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REVISITING THE SECULAR STAGNATION HYPOTHESIS IN THE LIGHT OF THE COMPLEXITY PARADIGM

HENRIQUE MORAIS
hnmorais@gmail.com
Degree in Economics from Universidade Técnica de Lisboa / Instituto Superior de Economia e Gestão. Master's degree in International Economics from ISEG. PhD in International Relations: Geopolitics and Geoeconomics from Universidade Autónoma de Lisboa. He works at Banco de Portugal (Portugal) where is Head of Innovation and Support Division of Markets Department. He was a Consultant for the Portuguese Post Office (CTT), Chairman of the Executive Committee and Director of Invesfer S.A., a company of the REFER Group, and Director / CEO of CP Carga. He teaches at Universidade Autónoma de Lisboa (in the Departments of Economics and Business Sciences and International Relations) and on the MBA in Corporate Finance at Universidade do Algarve. He is also a member of the Foreign Relations Observatory of UAL, where he has been involved in various research projects, as well as assiduous participation in the various editions of Janus - International Relations Yearbook.

Abstract

After the disruptions brought, also to the macroeconomic scenario, by phenomena such as the COVID-19 pandemic and the invasion of Ukraine, it is likely that the theme of secular stagnation of economic growth, taken up again in 2013 after Alvin Hansen's original contribution, will once again occupy a central place in geo-economic research and analysis, not least because of its empirical validation. The dominant paradigm, at least since the beginning of the 20th century, not only in the so-called exact sciences, but also in other areas of the social sciences such as economics, has been characterised by determinism, almost unlimited trust in linear models, their conclusions, and their near infallibility. The lack of precision of these models has been evident, particularly in what is supposed to be their great strength, that is, their predictive capacity. Events such as the financial crisis of 2007/2008, the European sovereign debt crisis, the significant increase in the contribution of emerging markets to the global wealth, have shown how these linear models are limited and, also for this reason, are likely to be viewed with some skepticism by decision-makers. Given this conceptual framework, we intend to revisit the secular stagnation thesis, in its fundamental theoretical foundations, but also in the empirical evidence with the most recent data and, in addition, to look at an alternative vision to the mainstream. This vision is embodied by complexity theory, with its conviction that phenomena don't necessarily behave in a linear model, so it's difficult to identify one that covers all the characteristics under study, imbalance is the usual characteristic of systems and, finally, disorder, not order, is typically the situation in systems. Seieing these approaches as a complement to, rather than a break with, the mainstream, we ultimately tried to remain faithful to the founding principles of science, starting with openness to change, to new working methods, to new paradigms.

Keywords

Secular Stagnation, Economic Policy, Complexity, Linear Models.

Resumo

Após as disrupções trazidas, também ao cenário macroeconómico, por fenómenos como a pandemia do COVID 19 e a invasão da Ucrânia, é provável que o tema da estagnação secular do crescimento económico, retomado em 2013 depois do contributo original de Alvin Hansen, venha novamente a ocupar, até pela sua verificação empírica, um lugar central na investigação e na análise geoeconómica. O paradigma dominante, pelo menos desde o início do século XX, não apenas nas ciências dita exatas, nas também noutras áreas das ciências sociais, como a economia, tem sido caracterizado pelo determinismo, pela confiança quase ilimitada nos modelos lineares, nas suas conclusões e na sua quase infalibilidade. Tem sido evidente a falta de precisão destes modelos, nomeadamente naquilo que supostamente seria a sua grande força, ou seja, a capacidade preditiva. Acontecimentos como a crise financeira de 2007/2008, a crise das dívidas soberanas europeias que se lhe seguiu, o aumento significativo do contributo dos mercados emergentes para a riqueza global, têm mostrado como estes modelos lineares são limitados na sua capacidade de análise e, também por isso, suscetíveis de virem a ser olhados com algum ceticismo pelos decisores. Perante este quadro concetual, pretendemos revisitar a tese de estagnação secular, nos seus alicerces teóricos fundamentais, mas também na evidência empírica com os dados mais recentes e, para além disso, olhar para uma visão alternativa à do mainstream. Essa visão é encarnada pela teoria da complexidade, com a sua convicção de que os fenómenos não têm necessariamente um comportamento linear, pelo que é difícil identificar um modelo que cubra todas as características em estudo, o desequilíbrio é a característica habitual dos sistemas e, por fim, a desordem, e não a ordem, é tipicamente a situação dos sistemas. Vendo nestas abordagens um complemento, e não uma rutura com o mainstream, tentámos afinal mantermo-nos fiéis aos princípios fundadores da ciência, desde logo a abertura à mudança, a novos métodos de trabalho, a novos paradigmas.

