



Crisis of economics mainstream studies and renewal proposal for active learning experience

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Abstract

Economics is currently facing a crisis, influenced by the Neoclassical Synthesis and its welfare state model, as evidenced both in real-life situations and classroom settings. The study of mainstream economics relies heavily on formal reductionism and instrumentalism, which introduce biases such as the *ceteris paribus* axiom, ergodicity, ancilla statistica, and concepts like F-twist or mathiness. Additionally, mainstream economics has shown a lack of adaptation to social reality changes, including digitalization and globalization 2.0, as well as phenomena like permacrisis and polycrisis. The purpose of this work is to propose a heterodox mainline approach for renewing economics studies and their learning processes in a digital and practical manner. The methodology is based on heterodox theoretical and methodological frameworks, offering a critical review and systematization of biases and failures within current curricula and syllabi. The aim is to implement active learning experiences that incorporate digital literacy with real data, thereby enhancing the study of economics and reconnecting the subject with students and their future professional expertise. The results indicate that, through this proposed learning experience utilizing platforms with real data and heterodox analysis student participation and understanding have improved over three years at Rey Juan Carlos University. Furthermore, this approach provides a foundational framework that other educators in different institutions can adopt to replicate and adapt the experience effectively.

Keywords: Digitalization, Economic crisis, Economics studies, Mainstream-heterodox relations, Syllabus renewal.

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Contribution of this paper to the literature

How can we re-engage Economics students with real-world applications and promote their professional development through digital literacy? This is a critical review of mainstream Economics education under the Neoclassical Synthesis and its challenges with designed models and "mathiness." An alternative approach is presented here, based on heterodox methods and data platforms.

1. Introduction

This work addresses the economic crisis, both in real life and within classrooms, caused by the implementation of the Neoclassical Synthesis (NS), which is characterized by its excessive reductionist and instrumentalist formalism (Friedman, 1953). This problem has been exacerbated by the mainstream proposals of New Keynesians since the 1990s; they believed in controlling economic cycles with the help of transplanted engineering econometrics (Mankiw, 2006). A decade later, coinciding with the financial cycle and the maturity of the main debt instruments, reality challenged this type of economic study and its academic curriculum. New crises, inflation, unemployment, and other economic issues emerged. The Great Recession discredited both the teaching and practice of economics, highlighting the limitations of existing models and theories (Keeler, 2001; Krugman, 2009; Romer, 2015, 2016). The problem presented here began after World War II, when a disconnect emerged between microeconomics and macroeconomics. Macroeconomics was developed by Keynesians as a form of economic policy that relies on numerical data to guide decision-making (Sánchez-Bayón, Sastre, & Sánchez, 2025). This problem was addressed by the school that has led mainstream thinking since the 1970s, the Chicago School and its New Classical Macroeconomics approaches (Lucas, 1973). An attempt was made to solve the issue by incorporating micro-foundations, such as rational and adaptive expectations (Lucas Jr, 1972). In the 1990s, under the Clinton Administration, New Keynesians were supported by appointing advisors and relevant positions, and mainstream leadership shifted from the Chicago boys to the MIT boys and their vision of engineering, thus accentuating the discrepancies between freshwater schools and saltwater schools. Through increasingly sophisticated econometrics, but increasingly out of touch with reality and described as autistic, as student groups denounced at the time, PAE (2000), Cataño (2001) and Alcorn and Solarz (2006) believed that market and economic cycle failures had been resolved through public intervention, giving way to the so-called Great Moderation (Bernanke, 2004). Soon, we returned to the world of great turbulence (Greenspan, 2007). The students had been denouncing a trend that distances economics from reality and from the Social Sciences, given its excessive formalization (by attempting to assimilate it with the Natural Sciences and Engineering, Sanchez-Bayón (2025) and its shades of *mathiness* (Romer, 2015, 2016): with too many presumptions and biases in its modeling (with errors such as *F-twist*, *ceteris paribus*, etc.); its econometric prioritization and excessive *mathiness* (as opposed to the understanding of the underlying reality); its insufficient theoretical foundation (focusing on its applied dimension and as a kind of *ancilla statistica*); its didactic failures (i.e., standardization under the SN or *McDonaldization* of Economics studies, with the same academic curriculum everywhere: the teaching process is focused on solving given problems, without fostering critical and creative learning), (Sanchez-Bayón, 2025). In this sense, NS is disconnected from changing reality and its complex social phenomena (following globalization, digitalization, the resurgence of inflation, poly & permacrisis, etc.).

Such malaise has been reinforced by successive crises since 2007 (i.e., Subprime crisis, 2008; Great Recession, 2008; Financial & public debt crisis, 2009-11), which were neither perceived nor managed adequately (with the implementation of unconventional measures that delayed and exacerbated the problem and its solution). Faced with such a crisis scenario, an alternative to NS is offered here, with a Macroeconomics based on heterodox mainline analysis (Belke & Pollet, 2009; Sanchez-Bayón, 2025), combining the Austrian Economics and New Institutional Economics, due to their convergent and comprehensive proposals for reformulation and reconnection (with each other and of economics with other social sciences). Thus, this paper first offers a refreshing synthesis of macroeconomics, based on a review of capital and cycle theory and adapted to the current context of polycrisis and digitalization. The paper then concludes with a digital literacy exercise, which illustrates the application of the theoretical renewal proposed here.

