively only risks new wars. And as Keynes observed, “most of the valuable things in life have very little to do with international affairs. But there is one necessary condition for everything good: peace” (Keynes 1922, 26).

3. THE GENERAL THEORY IN CONTEXT

Today's mainstream economics may be missing critical aspects of Keynes's theory – as legends of Post Keynesian economists would rightfully attest. But currencies around the world are managed by central banks, an inevitability attested by Keynes in his Tract. And the general political message that government bears important responsibility for full employment and price stability, and therefore should apply macroeconomic policies to that effect, has undoubtedly become part of modern conventional wisdom; a victory of ideas over vested interests, as Keynes prophesied in *The General Theory*.

When we turn to the rationalization of specific policy designs representing today's orthodoxy it becomes clear that the insights of *The General Theory* have only been partially apprehended. Central banks still deliberately provoke unemployment to fight inflation; for some even imagined inflation risks provide reason enough to do so. Some governments still imagine that balancing the budget would somehow increase investment while budget deficits inevitably crowd out investment. Just as current account imbalances are still widely associated with saving flows.

More specifically, as far as climate policies are concerned, governments will tend to resist any measures that may seem detrimental in effect to either employment and/or price stability. Therefore, a crucial part of the challenge is to help governments appreciate that climate policies

¹See Aspromourgos's (2025) discussion of the interrelationship between nature and the human economy in Keynes's thought.

can have positive employment effects and that any price level and distributional (side-)effects need to be assessed in terms of the available overall policy mix.

We will return to this matter further below. The remainder of this section will seek to contextualize Keynes's thinking as it applies to economic policy in *The General Theory*. We will discuss a variety of subjects that seem pertinent in appreciating Keynes's insights as they apply to the analysis of today's trifecta of challenges within the theoretical framework of *The General Theory*, starting with his background in mathematics, philosophy, and politics.

3.1 Keynes on Uncertainty, Science, and Political Philosophy

Keynes's undergraduate studies at Cambridge were in mathematics. As a member of the Apostles secret society, he developed a strong affection for philosophy; specifically G.E. Moore's moral philosophy made a big impression on him. So his graduate studies came to stand at the crossroads of mathematics and philosophy, focusing on probability theory. His thesis examiners were William Ernest Johnson and Alfred North Whitehead, with additional important feedback coming from another giant of the time, Bertrand Russell. Keynes's fellowship thesis for King's College A Treatise on Probability was successful, on second attempt, in 1909. The work captures important aspects of his thinking on rational decision-making under uncertainty that informed his later economic theorizing in crucial ways.

Keynes's main interest in probability theory is precisely in those situations that do not resemble perfect games with perfectly calculable probabilities for each perfectly known possible outcome. In situations where statistical evidence is incomplete and/or not all possible outcomes are even known, assigning numerical values of probability may not be possible or meaningful. In situations like these, he proposes adding a second dimension in the probability calculus that he calls the “weight of argument”, namely as a measure of the (in)completeness of evidence. Rejecting both frequentist and subjectivist notions of probability, he nevertheless emphasizes that probability is objective in the sense of reflecting the rational degree of belief that should be held

given the available knowledge; a logical relation a/h between a conclusion and the premises supporting it.

As a matter of practical affairs, his approach puts producing more knowledge into the limelight, be it simply in collecting information and making it available, or through the scientific discovery process of new knowledge. Regarding the availability of information, Keynes made a pertinent observation in his essay “The End of Laissez-Faire” in which he identifies what he sees as the “agenda” for state action:

Many of the greatest economic evils of our time are the fruits of risk, uncertainty, and ignorance. It is because particular individuals, fortunate in situation or in abilities, are able to take advantage of uncertainty and ignorance and also because for the same reason big business is often a lottery, that great inequalities of wealth come about; and these same factors are also the cause of the Unemployment of Labor, or the disappointment of reasonable business expectations, and of the impairment of efficiency and production. Yet the cure lies outside the operations of individuals; it may even be to the interest of individuals to aggravate the disease. I believe that the cure for these things is partly to be sought in the deliberate control of the currency and of credit by a central institution, and partly in the collection and dissemination on a great scale of data relating to the business situation, including the full publicity, by law if necessary, of all business facts which it is useful to know. These measures would involve Society in exercising directive intelligence through some appropriate organ of action over many of the inner intricacies of private

business, yet it would leave private initiative and enterprise unhindered (Keynes 1926).

We see here both his (liberal) inclination to not unduly impede private initiative and his (collectivist) urge for governments to take responsibility in those cases where private initiative is either not incentivized to add to the pool of public knowledge or is even presenting a risk of abusing informational advantage to the detriment of society. Regarding the scientific discovery process, his *Treatise on Probability* departs from Hume's analysis of induction as seeking for certainty, arguing instead that scientific induction was aiming at forming high probabilities based on cumulative evidence.

Keynes's clearest appreciation of the role of science as an economic force propelling productivity growth and living standards through improving technical efficiency appears in his 1930 Essay “The Economic Possibilities for our Grandchildren”. Keynes observes that “from the sixteenth century, with a cumulative crescendo after the eighteenth, the great age of science and technical inventions began”, a process that had by the nineteenth century brought a flood of transformative technologies and thinkers too numerous to catalogue (Keynes 1930c).

Keynes spells out the conditions on which his optimistic outlook for his generation's grandchildren would rest as follows: the pace at which humanity can reach the “destination of economic bliss” would be governed by society's power to control population, its determination to avoid wars and civil dissensions, its willingness to entrust to science the direction of matters properly the concern of science, and the rate of accumulation fixed by the margin between production and consumption – the last of which, Keynes suggests, would take care of itself given the first three (Keynes 1930c).

If technical inventions are the joint-work of scientists, inventors, and entrepreneurs as well as their financiers, the issue of “entrust[ing] to science the direction of those matters which are

properly the concern of science” is ultimately a matter of politics; which does, however, include the possibility that government chooses to give free reign to private initiative no questions asked.

Keynes's own views on politics clearly attach great importance to “the short run” as expressed in his famous critique of classical economic teachings with its focus on long run equilibrium. For “this long run is a misleading guide to current affairs. In the long run we are all dead” (Keynes 1923). Already the acute price level instabilities in the aftermath of WWI alerted Keynes to the vulnerability of democracy and civilization when faced with momentous “short run” pain. The remaining two decades of his lifetime brought plenty more evidence of economic instabilities with associated “short run” sufferings leading to political extremism and war. This concern was most clearly expressed in his essay “My early beliefs”, in which Keynes describes civilization as a “thin and precarious crust”, highlighting the danger of economic chaos paving the road to barbarism (Carabelli and Cedrini 2018). In modern democracies, government has to present its electorate with a compelling narrative of why it should tolerate “short run” economic anguish for the sake of some promised “long run” good.

As an undergraduate, the young Keynes had explored the political philosophy of British conservative Edmund Burke. In 1904, he wrote a 90-page essay titled “The Political Doctrines of Edmund Burke” (which won him a Cambridge University prize). While critical of Burke's conservatism, his defense of laissez-faire, for instance, Keynes admires the internal logic of Burke's thought emphasizing the well-being of the community in the present; the lived short run. Of central importance is the philosophical principle of “insufficient reason”, which says that if there is no sufficient reason to believe that a good situation today will have adverse long-term consequences, it is rational for individuals to aim to maximize their short-term good. Burke's skepticism of long-term theoretical benefits to be traded for a worsening present seems to rhyme rather well with Keynes's critique of classical economists' theorizing about the economics of the dead. And Keynes also agreed with Burke's concerns about “the evils of the transition” from one

state towards a supposedly better one. For both men the favored approach seemed to be one of managed gradualism rather than uncontrolled radicalism.²

Regarding the subject of this essay, one critical question then is whether our knowledge about climate change, featuring forecasts of significant adverse long-term consequences, justifies “sufficient reason” for politics to change course today, even if that means not maximizing the short-term good of today's generation. Another question is to what extent changing course today would actually involve sacrificing any social good and how that sacrifice would be shared.