Palavras-chave

Estagnação Secular, Política Económica, Complexidade, Modelos Lineares.

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REVISITING THE SECULAR STAGNATION HYPOTHESIS IN THE LIGHT OF THE COMPLEXITY PARADIGM

HENRIQUE MORAIS

Introduction

The break-up of the Bretton-Woods International Monetary System, the currency crises of the 1990s, the financial crisis of 2007/2008, the Great Recession of 2009, and the economic and inflationary crisis following the COVID-19 pandemic, all these events should perhaps prompt a rethink of the paradigms that have guided society and the economy since the Second World War.

These episodes may be one-off movements of another phenomenon, more structural and worrying, of stagnating economic growth in a significant part of the world economy, specifically in the group of countries that the International Monetary Fund calls 'Advanced Economies'.

In this article we try to point out the importance of the initial work on the subject by Alvin Hansen (in the 1930s) and, not ignoring the role that the Keynesians and the American neo-Marxist school played in keeping the subject 'alive' throughout the second half of the 20th century, that of economists such as Lawrence Summers in reviving the subject at the end of the first decade of the 21st century.

Having defined our problem, namely the hypothesis of the materialisation of secular stagnation in economic growth, the argument of this article is that traditional linear models are not sufficient to explain the phenomenon and even less so to list the policies needed to combat it.

A complex reality needs to be explained using models that can recognise this complexity and, therefore, consider all the factors which influence this reality.

We looked for these factors in complexity theory, presenting its assumptions and their application to the phenomenon under study, starting with the fundamental starting assumptions that the normal situation of social phenomena is imbalance, self-organisation, which suggests the spontaneous emergence of new global patterns from local interactions of subunits and, finally, disorder, rather than order, as the typical system' situation.

Perhaps for all these reasons, the technological advances of recent decades, particularly with the digitisation and robotisation of large segments of our economic activity, have not been enough to provide us with robust and lasting economic growth.

In this article, after a brief presentation of the contributions of Alvin Hansen and Lawrence Summers, we revisit, albeit briefly and in a very general way, linear models, and the theory of complexity, to end with a vision, in the light of the theory of complexity, of the phenomenon of stagnation in world economic growth.

The stagnation of world economic growth: the role of Alvin Hansen

The shadow of what would become the most dramatic and intense economic phenomenon in centuries (the Great Depression of 1929-30) was still hanging over American society and the economy when one of the most eminent economists in the United States, Alvin Hansen, gave the speech that would launch the concept of secular stagnation of economic growth[1].

> *It was March 1939, and, at one point, Hansen said about the situation at the time: "This is the essence of secular stagnation, 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: 4).

While acknowledging the complexity of the period that the United States would be going through, after times of growth and expansion (westwards) that characterised much of the 19th century, which is clear when he says

> *"We are passing, so to speak, over a divide which separates the great era of growth and expansion of the nineteenth century from an era which no man, unwilling to embark on pure conjecture, can as yet characterize with clarity or precison"* (*ibid*.: 1).

Hansen points to three factors that would have been at the origin of the strong investment flows in the first decades of American economic history, thus guaranteeing abnormally high levels of gross domestic product growth, compared to the rest of the world, and which would appear to be running out, or at least decreasing in intensity: population growth, inventions and the discovery and development of new territories and resources (*ibid.*: 3).

Let's start with demographics

The thirties brought a slowdown in population growth to about half of what had been recorded in the previous decade (in which the US population would have increased by about sixteen million people) and forecasts pointed to less than a third in the forties (*ibid*.: 2). The apparent stagnation of the population implied "*serious structural maladjustments which can be avoided or mitigated only if the economic policies, appropriate to the changed situation, are applied*" (*ibid.*: 2).

[1] The speech by what many called the "American Keynes" was entitled "Economic Progress and Declining Population Growth".

At a glance, the economy's fundamental problem emerged: underemployment, that is, the inability to achieve full employment (*ibid.*: 4). Hansen suggested that the main factor in the genesis of underemployment was weak population growth, insofar as, by conditioning the increase in demand, it created the potential danger of economic stagnation and effective underemployment of capital and labour.

Hansen goes further, stating that

> *"it is accepted by all schools of current economic thought that full employment and the maximum currently attainable income level cannot be reached in the modern free enterprise economy without a volume of investment expenditures adequate to fill the gap between consumption expenditures and that level of income which could be achieved were all the factors employed (…) Thus we may postulate a consensus on the thesis that in the absence of a positive program designed to stimulate consumption, full employment of the productive resources is essentially a function of the vigor of investment activity. Less agreement can be claimed for the role played by the rate of interest on the volume of investment. Yet few there are who believe that in a period of investment stagnation an abundance of loanable funds at low rates of interest is alone adequate to produce a vigorous flow of real investment (…) I venture to assert that the role of the rate of interest as a determinant of investment has occupied a place larger than it deserves in our thinking. If this be granted, we are forced to regard the factors which underlie economic progress as the dominant determinants of investment and employment"* (*ibid*.:5).

