SBE
DOI 10.2478/sbe-2025-0058
Studies in Business and Economics: no. 20(3) 2025

SECULAR STAGNATION: A LONG-RUN PHENOMENON, SHORT-RUN POLICIES. THE CASE OF THE U.S. ECONOMY

Val VLAD
Penn State Erie - Black School of Business, USA

Cristina Elena POPA
Lucian Blaga University of Sibiu, Romania

Abstract:

This study examines the persistent slowdown of the U.S. economy since 2007 and argues that it represents a secular stagnation: a structural form of slowdown growth, rather than a cyclical weakness. Despite unprecedented monetary expansion and near-zero interest rates from 2008 to 2022, economic growth failed to return to norms, revealing the limits of conventional policy tools. Using annual growth data from 1949 to 2025, the study employs ANOVA-type models and binary-variable segmentation to identify structural breaks in growth behavior. We distinguish six homogeneous business-cycle intervals and three long-run growth phases, with long-term growth averages of 4%, 3%, and 2%, respectively. One important conclusion is that the decline of growth potential has been a long-run process undeterred by the excessive use of monetary and fiscal tools. This resonates with the Tinbergen Rule that discourages the use of short-run policies to treat long-run economic problems. We refined the concept of secular stagnation and defined it as a long-run structural phenomenon driven by recent socio-economic conditions including slower productivity growth, chronic investment shortfalls, diminishing returns from digital technology, etc. The ongoing stagnation is unlikely to reverse without significant policy reorientation; it needs renewed scholarly and policy attention and requires long-term structural solutions.

Key words: *Slowdown in Economic Growth, Secular Stagnation, Long-Run Growth Potential, Tinbergen Rule, Monetary Policy Limitations.*

1. Introduction

The world needs harmony… The impactful presence of stagnation, since 2008, signals that there is a growing social disconnect among people, and between people, on one side, and the economic and political systems, on the other side. One point made in this paper is that, for the first time since the Great Depression, the evidence suggests that the U.S. economy is going through an enduring economic turbulence, chiefly marked by a long-lasting stagnation that seems to have no end in sight. More importantly, one argument we make in this study is that the ongoing stagnation is a long-run, endogenous,

phenomenon that could not have been, and cannot be, addressed with ordinary short-run monetary and fiscal instruments. The intensive use of monetary expansion— which pushed the federal funds rates close to zero — from 2008 to 2022 did not help the economy escape the burden of declining potential of growth (secular stagnation). Instead the use of short-run instruments only generated unintended consequences that have made people's reality more complicated, harder to understand, harder to remediate.

Economic stagnation represents a complex macroeconomic phenomenon that has long challenged the understanding of economists and policymakers. Lacking a universally agreed-upon definition, it it generally refers to an extended period of sluggish economic growth, during which an economy sees minimal or less than "normal" increase in its Gross Domestic Product (GDP). Unlike recessions, which are clearly defined as two consecutive quarters of negative economic growth, long-term stagnation appears as persistent sub-optimal growth that falls short of historical, already familiar norms. This distinction is crucial, as the absence of precise thresholds for defining stagnation necessitates a more nuanced analysis of long-term trends, business cycles, and other qualitative factors.

While short-term economic downturns typically command immediate attention and policy responses, the more insidious threat of secular stagnation—a prolonged period of economic torpor—poses far greater challenges to long-term prosperity for at least two reasons: (1) conventional monetary and fiscal policy instruments lose their efficacy, and the economy's capacity for self-correction diminishes significantly; and (2) this status quo may go unnoticed for many years, leaving no appropriate or effective policy response.

Despite mounting evidence of sluggish growth in major economies worldwide, the critical issue of secular stagnation has not received adequate scholarly attention in recent years (see next section).

This paper presents a critical analysis of secular stagnation, examining its theoretical foundations and contemporary manifestations. We develop a refined definition of secular stagnation within the context of current economic realities and evaluate whether the U.S. economy exhibits this phenomenon. Our central hypothesis posits that the United States has experienced suboptimal economic growth over the past 18 years since the Great Recession (2008-2025), indicating a structural shift toward a new, lower long-run growth level. Given the absence of transformative technological or structural changes on the horizon, we project that this condition will persist for the foreseeable future, justifying its classification as *secular stagnation*.

The objective of this paper is to raise awareness of the concept of secular stagnation, a critical issue that can have profound long-term consequences for economic well-being. We seek to redefine this concept by contextualizing it within contemporary economic conditions. In doing so, we aim to distinguish between short-run stagnation and long-run stagnation, two forms of economic stagnation that, while similar in their outcome of low growth, differ significantly in their causes, duration, and impact. We consider that the current stagnation is secular stagnation a long-run stagnation which describes a prolonged period of weak economic growth that persists for decades. Unlike short-run stagnation, long-run stagnation is driven by a large set of structural factors such as productivity slowdowns, non-impactful and harmful innovation, decline of willigness (incentives) to pursue real investment, etc. Addressing long-run stagnation requires more than short-term

policy measures; it demands structural reforms, innovation, and investment in key sectors of the economy to boost productivity and demand over the long term.

After distinguishing between these two types of stagnation, we shift our focus to the U.S. economy and examine the most prominent scholars who have addressed the concept of secular stagnation. For some of them, the context of their respective periods of analysis led them to perceive secular stagnation as a short-run issue, overlooking its deeper structural nature. As a result, the measures they proposed were inadequate in addressing the fundamental problems of the American economy: the country facing a prolonged period of stagnation without a clear resolution.

Secular stagnation poses significant long-term challenges to economic prosperity, necessitating urgent attention from both scholars and policymakers. A thorough understanding of its meaning and implications will enable the identification of the structural factors that sustain stagnation, paving the way for solutions that go beyond traditional monetary and fiscal interventions.

This work is intended to contribute to the growing body of research on secular stagnation, offering a foundation for further exploration by economists and researchers who, are willing to deepen their investigation into the causes and consequences of secular stagnation. Accordingly, we pursue the following objectives:

1. Demonstrate—using long-term data on growth—that after 2008 the U.S. economy has been through a significant slowdown in economic growth (stagnation) relative to the previous three decades.
2. Argue that a sustained (almost two decades) slowdown constitutes a state of secular stagnation. It became evident after the Great Recession of 2008 and shows no indication of reversal.
3. Demonstrate that secular stagnation is a long-run, endogenous phenomenon, driven by internal structural factors rather than by temporary or cyclical downturns.
4. Establish that long-run, endogenous stagnation cannot be corrected through short-run stabilization policies. Monetary and fiscal instruments are designed for short-run cyclical adjustments and they cannot reverse a structural decline in long-run potential output.
5. Argue that the unusually intensive (near-zero interest rates) and unusually extensive (over a decade) use of monetary policy represents an overextension of a short-run policy tool—and has most likely produced unintended long-run consequences.

2. Literature review

Theoretical contributions to the discussion of secular stagnation can be broadly classified into two primary perspectives: demand-side and supply-side theories. The demand-side perspective, the mainstream and modern foundation of the secular stagnation hypothesis, argues that persistent weakness in aggregate demand is the main driver of prolonged economic stagnation with no foreseeable end.

The supply-side perspective, in contrast, shifts attention to long-run, structural factors and constraints within the economic system that limit potential output growth.

These include sluggish productivity growth (a conundrum with deeper roots than technocratic analyses suggest), insufficient incentives for real investment, inadequate innovation, an aging population, and other quantitative and qualitative limitations on labor-force expansion, among others.