It is of interest here that Burke was a common influence on both Keynes and Hayek (Collins 2025) – supposedly the two adversaries whose competing economic “ideologies” have principally shaped economic policies since WWII (Wapshott 2011). We may therefore add a brief note on the correspondence between the two intellectual rivals regarding Hayek's famous work “The Road to Serfdom”, of which Keynes read a draft on his return journey from the Bretton Woods negotiations in 1944. Keynes writes to Hayek that he shares much of the “spirit” of the work but fundamentally disagrees with respect to the need for “planning”. While Keynes saw a rising need for “planning”, including “moderate planning” by government, Hayek was around the same time publishing several articles praising the role of markets as aggregators of decentralized information. These articles arose in the context of the socialist (full-scale) planning debate at the time, for which, Hayek argued, a central planner would not have the necessary information to undertake effective planning.

Hayek does have a point regarding the efficacy of the price mechanism in coordinating production that Keynes would not fundamentally disagree with. Rather, for Keynes the question is whether the “invisible hand” can also be relied upon to coordinate individual plans through

²“Burke ever held, and held rightly, that it can seldom be right ... to sacrifice a present benefit for a doubtful advantage in the future. ... It is therefore the happiness of our own contemporaries that is our main concern; we should be very chary of sacrificing large numbers of people for the sake of a contingent end, however advantageous that may appear. ... We can never know enough to make the chance worth taking. ... There is this further consideration ... it is not sufficient that the state of affairs which we seek to promote should be better than the state of affairs which preceded it; it must be sufficiently better to make up for the evils of the transition” (Keynes 1904).

time, that is, regarding the uncertain future. Hayek presumes that markets are always superior compared to any government planning and he would later even promote competition in the currency sphere. This is a point of fundamental disagreement as Keynes had already in 1923 declared that a “managed currency was inevitable”. And his analysis in *The General Theory* not only shows that the rate of interest is a purely monetary phenomenon lacking the real anchor presumed to exist in both neoclassical and Austrian thought, especially chapter 12 also makes it clear that Keynes had strong doubts about the efficiency of asset prices determined under (“Keynesian”) uncertainty in markets subject to “beauty contest-style” market play.

While Hayek would likely be inclined to deny any role for government planning to counter the climate challenge, Keynes would more likely see uncertainty as a factor hindering adequate private entrepreneurial initiative and investment. If science calls for action, justifying “sufficient reason” for society to change course today, it will be for the government to act in ways that assures sufficient investment in a timely energy transition. Among other things, investment always depends on financing (rather than saving), which brings the role of the financial system to the fore.

3.2 Keynes on Financial Organization and Monetary Regime

An important aspect of meeting the climate change challenge concerns the financing of the energy transition. In his 1930 “Economic Possibilities” Keynes singles out capital accumulation and technological advances as the key drivers of growth propelling humanity along its path towards economic abundance. He does not mention the role of finance explicitly. *The General Theory*, however, makes it clear that financial conditions – determined by the financial system under the stewardship of financial regulators and guidance of monetary policy – always condition and shape capitalist evolution, and that finance can act as an important constraint on economic activity at any time. Keynes thought that this was a management problem; as, in principle, monetary policy can make sure that finance does not become a constraint on activity. The financial system is in the business of creating liquidity. And the government's central bank is

the ultimate source of “liquidity par excellence”, bank money. Keynes held that the “banking principle” was fundamental to the functioning of capitalism.

It is in his early monetary work “Indian Currency and Finance” that Keynes also explicitly explores matters of financial organization and development. Given that the financing of the energy transition poses a particular challenge in many poor developing countries, the work presents itself as another pertinent source of insight. Indian Currency and Finance mainly focuses on the first part of the title, India's currency arrangements, and Keynes praises India's gold-exchange standard as progress and superior to a gold currency regime. It is chapter 7 of the book on banking in India which is most relevant for our subject. Keynes offers a detailed analysis of India's banking system, the different categories of banks and their respective business, and money market arrangements.

One group of larger banks was under European management and mainly involved in India's overseas trade. Another group of larger Indian banks was mainly involved in domestic trade. And then there were smaller banks in vast numbers that had seen rapid growth as well as informal moneylenders (Shroffs, Marwaris etc.). Keynes's lens is that of a banking supervisor assessing the banks' capital and reserves as well as their cash position. He describes India's history of banking as checkered by instabilities but judges the surviving large banks, which had been experiencing a period of prosperity of late, as quite strong. He is, however, concerned about the recent strong growth of new banks that have seen their liquidity shrink markedly, an issue which is even more concerning in view of the ultimate weakness of India's banking system, namely, the lack of a central bank. While some central banking functions were being fulfilled by the local treasury department and some larger banks, Keynes argues strongly that the situation needs to be rectified by establishing a proper central bank.³

³The Reserve Bank of India was finally established in 1935. By the time when Indian Currency and Finance was published, Keynes was called upon to serve on a Royal Commission on Indian Finance and Currency, the report of which, according to its chairman Austen Chamberlain, was dominated by Keynes. Given the Commission's remit it largely avoided the issue of an Indian central bank though.

Keynes's following assessment of the recent period of strong growth of Indian joint-stock banks provides a good summary and deserves to be quoted at length:

As late as 1900 these banks were comparatively insignificant. Since that time they have succeeded in attracting so large a volume of deposits as to make them an important part of the banking system of the country. Only six of them date back long enough to remember any real financial crisis in India (for the depression of 1907-8 was not accompanied by the symptoms of financial crisis). Growing up in smooth times, they have thought more of attracting deposits than of retaining cash reserves; and in 1910 we find sixteen banks with deposits of 17,000,000 and cash reserves of not quite 11%. Even of these reserves the greater part is probably held by the older and more established of the banks belonging to this class. In the case of the smaller banks, dealing as they are with clients to whom banking is a new thing and in a country where hoarding is still dominant, the cash balances seem, from the available indications, to be hopelessly inadequate; and it is hard to doubt that in the next bad times they will go down like ninepins. If such a catastrophe occurs, the damage inflicted on India will be far greater than the direct loss falling on the depositors. The growth of banking habits in India is, of course, of the utmost importance to the country's economic development. A startling series of failures will do much to retard it (Keynes 1913, 158-9).

Note that Keynes highlights the importance of banking to India's “development”, meaning the mobilization of domestic resources, particularly a vast pool of unproductive or largely informal labor lacking a sufficient capital stock (Kalecki 1954, Lewis 1954). In *The General Theory*, the issue is not one of mobilizing workers but of re-employing underutilized workers and capital. But in either case banking and finance can act as a restraint. In the context of the Bretton Woods negotiations, Keynes was even eager to establish “the banking principle” (read: managed elasticity) at the level of the global monetary order. In his own favored blueprint centered around a global currency called “bancor”, overdraft credit facilities would contain countries' need for holding precautionary foreign currency reserves. And capital controls were part of a monetary regime designed to protect nations' policy space, so that money and finance were properly under their national control.

The so conceived situation in Keynes's bancor plan is far from describing today's realities though, which center around the U.S. dollar as the hegemonic global currency while featuring largely liberalized international financial flows under the whim of Wall Street. This is the environment under which both advanced and emerging market economies are subjected to a “global financial cycle”. And it is in this kind of environment that today's developing countries too will have to manage their specific national trifecta of challenges, whatever the state of their domestic banking system may be. Will it be safe to continue following Hayekian principles in the sphere of money and finance, or will Keynesian “moderate planning” have to be part of any solution to accomplishing the energy transition – which is critically dependent on its financing?

It surely is a tragedy that some of the countries that have contributed next to nothing to the looming climate crisis may be at particular risk of facing economic devastation from it. They are not only lacking the resources – both technology and finance – to protect their current population by climate adaptation, but are also projected to experience some of the fastest population growth over the period when climate change – unless effectively mitigated – is projected to increasingly wreak its havoc.