2. Heterodox Review of Mainstream Economics

Mainstream economics considers money to be neutral, but there is one economic school that views it as non-neutral: Austrian economics and its Austrian Business Cycle Theory (ABCT) (Hayek, 1931; Huerta de Soto, 1998; Mises, 1912, 1949; Rothbard, 1963). ABCT explains how monetary expansions, channeled through the loanable funds market with the intention of lowering interest rates, induce artificial credit growth in a fractional-reserve banking system. Credit expansion without prior savings support leads to significant distortions in the economy's production or capital structure that are not driven by real resource availability or household consumption-saving preferences. These distortions must ultimately be corrected through a deep recession (Garrison, 2001; Holcombe, 2017; Huerta de Soto, 1998).

When the environment is flooded with cheap credit induced by central banks' monetary laxity the lack of savings to support the new production structure and the growing debt to finance immediate consumption exert upward pressure on interest rates. Consequently, the economy transitions from an artificial boom to one of adjustment and crisis, as described by the "Ricardo effect" or "readjustment effect" (Cwik, 2005; Miller, 2009) according to the manifestation of these effects (Sánchez-Bayón et al., 2025).

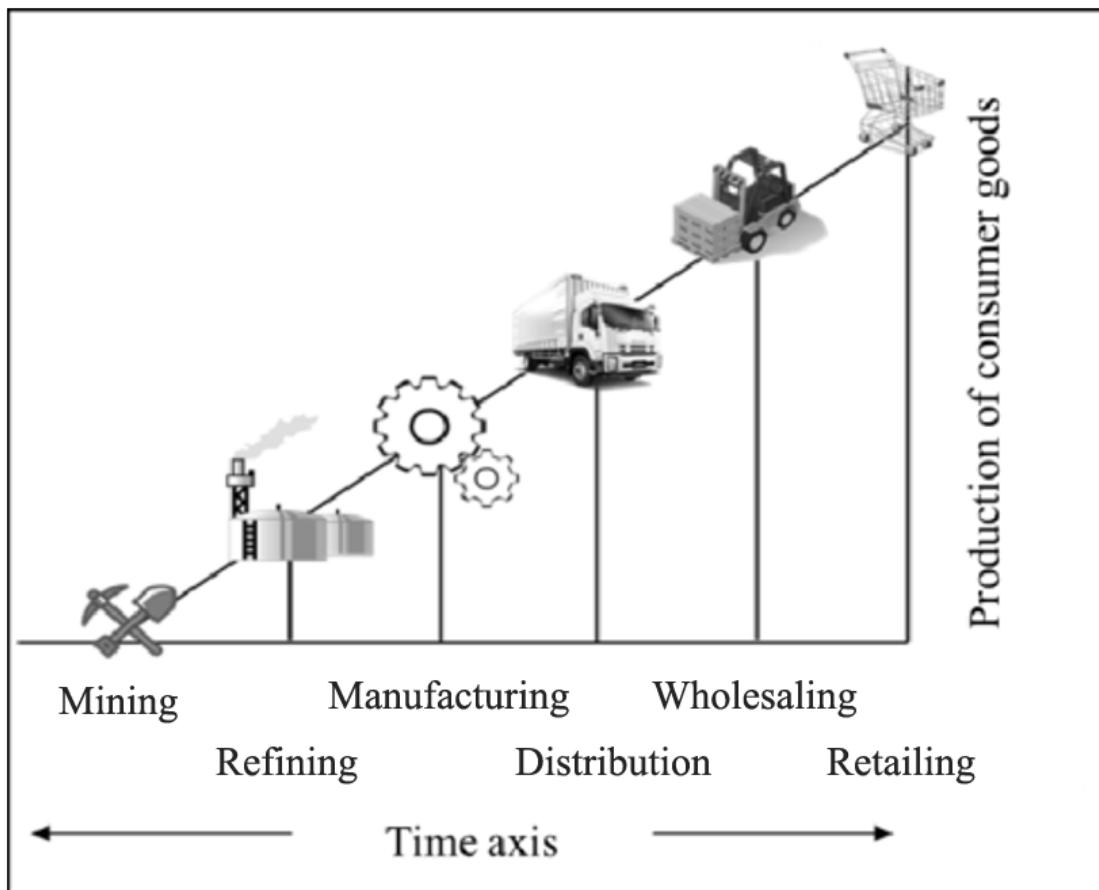


Figure 1. Hayek's production triangle.

Source: Garrison (2001).

The Hayek triangle illustrates the temporal structure of production, ranging from stages furthest from consumption (see Figure 1), which are more time- and capital-intensive and thus more vulnerable to changes in interest rates, to the closest stages, which are less sensitive to such changes because they depend more heavily on labor. Changes in the temporal structure of production are linked to several economic effects, including the "Cantillon effect" which demonstrates that monetary expansion processes are not neutral, as shown by Hayek (1931) the "Ricardo effect" (Sánchez-Bayón et al., 2025), and the fourth proposition of John Stuart Mill. This proposition states that a reduction in consumption in the goods market does not necessarily lead to a decrease in production and labor demand; instead, the resulting increase in savings, driven by higher interest rates, promotes a shift of productive resources from the production of immediate consumer goods to capital goods and future consumer goods (Huerta de Soto, 1998; Sánchez-Bayón et al., 2025). Garrison (2001) demonstrates that, following an increase in savings, the interaction between the derived Keynesian demand effect and time discounting explains the changes in the structure of production. Specifically, two effects are involved: the "derived demand effect," where a decline in demand causes a fall in production consistent with Keynesian effective demand principles, and the "time discounting effect," where a reduction in interest rates resulting from increased savings stimulates investment in the early stages of production, known as the readjustment effect (Sánchez-Bayón et al., 2025). These early stages are more sensitive to interest rate changes because they are more time- and capital-intensive, especially the further they are from consumption.