The term *secular stagnation* was first introduced in 1939 by Alvin Hansen, a leading American economist, demand-side theorist, and prominent figure in Keynesian economics. Hansen defined secular stagnation, in the context of the Great Depression, as "sick recoveries which die in their infancy and depressions which feed on themselves and leave a hard and seemingly immovable core of unemployment" (Hansen, 1939). He concluded that economies could become trapped in a prolonged state of low growth and high unemployment if demand remained insufficient, even in the presence of low interest rates and other stimulative measures. Hansen identified declining population growth and the lack of significant technological innovation as the primary causes of stagnation in the U.S. economy, leading to chronic underinvestment and weak demand. To counteract this outcome, he advocated for increased government expenditure to support the development of new industries and technologies.

Hansen's predictions did not fully materialize in the post-war era, as the economic boom of the 1950s and 1960s, driven by population growth and technological advancements, appeared to refute his theory. The concept of secular stagnation has been revived and adapted in the aftermath of the 2008 global financial crisis to explain contemporary economic conditions. Larry Summers, a proponent of the demand-side theory and former economic advisor during the Clinton and Obama administrations, warned that the U.S. might be entering a new era of secular stagnation, characterized by a chronic shortfall in demand despite historically low interest rates (Summers, 2015). According to Summers, the primary causes of secular stagnation include an increased propensity to save rather than invest, coupled with insufficient government fiscal spending. He also identified factors such as an aging population, rising income and wealth inequality, a slowdown in technological innovation, and a growing preference for safe assets as exacerbating the situation. As a solution, Summers proposed that the government should focus on boosting demand to achieve sustainable economic growth (Summers, 2014).

Paul Krugman, a Nobel Prize-winning economist, has also supported Summers' views on secular stagnation. In a 2013 article, Krugman argued that the U.S. economy was at risk of secular stagnation, being caught in a "liquidity trap"—a situation in which nominal interest rates are near zero, limiting the effectiveness of monetary policy. He suggested that this condition could become the "new normal" for the U.S. economy, exacerbated by factors such as declining population growth and reduced innovation. Krugman drew parallels to Japan's experience, where a shrinking working-age population played a significant role in its secular stagnation (Krugman, 2013).

The concept of secular stagnation has also been examined from a supply-side perspective, most notably by Robert Gordon, a professor at Northwestern University and one of the world's leading experts on inflation, unemployment, and long-term economic growth. Unlike demand-side theorists such as Hansen and Summers, Gordon attributes economic stagnation to a decline in labor productivity growth, driven by the diminishing impact of technological innovation on economic expansion. He argues that slow

productivity growth, combined with slower population growth and declining labor force participation, reduces the need for capital formation, which in turn depresses aggregate demand and further reinforces the decline in productivity growth. In Gordon's view, secular stagnation is not solely a demand- or supply-side issue, but rather the result of the interaction between the two (Gordon, 2015).

There is a group of economists who reject the secular stagnation hypothesis. Jim Hamilton, Ethan Harris, Jan Hatzius, and Kenneth West argue that proponents of secular stagnation may be misinterpreting the slow recovery from the 2008 financial crisis as evidence of chronically weak aggregate demand. Instead, they suggest that the sluggish recovery can be attributed to the severity of the recession and the time required for balance sheet adjustments, rather than an inherent inability of the economy to grow (Hamilton et al., 2015). In their view, the economy is capable of recovery and self-correction with appropriate policies and sufficient time.

Ben Bernanke, former Chair of the Federal Reserve, has also been a prominent critic of the Hansen-Summers secular stagnation hypothesis. He remains skeptical that the U.S. economy is experiencing secular stagnation (Bernanke, 2015a), attributing the observed low interest rates and sluggish growth more to global factors than to a chronic insufficiency of domestic demand. Bernanke is also cautious about the idea that increased fiscal spending is the solution to persistent stagnation, as it could result in rising government debt and diminishing returns on public investment. Instead, he suggests that any tendency toward secular stagnation in the U.S. could be mitigated or even eliminated through foreign investment and trade (Bernanke, 2015b). His perspective underscores the importance of considering the international dimension, addressing global imbalances, and pursuing structural reforms rather than focusing solely on demand-side policies.

Lack of Perception of and Interest in Secular Stagnation

There were two significant waves of attention given to secular stagnation: during the Great Depression and after the Great Recession. Inspired by the wide fluctuations of the U.S. economy during the Great Depression, Hansen (1939) characterized secular stagnation as "sick recoveries which die in their infancy and depressions which feed on themselves and leave a hard and seemingly immovable core of unemployment." This description reflects the fact that the economy fluctuated dramatically during the Great Depression: periods of severe downturns (1930–1933) were followed by periods of strong expansion (1934–1937). Although there were years of poor economic performance, these periods were not long enough to justify the term "secular." It was only the very low average growth rate of 1.4% over the entire decade (1930–1939) that can properly be labeled as stagnation.

There was little notable interest in secular stagnation after World War II. From 1949 to 1973, the economy responded to policy stimuli in an almost "fine-tuning" fashion, and average economic growth exceeded 4 percent. During this period, there was no stagnation.

From 1974 to 1979, the concept of "stagflation" was used to describe the second half of the 1970s. However, because inflation was the primary concern of the public,

stagnation was only evident when considering the average growth rates of the years from 1974 to 1979.

During the 1990s and early 2000s, the U.S. economy was boosted by globalization and the rapidly growing Information Technology sector. This led scholars and policymakers to believe that economic problems were largely a concern of the past. It was the financial crisis and economic recession of 2008 that refocused policymakers' attention on new economic vulnerabilities, created by the very factors that had previously driven growth and complacency during the housing bubble years. Larry Summers' speech at the IMF in 2013 further revived interest in the idea of *secular stagnation*. Summers argued that advanced economies were experiencing an unusually prolonged period of low growth after emerging from the Great Recession. He attributed this to weak aggregate demand, which proved resistant to prolonged periods of near-zero interest rates (Summers, 2013). His explanation echoed the 'secular stagnation' theory proposed by Alvin Hansen in the 1930s and later revived.

Figure 1 shows that, shortly after Summers' speech, interest in "secular stagnation" spiked briefly, as economists, policymakers, and media outlets debated whether the global economy was trapped in a low-growth cycle. For some scholars, the aftermath of the 2008 financial crisis, the weak recovery, and persistently low inflation made the theory highly appealing. However, as global economies gradually recovered, interest in secular stagnation declined, and by the early 2020s, attention had largely faded to near zero, as new economic concerns—many arising from the COVID-19 crisis, such as inflation expectations, recession fears, and supply chain disruptions—dominated public and policy discussions.

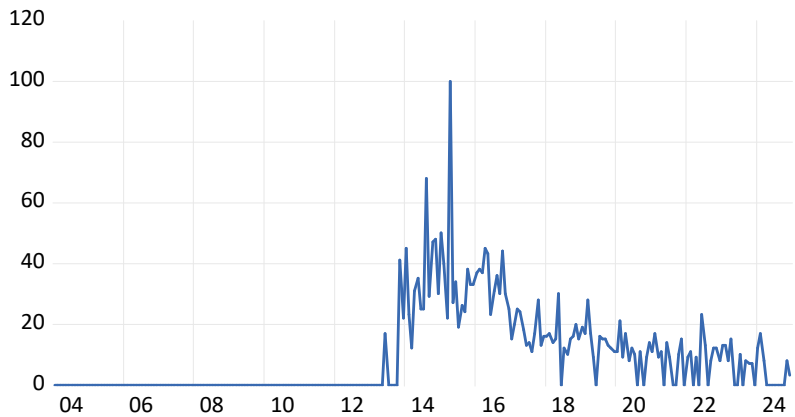

Figure 1: *Google Trends: Interest in 'Secular Stagnation' (2004–2024)*
Source**:** Google Trends

The low perception of secular stagnation among scholars is illustrated further in Figure 2. The concept receives almost no attention compared with the extensive research devoted to more frequent phenomena such as inflation and recession. A major reason for this disparity is the direct and tangible impact that inflation and recessions have on people's lives. High inflation erodes purchasing power and can trigger social and political unrest, making it a top priority for central banks, businesses, and households. Similarly, recessions result in job losses, declining investment, and broader economic instability,

keeping them at the center of financial and policy discussions. Although secular stagnation poses significant long-term challenges to economic prosperity, it lacks the immediate urgency associated with sudden spikes in inflation or sharp declines in GDP, making it less prominent in public and media discourse.