3.3 Keynes on Population

It appears that throughout his working life the matter of population was never far from Keynes's mind, although it never quite made it to the top of the list (Toye 1997, 2000). Until the 1920s, featuring his early Cambridge lectures and *Economic Consequences of the Peace*, and partly informed by his civil service experience in the India Office, Keynes viewed population growth through a Malthusian lens. He expressed serious concerns about rapid population growth, especially in India, China, and Egypt, as resulting in overpopulation, which would undermine living standards and threaten prosperity in poorer regions of the world. (The at the time less densely populated regions in Latin America and Africa did not attract his attention.) Even in richer Western countries population growth had to be kept in check, he ventured. Contrary to pro-natalist views prevalent at the time, he advocated for birth control to curtail population growth.

When aggregate demand considerations took center stage in his theorizing in the 1930s, Keynes recognized that slowing population growth, or even population declines, could also have detrimental effects on macroeconomic performance. For instance, in his Galton Lecture, Keynes (1937a) draws a connection between population growth and the marginal efficiency of capital driving the strength of investment spending. These issues are conceptually maybe most clearly expressed in *Economic Possibilities* where he lists “our power to control population” as among the critical preconditions determining the pace at which the ultimate “destination of economic bliss” may be reached by any nation and humanity at large. In the same essay, Keynes notes that a growing population needs to be “equip[ped] with houses and machines” to enjoy any given standard of living – the further advancement of which would be dependent on continued capital accumulation and technological advances.

Population growth, then, plays a somewhat ambivalent role. By giving rise to more investment in “houses and machines” for any additional workers and boosting the marginal efficiency of capital in general, population growth in and by itself may stimulate GDP growth and employment; a stimulant which may or may not be necessary or helpful to attain full

employment. Assuming full employment is assured by management, population growth tends to postpone the reaching of economic bliss further into the future – unless offset by augmented capital accumulation and/or technological advances.

But unusually rapid technological progress can also prove disruptive as it may give rise to “technological unemployment”, “unemployment due to our discovery of means of economizing the use of labor outrunning the pace at which we can find new uses for labor” (Keynes 1930c); supposedly a temporary plague, assuming successful macroeconomic management.

In the (very) long run, as countries are progressively approaching the envisioned state of economic bliss, workers in increasing numbers would choose to work fewer hours and enjoy more leisure instead, Keynes predicted. By contrast, if capital accumulation and technological progress were lacking overall relative to population growth, the direction of travel in society would essentially be Malthusian (resembling the situation in developing countries with “surplus labor” and an insufficient capital stock). Given considerations of economic efficiency, Keynes seems to have harbored some notion of an “optimum” population size.⁴

Seen from today's perspective, diverging demographic trends around the world pose vastly different sets of challenges in different countries and regions. In many advanced as well as middle-income emerging market economies, birth rates have declined so sharply as to either deliver or herald a declining population.⁵ In principle, this trend may alleviate climate change. But detrimental consequences in labor market and macroeconomic performance might easily arise as macroeconomic management adapts to a new environment so fundamentally different from earlier experience (Goodhart and Pradhan 2020).

⁴Against the backdrop of Keynes's participation in the Eugenics movement of the time, Toye (2000) offers a balanced discussion of Keynes's scattered observations on the “quality” of population. These include both progressive ideas that are much in line with Marshallian and modern ideas about investment in “human capital” as well as remarks that, while widely prevalent at the time, are clearly considered racist by today's standards. See also Magness and Hernandez 2017 and Magness and Harrigan 2020.

⁵See Schettini Kearney and Levine 2025, Bivens 2025; Geruso and Spears 2026, Chen et al. 2026, for instance.

Macroeconomic management challenges are further aggravated by the fact that income inequality has increased sharply in many countries, especially in America. The American case also best exhibits how these socio-economic trends, in turn, threaten to undermine democracy as the oligarch class expands its greedy grip on both the body politic and public opinion-shaping channels of influence.

On the other hand, it seems a tragedy in the making that the sharpest population growth is projected to happen in precisely those parts of the world that will likely be the most adversely affected by climate change until the time at which global population is projected to climax towards the end of the current century. It is easily conceivable how these developments might nourish both unrest and warfare as well as immense migratory pressures. These prospects provide yet another call for global cooperation to achieve effective climate change adaptation and mitigation. Will continued economic growth – whether in conjunction with a growing, declining, or stable population – help or hinder countries and humanity in meeting the climate challenge? It is in order here to consider Keynes's contributions to growth theory.

3.4 Keynes on Growth and Growth Theory

In line with his views on population, Keynes held quite glum views on economic growth prior to *Economic Possibilities* (Keynes 1930c). His account in *Economic Consequences of the Peace* describes the economic situation in Western Europe before the war as rather exceptional and temporary. His opening words capture this spirit well: the power to become habituated to one's surroundings is a marked characteristic of mankind, and very few people realize with conviction how unusual, unstable, and temporary the economic organization was by which Western Europe had lived for the preceding half century (Keynes 1919, p. 1). Continued growth was anything but guaranteed, economic bliss not in sight.

The same work also offers valuable insights into Keynes's views on the relation between inequality and economic growth deserving to be quoted here at length, directly connecting

Keynes's outlook with Malthus's gloomy prophecies of an earlier time. According to Keynes, before WWI:

Europe was so organized socially and economically as to secure the maximum of accumulation of capital. While there was some continuous improvement in the daily conditions of life of the mass of the population, society was so framed as to throw a great part of the increased income into the control of the class least likely to consume it. The new rich of the nineteenth century were not brought up to large expenditures, and preferred the power which investment gave them to the pleasures of immediate consumption. In fact, it was precisely the inequality of the distribution of wealth which made possible those vast accumulations of fixed wealth and of capital improvements which distinguished that age from all others. Herein lay, in fact, the main justification of the capitalist system. If the rich had spent their new wealth on their own enjoyments, the world would long ago have found such a régime intolerable. But like bees they saved and accumulated, not less to the advantage of the whole community because they themselves held narrower ends in prospect. The immense accumulations of fixed capital which, to the great benefit of mankind, were built up during the half century before the war, could never have come about in a society where wealth was divided equitably. ... the duty of 'saving' became nine-tenths of virtue and the growth of the cake the object of true religion. ... If only the cake were not cut but was allowed to grow in the geometrical proportion

predicted by Malthus of population, but not less true of compound interest, perhaps a day might come when there would at last be enough to go round, and when posterity could enter into the enjoyment of our labors. In that day overwork, overcrowding, and underfeeding would come to an end, and men, secure of the comforts and necessities of the body, could proceed to the nobler exercises of the faculties. One geometrical ratio might cancel another, and the nineteenth century was able to forget the fertility of the species in a contemplation of the dizzy virtues of compound interest (Keynes 1919, 11-12).

Note though that these words do sound an inkling of the ultimate prospects of economic bliss (“nobler exercises of the faculties”), a little over a decade later foreseen for (at least parts of) humanity by 2030 in *Economic Possibilities* – prospects which, however, once again became dimmed and questioned by the analysis in *The General Theory*.

Keynes's monetary works of the 1920s, *A Tract on Monetary Reform* (Keynes 1923) and the two-volume *A Treatise on Money* (Keynes 1930a,b), provided crucial monetary stepping stones towards Keynes's monetary masterstroke. But another contribution deserves consideration here, namely Ramsey's essay “A mathematical theory of saving” (Ramsey 1928).

