Aggregate Output Stability: Divergent Perspectives

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Abstract

The main objective of this article was to describe two asymmetric perspectives of the aggregate imbalance approach. Starting from the contrast of the Rational Expectations and Keynesian approaches, we analyze the characterization that the general reserve makes of the causes of inflation and the implications that it has on economic policy decisions. From the rational expectations approach, companies and workers form a kind of coherent group that jointly experiences fluctuations in the prices of their products and faces in unison the problem of signal extraction. On the other hand, the Keynesian approach to effective demand explains price fluctuations in principle as an expression of insufficient demand that generates involuntary unemployment. It was identified that the increase in margins during 2021 sought to pass on to consumers and end users of the goods and services of oligopolistic structures the increase in marginal costs induced by the fall in effective demand; resulting in an effect of price increases on the supply side or cost inflation.

Keywords: supply insufficiency; effective demand; economic disequilibrium; income; unemployment.

JEL Codes: E12, E13

Introduction

The main objective of this article was to describe two asymmetric perspectives of the aggregate imbalance approach. Based on the contrast of the Rational Expectations and Keynesian approaches, we analyze the characterization made by the general reserve of the causes of inflation and the implications that this has on economic policy decisions. The slowdown in economic growth and the increase in inflation from the second half of 2021 have revived a hypothetical parallel between the current economic and financial situation and

the stagflation of the 1970s. In this context, central bankers in advanced economies and the FED have harbored the idea that monetary policy can control the rise in inflation through the policy of controlling interest rates, which determines the nominal growth rate of the demand. Policymakers could contain inflationary expectations with a prudent slowdown in economic growth, without the risk of a deep recession. The above occurs under the arguments that the long-term Phillips Curve is vertical due to the absence of any monetary illusion (Friedman, 1968) and the accelerationist hypothesis of Phelps (1979) which establishes that an economic policy that seeks to maintain unemployment Below the natural level unemployment rate - which is the unemployment that is in correspondence with the real conditions existing in the labor market - lead to accelerated inflation.

However, today the causes of inflation are also different: Although the sudden and sharp rise in inflation occurred from the end of 2021 dashed hopes that it would be short-lived, the evidence does not seem to indicate that this rise was due to further easing of fiscal policy or wage pressure. These increases have been amplified by the fact that companies with a degree of monopoly, which set prices in highly concentrated and centralized markets, have increased their profit margins by taking advantage of two opportunities: On one hand, the pronounced and sudden increase in demand caused by the global recovery in 2021, and on the other hand the increase in speculative operations in 2022 in the commodity markets: oil and cereals, and this without any substantial changes in real demand or supply (Azémar & Giroud, 2023).

In this context, the impact of the restrictive monetary policy on the main causes of inflation will be little. From a Keynesian perspective, economic fluctuations are not explained by nominal rigidities, but by the principle of effective demand (Keynes, 1936). Excess supply in capitalist economies induces restrictions on the demands of economic agents due to the impossibility of making their offers. The factual absence of the instantaneous and complete market clearing, makes the quantities determine the prices, and therefore, the levels of real income with involuntary unemployment, determine the levels of consumption. The effects of economic fluctuations imply changes in real demand, specifically in capital investment. From this perspective, the effective constraint on aggregate output is aggregate demand; and the constraint on required employment is the demand for labor in the business cycle phase scenario in terms of capital accumulation derived from current earnings.

The first section describes the characteristics of United States monetary policy and contextualizes its theoretical references that underlie rational expectations. The second section explores the asymmetries in exchanges in the absence of equilibrium based on the works of Clower (1965) and Leijonhufvud (1968), from a Keynesian approach. In the third section, the consumption function of the Barro and Grossman (1971) model was analyzed in imbalance scenarios with insufficiency of effective demand. The fourth section offers a long-term vision of productivity and real growth in which the existence of structural problems in the allocation can be evidenced. The fifth section analyzes the changes in savings and investment structures in the United States economy. Finally, we conclude that the increase in margins during 2021 sought to pass on to consumers and end users of the goods and services of oligopolistic structures the increase in marginal costs induced by the fall in effective demand; resulting in an effect of price increases on the supply side or cost inflation.