Therefore, in a context of rising savings, the "Ricardo effect" and the "time discount effect" lead to a lengthening of the Hayek triangle. As a result, a more complex and productive capital structure is achieved. However, not every decline in interest rates results from an increase in voluntary savings; rather, it can be the result of exogenous monetary expansion implemented by the central bank (Garrison, 2001) or, in line with the original arguments of Mises (1912); Hayek (1931) and Holcombe (2017) of credit expansion under a fractional-reserve banking system (Huerta de Soto, 1998).

ABCT explains that business cycle scenarios, characterized by unsustainable growth, arise as a consequence of artificial manipulation by monetary authorities. Specifically, it is the process of bank credit expansion orchestrated by central banks within a fractional reserve system that causes monetary rates to diverge from natural rates. In this context, interest rates cease to effectively coordinate producers and consumers, leading to the accumulation of investment errors in the stages furthest from final consumption. The phases that define an Austrian expansionary-recessionary cycle are: a) The crisis begins with an expansion of bank credit and a corresponding decline in interest rates, in an environment of very loose monetary policy driven by central banks. Through this process, monetary authorities disrupt the balance between savings and investment by setting monetary interest rates below their natural level. b) The decline in interest rates causes the economy's capital structure to shift toward earlier, more time- and capital-intensive stages of the production process, to the detriment of the later, final-consumption-oriented stages. However, unlike in sustainable growth scenarios, the increase in investment is no longer supported by an accumulation of voluntary savings. c) Thus, the artificial expansion of credit distorts the production structure: it causes a mismatch between the intertemporal decision-making plans of producers and consumers, resulting in the accumulation of long-term "malinvestments" that the market will be unable to absorb. Furthermore, the rise in inflation caused by the abundance of cheap money will force monetary authorities to raise official interest rates and limit credit. d) Since the capital structure does not respond to the availability of real resources (savings) or to the consumption-saving preferences of individuals, it will ultimately have to adjust to them through a severe recession. Added to this is the impact of the credit slowdown and rising interest rates on the sustainability of investment projects. This sequence of stages suggests that changes in official intervention rates in general, and the slope of the

yield curve in particular, can play a relevant role as leading indicators of the cycles induced by monetary and credit expansion processes.

3. Empirical Illustration and Digital Alphabetization: FRED Tools and Applications

Thanks to digitization, there is increasing access to open databases that facilitate the modernization and transformation of economics education. This development enables a more enriched connection between theory, data interpretation, and practical application. However, many manuals and teaching methodologies for introductory and intermediate economics courses still emphasize the use of abstract mathematical models and simplified diagrams. This focus often does not sufficiently develop skills such as data management, analysis, and interpretation of economic and financial information (Coyle, 2012; Mendez-Carbajo, 2020).

The lack of a realistic economics teaching environment can influence the labor market. Torbet (2022) establishes the main qualities of a good economist. The first skill is the ability to manage real databases and interpret visual data and graphs to represent cases of the real economy, supporting digital transformation and paradigm shifts (García-Abad, 2019; Jensen, 2008; Sanchez-Bayon, 2025). This initiative aligns with the contributions of authors such as Hyerle (2000) who, in teaching in general, present the visual method as an essential learning modality, exemplified by FRED®: the Federal Reserve Bank of St. Louis platform (Mendez-Carbajo & Podleski, 2020).

FRED® is an online tool that allows students to search, visualize, transform, analyze, and download economic and financial data (Patel & Saunoris, 2016). It offers a wide range of options as a pedagogical tool for learning the subjects of economic theory and applied economics. FRED® minimizes the time teachers and students spend searching for and mining data on the web for their representation and subsequent analysis. Additionally, the materials used to facilitate the planning of pedagogical strategies, such as the flipped classroom (Mazur, 1997), collaborative work (Fortanet, González, Mira, & López, 2013), or interactive demonstrations (Sokoloff & Thornton, 1997), are essential for creating an active learning environment.

3.1. Teaching-Learning Experience for Digital Alphabetization for Real Macroeconomics

Hansen (2009) and Mendez-Carbajo (2020) advocate for the pedagogical use of real-world economic data to promote active learning in economics. Hansen emphasized the importance of developing key skills for college students, including: 1) accessing existing knowledge and organizing it effectively; 2) analyzing and utilizing quantitative data (Hansen, 2009). The first skill involves scrutinizing economic data and sources, understanding their creation, construction, and significance. The second skill focuses on interpreting numerical data presented in tables, identifying patterns and trends to illustrate economic issues, and understanding the relationships between different variables such as unemployment, prices, and GDP. These skills are essential for fostering critical thinking and analytical abilities in students, enabling them to apply theoretical knowledge to real-world economic problems effectively.

Simkins and Maier (2009) emphasize that in mainstream economic courses, students must review the learning process to "think like an economist." This approach requires moving beyond superficial study of the subject content, solving numerical problems, or answering multiple-choice questions. They advocate for examining trends and correlations in economic variables' behavior and applying economic theory insights to real-world problems. To achieve this, students need an expert guide who can help them organize their ideas, structure their knowledge, and build confidence in their skills, especially as they relate to real-world issues and challenges.

Mendez-Carbajo (2020) emphasizes that using real-world economic data for pedagogical purposes promotes active learning techniques endorsed by renowned scholars in economic and financial education. The method presented in this paper has already been employed in several academic courses related to Political Economy, Principles of Economics, and Macroeconomics, across various degree programs such as Economics, Business Administration, Management, and Law. These courses are often complemented by seminars, which not only familiarize students with the management and interpretation of real economic data but also enhance their understanding of the concepts and relationships derived from traditional theoretical models.