In his biographical essay, Keynes praises Ramsey's *Economic Journal* article as one of the most remarkable contributions to mathematical economics ever made, both in respect of the intrinsic importance and difficulty of its subject and the power and elegance of the technical methods employed (Keynes 1930d, 335-6). Ramsey in turn acknowledges that Keynes had shown him

that the rule governing the amount to be saved could be determined at once from these considerations, and credits Keynes with several other suggestions (Ramsey 1928, 545, 547).⁶

What is therefore known as the “Keynes-Ramsey rule”, says that the optimal macroeconomic rate of saving maximizing consumption over time rests on the condition that the marginal cost of saving (forgone consumption today) should equal the marginal benefit in the form of increased future consumption.⁷ In Ramsey's formulation, the growth rate of consumption is seen as depending on the interest rate, rate of time preference, and elasticity of intertemporal substitution. At the economy's “bliss point”, the interest rate equals the rate of time preference plus the growth rate, and the marginal utility of consumption is zero. While population growth raises the optimal saving rate, the influence of inventions is ambivalent: they give us new needs which we can better satisfy if we have saved up beforehand, but they also increase our productive capacity and make preliminary saving less urgent (Ramsey 1928, 549). Critically, on ethical grounds, Ramsey assumes zero discounting of future generations' utilities.⁸

It seems unquestionable that Ramsey's 1928 essay provided an important background for the long-run outlook Keynes presents in *Economic Possibilities*, an essay that started as a talk in 1928 and was published in 1930, even if not explicitly referred to. Discussing his concept of “profit inflation”, Keynes does refer to Ramsey's essay in his *Treatise on Money*, published in the same year, where he also harks back to the distributional issue addressed earlier in *Economic Consequences*:

⁶The correspondence between Keynes and Ramsey regarding the latter's essay published in the *Economic Journal* appears in volume XII of JMK (pages 784-9). It is noteworthy that Keynes thought that the optimal rate of accumulation would typically be undershot because of uncertainty. The contemporary generation would sacrifice less for fear of either future wars and destruction or of egotistical behavior of future generations.

⁷Joan Robinson (1956) elaborated on this idea developing a Keynesian model featuring a steady growth full employment “golden age” scenario of optimal accumulation that the economy can reach when the share of profit in income equals the proportion of income invested. In her model the aggregate saving rate depends on the income distribution between capitalists and workers. Edmund Phelps (1961) introduced a neoclassical model featuring the “golden rule” for steady-state optimal growth of consumption requiring that the marginal product of capital equals the sum of the population growth rate and the rate of capital depreciation.

⁸On the discount rate as a critical and controversial issue in the climate change debate, see Stern 2013, Nordhaus 2007, 2018, Weitzman 2009, Keen 2020, Stern and Stiglitz 2022, and Hotelling 1931.

Mr F.P. Ramsey showed in his [essay] that the ideally right rate of accumulation is almost certainly must faster than the 10-15 per cent of the annual income which I have attributed above to the typical modern community. Thus, if we consider a long period of time, the working class may benefit far more in the long run from the forced abstinence which a profit inflation imposes on them than they lose in the first instance in the shape of diminished consumption. Moreover, the amount of the diminution in their current consumption corresponding to a given increment of capital wealth is no greater if it comes about in this way than if it is due to voluntary saving; it is only the distribution of the resulting wealth which is affected, and, so long as wealth and its fruits are not consumed by the nominal owner but are accumulated, the evils of an unjust distribution may not be so great as they appear. All this applies a fortiori to a community very poor in accumulated wealth, such as Europe at the end of the fifteenth century (Keynes 1930b, JMK VI, 144-5).

Keynes's outlook changed again with the Great Depression and while working on his *General Theory*. If the early stages of the Great Depression, following the very rapid productivity growth in the preceding decade, suggested to Keynes the possibility of temporary “technological unemployment” (see above), the analysis in *The General Theory* established the possibility of persistent “involuntary unemployment” due to insufficient aggregate demand.

The instability of investment spending takes center stage while money and finance are seen as factors potentially curtailing capital accumulation and employment – and hence the pace at which economic bliss and voluntarily enjoyed leisure may be reached eventually. Monetary policy must manage financial conditions conducive to growth. Fiscal policy must play its part too. Keynes mentions the possibility that since “it seems unlikely that the influence of banking policy on the rate of interest will be sufficient by itself to determine an optimum rate of investment” that “a somewhat comprehensive socialization of investment will prove the only means of securing an approximation to full employment” (Keynes 1936, 378). Reaching economic bliss requires overcoming the scarcity of capital, artificially kept scarce by uncertainty and liquidity preference unless countered appropriately by the government. With capital no longer scarce, the “euthanasia of the rentier” heralds a post-capitalist age of abundance and absence of “poverty in plenty”.

Keynes's analysis of capitalism was coming full circle here: in “The end of laissez-faire” he had advised government to focus their agenda on matters that the private sector would not take on, in *The General Theory* – now based on macroeconomic theory! – the government's agenda comes to include making sure a nation invests enough to maintain full employment while staying on its path towards economic bliss. Traditionally, during war times, as again during WWII, governments have adopted a “whatever it takes” mode of operation. While leaving to private initiative whatever it can properly take care of, why should government abandon what is properly its own agenda during times of peace then? That was the message of Keynes's open letter to FDR in December 1933. And in a BBC radio address in 1942, Keynes puts it most succinctly: “anything we can actually do we can afford.” Physical resources are the only true economic constraint, not money and finance; if we dare.

The instability of investment is also at the heart of the matter in Keynes's post-*General Theory* correspondence with Roy Harrod over the latter's ongoing work on “An essay in dynamic theory”, eventually published in the *Economic Journal* in 1939 (and one leg of the Keynesian

“Harrod-Domar growth model”).⁹ The model is “Keynesian” in the sense of featuring both the possibility of steady growth plagued with persistent unemployment as well as the peril of dynamic instability as deviations from equilibrium tend to be self-amplifying rather than self-correcting (“knife-edge” property). Highlighting the dual role of investment as creating both demand and productive capacity, Harrod’s “warranted growth rate” is the dynamic version of Keynes’s “short-term expectations” equilibrium (and point of effective demand determining the level of employment at any time) where firms get their sales expectations just right and hence have no incentive to change their production and investment plans. Persistent unemployment (inflation) is even possible at the warranted rate of growth though, if that equilibrium rate falls short of (exceeds) the “natural rate of growth”, which is determined by population growth and technological progress.¹⁰

Some of Keynes’s criticisms of Harrod’s multiple drafts during the editorial process concern the model’s assumption of fixed parameters for the saving rate and the capital-output ratio yielding the famous knife-edge property. Other comments confirm Keynes’s skepticism whether private investment can be expected to come forth at a sufficient scale that he also expressed towards the end of *The General Theory*. Referring to the case of a “stationary population in an old country, the rate of growth relating solely to the standard of life; or even worse, a declining population” (Keynes 1938, 348), and emphasizing uncertainty and related business risks as the constraining factor, Keynes observes that if a stationary or declining population were to persist year after year, the change in the direction of new demand and of technique would be so great and unpredictable as to baffle entrepreneurs, so that with private risk-taking alone, no one would dare attain the warranted rate except momentarily by accident; the remedy would have to take the form either of

⁹The post-*General Theory* correspondence between Keynes and Harrod on dynamic economics had started in early 1937 in the context of Harrod’s book “The Trade Cycle” published in 1936. Harrod (1964, 140) later declared that “Keynes may be truly regarded as the father of dynamic theory.” See Besomi 1996, 1999, 2001; Martini and Spataro 2026.

¹⁰The neoclassical “Solow-Swan model” keeps the parameters population growth and technological progress exogenous but has the capital-output ratio determined endogenously by invention of the neoclassical production function featuring flexible factor proportions and substitutability of labor and capital. These changes get rid of the knife-edge property and reaffirm the standard neoclassical proposition of steady growth at full employment as the “natural” long-run equilibrium.

a burst of beneficial new inventions or a sufficiently violent fall in the rate of interest, or of abnormal government loan expenditure or a drastic change in income distribution (Keynes 1938, 349-50).

Considering developments since WWII, it seems fair to say that those countries that have successfully emerged from poverty have done so by very high capital accumulation rates – with Japan, South Korea, and China as the standout cases – and with very significant government involvement (planning) in the process (Ing and Rodrik 2026). By contrast, those nations that are still the poorest today may be characterized as experiencing stagnation in the Malthusian trap – with the majority of countries landing anywhere between these extremes. The “old” countries that Keynes was mainly referring to have relatively successfully stabilized their continued growth by means of macro policies – but without quite achieving “economic bliss” as yet. In fact, their progress has become increasingly hampered by both rising inequality (raising the private saving rate and financialization) and rising uncertainties due not least to socio-political dysfunction.