I. Inflation and Economic Growth in Equilibrium State

In January 2012, the Federal Open Market Committee (FOMC) adopted a 2% inflation target. The inflation target they chose was based on the percentage change in the personal consumption expenditure price index (PCEPI) of all items (which is an acceptable measure of the inflationary trend since it excludes food prices and PCEPI energy of all areas). The FOMC noted that deviations from the 2% target rate were likely in response to economic and financial developments, but that, with appropriate monetary policy, inflation would average 2% over the long term. From the perspective of conventional inflation models, the 2% inflation target rate becomes a reasonable indicator of trend inflation and helps anchor long-term inflation expectations. Accordingly, the FOMC attempts to measure the trend of inflation because it is a potentially useful guide to predicting future inflation over a time horizon that is (typically 1 to 3 years).

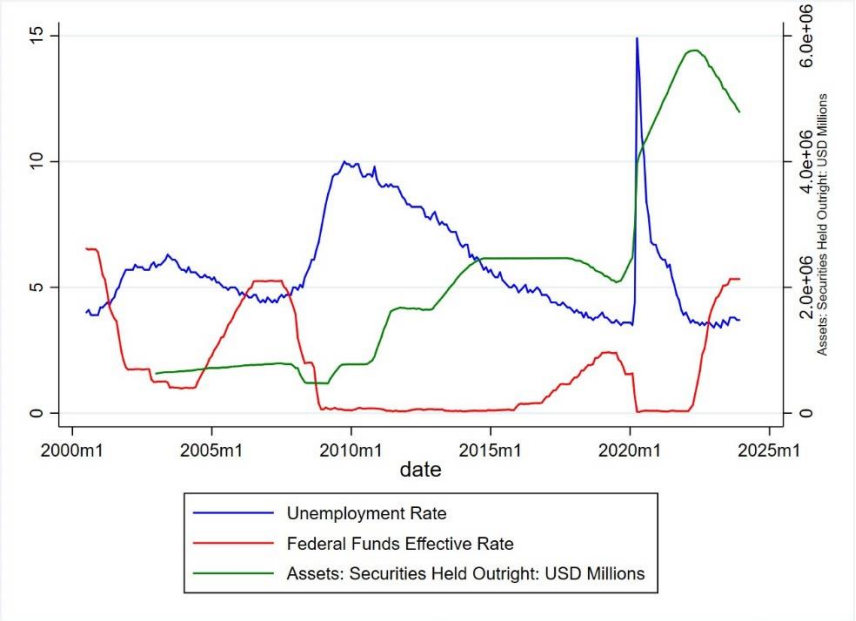

Figure 1. Unemployment rate, Effective Federal Funds rate, and Assets in the COVID-19 Context

Figure 1 shows the unemployment rate (in blue), the stock of mortgage-backed securities held by the Federal Reserve (in green), and the effective federal funds rate (in red). While the first series reflects a target of monetary policy, the other two series reflect monetary policy instruments: the federal funds rate is a "conventional" instrument and large holdings of mortgage-backed securities are a "non-conventional" instrument.

In the context of fluctuations in economic activity, what in the FED literature is called an unconventional monetary policy arises associated with the recessions of 2007-2008, and the recessive crisis of 2020 (COVID 19). In each recession, the unemployment rate rose, and in response, the Federal Reserve lowered the federal funds rate to stimulate economic activity. After the 2007-08 financial crisis, the federal funds rate became practically zero, the

Federal Reserve implemented alternative means to stimulate the economy, hence the name "unconventional monetary policy," which includes large purchases of mortgage-backed securities beginning in late 2008. These monetary policy decisions are often called quantitative easing (QE). By purchasing large amounts of assets, the Federal Reserve lowered its yields, which is a mechanism like lowering interest rates to stimulate economic activity.

Based on the partial recovery of economic activity, the unemployment rate decreased from its 2010 peak, the Federal Reserve began, in 2016, to "normalize" its monetary policy, first by raising the federal funds rate again and then, in 2018, gradually reducing the stock of mortgage-backed securities. In 2020, the COVID-19-induced crisis led the Federal Reserve to implement a non-restrictive monetary policy, once again the federal funds rate was reduced, and the stock of mortgage-backed securities increased.

Since the conception of rational expectations, previous behaviors have been concentrated in the case of excess supply both in the markets of goods and services and in the labor market. However, similar considerations can be applied to hypothetical boom situations in which excess demand for goods and services and labor coexist.