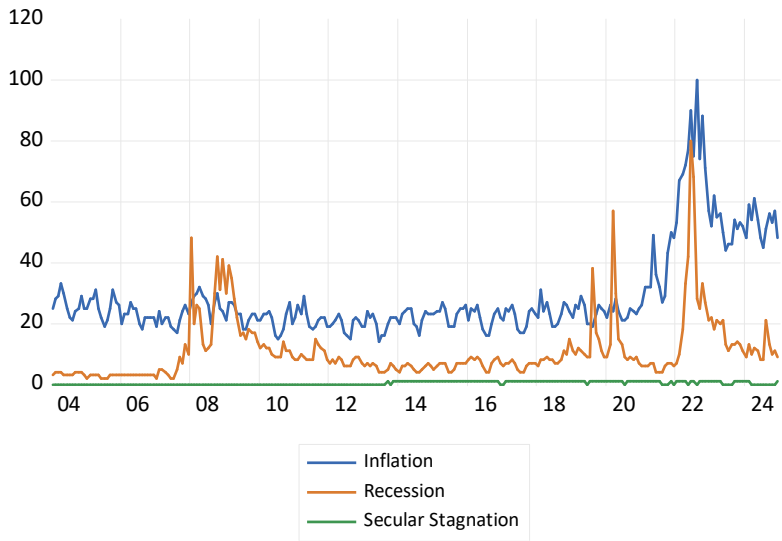

Figure 2: *Google Trends: Interest in 'Secular Stagnation' Compared with 'Inflation' and 'Recession (2004–2024).*
Source: Google Trends

In Figure 2, the numbers quantifying interest in secular stagnation pale in comparison with those for inflation and recession. This suggests that secular stagnation is not yet an established concept attracting widespread attention. One reason is that stagnation is not perceived as posing an immediate, short-term cost or risk to markets and individuals. It may also be less visible as a detrimental economic condition, particularly during periods of uncertainty. Furthermore, establishing it as a recognized phenomenon requires long time series of data and, of course, more frequent and adequate scholarly attention to the issue.

It is our evidence-based belief that secular stagnation is an socio-economic concept that must receive more scholarly and policy attention, especially given the substantial empirical evidence pointing at the persistent inverse relationship between prolonged slow economic growth and sustained reliance on excessive monetary expansion.

3. Methodology

This study aims to establish, using empirical and historical evidence, that the U.S. economy has entered a phase of significantly lower-than-normal growth. This slowdown has persisted for almost two decades and should be considered of "secular" proportions; thus, it deserves to be referred to as secular stagnation. More importantly, the study seeks to demonstrate that the slowdown in economic growth is a long-run structural phenomenon, determined by a multitude of contributing factors and processes. Finally, we inquire whether secular slowing can be addressed through short-run policy interventions.

To achieve these objectives, we chronicle the evolution of economic growth in the U.S. economy. The working variable is long-run growth, estimated as the long-term average of annual growth rates of the U.S. economy across several historical, growth-homogeneous periods, which we refer to as “phases”.

We analyze the time series of growth rates spanning 77 years, from 1949 to 2025. Annual growth rates for the U.S. economy were obtained from the FRED database maintained by the Federal Reserve Bank of St. Louis. use an original method analysis of the historical

The empirical results are presented through figures designed to highlight several lesser-known characteristics of the U.S. short-run and long-run growth processes. In the spirit of what Orwell referred to as “ordinary decent people,” the aim is to inform rather than to display analytical sophistication.

All data transformations rely on ANOVA-type models that use various sets of binary variables to identify major structural changes in the long-run potential for growth. The analysis focuses on simple averages of annual growth rates across different homogeneous periods of the U.S. economy from 1949 through 2025.

A short-run business-cycle (BC) approach allows for the separation of six homogeneous business-cycle intervals, each representing a distinct growth level. Each interval begins with a recession, and the growth level (potential) for each period is measured as the average of annual growth rates within that period. Each BC period is internally homogeneous but differs from the others, producing a distinct growth pattern or potential. This setup enables an assessment of the economy’s capacity to navigate a recession and recover to the prior growth level.

From a long-run perspective, the six BCs are grouped into three long-run (LR) growth phases. Here, LR homogeneity reflects the long-run potential of economic growth, evaluated as long-term averages over the years included in each phase. Three long-run growth potentials are distinguished: 4 percent, 3 percent, and 2 percent.

To analyze the ineffectiveness of monetary and fiscal policies, we used time-series data on the Federal Funds Rate and the debt-to-GDP ratio, both obtained from FRED. Data on the M1 money supply were collected from Macrotrends. For all these series, we applied transformations and constructed graphs using ANOVA-type models with binary variables to isolate both business-cycle phases and long-term periods.

4. Results and Discussions: Secular Stagnation, A Long-Run Phenomenon

A short-run business-cycle approach allows us to distinguish six homogeneous business-cycle (BC) intervals—six growth levels—that begin with a recession and continues with the recovery. These six BC growth levels are measured for each period as the average growth rate of the years included in that interval.

BC1: for the period [1949-1957] the average growth rate was 3.95%,
BC2: for the period [1958-1973] the average growth rate was 4.11%,
BC3: for the period [1974-1979] the average growth rate was 3.00%,
BC4: for the period [1980-1990] the average growth rate was 3.01%,
BC5: for the period [1991-2007] the average growth rate was 3.05%.
BC6: for the period [2008-2025] the average growth rate was 1.97%.

Visually the six BC periods are compounded in the next Figure.

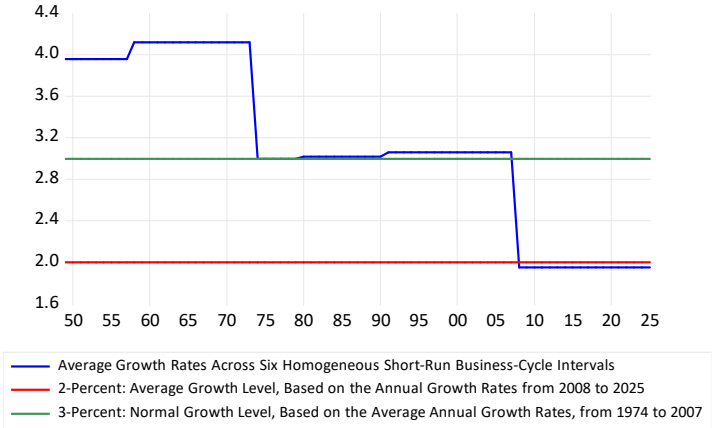

Figure 3: *Average Growth Rates Across Six Homogeneous Short-Run Business-Cycle Intervals (1949–2025).*
Source**:** Federal Reserve Economic Data (FRED, 2025a)

One takeaway from Figure 3 is that, in the short run, the U.S. economy recovered from recessions in all BCs, with two notable exceptions:

i. First, when the economy entered BC3 in 1974, it experienced a long recession (18 months) and never returned to the 4-percent average growth rate that characterized the preceding two cycles (BC1 and BC2).
ii. Second, when the economy entered BC6 in 2008, it underwent a severe contraction—widely known as the Great Recession—and never regained the 3-percent average growth rate observed across the three prior cycles (BC3, BC4, and BC5).

The most dramatic change occurred in the transition from BC5 to BC6. The period that constitutes the focus of our study is BC6 and it is referred to as the period (or Phase) of "secular stagnation". Although a gradual decline in growth over time is expected—a normal feature in the evolution of all economies—the shift into BC6, the most recent business cycle, represents a distinctly sharper break. It is characterized by persistent, year after year annual growth rates below 3 percent, as shown in Figure 4.