This, then, is the global growth backdrop against which the challenges of the inevitable energy transition need to be assessed. Different countries and regions of the world are in very different positions. Some countries are so rich that economic bliss would seem to be within reach – except for vast and growing inequalities. For most countries continued strong growth and hence rising energy demand remains the needed reality for decades to come (United Nations 2026). The AI revolution might potentially bring countries faster towards economic bliss – high standards of living at sharply reduced working hours; if the fruits were shared more equally. Or AI takeover could mean technological unemployment, stagnation and widespread misery. Superimposed are country-specific demographic trends posing challenges of their own.

4. THE CLIMATE CRISIS IN ESSENCE: FIRST PRINCIPLES OF A KEYNESIAN RESPONSE

The looming climate crisis (and related human-made environmental overexploitation and biodiversity loss) is stemming from humanity's excessive pressures on the planet's limited resources. These excessive pressures have been driven by the (1) growth in human numbers, (2) growth in quantities of things that humans produce and consume, and (3) the kinds of things we consume and modes of producing them.

Keynes's 1930 essay “Economic Possibilities” discusses the first two drivers but not the third, which is the most critical at the current juncture. Keynes optimistically held out the prospect that by now (parts of) humanity might be approaching a state of economic bliss. Instead, humanity is not only far from having solved its “economic problem” (scarcity) but also facing a climate crisis.

One reason is that while Keynes's optimistic outlook for humanity assumed that population growth would be kept under control, global population has grown from around two billion in 1930 to over eight billion today. This outcome – instead of the Malthusian trap and mass starvation – was only made possible by technological advances and an agricultural (“green”) revolution, the possibility for which Keynes hinted at in Economic Possibilities.

Current projections suggest that global population will peak at around 10 billion by the end of this century, by which time driver #1 would stop adding pressures on the environment. Alas, given that the climate crisis must be brought under control well before the end of the century, the prospective population peak is not really going to help in time at all. Instead, further complications arise from the fact that different countries and regions are far out of sync in terms of when they are reaching their respective peak population. Some countries, primarily but not only richer ones, have already reached that point or will soon do so whereas others are lagging some fifty years or so behind. Much of the forecast growth in global population will happen in poorer African and South Asian economies. In principle, migration flows might function as a balancing economic factor between countries that are out of sync in terms of population trends.

In practice, it is well known that, nationally, socio-political forces may operate strongly against this while international cooperation in this area is rudimentary at best.

Similarly, driver #2 is unlikely to provide any relief in defeating the climate challenge. Not even in the richest countries today, including countries that may already be richer than what Keynes had optimistically expected for them in 1930, do we see populations that consider their economic problem as being solved. Working hours per year (and as a proportion of extended life expectancies) have declined since 1930 to some extent, but vast population majorities in these countries – especially in the US (Bibow 2024, Behringer et al. 2024, Gethin and Saez 2025) – continue working hard and craving for ever more consumption. Even among the richest (the infamous “top 1 percent”) of the rich in the rich countries has the craving to get ever richer come to an end.¹¹

And today the benign link between inequality and growth that Keynes attested for the pre-WWI era is clearly broken, twice broken. For one, the rich are no longer modest consumers. Instead, conspicuous consumption of today's rich disproportionately contributes to the climate crisis (Oxfam 2023, Schöngart et al. 2025). For another, rising inequality acts as a drag on aggregate spending, so that continued growth requires either ever larger private borrowing (pre-GFC) or public deficits (post-GFC) as offset. Contrary to an earlier time when rising inequality was associated with rising capital accumulation, as observed by Keynes (1919), rising inequality today is associated with rising financial wealth of the rich as budget deficits and public debt keep feeding both corporate profits and the financialization frenzy. At least for now, that is, given that these unsustainable trends will inevitably end in another major crisis.

Be that as it may, global levels of consumption and production per capita are so much lower than in the richest countries today, if global averages were ever to attain these higher levels, the scope for future growth in quantities produced and consumed would seem mind-blowing. The

¹¹Instead, as the US case vividly illustrates, they successfully deploy their money powers to buy themselves the politics they like as well as media channels to disempower the public by mis-/disinformation. Observed behaviors also underscore Keynes's (1930c) remarks on the love of money as a possession.

quantities of, say, metals, including “rare earths”, needed to provide rich-country levels of provision of cars, TVs, computers, and big houses, to name just a few examples of ever more luxurious “necessities”, for 10 billion humans seem inconceivably high.

Yet it seems no easier to conceive of the majority of humans to simply forego the prospect and urge to attain significantly higher quantities of products produced and consumed; more comparable to what is achieved in rich countries today. Can we realistically imagine that individual societies (countries) might voluntarily agree on a new social contract that stabilizes current income levels? Even more challenging, might humanity – through international cooperation – somehow agree on restraining its urge for ever more, and live peacefully within the limits of what this planet has to offer?

Unfortunately, at the current juncture, it seems far more likely that the excessive pressures driving us ever closer to the climate crisis will lead to rising levels of global conflict and possibly even wars. And as the looming climate crisis will only add to devastation of resources (and therefore even aggravate the excessiveness of pressures put on the resources that remain), the prospect of rising global conflict levels (with all their negative consequences) is becoming more acute the longer humanity fails to effectively defeat the climate challenge.

Which brings us to driver #3, the issue of what kinds of things we consume and how we produce them (see Aldred 2026). Keynes did not foresee that this matter might become the foremost challenge for humanity today. His reflections on an eventual state of economic bliss featured a life of expanding leisure time characterized by communal consumption of mild or moderate rather than intensive resource use. How can we steer consumption away from resource-intensive products, produce products more energy-efficiently, and use renewable energy instead of fossil fuels in doing so?

For true believers in markets and capitalism contesting driver #3 is a nonstarter. As capitalism self-evidently provides for humans the best of all possible worlds, what is there to nag about?

Modern day libertarians and other zealots aside, serious economists have known for a long time that unfettered market forces might well deliver outcomes that are socially suboptimal. Already Adam Smith had a robust conception of public goods and market failures. The “tragedy of the commons” may even be traced back to Aristotle, and institutional economists developed a sharp understanding of the matter long before climate change became humanity's foremost global challenge. Keynes's Cambridge contemporary A.C. Pigou deserves acclaim here for another critically important breakthrough in economic theory: the concept of externalities. One does not need to challenge the fact that capitalism has played a critical role in massively raising human productivity and well-being in the past 300 years or so. At issue is merely the related fact that economic growth in this period, fired by fossil fuels, has also devastated vast natural resources and is causing climate change.

Keynes praised capitalism for its efficacy in solving the economic problem. But he saw capitalism not as an ideal or end in itself. For him it was a means towards an end: economic bliss. Capitalism may just be the best engine humans have yet come up with in solving the economic problem. But capitalism is flawed. Not only do market forces need to be corrected to avoid market failures and deliver socially desirable outcomes. Capitalism needs to be managed and markets guided effectively, so that the economy will evolve in ways that are both socially desirable and compatible with the planet's resources.

The best science available today is showing compelling evidence that humanity must change course to avoid catastrophic outcomes: the energy transition away from fossil fuels is inevitable. The technologies are known and available, and renewable energy can be produced more cheaply today than continued reliance on fossil fuels, even ignoring negative externalities (Terzi 2026). At least some governments and private players have shown their commitment to achieve “net zero” CO₂ emissions by 2050.

But there are two major obstacles. First, the transition involves huge upfront costs in the form of infrastructure investment and upgrades (electricity grid, EVs, etc.), and demands new resource

explorations (lithium, cobalt, copper, etc.). Second, politics, especially as driven by “vested interests”. Keynes's economics as discussed in the previous two sections can help address the first obstacle – to be briefly sketched in the remainder of this section –, but not the second, which will be the subject of the next.

The investments required for the inevitable energy transition have a very long horizon and bear partly public good character. The visible hand of government planning is the answer to Keynesian uncertainty, and securing long-term financing for these investments as well, including low-cost, long-term financing for the needs in poor countries (Arezki 2026, Gordon 2026, Ghosh 2026, Ocampo 2026). There may be scope for public-private partnerships in financing (Songwe 2026). But if governments cover much of the risk, private investors can hardly expect to earn much in excess of risk-free rates.

Global cooperation is of the essence. Regarding technology and finance, rich countries must support poor countries for their own best interest. Historically, rich countries share the greatest responsibility for climate change. China is a special case. China's per-capita incomes are still a good distance from rich country status. But China is both a technology leader and a key contributor to CO₂ emissions today.