The second scenario considered becomes explicit after 2020 and again in 2022, when the unemployment rate began to decline. The Federal Reserve's response was to implement a restrictive monetary policy that was expressed in increases in the federal funds rate and again reduced its holdings of mortgage-backed securities. In this case, inflation played an important role. As of 2021, inflation from a strictly monetary perspective had changed little, particularly compared to changes in the unemployment rate. With inflation rising in 2021, the Federal Reserve had an additional motivation to increase the federal funds rate: the existence of a general imbalance with excess demand.

The general imbalance in the conception of Friedman and Phelps (1968, 1970). It is explained by the impossibility of maintaining the hypothesis of the natural rate, that is, "the unemployment rate that is in correspondence with the real conditions existing in the labor market. …the purpose of this concept is to separate the monetary from the non-monetary aspects of the employment situation." (Friedman, p. 278). In the Lucas supply curve hypothesis, effective production will deviate from full employment production or capacity production only when current prices differ from those planned or anticipated by economic agents. This divergence between current and expected prices generates a random shock, which explains that only the unanticipated part of the monetary stock will give rise to deviations of the product from its level of production capacity.

In the context of the Friedman, Phelps, Lucas (1977,1978) models, what would consumer behavior be like? These theories assume that consumers will react to a frustrated demand for goods (Barro, Grossman, 1971), in the first instance the income that they cannot spend on consumer goods is transformed into increases in monetary balances, or forced savings, which Robertson defined as «*automatic lacking*» (Keynes, 1973, p.157). Secondly, consumers will increase their leisure by reducing their labor supply. This second option can be relatively important in these models when there is excess demand that tends to be chronic, for example, in times of war, in rationing scenarios, or in substantial price controls. In the "optimal" scenarios of these models, consumption, savings, and leisure are substitutes, therefore, a combination of the two options would be assumed. In general, excess demand will induce decreases in production.

The solution of forced savings is partial even in the logic of the neoclassical model, to the extent that the labor supply reacts inversely to a prolonged frustration in the demand for goods and services. Insofar as, excess demand means an insufficiency of supply, which

means a reduction in demand over labor supply, which implies an increase in involuntary unemployment rather than an increase in forced savings.

In summary, the rational expectations model that explains the inflation targeting policy assumes the maximization of preferences subject to the budget constraint, defining the notional or ideal supply of labor and the notional or ideal demand for goods and services. Considering that the behavior of the representative firm in the context of profit maximization is only restricted by the production function (technical production conditions). Consequently, said representative supply can buy all the labor it demands and sell all the goods it offers at the existing levels of the real wage rate and monetary prices of goods and services. Therefore, the random shock will be corrected through the expansionary or contractionary mechanisms of monetary policy to restore the state of equilibrium.

II. Income and employment imbalance

The absence of equilibrium in the markets for production factors implies that for a growing set of economic agents, the real quantities exchanged are asymmetric with the quantities that these agents supply or demand. In Keynes (1936) the principle of effective demand is the foundation of income and employment imbalances. In the absence of an instantaneous and complete clearing of markets, production, and employment are constrained by aggregate demand. Failures in the adjustment of prices to empty the markets explain the adjustment via quantities, thus real income determines consumption demand, as Keynes described in the calculation of the multiplier (Tobin, 1996).