Active learning processes based on autonomous resolution (guided by the teacher) of practical cases that analyze economic variables' behavior in sustainable growth scenarios or the four phases that define an economic cycle, help undergraduate students better understand the world around them. Through the management and direct observation of accurate economic data, the teaching-learning method proposed in this work achieves four of the seven educational objectives proposed by Hansen (2009) in the spirit of the taxonomy developed by Bloom (1956).

General goals:
1. Access and organization of existing knowledge: economic research data and its sources. The knowledge and handling of the data of the real economy allow the student to have additional information that is very relevant, which is usually ignored in most economic theory courses.
2. Interpretation of existing knowledge: The development of tasks with accurate data not only facilitates the student to obtain a better understanding of real-world problems. It also helps him to interpret the economic variables and abstract relationships that underlie the usual theoretical models.
3. Interpretation and manipulation of quantitative data: The objective is achieved naturally by working with historical data series and observing their evolution over time. In this case, the detection of regularities in the individual behavior of the variables, or correlations between them, does not require resorting to the use of econometric techniques, so this method is recommended at the initial and intermediate levels of university degrees in Economy and ADE.
4. Application of existing knowledge: Using economic data from the real world allows the student to apply the knowledge acquired in the classroom (generally in the form of theoretical models) to the analysis of the economic problems of each country. The development of this competence (learning objective) is essential for the future exercise of professional activity as an economic analyst.
Specific goals:
1. To teach the student to create, manipulate and interpret graphs of economic data. These data correspond to the economic variables that are discussed in class.
2. To make easier for the student to discover trends and regularities in the cyclical behavior of the variables under study and the possible existence of correlation and causality relationships between them. In addition, the representation of the temporal profile of the economic variables allows us to verify that some act as accurate «advance indicators of the cycle».
3. To discover the students the usefulness of the skills achieved due to the effort and involvement. The knowledge obtained through the development of active and experimental learning activities places students in an advantageous position to formulate a professional diagnosis of the different scenarios and design the appropriate economic policy strategies required by each situation.

Figure 2. Educational experience design: goals and stages.

Source: Bloom (1956) and Hansen (2009).

This project is designed for the renewal of Economics studies across various subjects: Introduction to Economics and European Economic Integration in Economics and Finance degrees; Political Economy in Law and Political Science degrees; Principles of Economics in Communication; and others. Additionally, it can be taught in advanced specialization seminars with credit recognition.

The program was launched three academic years ago (2021-2022) within the Department of Applied Economics at King Juan Carlos University in Spain. It received support from the Research Group for the Study and Monitoring of the Economic Cycle (GESCE) and the Teaching Innovation Group in Technologies of Information and Communication, as well as Learning and Knowledge Technologies aimed at enhancing studies in Economic and Social Sciences (GID TIC-TAC CEE). The initiative was also supported by Fundación Jesús Huerta de Soto Ballester. Participants included Dr. Mendez-Carajo, a senior specialist in economic education at the Federal Reserve Bank of St. Louis, and Dr. Dierks, Professor of Finance and International Capital Markets at Lübeck University of Applied Sciences in Germany.

Each proposed activity responds to an active and experimental learning strategy in which the student must complete four stages (Figure 2). First, students must answer an online test-type questionnaire for control purposes. This stage aims to determine the student's prior knowledge of the research topic. In the second stage, students must build and interpret different graphs (the number of which depends on the activity to be developed) using the FRED® interface. The professor prepares a document that: 1) provides a brief introduction to the problem; 2) describes the variables to be identified and graphed; 3) formulates a series of short-answer questions intended to guide and facilitate the interpretation and understanding of the content of the figures; and 4) prompts the student to write a report that summarizes the main results of their work, as well as proposing possible solutions to economic policy (when the activity requires it).

After the delivery of this activity, the student must retake the online test. This assessment tool determines whether the teacher's active learning process objectively impacts the student's training. Finally, in the fourth stage, the results and practical applications of the activity are discussed in the classroom. It is advisable for the teacher to suggest discussion topics that illustrate, reinforce, and consolidate the knowledge acquired by the student.

3.2. Active Learning Experience: 3.2.1. Phillips Curve Review

Mainstream macroeconomics uses the Phillips curve as a normative tool in economics, explaining the inverse relationship between inflation and unemployment. In a paper published in the journal *Economica*, [Phillips \(1958\)](#) documented the existence of a non-linear and negative correlation between the wage inflation rate and the unemployment rate in the UK (1861-1957). Subsequently, [Samuelson and Solow \(1960\)](#) adapted this model to the United States (1959-1969). The Phillips curve was a fundamental tool in the development of macroeconomic studies during the 1960s. This empirical relationship suggests that a government could reduce unemployment if it is willing to accept higher inflation. Many economists regarded this relationship as a universal law, although it was based on specific countries and historical periods. The works of [Phelps \(1967\)](#) and [Friedman \(1968\)](#) introduced the natural rate of unemployment hypothesis and augmented the Phillips curve with expectations. [Lucas Jr \(1972\)](#) developed a model of general equilibrium with rational expectations and imperfect information, which generated issues such as money illusion and explained the stagflation of the 1970s. These developments led to the rejection of the Phillips curve as a stable relationship, as noted by [De Gregorio \(2006\)](#). Despite these critiques, most modern economic manuals still regard the Phillips curve as a reliable empirical relationship and a key component in short-term macroeconomic modeling. Today, with tools like FRED, it is possible to review real data with students in the classroom, enhancing understanding of these concepts.

The Phillips curve considers the two objectives pursued by the Federal Reserve's dual monetary policy: achieving the maximum sustainable employment level and maintaining price stability at around 2%. However, these objectives are often incompatible, creating an economic policy dilemma. Based on [Samuelson and Solow \(1960\)](#) version of the Phillips curve, prioritizing employment tends to lead to inflationary policies during recessive periods. Conversely, if the goal is to stabilize inflation, the necessary monetary restriction policies are likely to increase the unemployment rate.