And here comes the second theme, inventions. Hansen states that

> *"considering the economy as a whole there is no good evidence that the advance of technique has resulted in recent decades, certainly not in any significant measure, in any deepening of capital. Apparently, once the machine technique has been developed in any field, further mechanization is likely to result in an increase in output at least proportional to and often in excess of the net additions to real capita. Tough the deepening process is all the while going on in certain areas, elsewhere capital-saving inventions are reducing the ratio of capital to output"* (*ibid*.:7).

Perhaps this inability of "*further mechanization*" to prove itself as a creator of added value might be an indication that Hansen also saw the possibility that, like the economy, technology could also work in very long cycles of successive expansion and contraction.

The discovery of new territories and resources is perhaps the most immediate reason given by Hansen to justify the stagnation of economic growth. In fact, in the last decade of the 19th century, following the progress of the railway, the westward expansion of the USA was completed. To quote Hansen,

> *"it is not possible, I think, to make even an approximate estimate of the proportion of the new capital created in the nineteenth century which was a*

> *direct consequence of the opening up of new territory (…) What proportion of new capital formation in the United States went each year into the western frontier we do not know, but it must have been very considerable. Apparently about one-fourth of the total capital accumulations of England were invested abroad by 1914, and one-seventh of those of France. These figures, while only suggestive, point unmistakably to the conclusion that the opening of new territory and the growth of population were together responsible for a very large fraction - possibly somewhere near one-half-of the total volume of new capital formation in the nineteenth century"* (*ibid*.:9).

In conclusion, even knowing how Hansen devalued monetary factors, also because of the emphasis he placed on demography, it is curious that this great economist considered that the Great Depression was particularly significant namely because it had at its genesis broad monetary and technological shocks acting simultaneously.

Ironically, the topic was practically abandoned in the following decades, perhaps because many of the measures suggested by Hansen to combat the phenomenon of secular stagnation were part of the New Deal prescription, perhaps also because World War II changed everything or quite simply because the long prosperity experienced in the post-war period made the topic launched by Hansen very unappealing, even to science.[2].

The stagnation of world economic growth: the contribution of Lawrence Summers

The long silence mentioned previously was interrupted by Lawrence Summers in 2014, when he recalled Hansen and pointed to the liquidity trap and the imbalance between savings and investment as the deepest causes of the secular stagnation that, according to him, was very probably returning to the United States.

Summers defines several aspects that characterise the process: the difficulty of economic policy in achieving multiple objectives, that is, good use of productive capacity and financial stability, which in turn is closely related to the fall in the equilibrium real interest rate and the need for different approaches in economic policies (Summers, 2014: 65-66).

He points to the profound change that the financial crisis of 2007-2008 brought to macroeconomics, given that it went from a time when monetary policy aimed to reduce the (small) amplitude of fluctuations in relation to the trend, to a scenario in which the ambition is precisely to have to face the problem of minimising fluctuations around a satisfactory trend (*ibid*).

He argues that although the response of economic policy in 2008 was much greater than during the 1929-30 crisis, the projection of per capita GDP growth is in all respects identical to that observed between 1929 and 1941 (Summers, 2016: 93 and 96). Our

[2] In fact, the subject was not abandoned altogether thanks to the contributions of the American neo-Marxist school, in the wake of Alexander Hamilton's legacy, personified by academics such as Paul Sweezy and Paul Baran.

interpretation: a non-conventional super-aggressive monetary policy, at least in the 21st century, has had results far below what is expected and what the monetary authorities and governments would certainly like.

Summers (2014: 66) concludes that the crises have led to the destruction of jobs that have not been replaced, with the biggest explanation for the downward trend in potential gross domestic product being the reduction in capital investment, followed by the contribution of labour and, to a lesser extent, the behaviour of productivity.

What about the causes of this anemic economic growth? Summers says that structural changes in the economy have led to profound changes in the natural balance between savings and investment, causing a fall in the equilibrium real interest rate associated with full employment (*ibid*., 69). Later, the main question is what causes savings to rise and investment to fall, creating this downward pressure, this tendency towards stagnation (2016: 100).