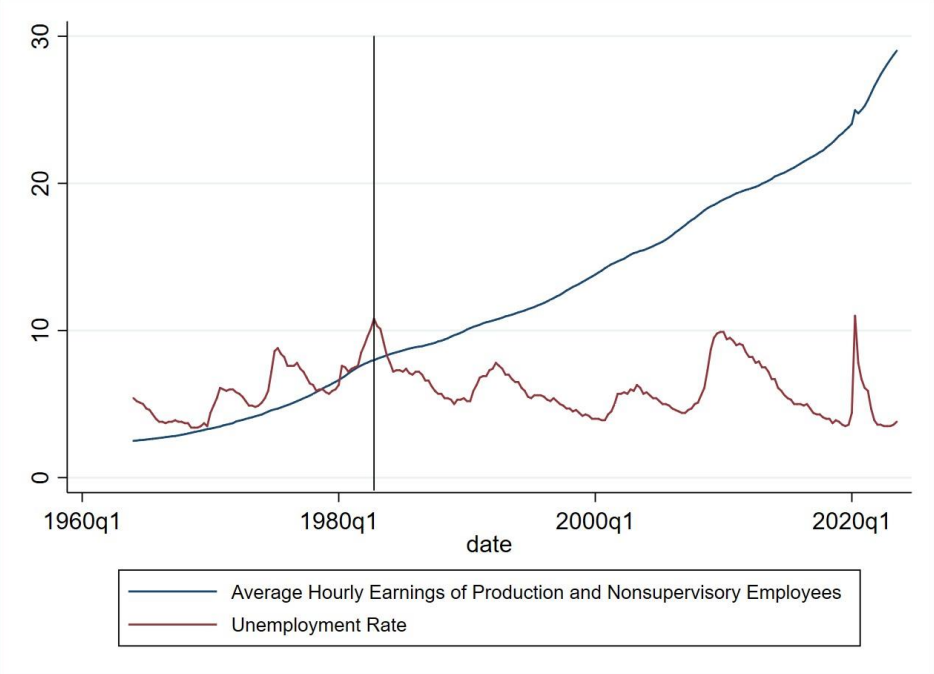

Figure 2. Real wages and unemployment in the United States

Robert Clower (1965) and Axel Leijonhufvud (1968) developed the principle of effective demand in which involuntary unemployment is a result of excess supply in the aggregate

market. The inability of companies to sell the quantities produced induces them to demand a smaller quantity of labor than that derived from their notional or ideal demand curve without imposing any restriction on variations in real wages. The cause of involuntary unemployment is the decrease in aggregate demand and only its reactivation can increase the level of employment; it is not the real salary that is the cause of lower employment, in fact, as soon as real salaries fall in a context excess labor supply will accompany the decline in employment (See Figure 2). The imbalance in the labor market suggests that real wages are procyclical, which differs from the neoclassical argument that employment and real wages should be inversely related.

III. The consumption function: Some indicators

It is necessary to analyze the effects on the consumption function of a scenario characterized by aggregate imbalances in income and employment. A situation in which there is an excess supply of labor, initially explained by an excess supply of goods and services.

In a competitive scenario, the initial assumption of the consumption function would be the one that considers that the consumption units maximize their utility subject to the budget restriction. Specifically, consumers consider that they can carry out the entire supply of labor services and purchase the quantity of goods and services demanded at given levels of real wages and monetary prices of goods and services.

We contrast this competitive scenario with a situation in which there is an excess supply of labor (Clower, 1965). Therefore, consumers face a process of income restriction, which is generated by the inability of producers to do everything they want at the prevailing prices in the markets, which leads to a reduction in effective demand in the markets. of products, with negative multiplier effects on aggregate income. These disturbance-amplifying processes are widely analyzed by the literature on Keynesian quantitative adjustments. The contraction is cumulative: in Keynesian disequilibrium, both producers and domestic economies are constrained by their inability to sell what they have anticipated at current prices. The short-term response of the business cycle is characterized by a tendency to reduce prices and wages (Leijonhufvud, 1968).

The analysis of fluctuations in effective demand involves a formally parallel relationship between the disequilibrium of the goods markets and the labor market. The Keynesian consumption function is an expression of the impact of the excess supply of labor on the demand for goods. In contrast, with conventional macroeconomic analysis which is asymmetric. On the one hand, the impact of an excess supply of labor is implicitly assumed, by including the income variable as an argument of the consumption function. However, by adhering to the assumption of a neoclassical labor demand function that incorporates the real wage, the impact of an excess supply of goods is excluded (Clower, 1965; Leijonhufvud, 1968).

In a scenario of insufficient effective demand, we can express a consumption function in which consumers as consumption units are unable to sell their ideal or notional labor supply x^s and receive the notional labor income that it would imply (wx^s), where w is the real wage rate (in units of goods). Labor income in a context of insufficient effective demand is not a variable subject to choose that is maximized and is, on the contrary, an exogenously determined variable. We assume that the consumption units obtain a level of demand based on the quantity of labor services (x) where $x < x^s$, such that their labor income is a function of $wx + \pi$. Where the variable π, is the amount of real benefits (in units of goods).