Figure 4 shows that since 2008, the U.S. economy has consistently failed to grow faster than 3%, with the sole exception of the fiscally excessive, policy-driven rebound in 2021. However, growth underperformance resumed in 2022. The persistence of these low growth rates points to a structural decline in the economy's long-run growth capacity, signaling a deterioration in its endogenous potential. This pattern is emblematic of secular stagnation—a condition defined by prolonged, chronically low growth—and its enduring nature justifies the use of the term *secular*, implying a long-lasting, potentially century-scale, presence.

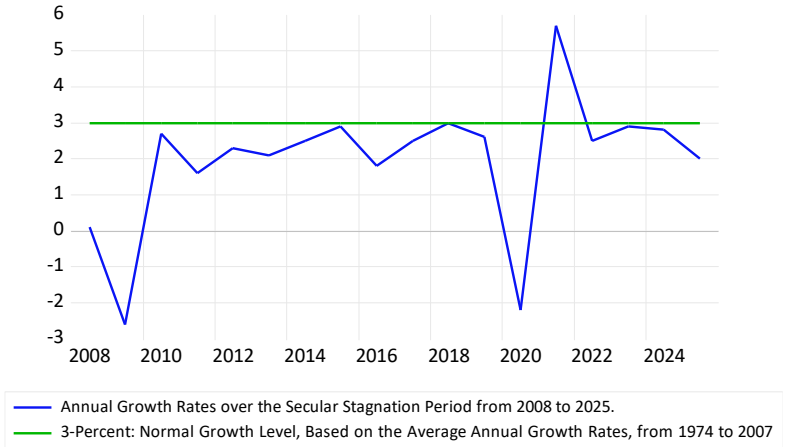

Figure 4: *Persistent Annual Growth Below 3% After 2008, Except in 2021*
Source**:** Federal Reserve Economic Data (FRED, 2025a)

Now we turn to the study of the growth process from a long-run perspective. By observing the homogeneity of long-run growth dynamics, we group the six business cycles (BCs) into three long-run phases. In this context, a *Phase* refers to a stage in the evolution of the U.S. growth process characterized by a relatively stable level of long-run potential for growth. For each Phase we measure the long-term potential for growth as the average of annual growth rates for the years included in that Phase. Thus:

i. Phase 1 (1949–1973) spans 25 years, with an average growth rate of 4.01%. This period reflects a superior growth potential shaped by the post–Great Depression and post–World War II *reset of the economic system*—a reset characterized by social simplicity, strong social cohesion and human character, and the predominance of *less-entropic* technologies.

ii. Phase 2 (1974–2007) covers 34 years, stagflation and post stagflation period, with an average growth rate of 3.06%. This phase marks a decline in long-run growth potential, driven, among others, by rising social complexity, increase in social entropy, weakening social cohesion, and shifts towards *entropic* technologies.

iii. Phase 3 (2008–2025) spans 18 years—the post–Great Recession era—and is characterized by an average annual growth rate of only 1.97 percent. This period marks a sharp decline in the economy's long-run growth potential. We classify this interval as the current *secular stagnation* phase: an 18-year stretch from 2008 to 2025 in which growth has persistently remained below its previous long-run norm.

Moreover, forward-looking projections indicate a continuation of this low-growth trajectory for at least the next five years, reinforcing the view that stagnation is structural rather than cyclical. It corresponds to further increases in social complexity and entropy, deeper erosion of social cohesion, and the dominance of entropic technologies.

A visual representation of these three phases of the long-run potential growth is provided in Figure 5.

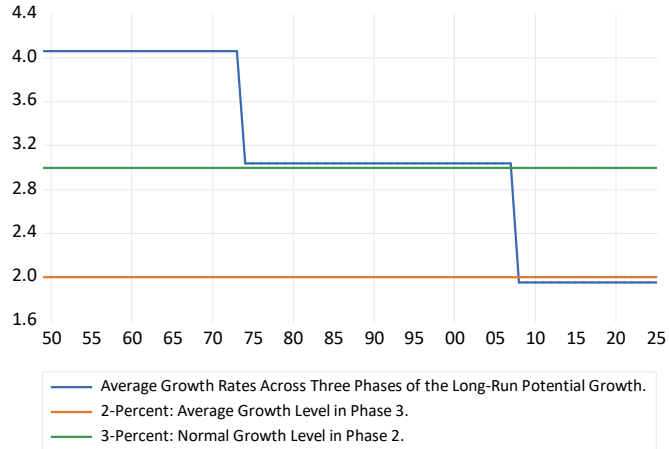

Figure 5. *Three Phases of the Long-Run Growth Potential of the U.S. Economy*
Source**:** Federal Reserve Economic Data (FRED, 2025a)

Figure 5 reveals that throughout the growth process, from 1949 to 2025, there have been three phases and two major declines in the long-run growth potential of the U.S. economy. The first major drop occured between Phase 1 (1949–1973) and Phase 2 (1974–2007). Long-run potential growth fell from 4 percent—the "normal" level in Phase 1—down to 3 percent, which became the stagnant level of Phase 2. The 3-percent average growth rate in Phase 2 is considered stagnant only in comparison with the higher 4-percent norm of Phase 1. From an ex-post perspective, however, this lower rate ultimately became the "new normal" for Phase 2.

The second major drop occurs between Phase 2 (1974–2007) and Phase 3 (2008–2025), where long-run potential growth declines further—from the 3-percent normal of Phase 2 down to the 2-percent stagnant level characteristic of Phase 3. Again, this rate can be judged as stagnant only in relation to the higher long-term potential of the preceding phase.

A short-run, year-by-year comparison between Phase 2 and the current secular stagnation (Phase 3) is presented in the next figure. This comparison highlights the inadvertent and ultimately ineffective use of monetary policy during the post–Great Recession period.

Figure 6 compares two consecutive periods in terms of very short-run, year by year, rates of growth. From 1974 to 2007, the economy's annual growth rates averaged roughly 3 percent. By contrast, in the subsequent period from 2008 to 2025—Phase 3—the average annual growth rate fell below 2 percent. A sudden structural fall in long-run growth potential: after the Great Recession, long-run growth experienced a sharp decline with no consistent signs of recovery. In addition, several key observations emerge from a year-by-year examination of the data.

First, annual growth rates in Phase 3 fluctuate around a much lower mean, indicating an economy whose cyclical movements now take place within a narrower and distinctly more depressed range. The peaks of annual growth during this period are consistently lower than those recorded in Phase 2, showing that even in favorable years the economy is unable to regain the momentum that characterized earlier decades. Low-growth years have become both more frequent and more persistent, suggesting a loss of

the system's capacity to generate strong short-run recoveries. Moreover, the weak response of annual growth to historically accommodative monetary policy underscores the structural nature of the slowdown: short-run demand stimulus no longer produces substantial or durable improvements in year-to-year performance.

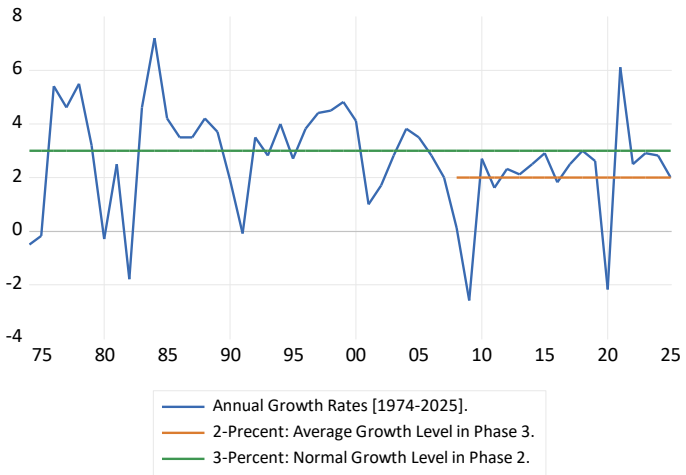

Figure 6. *A Major Downfall in Economic Performance Before and After the Great Recession.* *Source*: Federal Reserve Economic Data (FRED, 2025a)

Second, during the stagflation and post-stagflation years of Phase 2, the economy returned to its historical 4 percent growth norm in twelve separate years. In sharp contrast, in Phase 3 (2008–2025) the economy reached the old benchmark in only two years—one of which was the heavily fiscal-driven rebound of 2021. This pronounced asymmetry signals that the post-2008 slowdown is structural rather than cyclical.