Of course, during the energy transition deliberate macro management, avoiding both unemployment and overheating/inflation, will continue to be of the essence. As always, keeping macro failures of capitalism in check, Keynes's specific focus in *The General Theory*, is critical in maintaining social and political stability. Depending on national demographic trends and the specific impacts of AI, different governments may require different policy mixes. The same applies for the design of effective micro and structural policies required to both marshal market forces in defeating the climate crisis and ameliorating any harsher social side effects.

Conventional projections by the OECD (see OECD 2025) presume that fossil fuels will still dominate the energy mix by 2100 and suggest that, without policy action, climate damages could

cut global GDP by 9% by that time. Since projections presume continued growth, that does not seem to be too much of a deal. The impact will be felt by future generations (whose welfare gets discounted at market rates of interest!) while the present generation would need to shoulder massive costs; or so it might seem.

Stern, Stiglitz and Taylor (2022) compellingly critique the methodology underlying such projections, highlighting uncertainty and calling for urgent action and radical change. Stern and Stiglitz (2023) challenge the conventional wisdom of a presumed trade-off between tackling climate change and hurting growth. In other words, they make the case that the inevitable energy transition provides a win-win opportunity: higher welfare of future generations and faster growth during the transition; while doing too little today means “lose-lose”.

In the spirit of Keynes's 1940 “How to pay for the war”, Nersisyan and Wray (2020) explore whether the US can afford the “Green New Deal” (and related progressive projects). The same thinking may be applied globally. One key issue concerns the presence of free resources, another the need to redirect resources (no longer to be wasted on fossil fuel production; “stranded assets”). Taxation to withdraw private purchasing power becomes an issue if mobilizing real resources for the energy transition causes inflation. Fairness would call for taxation in line with CO2 emissions. In other words, previous tax cuts (based on “Laffer Curve” ideology) might need to be reversed. We see here where to expect resistance.

Science provided the warning, technology the machinery, and economics the public policy toolkit to successfully win this war. Just as Keynes applied his ingenuity at HM Treasury during WWII, today's economists can provide the intellectual firepower needed to mobilize the resources in forestalling the looming climate crisis.

5. THE CLIMATE CRISIS IN CONTEXT: OBSTACLES TO A KEYNESIAN RESPONSE

Except for people living in denial, it is obvious what needs to be done. In the previous sections we have gathered some insights from Keynes's economics as to how it could be done. Based on some recent experiences, this section will briefly reflect on the factors that seem to be obstructing or undermining the inevitable energy transition.

The first instructive example was provided by the Covid-19 pandemic. The pandemic encouraged numerous governments, especially in America and Europe, to adopt a fiscal “whatever it takes” approach to meet the challenge; a mode of operation traditionally reserved for times of war prior to the Cold War era. Even Germany and the European Union chose to temporarily pause their respective fiscal straight jacket that has undermined public investment since the Maastricht Treaty. Apparently, an immediate threat to lives (and livelihoods) can produce an urgency that a threat that is still perceived as a distant potentiality cannot. Nevertheless, the pandemic provided a welcome reminder of the truth that: “anything we can actually do we can afford.”¹²

Germany's “Ampelkoalition” of Social Democrats, Green Party, “liberal”/conservative Party under Chancellor Olaf Scholz from December 2021 to November 2024 provides a case in point. The government set out ambitiously with a “net zero” target by 2045. It floundered for two reasons. First, it stumbled over finances. Not a lack of real resources in Germany, Europe, or the world was the problem, but self-imposed fiscal limits.¹³ Second, and related, government plans for transforming energy regulations for residential housing and transportation proved too ambitious for lower- and middle-income groups due to insufficient public subsidy support.

¹²True, there was a global surge in inflation in the aftermath of the pandemic. While macro stimulus might have been somewhat too generous in some cases, global supply-chain disruptions and Russia's invasion of Ukraine were the primary source of global inflation. This experience does not provide an argument against macro management but a warning that ongoing confrontational global developments driven by the Sino-American rivalry are detrimental to successfully meeting the triad of challenges under discussion here.

¹³The government attempted to repurpose some of the borrowing capacity left over from the pandemic, but the Supreme Court stopped it. This forced the government to operate within the constraints of the “debt brake” which the “liberal” coalition partner was adamant about.

The successor coalition government of conservatives and social democrats elected in 2025 finally agreed on creative ways to operate around Germany's notorious “debt brake”. Forced by Russia's invasion of Ukraine, this long overdue U-turn followed the realization that Germany had for decades underinvested in both defense and infrastructure. Russia, a failed authoritarian state dependent on fossil fuels, vividly illustrates that humanity and civilization remain at the whim of destructive actors. Whether Germany and the EU will make fast progress towards achieving the energy transition remains to be seen. The wars in Ukraine and Iran should only propel their ambition. But even today – 90 years after the publication of *The General Theory* – rich countries can feel constrained by their finances and public resistance in the age of disinformation and polarization.

By contrast, Donald Trump's America does not act like it feels constrained by its finances at all. Rather, it chooses to waste all money (and resources) on tax cuts for billionaires, corruption, and, lately, also fresh warfare. America's oligarchs, meanwhile, having fully captured the government for their interest, don't miss a chance to foster mis-/disinformation and polarization. Rupert Murdoch's Wall Street Journal, supposedly a source of information for the socio-economic elite, remains a poster child of agitation against the energy transition. The ongoing deregulation push amounts to waging war on both science and the environment – and hence humanity and civilization as well (see however Ember 2026). And the building of billionaire bunkers in New Zealand reveals that the oligarchs understand perfectly well we are in for a lose-lose gamble for humanity.

The final illustrative case is China. On the one hand, China is a leader in climate technology and at the forefront of the energy transition. The government played a heavy hand in planning and financing China's global success in this field. On the other hand, against the background of fast growth in energy demand, China also continues to install vast new fossil fuel (especially coal) capacities; as does India. Despite the availability of cheaper renewable energy, the two most populous countries, China and India, continue to exploit coal energy extensively – a major

roadblock in the way of achieving “net zero” sooner rather than too late (Kapoor 2026, Mundy 2026).

The General Theory's closing statement expresses Keynes's optimism regarding the power of ideas, their “gradual encroachment” which sooner or later would win out over vested interest.¹⁴ Science started warning about the looming climate crisis half a century ago. For long the fossil fuel industry managed to keep the issue off the radar screen. Developments in America today, the world's most powerful nation and supposedly a democracy founded and operating in the spirit of the enlightenment, best illustrates how a relatively small clique of unfettered oligarchs can capture the state and marshal the power of capitalism against humanity.

6. SOME CONCLUDING REFLECTIONS

Uncertainty and money were at the center of Keynes's theorizing about the workings of “monetary production economies” under “individualistic capitalism”. *The General Theory* is the culmination of his theorizing, highlighting the critical role played by uncertainty and money. Piercing through “the dark forces of time and ignorance” is the task confronting actors in charge of making long-term commitments. With the scope for sober calculations being often limited, “animal spirits” are typically a critical part of the action taken – or inaction. Financial markets provide a convenient social illusion for the common investor: capital investments that are fixed for the community as a whole are made “liquid” for the individual wealth-holder. While market liquidity may vanish, and inconveniently exactly when it is most needed, money itself is the ultimate default option in coping with uncertainty; the “liquidity premium” on money being a measure and barometer of our degree of confidence (Keynes 1937a).

¹⁴“I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas. Not, indeed, immediately, but after a certain interval; for in the field of economic and political philosophy there are not many who are influenced by new theories after they are twenty-five or thirty years of age, so that the ideas which civil servants and politicians and even agitators apply to current events are not likely to be the newest. But, soon or late, it is ideas, not vested interest, which are dangerous for good or evil” (Keynes 1936, 383-4).

Money does not manage itself (Bagehot 1873, Keynes 1923). Management of money is thus inevitable, a critical public responsibility even in normal times, and a vital one in times of crisis. For the financial system is the source of financing of all economic activity in monetary production economies: to make things happen under individualistic capitalism, the (potential) actor in need of money must compel either someone who has money or an institution that can produce money. Keynes's monetary theory concern bank money, a public-private partnership featuring a central bank and profit-seeking banks.