Then following (Barro & Grossman, 1971), the consumption unit maximizes:

$$U = \left(x, y^{D'}, \frac{M}{P}, m^{D'}\right);$$

Subject to the fact that $\pi + wx = y^{D'} + m^{D'}$;

The variables $y^{D'}, m^{D'}$; They are respectively the effective demands for goods and effective monetary balances.

$$y^{D'} = y^{D'}\left(\pi + wx, \frac{M}{P}\right);$$

$$m^{D'} = m^{D'}\left(\pi + wx, \frac{M}{P}\right).$$

In the context of insufficient effective demand, labor income as factor income is received by the corresponding consumption units, therefore, the demand for consumption and savings are determined by the level of employment and real monetary balances and is not a variable. explanatory rate of real wages. The constraints are expressed: $x < x^{s}$; which assumes that $y^{D'} < y^{D}$, and $m^{D'} < m^{D}$, in the stabilization policy scenarios the effective demands for goods and monetary balances may approach the ideal or notional conditions of the demand for goods and the demand for monetary balances (Barro & Grossman, 1971).

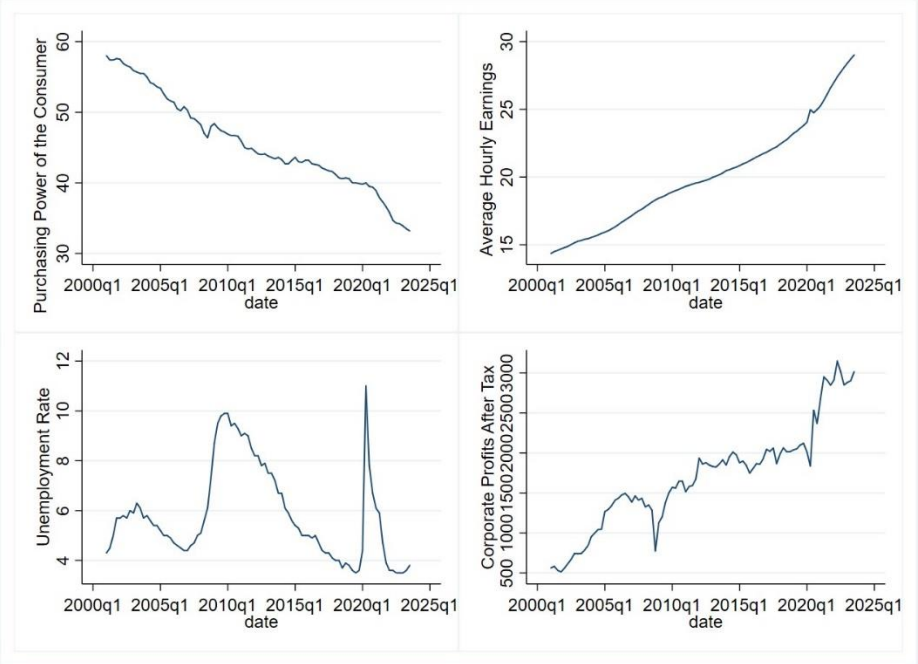

Figure 3. Components of the consumption function in a scenario of insufficient effective demand.

By taking the period between 2000 and 2023, the Keynesian consumption function is intended to be represented as a manifestation of the impact of excess labor supply on the demand for basic products. Figure 3 shows the asymmetry between the excess labor supply

and the purchasing power of consumers. In panel A you can see the decrease in the CPI in contrast to the increase in unemployment (panel C) at the end of 2020, which shows a clear lack of effective demand. On the other hand, in panel D, corporate profits can be seen increasing as increases in the federal funds interest rate begin at the end of 2021; which shows that the imbalance in the labor market and the goods market is strongly influenced by excess demand due to insufficient supply.

IV. Accounting for real growth

An essential element in explaining business cycle fluctuations is the growth rate of the economy's real (inflation-adjusted) Gross Domestic Product (GDP). Thus, the long-term growth rate of real GDP depends largely on the growth rate of labor productivity, or output per hours worked. Long-term labor productivity growth depends on several factors, such as technological improvements and additions to the capital stock. The Bureau of Labor Statistics reports on nonfarm labor productivity, a commonly used measure of output per hour worked.

In the scenario of fluctuations in economic activity, producers can modify working hours without affecting the level of employment, at least in the short term. Producers can implement "labor accumulation" when faced with scenarios of a drop in effective demand. And they can even temporarily increase overtime when there is an expansion in effective demand. Labor statistics could express the implications for labor productivity. Therefore, the production function suggests that as output increases, the average and marginal contribution of labor to output decreases. However, empirical facts show that productivity is procyclical.