Third, the role and effectiveness of monetary policy changed fundamentally. In the 1980s and 1990s (Phase 2), monetary policy successfully supported the real economy—breaking the stagflationary spiral and helping restore strong growth. After 2000, and especially after December 16, 2008, a critical shift occurred. Monetary policy became heavily used for a very long period: the policy rate was held at roughly 0 percent for seven years and kept below 2 percent for fourteen years, until 2022. These extraordinary interventions failed to revive the pre-2008 growth potential.

Finally, the prolonged use of macroeconomic stimulus yielded little macroeconomic payoff. The extensive and sustained reliance on monetary and fiscal stimulus ultimately proved ineffective. Between 2008 and 2025, the U.S. economy surpassed 2 percent annual growth in only two years—2018 and 2021, the latter being an exceptional rebound from the COVID-19 shutdown rather than evidence of renewed underlying strength. This persistent underperformance reflects a decline in the economy's long-run growth capacity—a structural break in potential growth rather than a temporary slowdown.

Based on the analysis thus far, we can synthesize a definition of secular stagnation that is consistent with contemporaneous conditions in the U.S. economy. This definition includes and is configured by the following:

i. The long-term rate of growth is below the normal growth potential

ii. The slowdown has been the status quo for a long period (nearly two decades). Moreover, current forecasts from leading business and rating institutions remain pessimistic, anticipating that potential growth will stay subdued—and may even weaken further—with no clear end to stagnation in sight.

iii. The slowdown is a long-run, structural, endogenous process, determined by a multitude of contributing factors and processes: economic, social and human.

Several authors demonstrate that the U.S. economy entered a markedly weaker growth phase after 2008 compared with the preceding three decades.

Fernald et al. (2017), using long-term historical data, show that total factor productivity (TFP) growth following the Great Recession fell to its lowest sustained level in decades. Lera and Sornette (2017) similarly identify a “bipolar” pattern in U.S. GDP per capita growth, with the post-2008 period falling decisively into a low-growth regime distinct from the stronger expansion observed from the 1980s through the early 2000s. Gordon (2014), drawing on over a century of data, likewise highlights that the years after 2008 constitute one of the weakest growth episodes in modern U.S. economic history.

Stagnation as a long-run phenomenon has been examined and agreed upon by many economic analysts from multiple angles depicting the slowdown in economic growth as a long-run, structural phenomenon determined by a multitude of factors.

Baumol (1967) argued that service-heavy economies naturally experience slower productivity growth. Ngai and Pissarides (2007) show how sector-specific productivity trends shape long-run growth. Kliesen and Tatom (2018) provide detailed empirical evidence of the structural decline in U.S. manufacturing productivity. Historically, manufacturing has been the main engine of productivity. Data show a post-2000 slowdown in productivity and declining capital investment. The weakening of manufacturing productivity has had a significant impact on growth potential. This effect is particularly important given that manufacturing has multiple linkages with many other industries, including logistics, materials, and high-tech components.

Jorgenson et al. (2008) reviews the 1995-1999 productivity boom and attribute the resurgence to ICT capital deepening, which did not continue after 2005. Fernald (2014) documents a substantial slowdown in TFP growth beginning around 2004–2005, prior to the financial crisis. His empirical analysis suggests that supply-side forces, rather than the recession, explain sluggish potential for growth. Van Reenen (2018) argues that a widening gap between frontier firms and laggards, alongside increasing market power and dispersion, contributes to productivity stagnation. Bloom et al. (2020) show that steep increases in R&D effort yield smaller productivity gains.

Decker et al. (2016) present evidence of declining startup rates, job reallocation, and firm turnover, arguing that these trends weaken innovation and productivity growth. Decker et al. (2017) link reduced reallocation efficiency to slower productivity growth and identify frictions and increased concentration as underlying causes for stagnation.

Akcigit et al. (2021) show that declines in innovation, market entry, and knowledge diffusion are associated with lower long-run growth. Carvalho et al. (2016) demonstrate that population aging significantly lowers real interest rates and contributes to secular stagnation. Jones (2022) argues that population aging and slower production of ideas could push economies into semi-stagnation even in the presence of technological

progress. Gagnon et al. (2016) tie falling natural interest rates to demographic shifts and the presence of global savings glut, providing central bank evidence for long-term stagnation. Haskel et al. (2017) explain how intangible assets create scale and winner-take-all incentives that lead to declining investment in physical capital and slow aggregate growth potential. Crouzet and Eberly (2019) link rising concentration and intangible capital to declining investment rates. Gutiérrez and Philippon (2016, 2017) show that reduced competition correlates with lower investment relative to profits, while rising concentration in the U.S. industries leads to declining investment even when firms are profitable. Mian et al. (2021) shows how rising household debt depresses aggregate demand, investment, and interest rates. Palley (2016) argues that financialization diverts resources away from productive investment, thereby fostering long-run stagnation. Gordon (2014) further interprets the post-2004 and post-2008 slowdown as evidence of secular stagnation, arguing that declining productivity and innovation reflect deep, long-term structural headwinds that have permanently lowered the economy's growth potential. Fernald et al. (2017) support this view by attributing the persistent TFP slowdown to endogenous technological dynamics and diminishing innovation returns rather than cyclical shocks, while Lera and Sornette (2017) show that the post-2008 period represents a transition into a durable low-growth regime driven by internal system dynamics.

Collectively, these studies underscore that U.S. secular stagnation arises from structural, endogenous forces rather than temporary or cyclical disturbances.

The Future of Economic Growth: Current Forecasts

Current forecasts indicate that U.S. economic growth is likely to remain subdued over the next five years, continuing within the bounds of stagnation.

The Congressional Budget Office (CBO, 2025) projects GDP growth of 1.4% in 2025, rising to 2.2% in 2026, and remaining stable at 1.8% through 2027 and 2028. The Federal Reserve (FRED, 2025d) provides a similar outlook, forecasting growth of 1.6% in 2025, 1.8% in 2026, 1.9% in 2027, and 1.8% in 2028, with the 2% threshold never being reached. Deloitte anticipates growth of 1.8% in 2025, followed by a deceleration to 1.4% in 2026, a modest recovery to 2.1% in 2027, and stability at 1.9% over 2028–2030 (Deloitte, 2025).

Ernst & Young (EY, 2025) forecasts growth of 1.7% in 2025 and 1.4% in 2026, while the Conference Board projects 1.8% in 2025, 1.5% in 2026, a slight increase to 1.8% in 2027, and 1.7% in 2028, respectively (The Conference Board, 2025). In this case as well, U.S. economic growth does not exceed the 2% threshold.

Averaging these projections yields expected growth rates of approximately 1.6% in 2025, 1.6% in 2026, 1.9% in 2027, and 1.8% for 2028, suggesting a continuation of the slow growth over the next five years. This pattern is highly consistent with the presence of secular stagnation.