The increase in savings is associated with changes in income distribution and profit sharing (more inequality would imply higher savings), the accumulation of reserves or capital flows and deleveraging and preparation for retirement, in a context where longer life expectancy would generate more resistance to indebtedness[3] (*ibid.*: 100 and 102). The fall in the propensity to invest (*ibid*.: 102 and 103) is the result of lower population and/or technology growth, less massification of the economy and, finally, lower prices for capital goods.

Rachel and Summers (2019: 46) go even further and conclude that the private sector of the economy is likely to be captured by an equilibrium of underemployment and low inflation if real interest rates cannot fall well below zero per cent.

Summers is one of a large group of academics who emphasise the prevalence of demand-side factors as the main determinants of the phenomenon of secular stagnation.

Other authors consider that secular stagnation is mainly the result of supply-side factors. For example, Gordon and Crafts say that stagnation is evidence of a sharp decline in long-term potential growth, while Rogoff, with his so-called "debt supercycle" hypothesis, links the stagnation of economic growth to the long period of indebtedness of economic agents, which would have come to an end and given way to a progressive process of financial deleveraging.

Revisiting linear models and complexity theory

The search for phenomena that show standardised behaviour, with characteristics of regularity and repetition that allow for a better explanation, is probably one of the most universal characteristics of the various fields of science. In these characteristics, scientists find solid bases for prediction, something that in modern times, due to the

[3] Summers points out that household deleveraging and early repayment of debts are forms of saving (ibid., 102).

strong media pressure, makes this prediction of phenomena or certain variables a core objective for the comfort of public opinion[4].

The social sciences, and in particular economics and international relations, are no exception and have been intensifying the continuous search for models based on strong quantitative robustness that are supposedly (more) suitable for explaining social phenomena.

To be fair, the importance of modelling is intrinsic to the very emergence of economics, if we accept, as the author of these lines does, that this moment occurred with the classics, namely Adam Smith and David Ricardo, and with the model of comparative advantages, which through the endowments of productive factors explained under what conditions countries could have a mutual interest in engaging in exchange, in international trade, benefiting from the situation of autarky[5].

In fact, the geopolitical importance of these men's work is notable, particularly as they helped to foster commercial cooperation to the detriment of mercantilism's main objective, that is, the accumulation of precious metals, which often fostered conflict to the detriment of international cooperation.

The neoclassicals, in their attempt to explain the mechanisms underlying international trade, created mathematical general equilibrium models and demonstrated, for example, how an increase in the relative price of a good leads to an increase in the real income of the factor most used in the production of that good and, conversely, to a decrease in the real income of the other factor[6]. This also highlights the attempt to predict the evolution of one variable according to the observed behaviour of another variable/factor.

And John M. Keynes revolutionised macroeconomics in the 20th century with his General Theory, by introducing the concepts and practices of the science in which he was originally trained, mathematics. The multitude of admirers he garnered from a very young age and who also contributed with their own research to Keynesianism emerging as one of the main currents/schools of economics in the 20th century were not unrelated to the novelty that Keynes brought to academia: the massive use of highly advanced mathematics, which demonstrated that it was possible to try to explain social phenomena using the tools of the exact sciences.

Keynes won the admiration of young economics students largely because of the fascination aroused by his mentor's new linear approaches.

These formulations of the attempt to explain the economic problem are based, among other things, on two fundamental principles: on the one hand, that equilibrium is by nature the point towards which economic systems and phenomena must converge and, on the other, that these can be explained by linear models.

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4 Just to cite recent examples, take the pressure on the Hawaiian authorities for supposedly not being able to predict the intensity of the fires that caused hundreds of victims in August 2023 or, on another level, the permanent tension, and millions of dollars of "incentive" for scientists to be able to find regularities in the behaviour of the SARS-COV 2 virus and thus quickly find a vaccine for the disease.

5 The model, which was very sophisticated for its time (early 19th century), was important in moving away from the mercantilist doctrine, which was dominant at the time, but also because it made it possible to anticipate what the pattern of productive specialisation of the countries involved in trade should be.

6 A mandatory reference for the Heckscher and Ohlin model and, above all, for the Stolper-Samuelson theorem.

An exemplary example of the first principle is the balance between supply and demand[7], one of the foundations of economic theory and a central element in explaining the essential economic problem: how markets work, how the price of goods and the income of economic agents are determined.

Some argue that equilibrium is more central to the economic and business sciences than to many other sciences, which in fact helps to differentiate economics:

> *"A characteristic feature that distinguishes economics from other scientific fields is that, for us, the equations of equilibrium constitute the center of our discipline. Other sciences, such as physics or even ecology, put comparatively more emphasis on determination of dynamic laws of change...Certainly there are intuitive dynamic principles...the difficulty is in transforming these informal principles into precise dynamic laws"* (Mas-Colell *et al*, 1995: 620).