Academic research offers various political and economic explanations for the instability in the relationship between inflation and unemployment rates since the early 1970s. Firstly, there has been a shift in the priorities of the Federal Reserve's monetary policy ([Engemann, 2020](#)). In October 2018, James Bullard, the president and CEO of the Federal Reserve Bank of St. Louis, explained in an interview with National Public Radio that the Fed had aimed to stabilize the inflation rate at 2% over the past two decades. Consequently, it is no longer accurate to describe the relationship between inflation and unemployment as inverse, as it once was.

With a primary inflation target of 2% as opposed to the discretionary use of monetary policy as an instrument to stabilize the economic cycle the Federal Reserve (Fed) ceased applying loose monetary policies during periods characterized by high unemployment rates. This approach justifies the observation that inflation rates between 3% and 4% from 1988 to 2005, and between 2% and 3% from 2006 to 2019, were compatible with unemployment rates ranging from 3.9% to 7.6% and 3.6% to 9.9%, respectively. Consequently, the Fed's monetary policy and credibility in the markets contributed to a downward shift and flattening of the Phillips curve, as discussed by [Bullard \(2018\)](#) particularly around inflation rates between 1% and 3% from 2000 to 2019, as illustrated in Figure 3.

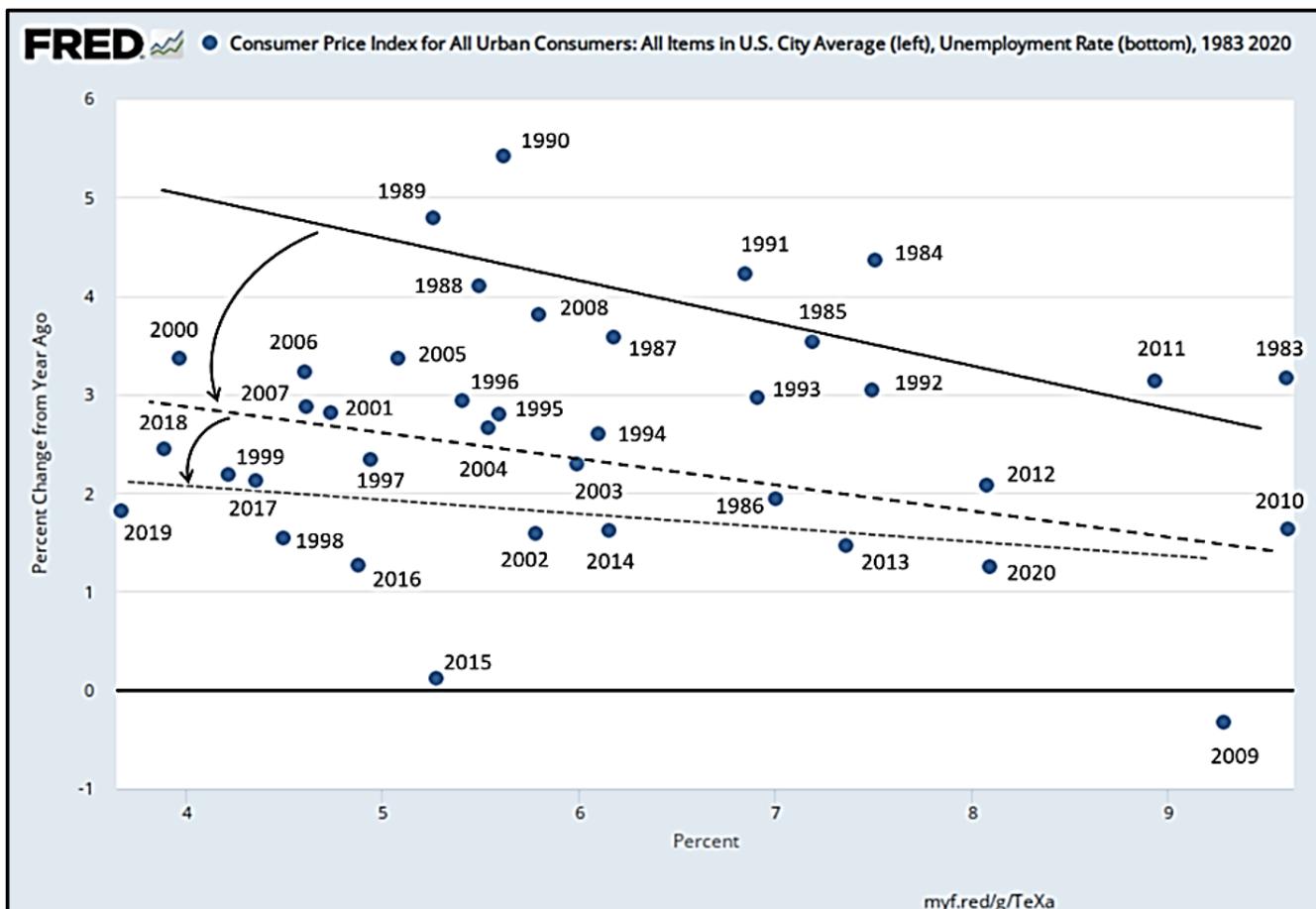


Figure 3. US Phillips curve reviewed: 1983-2020.

Source: (Based on FRED®). U.S. Bureau of Labor Statistics.

The economic explanations derive from expectation formation processes (Friedman, 1968; Lucas Jr, 1972, 1976; Phelps, 1967). Before the stagflationary crisis of 1972-1981, Phelps and Friedman rejected the notion that the Phillips curve represented a negative and stable long-term nonlinear relationship between the inflation rate and unemployment. They warned that this relationship was purely statistical and did not imply causality, making its use to justify inflationary policies aimed at reducing unemployment during recessive phases of the cycle unjustifiable.