5. Results and Discussions: Short-Run Policies

When analyzing the impact of economic policies (more attention to the monetary policy) during the post Great Recession period, three elements must be considered: stance, intensity, and duration. The stance is the most straightforward to identify. It was set in 2008, at the onset of the Great Recession, when the Federal Reserve (the Fed) responded to collapsing aggregate demand and rapidly rising unemployment. Under those circumstances, the appropriate stance was a highly accommodative, expansionary monetary. It aimed at supporting output and stabilizing the labor market. Accordingly, the Fed lowered its target for the federal funds rate to near-zero levels. The economy entered the positive area of growth by 2010, even though growth remained slow, within the bounds of stagnation, until today. Employment also recovered gradually, with a lag, crossing the 5-percent unemployment threshold in September 2014. It subsequently strengthened, reaching historically unprecedented lows after 2017.

Next, we focus on the intensity and duration of monetary policy post Great Recession. From a historical and empirical perspective, the Fed's monetary policy was employed with *excessive* intensity and for an *exceptionally long duration*. Despite this extraordinary reliance on short-run monetary (and fiscal) stimulus, the long-run growth potential of the U.S. economy nonetheless continued to remain lower than the pre Great Recession norm. This juxtaposition supports the broader conclusion that a fundamentally long-run structural problem cannot be effectively resolved with short-run policy tools, at least not for such an extended period and not with such intensity.

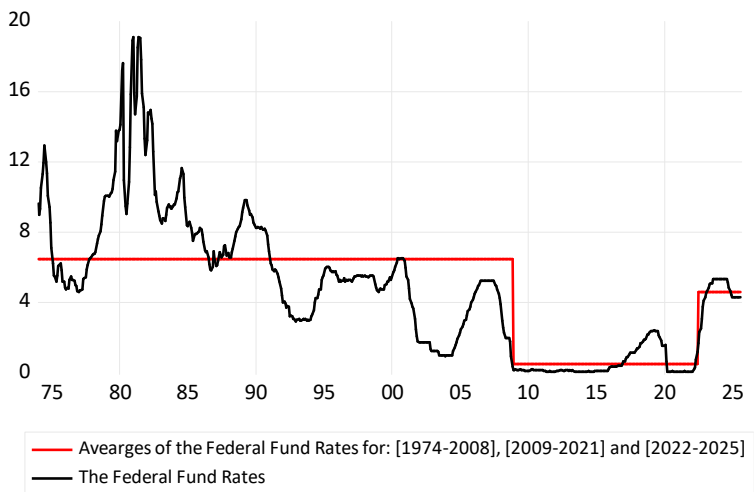

Figure 7. *Current Federal Fund Rate and Averages of the Federal Funds Rates for Three Periods*: [1974-2008], [2009-2021] and [2022-2025].
Source: Federal Reserve Economic Data (FRED, 2025b).

Figure 7 illustrates that, from an empirical–historical perspective, monetary policy tools were deployed continuously over an unusually long period, which may have progressively weakened their stimulative effectiveness. During this interval, the policy stance was not only persistently expansionary but also *exceptional* in magnitude, with nominal short-term rates pushed to near zero and real rates frequently falling below zero.

Examining the period from 2008 to 2022—a span of roughly 14 years (about 180 months)—reveals the unprecedented intensity of this regime: the effective federal funds rate remained below 1 percent throughout most of the period, averaging only 0.56 percent. Despite this intense and prolonged monetary expansion, the economy's long-run potential growth nonetheless experienced a sharp decline.

The second direction in this part tries to demonstrate that neither short-run monetary stimulus nor temporary fiscal spending can reverse the structural decline in the economy's long-run growth potential. Slow growth has been the defining norm in Phase 3 (2008–2025), despite the unprecedented and prolonged use of expansionary monetary policy. This observation reinforces our earlier conclusion that the economy is undergoing a form of *incurable stagnation*—a long-run decline in potential growth that persists regardless of the persistent and excessive engagement of short-run policy stimuli. The ongoing secular stagnation cannot be remedied through short-run tools because its roots are structural and endogenous. Such structural forces cannot be reversed by routine fiscal or monetary interventions, no matter how aggressive or persistent those interventions may be.

The next three figures put face to face growth rates and the rates of change in the policy variables.

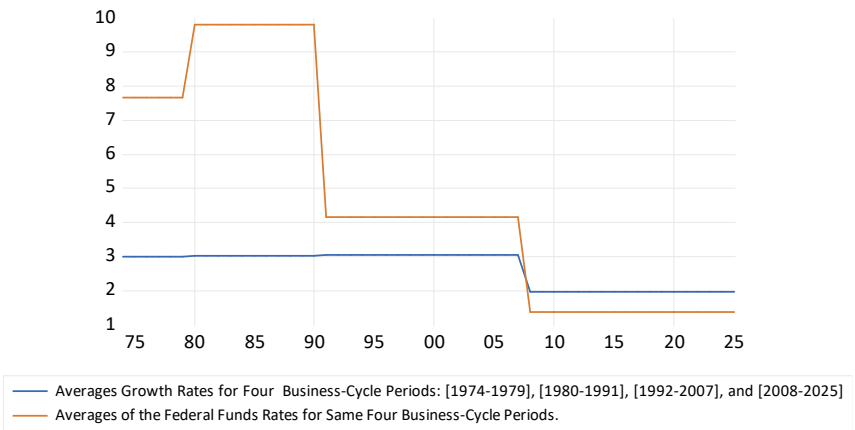

Figure 8. *Ineffective Monetary: Slower Economic Growth despite Near Zero Federal Fund Rate.*
Source: Federal Reserve Economic Data (FRED, 2025a and 2025b).

Between 2008 and 2022, the Federal Reserve maintained an exceptionally expansionary monetary stance, with the average effective federal funds rate remaining near zero for most of the period. Yet, despite persistently near-zero interest rates (Figure 8) and an unprecedented expansion of the money supply—particularly M1 (Figure 9)—the U.S. economy continued to exhibit slowing growth. This juxtaposition highlights a central tension of the post-2008 era: even large-scale and prolonged monetary accommodation proved insufficient to revive the economy's long-run growth potential, suggesting that the underlying forces restraining growth were structural rather than cyclical.

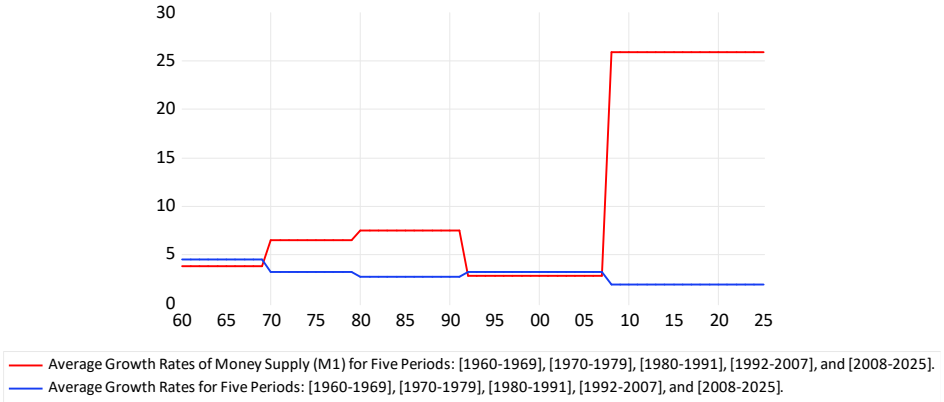

Figure 9: *Ineffective Monetary: Slower Economic Growth despite Unprecedented Rapid Growth of Money Supply (M1).*
Source: FRED, 2025a and Macrotrends, 2025

The limitations of fiscal policy also arise from its extensive deployment during both the Great Recession and the COVID-19 pandemic, which led to a substantial public debt accumulation. This i ncreasing debt burden now constrains the effectiveness of future fiscal interventions, reducing policymakers' ability to rely on discretionary stimulus as a countercyclical tool.