Financing the energy transition, an inevitability for containing the disruption and damage climate change is going to wreak in the global economy, will critically depend on governments playing a constructive part in both planning the transition and its financing.

Climate change is a threat to the planet and humanity. But the world is not one country; humanity is not one nation. International cooperation and solidarity between nation states, each directly responsible only for their own nation and electorate, are needed and often hard to arrange effectively. Deeply integrated global finance provides enormous powers – another illustrious public-private partnership between Washington and Wall Street – to the global hegemon who acted in self-interested though largely benign fashion for much of the time since WWII, but has taken a bad turn towards purely extractive and self-destructive behavior of late.

Even centuries after the Enlightenment that has enabled the remarkable prosperity among at least part of humanity today, the ongoing wars in Ukraine and Iran illustrate the forever presence of barbarian instincts below that thin crust of civilization that Keynes held so precious and in constant need of protection. Suffice to mention that throughout his life Keynes was deeply engaged in managing international relations, applying his enormous intellectual powers in serving his nation's survival during both World Wars and helping to establish institutions for the global good during peace times, from the Versailles Treaty to Bretton Woods (Markwell 2006).

However much cooperation humanity might muster, each nation will have to confront the climate challenge within the context of its own demographics and AI-impacted growth performance. Keynes also devoted considerable energies exploring the role of population and economic growth during his lifetime. For long he held a Malthusian outlook on population growth. That only changed when declining population growth and economic stagnation (or worse) coincided in the 1930s. He held an optimistic outlook for the very long run as he believed that science and technological advances together with continued capital accumulation would eventually end in a state of economic bliss (abundance). Today, large parts of humanity's economic problem is still far from solved, while in those countries operating at the forefront of abundance, especially in the US, a small group of oligarchs is holding humanity's fortune hostage to their own seemingly unlimited greed and lust for power.

To some extent, the “Keynesian revolution” was for real: in democratic countries governments understand today that they cannot shy away from their responsibility for full employment and price stability for all too long, even if they continue to often mistakenly apply orthodox medicines. Faced with a potentially existential crisis posed by the looming climate crisis, humanity is still waiting for the power of ideas to win over vested interests.

REFERENCES

- Aldred, J. (2026). Degrowth as climate policy: From GDP to consumption reduction, *Cambridge Journal of Economics* 50(1), 213–236.
- Arezki, R. (2026). The real barrier to Africa's solar energy boom, *Financial Times*, July 22, <https://www.ft.com/content/8e33fb1d-cce3-4b56-9546-260f3f918c2d?segmentId=b0d7e653-3467-12ab-c0f0-77e4424cdb4c>
- Aspromourgos, T. (17 December 2025). Keynes, policy and environmental crisis, *European Journal of the History of Economic Thought*, [https://DOI:10.1080/09672567.2025.2589510](https://doi.org/10.1080/09672567.2025.2589510)
- Bagehot, W. (1873). *Lombard Street*.
- Behringer, J., Gonzales-Granda, M., and van Treeck, T. (2024). Varieties of the Rat Race: Working Hours in the Age of Abundance, *Socio-Economic Review* 22 (1): 141–168.
- Besomi, D. (1995). From the Trade Cycle to the ‘Essay in Dynamic Theory’: The Harrod–Keynes Correspondence, 1937–1938, *History of Political Economy* 27 (2): 309–343. <https://doi.org/10.1215/00182702-27-2-309>
- Besomi, D. (1999). *The Making of Harrod's Dynamics*, New York: St Martin's Press.
- Besomi, D. (2001). Harrod's Dynamics and the Theory of Growth: The Story of a Mistaken Attribution, *Cambridge Journal of Economics* 25 (1): 79–96. <https://doi.org/10.1093/cje/25.1.79>
- Bibow, J. (2009). *Keynes on Monetary Policy, Finance and Uncertainty: Liquidity Preference Theory and the Global Financial Crisis*, London and New York: Routledge.
- Bibow, J. (2020). *The General Theory* as ‘Depression Economics’? Financial instability and crises in Keynes's monetary thought, *Levy Economics Institute, Working Paper no. 974*, October. Available at: https://www.levyinstitute.org/pubs/wp_974.pdf
- Bibow, J. (2023). J.M. Keynes' Tract on Monetary Reform (1923) After 100 Years—A Retrospective, *Contributions to Political Economy*, vol. 42, issue 1 (July), pages 192-225, <https://doi.org/10.1093/cpe/bzad020>
- Bibow, J. (2024). Keynes in the long run – to ‘live wisely and agreeably and well’, *Review of Political Economy*, 1-24, published online on 8 October 2024. <https://doi.org/10.1080/09538259.2024.2405142>

- Bivens, J. (2025). The U.S.-Born labor force will shrink over the next decade, Economic Policy Institute, Issue Brief October 7.
- Carabelli, A. M. and Cedrini, M. A. (2018). Great Expectations and Final Disillusionment: Keynes, 'My Early Beliefs' and the Ultimate Values of Capitalism, *Cambridge Journal of Economics* 42(5): 1183–204.
- Chen, S., Langley, W., Leahy, J., and Hu, T. (2026). Robot nation: China's bid to beat its demographic decline, *Financial Times*, June 24, <https://www.ft.com/content/c8731833-10ca-4a12-bfe4-8ebb2584ec68?segmentId=b0d7e653-3467-12abc0f0-77e4424cdb4c&syn-25a6b1a6=1>
- Collins, G.M. (2025). The influence of Burke in the thought of Keynes and Hayek, *Cambridge Journal of Economics* 49(6): 1365-95.
- Ember (2026). Solar overtakes coal in US electricity for the first month on record. New solar records and long-term coal decline lead to latest clean power milestone, 10 Jun 2026, <https://ember-energy.org/latest-updates/solar-overtakes-coal-in-us-electricity-for-the-first-month-on-record/>
- Geruso, M. and Spears, D. (2026). The likelihood of persistently low global fertility, *Journal of Economic Perspectives* Vol. 40(1): 3–26.
- Gethin, A. and Saez, E. (2025). Global working hours, NBER Working Paper 34217. <http://www.nber.org/papers/w34217>
- Ghosh, J. (2026). Global resource mobilization: Health and economic recovery, in L.Y. Ing and D. Rodrik (eds), 149-163.
- Goodhart, C.A.E. and Pradhan, M. (2020). *The Great Demographic Reversal: Ageing Societies, Waning Inequality, and an Inflation Revival*, Palgrave-Macmillan.
- Gordon, N. (2026). The global green transition won't be driven by self-interest alone, *Financial Times*, August 5, <https://www.ft.com/content/1aec6153-a264-4d04-8a8a-c2500c7a952d?segmentId=dddf6252-6e37-bb4b-bda7-2193a3453893>
- Harrod, R. F. (1936). *The Trade Cycle*. Oxford: Clarendon Press.
- Harrod, R. F. (1939). An Essay in Dynamic Theory, *The Economic Journal* 49 (193): 14–33. doi:10.2307/2225181.
- Harrod, R. F. (1964). Retrospect on Keynes, In: Keynes' *General Theory*, edited by R. Lekachman. London: Palgrave Macmillan.
- Hayek, F. A. (1944). *The Road to Serfdom*. Chicago: University of Chicago Press.