On the other hand, they argued that the main problem with Phillips (1958) findings was that the determination of the salary variation rate did not depend on inflation, which was equivalent to accepting that agents acted irrationally and suffered from monetary illusion (Snowdon, Vane, & Wynarczyk, 1994). In other words, they made their labor decisions based on the nominal salary without paying attention to the behavior of prices. Indeed, the Phillips curve did not consider inflation expectations, which could be important in the wage negotiation process. In contrast, Friedman (1968) claimed that changes in inflation expectations could alter the supposedly stable relationship (Phillips, 1958; Samuelson & Solow, 1960) between inflation and unemployment. This insight led him to formulate the expectations-augmented Phillips curve model, which introduced the theory of adaptive expectations into the Phillips curve.

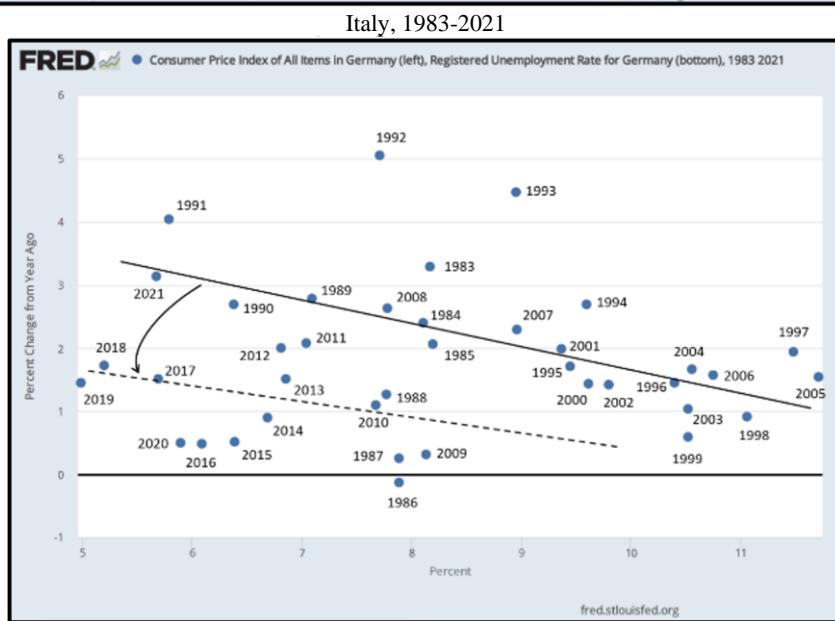
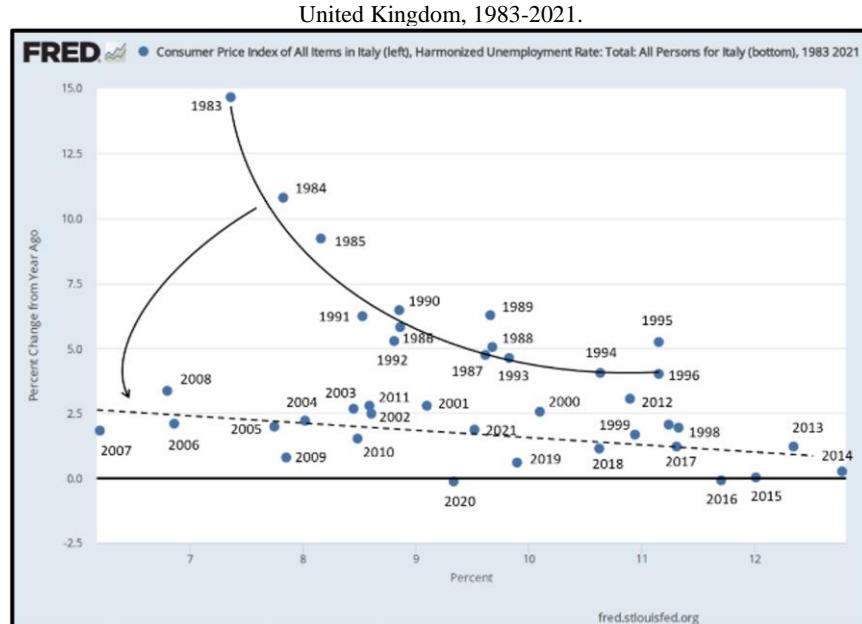
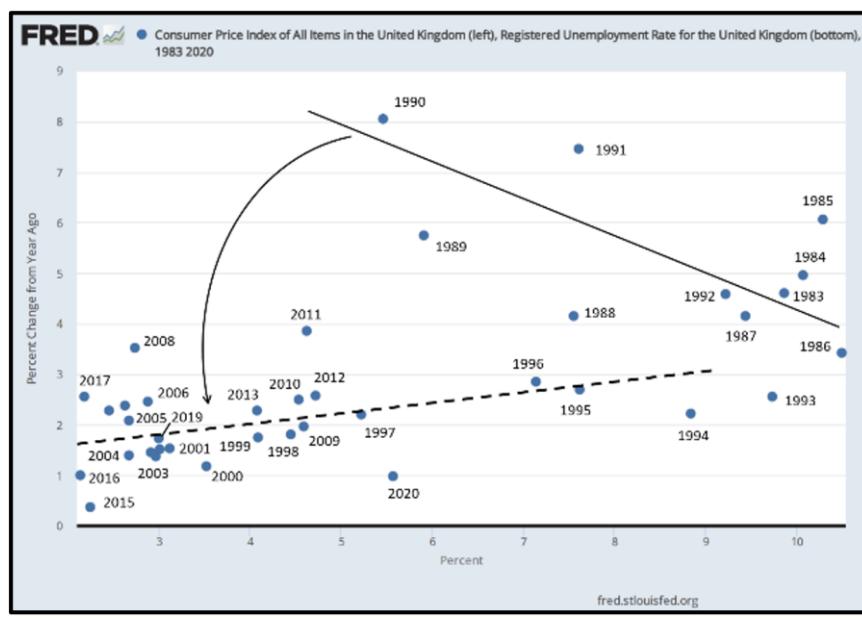
Friedman's model rejects the existence of a long-run trade-off between inflation and unemployment. He establishes that it is impossible to permanently reduce the unemployment rate by managing inflationary policies. In the long term, once agents adjust their expectations to the new inflation rate, the only impact of these measures will be an increase in the general level of prices, while the unemployment rate will return to its natural or equilibrium level. In this case, one could no longer speak of a flattening of the Phillips curve, but rather a verticalization at the height of the natural unemployment rate.