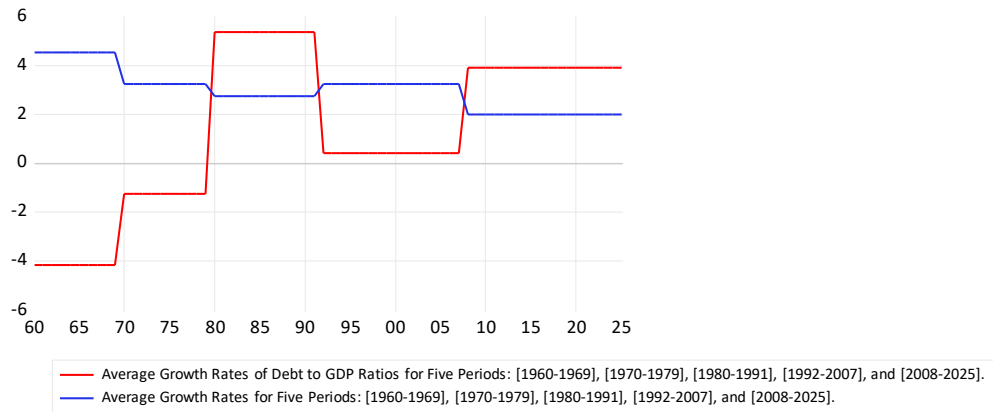

Figure 10: Ineffective Fiscal Policy: Slower Economic Growth despite Rapid Change in Debt to GDP Ratio.
Source: Federal Reserve Economic Data (FRED, 2025a and 2025c)

In sum, despite excessive use of monetary tools (Figures 8 and 9) and fiscal policy (Figure 10), real economic growth remained stubbornly low. The Federal Reserve's overuse—and at times misuse—of stimulus instruments significantly undermined monetary policy's effectiveness during this period (2008–2022). Keeping interest rates extraordinarily low for more than fourteen years progressively weakened monetary policy's ability to credibly encourage real investment and sustain economic growth.

The fact that excessive monetary expansion did not stimulate economic growth is constent with a violation of the Tinbergen Rule. Named after Nobel laureate in economics, Jan Tinbergen, this rule is considered a fundamental principle of effective economic policy. Assuming a set of targets -economic problems to be addressed- and a set of policy

instruments, the Tinbergen principle can be formulated as two rules. The first rule states that each policy instrument should be applied only to the target that responds effectively to that instrument (historically, we have learned that monetary policy targeted inflation very well). The second rule states that, in order to address a given number of policy targets, policymakers must employ at least an equal number of independent instruments. The resulting policy making principle can be distilled as: the long-run decline in growth – being the outcome of multiple factors and processes that reflect economic, social, and human realities - must be addressed through a broad set of long-run structural policies that use a large set of instruments and approches. Persistently using short-run policy tools to address structural problems generates cumulative externalities and, as a twist of faith, reduces long-run economic potential.

Using short-run policies to address a long-run structural problem—the decline in the economy's growth potential—has produced several unintended consequences and deep structural imbalances: distorted investment incentives, as a result capital increasingly flowed toward financial and speculative activities rather than real investment; a weakening of the link between monetary expansion and productive investment; and a widening gap between stock-market performance and real economic fundamentals.

6. Conclusions

Through an empirical long-term analysis of the U.S. economic growth process from 1949 to 2025, we identified three phases and two major slowdowns in long-run growth potential.

The first major drop occurred between Phase 1 (1949–1973) and Phase 2 (1974–2007). During this transition, long-term potential growth fell from 4 percent—the "normal" level in Phase 1—down to 3 percent, which became the normal level of Phase 2.

The second major drop occurred between Phase 2 (1974–2007) and Phase 3 (2008–2025), where long-run potential growth declined even further—from the 3-percent normal of Phase 2 down to 2 percent, the stagnant level of Phase 3.

We conclude that, since 2008, the U.S. economy has experienced a fundamental decline in its long-run growth potential. The fall in potential annual growth by more than one percentage point from Phase 2 to Phase 3 represents a structural break rather than a temporary cyclical phenomenon. On a short-term (annual) basis, the economy has failed to achieve 3% growth in all but two years over nearly two decades—a pattern that signals a consistent decline in growth potential. This significant downshift in U.S. economic performance exhibits all the hallmarks Hansen originally defined (during the Great Depression) as secular stagnation: chronically depressed growth that is self-reinforcing and long-lasting.

The persistence of sub-3% growth for 18 years, combined with pessimistic forecasts, justifies classifying this period as true *secular stagnation*. Just as Phase 2's 3% growth became the "new normal" after 34 years, Phase 3's 2% growth trajectory is very likely to persist for decades—unless a significant structural reset and a profound policy reorientation toward long-run, supply-side strategies occur.

Monetary policy, which successfully broke stagflation in the 1980s and supported strong growth through the 1990s, has proven ineffective in restoring pre-2008 growth potential during Phase 3. Despite unprecedented and excessive use of monetary expansion for more than ten years—including both near-zero interest rates and an overabundant supply of liquidity—the economy has not regained its previous growth potential. This policy ineffectiveness further confirms the structural nature of the slowdown. It is also important to understand that short-run, demand-side policy tools cannot overcome long-run, supply-side structural limitations.

Policymakers, businesses, and people must adjust their expectations. The growth of Phase 2 (1974–2007) is not achievable under current structural conditions. The era of robust, self-sustaining economic expansion has ended, replaced by a long period (secular) of reduced growth potential that may persist for much of the remainder of the 21st century—a secular phase of economic evolution that deserves its real name: *secular stagnation.*

7. References

Akcigit, U., and Ates, S. T. (2021). *Ten facts on declining business dynamism and lessons from endogenous growth theory*. American Economic Journal: Macroeconomics, 13(1), 257–298. DOI: 10.1257/mac.20180449. Retrieved from https://www.aeaweb.org/articles?id=10.1257/mac.20180449

Baumol, W. J. (1967). *Macroeconomics of unbalanced growth: The anatomy of the urban crisis*. American Economic Review, 57(3), 415–426. Retrieved from https://www.jstor.org/stable/1812111

Bernanke B. S. (2015a), *Why are interest rates so low, part 2: Secular stagnation*, Brookings, March. Retrieved from https://www.brookings.edu/articles/why-are-interest-rates-so-low-part-2-secular-stagnation/

Bernanke B. S. (2015b), *Why are interest rates so low, part 3: The Global Savings Glut,* Brookings, April. Retrieved from https://www.brookings.edu/articles/why-are-interest-rates-so-low-part-3-the-global-savings-glut/

Bloom, N., Jones, C. I., Van Reenen, J., and Webb, M..(2020). *Are Ideas Getting Harder to Find?* American Economic Review 110 (4): 1104–44**.** DOI: 10.1257/aer.20180338. Retrieved from https://www.aeaweb.org/articles?id=10.1257/aer.20180338

Carvalho, C., Ferrero, A., and Nechio, F. (2016). *Demographics and real interest rates: Inspecting the mechanism.* Federal Reserve Bank of San Francisco Working Paper 2016-05. Retrieved from http://www.frbsf.org/economic-research/publications/working-papers/wp2016-05.pdf

Congressional Budget Office (CBO). (2025). *CBO's Current View of the Economy From 2025 to 2028.* Congressional Budget Office, (pp.7). Retrieved from https://www.cbo.gov/system/files/2025-09/61236-Economy.pdf

Crouzet, N., and Eberly, J. (2019). *Understanding Weak Capital Investment: the Role of Market Concentration and Intangibles*, NBER Working Papers 25869, National Bureau of Economic Research, Inc. Retrieved from https://ideas.repec.org/p/nbr/nberwo/25869.html

Decker, R., Haltiwanger, J., Jarmin, R., and Miranda, J. (2016). *Declining business dynamism: What we know and the way forward*. American Economic Review, 106(5), 203–207. DOI: 10.1257/aer.p20161050. Retrieved from https://www.aeaweb.org/articles?id=10.1257%2Faer.p20161050&utm