Dynamic principles can easily be found in the law of supply and demand, namely when it is postulated that the price increases (decreases) if demand is higher (lower) than supply[8]. However, although it is widely believed that it is difficult to transform "informal principles" into "dynamic laws", the truth is that economists' belief in equilibrium models is "almost blind", both in macroeconomics and microeconomics.

The second principle benefited from the intrinsic "beauty" of linear equations (usually easily understood by non-literate people and, above all, difficult to refute) and also from the ease with which linear models can be identified and represented.

Mathematics and its derivatives became a powerful tool for economists, due to their linear behaviour, for strengthening analysis and, not least, for transmitting to economic agents their powerful ability to predict economic phenomena[9].

Also very important was economists' realisation of the growing importance of their work, not only for companies and families, but also for political decision-making. In other words, economists quickly realised the importance of putting budgetary, fiscal, monetary and exchange rate policy instruments at the service of political decision-makers in order to influence the economic cycle.

Ironically, one of the main reasons for the success of linear models among economists (the simplicity of their formulation and their results) was, in the opposite direction, also a factor in the success of these approaches among politicians: for them, the mathematical foundation, based on formulations that are often hermetic and incomprehensible, becomes, due to the inability to refute them, a kind of "sacred cow"... which further contributes to the conviction of generations of economists that they are the owners of an (almost) absolute truth.

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7 Or the IS/LM curves that reflect the relationship between interest rates and income.

8 In the IS/LM curves, "dynamic principles" can be identified, for example, when explaining the consequences for IS when the interest rate increases (shift to the right), that is, an increase in income/production.

9 There is some similarity in phenomena of a very different nature, or rather, a number of these phenomena are explained using very similar models. One example is the central equation of the Black-Scholes model for the price of options, which is very similar (or at least highly correlated) to the heat flow equation in physics.

Keynes himself recognised that systems are rarely in equilibrium, but rather tend to gravitate around the point of equilibrium without reaching it, at least as a steady state[10], and so the attempt to express the behaviour of these systems through linear equations and models is often doomed to failure.

In this context, the oil crisis of the 1970s probably represented the first "jolt" to the self-esteem of economists in terms of their belief in the merits and predictive capacity of their models. Suddenly, a group of countries considered, in the nomenclature of the time, to be underdeveloped, had the ability to band together in the Organisation of Petroleum Exporting Countries and, in a coordinated manner, substantially increase oil prices, causing disruption in the markets of the so-called "developed" countries and, directly or indirectly, generating enormous volatility in these markets and a general increase in inflation.

The currency crises of the 1990s, first in Asia in 1997, then in Russia (1998) and Brazil (1999) were moments that further shook the general belief in the predictive capacity of economic science through its linear models. These moments, however, were just the tip of the iceberg for what was to follow, specifically the financial crisis of 2007/2008, the European sovereign debt crisis between 2009 and 2014 and, finally, the *quantitive easing* and non-conventional monetary policies.

We'll come back to this point later. For now, let's focus on the fundamental structuring aspects of complexity theory.

Determinism as the main characteristic of the dominant paradigm in science, at least between the 18th century and the first half of the 20th century (in what some authors call The Newtonian Paradigm - for example Mateo et al. 2002) began to be questioned at the beginning of the 20th century, in quantum physics, when Nobel Prize winner Heisenberg postulated what became known as the uncertainty principle: "*the more precise the determination of the position of a particle, the less precise the prediction of its momentum from the initial conditions*".

We don't dare identify a single, universal definition for complexity theory or even for the idea of complex systems. However, recognising that systems are adaptive and complex, and can hardly be analysed by linear models alone, would have been the first important step in the development of this area of science.

Rosser (1999) says that "It is not surprising that there is no consensual definition of a term as complex as 'complexity'." He goes on to say that

> *"a dynamical system is complex if it endogenously does not tend asymptotically to a fixed point, a limit cycle, or an explosion. Such systems can exhibit discontinuous behaviour and can be described by sets of nonlinear differential or differential equations, possible with stochastic elements".*

Mason (2001) identifies three fields for complexity, namely "algorithmic complexity", in which complexity is associated with the difficulty of describing the characteristics of the system, "deterministic complexity", in which the relationship between "two or three key

[10] Defined in the physics sense of something that doesn't change over time.

variables can create systems that are quite stable and prone to sudden discontinuities" [11] and, finally, "aggregate complexity", related to the way in which individual elements work in defining the behaviour of complex systems.