This implies that in the expansion phases of the business cycle, labor productivity increases (the proportion of production with employment) become procyclical, that is, the productivity index moves with economic activity. In general, the causal relationship goes from production growth to productivity growth. However, productivity will also respond to exogenous factors, for example, technological change, not strictly to the response of producers to variations in production. In this context, the results may be ambiguous and will depend on the multiplier effect of the sectors that lead the technical change (Romer, 1990).

The labor market literature uses a growth accounting framework to analyze the contributions of productivity and labor inputs to real GDP growth (Kliesen, 2022). Implicit in this accounting are factors such as new ideas, the level of technology, and improvements in the skill levels of workers that are important for economic growth. Reducing labor services can reduce the positive effects of productivity growth, affecting real GDP growth.

Table 1. Accounting for Growth of Real GDP During Business Expansions

	1982-4 to 1990-2	1991-1 to 2001-1	2001-4 to 2007-4	2009-2 to 2020-4	2021-2 to 2022-2
[1] Civilian population	1.18	1.19	1.26	0.90	0.95
[2] + Employment/Population	1.29	0.39	-0.06	-0.33	3.50
[3] = Civlian employment	2.47	1.58	1.19	0.57	4.45
[4] + Labor productivity	1.86	2.19	1.59	1.47	-1.63
[5] = Real GDP	4.33	3.77	2.79	2.04	2.82

Note. Adapted from Kiesen (2022)

The main conclusions from Table 1 are: A) Population growth was quite stable between 1982 and 2020, with an average of 1.1% annually. B) Real GDP growth has steadily slowed since the business expansion of 1982-90, when growth averaged 4.3% annually. Real GDP growth during the 2009-20 expansion was the weakest of the periods analyzed at 2.04% annually. C) The slowdown in real GDP growth from 1982 to 2020 reflects declining growth in labor services (employment-population ratio) and a slowdown in labor productivity growth, the former reflecting a fall in the labor force participation rate, from its peak of 67.3% in early 2000 to its rate of 62.1% in August 2020.

The last column shows the breakdown of GDP growth since the second quarter of 2021. Real GDP has increased at an annual rate of 2.82% over the past four quarters, much faster than the expansionary period of 2009-20. The acceleration of GDP growth over the past year expresses changes in the quantity of labor services: faster growth in labor services has offset the decline in aggregate labor productivity (see Figure 4). There has been a greater contribution from labor services over the past year because a modest rebound in the labor force participation rate has more than offset lower population growth. As a result, civilian employment (labor) has increased at an extraordinarily rapid rate (4.5%).

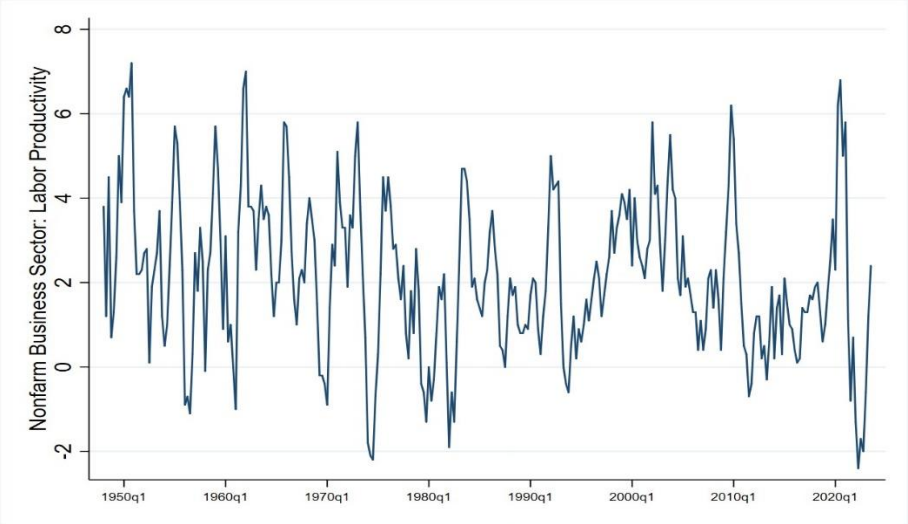

Figure 4. Nonfarm Business Sector: Labor Productivity (Output per Hour) for All Workers

V. Savings, Investment, and internal imbalances

The Federal Reserve has characterized the acceleration of the inflationary process in the United States since the end of 2021, as a result of excess aggregate demand motivated by pandemic payments to households, low-interest rates, the increase in the public deficit, the problems in the supply chain, the war in Ukraine. However, the most significant characteristic of economic policy in fiscal matters is the continuous and growing public deficit (particularly the budget deficit of the federal government), which has been increasing since the 1980s.