Decker, R. A., Haltiwanger, J., Jarmin, R., and Miranda, J. (2017). *Declining dynamism, allocative efficiency, and the productivity slowdown*. American Economic Review, 107(5), 322–326. DOI: 10.1257/aer.p20171020. Retrieved from https://www.aeaweb.org/articles?id=10.1257/aer.p20171020

Deloitte. (2025). *United States Economic Forecast*. Figure 18. Retrieved from https://www.deloitte.com/us/en/insights/topics/economy/us-economic-forecast/united-states-outlook-analysis.html

Ernst & Young (EY). (2025). *U.S. economic outlook* September 2025. Retrieved from https://www.ey.com/en_us/insights/strategy/macroeconomics/us-economic-outlook

Federal Reserve Bank of St. Louis (FRED). (2025a). *The US Annual Growth Rates*. Retrieved from https://fred.stlouisfed.org/series/A191RL1A225NBEA

Federal Reserve Bank of St. Louis (FRED). (2025b). *Federal Funds Effective Rate*. Retrieved from https://fred.stlouisfed.org/series/RIFSPFFNA

Federal Reserve Bank of St. Louis (FRED). (2025c). *Federal Debt: Total Public Debt as Percent of Gross Domestic Product.* Retrieved from https://fred.stlouisfed.org/series/GFDEGDQ188S

Federal Reserve Bank of St. Louis (FRED). (2025d). *FOMC Summary of Economic Projections for the Growth Rate of Real Gross Domestic Product, Median.* Retrieved from https://fred.stlouisfed.org/series/GDPC1MD

Fernald, J. G. (2014). *Productivity and potential output before, during, and after the Great Recession.* NBER Working Paper No. 20248. DOI 10.3386/w20248. Retrieved from https://www.nber.org/papers/w20248?utm

Fernald J., Hall R., Stock J. and Watson M. (2017). *The Disappointing Recovery of Output after 2009*. NBER Working Paper No. 23543. DOI: 10.3386/w23543. Retrieved from https://www.nber.org/system/files/working_papers/w23543/w23543.pdf

Gagnon, E., Johannsen, B. K., and López-Salido, D. (2016). *Understanding the New Normal: The Role of Demographics*. Finance and Economics Discussion Series 2016-080. Washington: Board of Governors of the Federal Reserve System, Retrieved from http://dx.doi.org/10.17016/FEDS.2016.080

Google Trends. (2025). *Interest in 'Secular Stagnation' (2004–2024).* Retrieved from https://trends.google.com/trends/explore?date=all&q=secular%20stagnation&hl=en

Gordon, R. J. (2014). *The Demise of U.S. Economic Growth: Restatement, Rebuttal, and Reflections.* NBER Working Paper No. 19895. DOI: 10.3386/w19895. Retrieved from https://www.nber.org/system/files/working_papers/w19895/w19895.pdf?utm_source=PANTHEON_STRIPPED

Gordon, R. J. (2015). *Secular Stagnation: A Supply-Side View. American Economic Review*, 105 (5): 54–59. DOI: 10.1257/aer.p20151102, Retrieved from https://www.aeaweb.org/articles?id=10.1257/aer.p20151102

Gutiérrez, G., and Philippon, T. (2016). *Investment-less growth: An empirical investigation*. (NBER Working Paper No. 22897). National Bureau of Economic Research. Retrieved from https://www.nber.org/system/files/working_papers/w22897/w22897.pdf

Gutiérrez, G., and Philippon, T. (2017). *Declining competition and investment in the U.S.* (NBER Working Paper No. 23583). National Bureau of Economic Research. Retrieved from https://www.nber.org/system/files/working_papers/w23583/w23583.pdf

Hamilton J. D., Harris E.S., Hatzius J. and West K. D., (2015). *The Equilibrium Real Funds Rate: Past, Present and Future.* NBER Working Paper No. 21476, August, DOI 10.3386/w21476. Retrieved from https://www.nber.org/system/files/working_papers/w21476/w21476.pdf

Hansen, A. H. (1939). *Economic Progress and Declining Population Growth*. The American Economic Review, 29(1), 1–15. Retrieved from http://digamo.free.fr/hansen39.pdf

Haskel, J., and Westlake, S. (2017). *Capitalism without capital: The rise of the intangible economy*. Princeton University Press.

Jones, C. I. (2022). *The End of Economic Growth? Unintended Consequences of a Declining Population*. American Economic Review 112 (11): 3489–3527.DOI: 10.1257/aer.20201605. Retrieved from https://www.aeaweb.org/articles?id=10.1257/aer.20201605

Jorgenson, Dale, W., Mun S. Ho, and Kevin J. Stiroh. (2008). *A Retrospective Look at the U.S. Productivity Growth Resurgence*. *Journal of Economic Perspectives* 22 (1): 3–24.DOI: 10.1257/jep.22.1.3. Retrieved from https://www.aeaweb.org/articles?id=10.1257/jep.22.1.3

Kliesen, K. L., and Tatom, J. A. (2018). *Here's Why U.S. Manufacturing Is Fundamentally Strong*. Economic Synopses, Federal Reserve Bank of St. Louis, Issue 4. Retrieved from https://fraser.stlouisfed.org/title/economic-synopses-6715/heres-us-manufacturing-fundamentally-strong-624514

Krugman P. (2013). *Secular Stagnation, Coalmines, Bubbles, and Larry Summers*, The New York Times, November. Retrieved from https://archive.nytimes.com/krugman.blogs.nytimes.com/2013/11/16/secular-stagnation-coalmines-bubbles-and-larry-summers/

Lera, S., and Sornette, D. (2017). *Secular bipolar growth rate of the real US GDP per capita: Implications for understanding past and future economic growth* (Swiss Finance Institute Research Paper No. 15-62). SSRN. DOI: 10.2139/ssrn.2703882. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2703882

Macrotrends. (2025). *M1 Money Supply*. Retrieved from https://www.macrotrends.net/3014/m1-money-supply

Mian, A., Straub, L., & Sufi, A. (2021). *Indebted Demand*, The Quarterly Journal of Economics, Volume 136, Issue 4, Pages 2243–2307, Retrieved from https://doi.org/10.1093/qje/qjab007

Ngai, L. R. and Pissarides, C. A. (2007). *Structural Change in a Multisector Model of Growth*. American Economic Review, 97(1), 429–443. Retrieved from https://www.aeaweb.org/articles/pdf/doi/10.1257/aer.97.1.429

Palley, T. I. (2013). *Financialization: The economics of finance capital domination.* Palgrave Macmillan.

Summers L. H. (2013). *IMF Fourteenth Annual Research Conference in Honor of Stanley Fischer*. Retrieved from https://larrysummers.com/imf-fourteenth-annual-research-conference-in-honor-of-stanley-fischer-2/

Summers L. H. (2014). *U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound*, Business Economics, Palgrave Macmillan, National Association for Business Economics, vol. 49(2), pages 65-73, April. Retrieved from https://doi.org/10.1057/be.2014.13

Summers L. H. (2015). *Demand Side Secular Stagnation*. American Economic Review, vol. 105, no. 5, May 2015, (pp. 60–65). Retrieved from https://www.aeaweb.org/articles?id=10.1257/aer.p20151103

The Conference Board. (2025). *Global Economic Outlook*. Retrieved from https://www.conference-board.org/topics/global-economic-outlook

Tinbergen, J. (1952). *On the Theory of Economic Policy*. *Books (Jan Tinbergen)*. North-Holland Publishing Company. Retrieved from http://hdl.handle.net/1765/15884

Van Reenen, J. (2018). *Increasing differences between firms: market power and the macro-economy*. CEP Discussion Papers (CEPDP1576). London School of Economics and Political Science. Centre for Economic Performance, London, UK. Retrieved from https://eprints.lse.ac.uk/91698/1/Van-Reenen_Increasing-differences_Author.pdf