Schneider and Somers (2006) state that there are "three interrelated constitutive elements of CT - non-linear dynamics, chaos theory and adaptation and evolution", the last of which challenges the dominant Darwinian version that the evolution of species is dependent on natural selection, suggesting instead that "although selection is important, species play a role in their evolution and adaptation to external changes". The corollary for systems in general, and not just living organisms, is that the capacity of systems to evolve is differentiated and that, in some cases, "small forces can result in disturbances in systems".

Walby (2007) and Olmedo (2010) say, respectively, that "complexity theory is a body of work that addresses fundamental questions about the nature of systems and their changes" and "complexity science seeks to study, describe and explain the behaviour of complex adaptive systems".

Despite this multiplicity of views, it is possible to find some common ideas between the authors cited, namely the belief in the non-linear behaviour of many phenomena, which implies the enormous difficulty in identifying a model that covers all the characteristics under study (the whole is not just the sum of the parts), disequilibrium as the usual state of systems and self-organisation (which suggests the spontaneous emergence of new global patterns from local interactions of subunits) and disorder rather than order as the typical "situation" of systems - identified, for example, in Lartey (2020) or David Ng (2013).

There are many recent economic phenomena that seem to incorporate a large part of the defining characteristics of the complexity paradigm in their behaviour.

The first, and obvious, but perhaps not the most important or impactful, is the fragility of macroeconomic forecasts, materialised in very frequent errors on the most varied dimensions[12]. How is it possible to understand this fragility in the century of supercomputers and artificial intelligence, unless it is simply a corollary of all the characteristics that shape and justify complexity theory?

In this sense, it is not surprising that the ECB (2022) recognised that "recent Eurosystem and ECB staff projections have substantially underestimated the increase in inflation, largely due to exceptional developments such as unprecedented energy price dynamics and supply bottlenecks". The IMF (2023) stated that "ex post, the errors in the underlying inflation forecasts for 2021 are potentially explained by four factors: a stronger-than-expected output recovery; demand-induced pressure on supply chains; a temporary shift in demand from services to goods; and a historically tight labour market. Ex ante the pandemic fiscal stimulus appears to be a significant indicator of subsequent mistakes for advanced economies." The latter explanation is still based on exactly the same linear

[11] Deterministic complexity has more than just a coincidence of points in common with chaos theory.

[12] This fragility of forecasts is not exclusive to macroeconomics, or even to economics. Two examples, among many: on the eve of the bankruptcy of the US bank Lehman Brothers, which triggered the crisis of 2007/2008, one of the main rating agencies reiterated its top-quality rating (AAA) for the bank; in the week of the invasion of Ukraine by Russia, experts were unanimous in admitting that Ukraine would not last more than a month.

models as decades ago and is incapable of incorporating the possibility that price behaviour is simply a non-linear phenomenon, capable of being conditioned, and conditioning, a set of other variables, in a context of general market disorder.

Linked to the issue of inflation is another interesting dimension, that of monetary policy.[13] We have spent most of the 21st century worrying about the absence of economic growth and almost no inflation. Monetary policy in Europe, but also in North America and a large part of Asia, exhausted its traditional mechanisms when interest rates pushed us into the "liquidity trap" and, as a last resort, resorted to unconventional monetary policies, shattering the convictions of most economists, not only because we started to live with negative interest rates but also because of the massive purchase programs by central banks of public debt on the secondary market.

When many were doubting the effectiveness of the "atomic bomb of monetary policy", precisely those unconventional policies that stubbornly failed to show results, here comes the COVID-19 pandemic and the invasion of Ukraine and ... suddenly, inflation too!

But perhaps the most important sign of the complexity of economic phenomena is the behaviour of gross domestic product (GDP) and the resurgence of the secular stagnation thesis, to which we will return in a moment.

The stagnation of world economic growth in the light of complexity theory

As we mentioned earlier, in recent decades and especially in the so-called advanced economies, there has been a reduced GDP`s growth, especially given the long post-World War II trend.

The behaviour of GDP was so unsatisfactory that it led to the revival of an approach that had been almost forgotten since the Great Depression, the Secular Stagnation, and renowned economists such as Lawrence Summers and Paul Krugman, among many others, resurrecting the topic in 2013/2014, convinced that it was a threat, especially in some advanced economies, namely the US and European economies.

Let's look at the empirical evidence, focusing only on the size of the wealth generated (GDP) and the utilisation of productive capacity[14].

Table 1 presents information on the average annual growth rate of gross domestic product observed in a group of countries/economic zones, as well as forecasts of this growth until 2029.

[13] The authorities' main, and in some cases only, monetary policy objective is to stabilize the general price level.