The third line of the explanation pertains to the rational expectations hypothesis and the so-called Lucas critique. Lucas Jr (1972) warns of the impossibility for central banks to permanently reduce the unemployment rate through systematic inflationary policies within a model of optimizing agents with rational expectations and complete information. It affirms that all information related to the use of monetary policy rules aimed at lowering unemployment will be incorporated by agents into their expectations and decision-making processes, ultimately neutralizing the real impact of these measures (Lucas Jr, 1972; Lucas, 1973; Sargent & Wallace, 1975). This result is directly connected to the 'Lucas critique'. Lucas Jr (1976) criticizes the common practice of evaluating the impact of various economic policies by estimating econometric models that assume parameters and constants remain stable when governments change their policies. He argues that parameters cannot stay unchanged because, under rational expectations, individuals modify their behavior in response to any known political change affecting their decision-making. Each economic policy regime has its own parameters, which depend mainly on the reactions provoked by each scenario. Lucas's reasoning has significant implications for the design and implementation of economic policies. Since governments cannot accurately predict how changes in policy will influence the parameters of their models, econometric methods are insufficient for anticipating the repercussions of policy variations (Snowdon et al., 1994). The influence of expectation formation processes in decision-making, along with the Lucas critique, leads us to reject the notion of a stable and lasting Phillips curve relationship. Finally, Lucas's critique echoes earlier ideas developed by economists of the Austrian School. Austrians argue that because empirical phenomena are continuously variable, social facts lack constant relationships, which complicates traditional econometric analysis based on extrapolating past trends into the future.

Does the Phillips curve demonstrate a negative and stable relationship in the long run? Can a flattening of the curve be observed in recent decades? It is proposed to examine the relationship between inflation and unemployment

rates (using annual data) for a selection of countries, namely the UK, Germany, France, Italy, Spain, and Greece from 1983 to 2021 to answer these questions. These countries can be divided into two groups based on the credibility of their central banks and the success of their efforts to combat inflation prior to the launch of the euro in January 1999. Consequently, the countries with the lowest and most stable inflation rates are the UK, Germany, and France. In contrast, Greece, Spain, and Italy experienced higher and more volatile inflation rates.

Following Figure 4 reveals the changes in the Phillips curve for these countries between 1983 and 2021. These graphs allow us to observe, as in the case of the United States, that all the nations studied exhibit a downward displacement and a flattening of their respective Phillips curves. These movements are the result of shifts in monetary policy priorities. In recent decades, establishing a credible inflation target of 2% has contributed to a downward movement of the Phillips curve, which has tended to flatten around the projected inflation rate. Under inflation-targeting monetary policy, inflation rates have become lower, less volatile, and closer to the targeted inflation level (Bullard, 2018). These effects have been a significant factor in the flattening of the Phillips curve in European nations.