What could be the cause of the continued deficit? The answer, in essence, is that in the long term, it is the result of the repeated cuts in personal and corporate taxes, which became manifest from the Reagan administration (the so-called Kemp-Roth Act, of August 1981). More recently, the Tax Cuts and Jobs Act of 2017, which applies to taxes starting in 2018,

the first quarterly data on tax revenues shows a line of continuity with the tax reforms led by the Reagan administration, a reduction of up to 35% for corporate tax revenues, and an increase of up to 16% for production and import tax revenues. Personal income taxes decline slightly, while taxes on foreign entities follow the trend.

The argument of neoclassical literature to justify these tax reforms since the 1980s is to stimulate savings through the mechanism of increasing the returns received with a lower tax burden on capital income (accompanied by the reduction of other taxes on other incomes), which in this logic stimulates investment. However, in the context of internal equilibrium, incentives to invest alone will not increase investment unless savings increase. Which from the Keynesian perspective is only viable through greater employment and higher income. This path is practically closed in the current situation in a scenario whose priority is disinflation.

The second mechanism by which savings are supposed to increase is through the higher performance of the portfolios of domestic economies. However, this alternative from the Keynesian perspective presents empirical fissures to the extent that the savings returns of individual economic agents do not imply a symmetrical relationship with the increase in national savings.

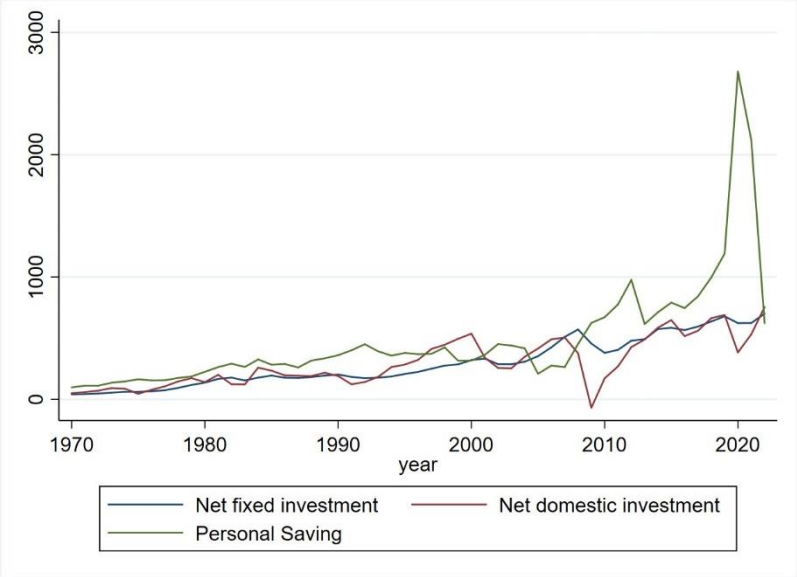

Figure 3. Savings and Investment

In particular, when the origin of the increase in private returns is the result of a higher fiscal deficit, the condition for an increase in national savings is not the increase in the private savings of the beneficiaries, but a contraction in their private consumption rate (Modigliani, 1988). From a microeconomic perspective, the effect, on the consumption rate, of increasing yields will depend on whether the substitution effect of higher yields is greater or, on the contrary, does not exceed the income effect. Consequently, if greater incentives to invest do not have a multiplier effect on savings and production, the effect will be to increase interest rates and the consequent expansion of the speculation motive (Modigliani, 1988).

In general, neoclassical perspectives assume that tax cuts stimulate investment, through a substantial increase in private savings. On the contrary, the results of non-residential net fixed investment for the period 2008 -2022 (in millions of chained 2017 dollars) show a continuous decline, Net domestic investment: private, billions of dollars quarterly, shows negative results since the seventh month of 2010. Net domestic investment, billions of dollars, quarterly presents a very volatile and decreasing behavior since 2020. Finally, the personal savings rate has decreased since the fourth month of 2021 and its behavior is decreasing concerning the end of the fifties of the twentieth century.