[14] Strictly speaking, secular stagnation can be empirically proven by three strands of analysis/dimensions. The first dimension corresponds to the wealth generated by a country or economic zone, in the case of the euro area, and can be measured by gross domestic product (GDP) or the rate of capacity utilization, in this case as an advanced indicator of what might happen. The second dimension, which is more financial, is related to the balance of full employment and the possible need for interest rates in real terms (nominal rate minus inflation) to be very low (or even negative) to ensure fundamental equality between savings and investment. The third dimension has to do with demographics, or if we like the demographic transition that is affecting the advanced economies.

Table 1. Gross Domestic Product (constant prices) – annual average growth rate, percentage

	1980-1989	1990-1999	2000-2009	2010-2019	2020-2027
World	3,2	3,1	3,8	3,7	2,9
Advanced Economies	3,1	2,8	1,8	2,1	1,6
European Union	2,1	2,1	1,7	1,7	1,4
Eurozone	-	2,0	1,4	1,4	1,1
Emerging Markets	3,3	3,7	6,0	5,0	3,8
USA	3,1	3,2	1,9	2,4	2,1
China	9,8	10,0	10,3	7,7	4,2
Japan	4,3	1,5	0,5	1,2	0,6
Germany	1,9	2,2	0,8	2,0	0,6

Source: International Monetary Fund, *World Economic Outlook*, April 2024, data worked up by the author. Data from 2024 onwards is from IMF forecasts.

Two conclusions seem clear to us in this very long horizon of information: economic growth in the world as a whole remains relatively high, taking into account long-term historical patterns, and in a narrow range between 3% and 4% and, secondly, there is an undeniable and progressive slowdown in the pace of growth in the advanced economies, which are now growing at around 1.5% rather than the 3% they averaged in the last two decades of the 20th century.

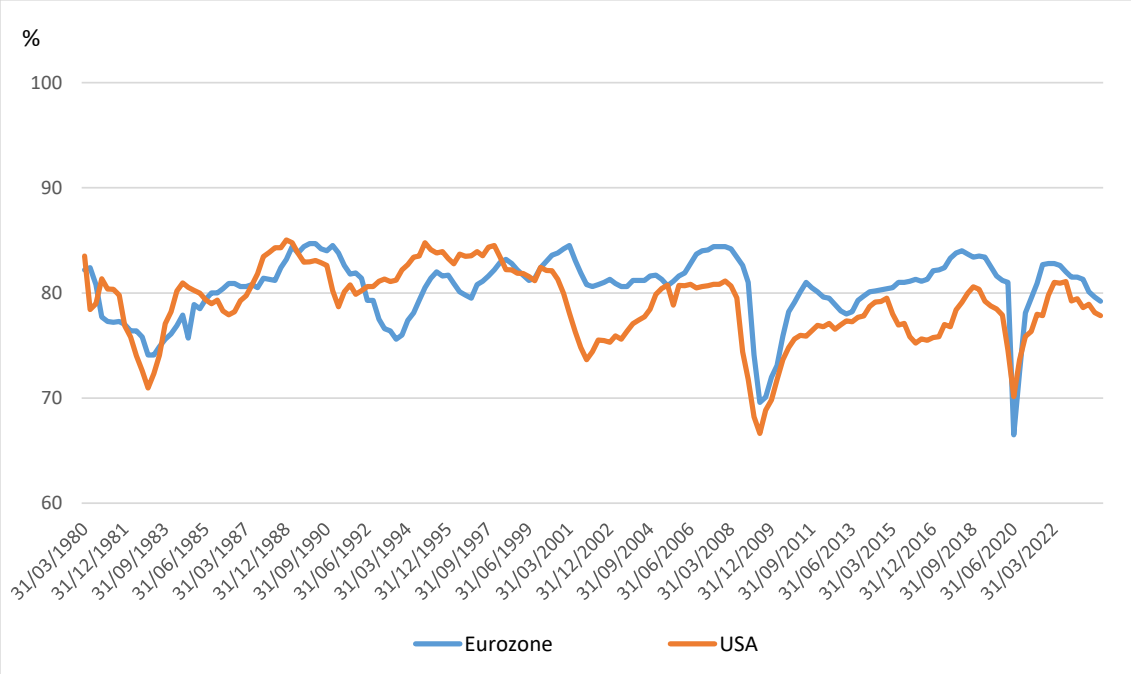
A more detailed analysis will find equally interesting micro-trends, for example the recent behaviour of China's GDP, which now seems to be showing signs of a sharp slowdown in its growth.