- Hotelling, H. (1931). The Economics of Exhaustible Resources, *Journal of Political Economy* 39 (2): 137–175. <https://doi.org/10.1086/254195>
- Ing, L.Y. and Rodrik, D. (eds) (2026). *The New Global Economic Order*, Taylor & Francis Group.
- Kalecki, M. (1954). *Theory of economic dynamics*. Unwin University Books.
- Kapoor (2026). The Global South Cannot Afford to Quit Fossil Fuels. Renewables have won the cost argument, yet poorer nations still pay a steep premium to deploy them. <https://www.socialeurope.eu/the-global-south-cannot-afford-to-quit-fossil-fuels>
- Keen, S. (2021). The appallingly bad neoclassical economics of climate change. *Globalizations* 18(7): 1149-1177. <https://doi.org/10.1080/14747731.2020.1807856>
- Keynes, J. M. (1904). *Essay on Edmund Burke*. The papers of John Maynard Keynes. JMK/UA/20. Cambridge: Kings College Library.
- Keynes, J. M. ([1913] 1971). *Indian Currency and Finance*. Reprinted in: *The Collected Writings of John Maynard Keynes* [henceforth: JMK], Vol. I. London: Macmillan, for the Royal Economic Society.
- Keynes, J.M. ([1919] 1971). *The Economic Consequences of the Peace*, JMK Vol. II.
- Keynes, J.M. ([1921] 1973). *A Treatise on Probability*, JMK Vol. VIII.
- Keynes, J.M. ([1922] 1978). Hamburg address, August 26; in E. Johnson (ed) JMK Vol. XVII: *Activities 1922-1932: The end of reparations*, 18-26.
- Keynes, J. M. ([1923] 1971). *A Tract on Monetary Reform*, JMK Vol IV.
- Keynes, J.M. ([1926] 1972). *The end of laissez-faire*; reprinted in JMK Vol IX: *Essays in Persuasion*, 272-294.
- Keynes, J. M. ([1930a] 1971). *A Treatise on Money: The Pure Theory of Money*, JMK Vol. V.
- Keynes, J. M. ([1930b] 1971). *A Treatise on Money: The Applied Theory of Money*, JMK Vol. VI.
- Keynes, J. M. ([1930c] 1972). *Economic Possibilities for Our Grandchildren*; reprinted in JMK Vol. IX: *Essays in Persuasion*, 321–332.
- Keynes, J.M. ([1930d] 1972). *Frank Ramsey*; reprinted in JMK Vol X: *Essays in Biography*, 335-346.

- Keynes, J.M. ([1931] 1972). The consequences to the banks of the collapse of money values; reprinted in JMK Vol. IX: *Essays in Persuasion*, 150-158.
- Keynes, J. M. ([1936] 1973). *The General Theory* of Interest, Employment and Money, JMK Vol 7.
- Keynes, J.M. ([1937a] 1978). *The General Theory* of Employment; reprinted In E. Johnson and D.E. Moggridge (eds) JMK Vol XIV: *The General Theory* and After: Part II Defence and Development, 109-123.
- Keynes, J. M. ([1937b] 1978). Some Economic Consequences of a Declining Population. Reprinted in E. Johnson and D.E. Moggridge (eds) JMK Vol. XIV: *The General Theory* and After: Part II Defence and Development, 124–133.
- Keynes, J.M. ([1938a] 1978). Letter to Roy Harrod, 26 September; reprinted in E. Johnson and D.E. Moggridge (eds) JMK Vol. XIV: *The General Theory* and After: Part II Defence and Development, 345-350.
- Keynes, J.M. ([1938] 1972). My early beliefs; in JMK Vol. X *Essays in Biography*, 433-450.
- Keynes, J. M. (1940 [1972]). How to Pay for the War: A Radical Plan for the Chancellor of the Exchequer; reprinted in JMK Vol. IX: *Essays in Persuasion*, 367–439.
- Keynes, J.M. ([1942] 1980). How much does finance matter? *The Listener*, April 2; reprinted in D. Moggridge (ed) JMK Vol. XXVII: *Activities 1940-1946 shaping the Post-War World: Employment and Commodities*, 264-270.
- Keynes, J.M. ([1945] 1980). National Debt Enquiry: The concept of a capital budget (Memorandum by Lord Keynes); reprinted in JMK Vol. XXVII: *Activities 1940-1946 shaping the Post-War World: Employment and Commodities*, 405-413.
- Lewis, W. A. (1954). Economic development with unlimited supplies of labour, *The Manchester School*, 22(2): 139–191.
- Magness, P. W., and S. J. Hernandez. (2017). The Economic Eugenicism of John Maynard Keynes, *Journal of Markets & Morality* 20: 79–100.
- Magness, P. W., and J. R. Harrigan. (2020). John Maynard Keynes, HG Wells, and a Problematic Utopia, *History of Political Economy* 52 (2): 211–238. <https://doi.org/10.1215/00182702-8173298>
- Markwell, D. (2006). *John Maynard Keynes and International Relations: Economic Paths to War and Peace*, Oxford University Press.

- Martini, A. and Spataro, L. (2026). Between The Trade Cycle and the Galton Lecture: a reappraisal of the intellectual exchange between Harrod and Keynes in early 1937, *European Journal of the History of Economic Thought*, <https://doi.org/10.1080/09672567.2026.2628537>
- Mundy, S. (2026). Can batteries halt India's coal power growth? Adani investment reflects shifting economics of clean baseload power, *FT* 3 June, <https://www.ft.com/content/dc3461f9-de46-4bd7-a75b-d189d193224d?syn-25a6b1a6=1>
- Nersisyan, Y., and L. Randall Wray. (2019). How to Pay for the Green New Deal. Working Paper No. 931. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College. May.
- Nordhaus, W.D. (2007). A Review of the Stern Review on the Economics of Climate Change, *Journal of Economic Literature* 45(3): 686–702.
- Nordhaus, W. D. (2018). Projections and uncertainties about climate change in an era of minimal climate policies, *American Economic Journal: Economic Policy* 10(3): 333–360.
- Ocampo, J.A. (2026). International financial and tax reform, in L.Y. Ing and D. Rodrik (eds), 134-148.
- OECD (2025). OECD global long-run economic scenarios: 2025 update, September, <https://www.oecd.org/en/topics/sub-issues/economic-outlook/long-run-economic-scenarios-2025-update.html>
- Oxfam (2023). Richest 1% emit as much planet-heating pollution as two-thirds of humanity, Press Release, November 20, <https://www.oxfam.org/en/press-releases/richest-1-emit-much-planet-heating-pollution-two-thirds-humanity>
- Phelps, E. (1961). The golden rule of accumulation: A fable for growthmen, *American Economic Review*, 51(4): 638-43.
- Robinson, J. (1956). *The Accumulation of Capital*, London: Macmillan.
- Schettini Kearney, M. and Levine, P.B. (2025). Why is fertility so low in high income countries, NBER Working Paper 33989.
- Schöngart, S., Nicholls, Z., Hoffmann, R., Pelz, S., & Schleussner, C. (2025). High-income groups disproportionately contribute to climate extremes worldwide, *Nature Climate Change* 15: 627–633. <https://DOI:10.1038/s41558-025-02325-x>
- Songwe, V. (2026). The new economic order: Do market mechanisms deliver better growth? In L.Y. Ing and D. Rodrik (eds), 164-177.

- Stern, N. (2013). The Structure of Economic Modeling of the Potential Impacts of Climate Change: Grafting Gross Underestimation of Risk onto Already Narrow Science Models, *Journal of Economic Literature* 51: 838–59. <https://doi.org/10.1257/jel.51.3.838>
- Stern, N., Stiglitz, J. and Taylor, C. (2022). The Economics of Immense Risk, Urgent Action and Radical Change: Towards New Approaches to the Economics of Climate Change, *Journal of Economic Methodology* 29: 181–216. <https://doi.org/10.1080/1350178X.2022.2040740>
- Stern, N. and Stiglitz, J. (2023). Climate change and growth, *Industrial and Corporate Change* 32(2): 277–303. <https://doi.org/10.1093/icc/dtad008>
- Toye, J. (1997). Keynes on Population and Economic Growth, *Cambridge Journal of Economics* 21 (1): 1–26. <https://doi:10.1093/oxfordjournals.cje.a013655>
- Toye, J. (2000). *Keynes on Population*, Oxford University Press.
- United Nations (2026). *The Roadmap for Eradicating Poverty Beyond Growth*, June.
- Wapshott, N. (2011). *Keynes Hayek: The Clash that Defined Modern Economics*, W.W. Norton.
- Weitzman, M.L. (2009). On modeling and interpreting the economics of catastrophic climate change, *The Review of Economics and Statistics* 91(1), 1–19.