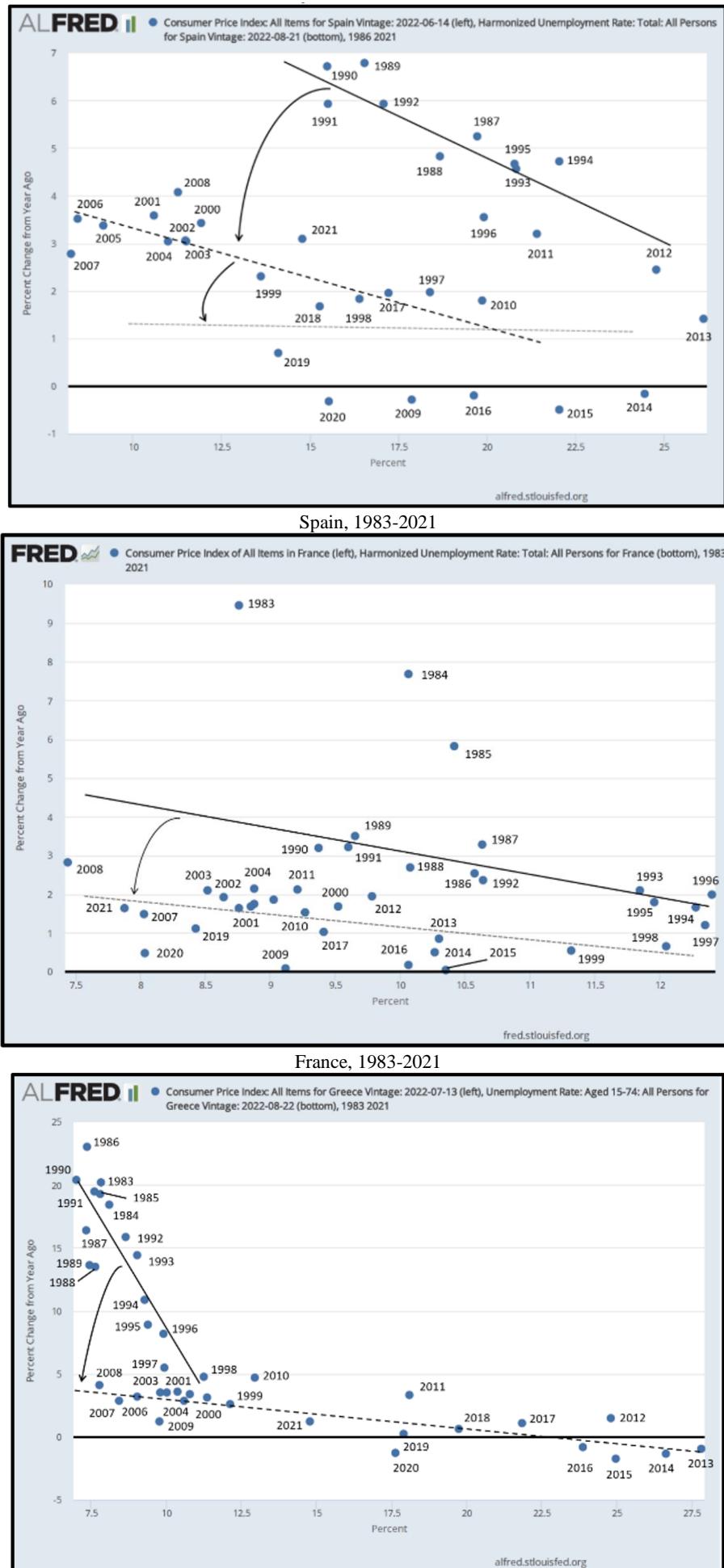


Figure 4. Evolution of the Phillips curve in a comparison between countries.

Source: Based on FRED® and Organization for Economic Co-operation and Development.

The flattening of the Phillips curve has been especially evident in countries that have experienced higher and more unstable inflation rates: Greece, Italy, and Spain. There has also been a significant change in the case of the UK. Finally, it should be noted that the declines in the Phillips curves for Germany and France have been very similar.

According to these results, it can be concluded that the Phillips curve is not indicative of an inverse, permanent, and stable long-term relationship between inflation and unemployment; it demonstrates a normative fallacy. In recent decades, the Phillips curve has flattened due to an anti-inflationary turn in monetary policies (Ihrig, Peneva, & Wolla, 2021; Ihrig & Wolla, 2022). This conclusion has several implications. On one hand, an effective and credible monetary

policy can push the slope of the Phillips curve to zero, effectively nullifying the inverse relationship between the rate of inflation and unemployment that underpins Keynesian models of the business cycle. On the other hand, as a result of this, it is doubtful that policymakers can rely on the Phillips curve to guide their monetary policies effectively (Bullard, 2018). According to heterodox approaches to positive economics, which are closer to reality, it is preferable to consider Okun's rule and its misery index (Okun, 1962, 1970).

4. Conclusion

This work aims to review mainstream macroeconomics from a heterodox perspective, focusing on capital and cycle theories adapted to the current context characterized by polycrisis and permacrisis. It seeks to promote digital literacy and a 'geek'n'talent' methodology (Sánchez-Bayón et al., 2025). To achieve this, the work includes an illustration using the FRED platform. Recognizing the importance of digital literacy skills in understanding macroeconomics, the approach aligns with contributions from renowned scholars in education and economics, such as (Bloom, 1956; Hansen, 2009; Simkins & Maier, 2009). The work advocates for an autonomous, active, and experiential learning strategy that leverages interactive media both statistical and graphical, to facilitate understanding of macroeconomic concepts through the FRED platform provided by the Federal Reserve Bank of St. Louis. These online resources can be valuable for teachers and students in implementing innovative active teaching and learning methods, serving as empirical illustrations for heterodox reviews. Although the FRED® data can be utilized as input for pedagogical econometric analysis techniques, the didactic approach presented in this work emphasizes the use of economic time series strategies based on real-world data. Integrating the FRED® platform as a pedagogical resource in economic theory and applied economics enables the development of competencies essential for current university graduates, such as (Hansen, 2009). Specifically, this includes the ability to access and organize existing knowledge, interpret and manage this knowledge, analyze and manipulate quantitative data, and apply learned concepts effectively in practical contexts.

This work describes a learning methodology focused on macroeconomic issues, where students learn to track information from statistical data and create graphs for empirical illustrations of economic principles. These principles are supported by references such as (Keeler, 2001; Mulligan, 2006; Wolfe, 2020). Students are trained to read, understand, and interpret the content of these graphics, applying the information obtained to analyze real economic problems and design potential economic policy decisions. The proposed system enables the recognition of relevant economic relationships without relying on econometric analysis, making it an ideal teaching and learning method for introductory and intermediate courses in Economics. The tasks involved in this methodology help develop students' intuition and analytical skills, leading to a deeper understanding of the abstract concepts characteristic of macroeconomics. The use of FRED® facilitates the placement of abstract theories and models into real and relevant contexts. Incorporating real-world examples encourages classroom discussions and enhances students' communication skills. Since its adoption between 2021 and 2025 at King Juan Carlos University, this methodology has shown that students become more engaged and committed to their learning process, especially when they see the practical application of their knowledge. Additionally, students improve their skills in reading, analyzing, and interpreting data and economic and financial representations, which contributes to a better understanding of the theoretical models studied. Finally, handling statistical data lays the foundation for developing skills necessary for more advanced econometric analysis in higher-level courses.

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