However, compared to 1999, when the GDPs of the USA, the Euro Area and China accounted for around 29%, 22% and 3% of the world total respectively, by 2023 these weights were 26%, 15% and 17%. We don't need to say much more about who the winners and losers have been in this new century, just add that in the same years, the advanced economies have gone from 80% to 59% of world GDP and, symmetrically, the emerging markets from 20% to 41%.[15]

Let's now look at the evolution of capacity utilisation in the US and the euro area, as shown in the figure below.

[15] As a curiosity, although in nominal terms the world's largest GDP is still prominently the US, in purchasing power parity since 2016 the world's largest economy has been China and the gap between it and the US has been widening.

Figure 1: Capacity utilisation rate - USA and euro area, percentage



Source: FED St. Louis e ECB

The information shows that capacity utilisation remains at low levels and, since 2021, has even been on a downward trajectory in both economies and is now below 80%, reflecting excess installed capacity. The under-utilisation of productive capacity makes significant increases in investment unlikely in the coming years, so supply is not expected to make a significant contribution to any acceleration in economic growth.

Given this less than encouraging situation for the advanced economies and, especially, for the euro area and the US, what conclusions can be drawn about the scenarios/forecasts for the near future?

One perspective is, in the light of the current mainstream, to resort to the usual answers: the centre of the world is changing, the emerging markets and, in particular, the Asian economies are more competitive and are also taking advantage of the effects of increased globalisation following the fall of the Berlin Wall, the advanced economies, on the other hand, have structural problems and need reforms that are slow to be implemented, demographics are also contributing to the slowdown in economic growth in the "richer" economies, the poor industrialisation process in the West is beginning to show its effects, among many other explanations.

The author has used these and other explanations several times. He won't refute them now.

However, it may be worth considering whether all these imbalances, which are also beginning to be felt in some emerging economies (the significant slowdown in economic growth in China is a good example) are not a sign that we must assume the non-linear

behaviour of multiple phenomena, so it will be difficult to find a valid model capable of covering all the characteristics of this phenomenon, in this case the secular stagnation of economic growth.

On the other hand, the last few decades have also reinforced that the situation of disequilibrium will be the predominant characteristic of systems, rather than equilibrium, as well as self-organisation, which suggests the spontaneous emergence of new global patterns from local interactions of subunits and, finally, disorder, rather than order, as the typical situation of systems.

Accepting these characteristics of the systems does not mean giving up the fight for what seems to us to be the fundamental structuring element of economic policy: its anti-cyclical nature, being able to help ensure that cycles of expansion above potential are not perpetuated, otherwise they will inevitably result in high levels of inflation and being prepared to combat cycles of economic contraction with effective measures.

Nor do they make it necessary to disregard most of the essential fundamentals of economic science.

They only advise us to have the intellectual humility to accept new formulations, to look closely at phenomena without prejudice and, above all, without fear of change.

Conclusions

The 21st century has seen a revival in academia of the hypothesis of secular stagnation in economic growth, which was launched by Alvin Hansen in 1930.

In these lines, we have tried to demonstrate, firstly, the common features of the initial approach and the more contemporary currents, namely those which, like Summers, who was the one who revived the subject in 2013, are based above all on demand-side factors.

These common approaches can be found both in the assumption that there is a risk of this secular stagnation materialising in the more advanced economies, notably the US, and also in the identification of many of its causes, namely demographics and technological cycles.

We have tried to show the empirical evidence of this stagnation in economic growth, limiting ourselves only, due to the nature of this publication, to the issue of gross domestic product, thus leaving aside financial and demographic issues.

In this context, we have opened, or tried to open, the door to new approaches to the phenomenon, also because we are convinced that the traditional responses of economic policy have proved ineffective, in this as in other phenomena in economic systems: the mainstream of economics is in danger of being emptied of what it is supposed to do, which is to help make the best decisions so that the wealth and satisfaction of economic agents can be maximised.

These decisions are based on linear models, the search for balance and the conviction of an order that doesn't seem to characterise current phenomena, as crises follow one another without us being able to predict them in time to avoid or minimise their impact,

economic growth in advanced economies remains anemic and inflation, which was supposed to be far from the medium and long-term horizon, has suddenly emerged with high intensity.

All this calls for a humble and flexible outlook, attentive to new approaches, new ways of looking at economic phenomena.

Complexity theory will certainly not be the answer to all of science's challenges. It can, and should, be seen as a complementary approach to the mainstream and one that can therefore enhance the models used in economics.

By presenting the thoughts of some of the authors of complexity theory in this article, by trying to look at secular stagnation from another perspective, we have perhaps remained faithful to the revolutionary or, if you prefer, liberal origins of economic science, in the sense that it is characterised by openness to changes in working methods, to new paradigms, to the intelligence to evolve by taking on new ways of looking at reality.

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