VI. Conclusions

In 2021, inflation reached a maximum in 40 years and maintained an expansionary behavior during part of 2022. Andrew Glover, José Mustre-del-Río, and Alice von Ende-Becker (2023) present evidence of the growth of margins (*Markup*) in 2021. In general, margins grew by 3.4% in said year, and inflation, measured by the price index for personal consumption expenses, was 5.8%. This leads us to assume that margins could represent approximately 58.62% of inflation. of 2021. However, the variations in the margins are an expression of important changes in effective demand, in particular falls in the elasticity of demand, in scenarios of income restrictions, which imply in microeconomic terms that the difference between marginal income and the price increases, contrary to the effect that the expansionary economic cycle has by increasing the elasticity of demand and reducing the difference between marginal revenues and the price. The optimum in the logic of Walras' law is that marginal revenue approaches the price when the elasticity of demand tends to infinity; Clower would remind us that Walras' law: “although it usually validates concerning excesses of ideal (notional) market demand, it is generally irrelevant for situations other than those of full employment.” (Leijonhufvud, 73, 1968).

The implications for oligopolistic structures of the decrease in effective demand is a significant increase in the underutilization of installed capacity, which is expressed in increases in fixed costs within total costs, which generates increases in marginal costs. In that sense, the increase in margins during 2021 sought to pass on to consumers and end users of the goods and services of oligopolistic structures the increase in marginal costs induced by the fall in effective demand; generating an effect of price increases on the supply side or cost inflation. The reduction in margins during the first half of 2022, even as inflation remains above the target set by the Federal Reserve, is consistent with the fact that oligopolistic structures increased margins during 2021 in anticipation of future pressures of costs.

In this article we have described two asymmetric perspectives of the aggregate imbalance approach based on macroeconomic data from the United States, emphasizing its long-term behavior. Beyond the differences in Friedman's explanation of the economic cycle, in the perspective of Robert Lucas (theoretical reference of rational expectations) there should be no differences in expectations between workers and companies with respect to unanticipated inflation. From the rational expectations approach, companies and workers form a kind of coherent group. Both types of economic agents jointly experience fluctuations in the prices of their products and face the problem of signal extraction in unison. Given that unanticipated movements in the general price level induce economic fluctuations, what explains the movements in aggregate prices is that there are variable delays between money and prices that can generate economic cycles, since the information on the past monetary stock does not is in many cases sufficient to adequately predict the current price level.

In this scenario of price flexibility, markets are assumed to be sensitive indicators of the current and future situation and simultaneously as efficient processors of information about the economy. In this context, the monetary authority requires political will and firmness to reduce the effects of unpredictable risk. The rational expectations hypothesis differs from perfect forecasting because it assumes the existence of risk in sectoral and aggregate economic systems.

The Keynesian approach to effective demand explains price fluctuations in principle as an expression of insufficient demand that generates involuntary unemployment. The effect of an excess of aggregate supply inducing an excess of labor supply excludes the classic univocal relationship between real wages and the level of employment. Some Keynesian authors (Clower, 1965; Leijonhufvud, 1968) have emphasized that the conditions of excess demand in the orthodox general equilibrium model could be explained based on the assumption that aggregate producers can acquire any quantity they want at current prices. of market that are fixed at the place of exchange at a given time.

When considering purchase and sales scenarios at a microeconomic level at a given price vector, it is assumed that economic agents act in markets with elastic supply and demand functions. That is, your exchange projects are prepared on the basis that the total value of your demands is financed by the total value of your offers and assuming that you will be able to carry out any volume of offers you plan at the announced price. What Clower calls ideal excess demand functions.

The dilemma is that planned transactions can only be carried out if all markets are cleared at the price vector established during the exchange. Following Leijonhufvud (1968, p. 75): "There is no deus ex machina to set things right, nor any Walrasian auctioneer to ensure that prices tell the truth (and nothing but the truth) about how things can and should the resources be allocated". Contrary to the rational expectations model under conditions of involuntary unemployment, excess demand may not be observed anywhere in a capitalist economy (Clower, 1965).

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