Research article

Demand-led growth, the supermultiplier, and fiscal policy: a review of the literature and some applications to the European and Spanish context

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Abstract: The European fiscal rules and the debt sustainability analysis that underpins them are grounded in supply-side growth theory. This perspective not only restricts fiscal policy to a short-term stabilizing role but also leads to an inadequate assessment of public debt trajectories. In this article, we propose adopting a demand-led growth framework—particularly the supermultiplier—as a more suitable analytical basis for evaluating fiscal policy. In these models, economic growth is driven by the dynamics of autonomous demand components, including public spending. As a result, fiscal policy plays a more substantial role than simply smoothing cyclical fluctuations around a supply-determined path. We identified three main avenues through which the supermultiplier approach can inform fiscal policy analysis: assessing the short- and long-term effects of changes in public spending on GDP growth, analyzing public debt sustainability under alternative fiscal scenarios, and evaluating the outcomes of different fiscal strategies in specific historical episodes within the literature on "growth regimes". As an illustration, we applied a supermultiplier model to the Spanish economy to contrast the impact of fiscal policy following the global financial crisis and the COVID-19 pandemic. While austerity measures during the former deepened the recession, expansionary fiscal policy in the latter case supported a faster recovery. Paradoxically, fiscal tightening was accompanied by rising debt-to-GDP ratios, whereas public debt has declined rapidly since 2021. In the current context, this approach could be especially valuable for revisiting the European Commission's Debt Sustainability Analysis methodology.

Abbreviations: Debt Sustainability Analysis (DSA); European Central Bank (ECB); European Monetary Union (EMU); European Union (EU); Gross Domestic Product (GDP); Non-Accelerating Inflation Rate of Unemployment (NAIRU); Spanish National Statistics Institute (INE); Vector Error Correction Model (VECM)

"The ideas of economists and political philosophers, both when they are right and when they are wrong are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually slaves of some defunct economist." (J.M. Keynes)

1. Introduction

What role should fiscal policy play in the economic policy framework of the EMU? How does this relate to debt sustainability? Is the change in fiscal rules approved in 2024 sufficient to ensure that fiscal policy contributes to achieving high levels of employment and economic activity? This article addresses these issues, focusing on the inadequacy of the theoretical foundations that currently inform the design of the monetary union's fiscal framework and proposing an alternative that we consider more appropriate for assessing both the short- and medium-term effects of fiscal policy and the analysis of public finances' sustainability.

Specifically, the European fiscal rules and the debt sustainability analysis that underpins them are grounded in supply-side growth theory. This perspective not only restricts fiscal policy to a short-term stabilizing role but also leads to an inadequate assessment of public debt trajectories. On the contrary, we propose adopting a demand-led growth framework—particularly the supermultiplier—as a more suitable analytical basis for evaluating fiscal policy. We also illustrate this with an example related to the Spanish economy.

As a starting point, we recognize that, from a fiscal policy perspective, the recession triggered by the public health measures adopted in response to the COVID-19 pandemic was addressed with a markedly different approach compared to the financial crisis that began in 2008. In March 2020, the general escape clause of the Stability and Growth Pact was activated, suspending the deficit and debt limits in order to provide governments with the necessary fiscal space to implement policies aimed at protecting employment, firms, and household incomes, as well as facilitating a rapid exit from the recession. These expansionary fiscal plans were further supported by the adoption of an ambitious European funding program—NextGeneration EU—which, for the first time, was financed through the issuance of Eurobonds. This initiative made €750 billion available to national governments in the form of grants or low-interest loans. The ECB, for its part, launched a large-scale asset purchase program

on secondary markets to ensure low interest rates and avoid tensions in sovereign debt markets. Lastly, European authorities launched a process to reform fiscal rules. Although a review of the EU's economic governance framework had already begun in February 2020, the pandemic and the suspension of the existing rules radically altered the fiscal landscape: reinstating the previous framework would force many countries into fiscal adjustments likely to trigger another recession and, more critically, would hinder the implementation of the public investments required to meet challenges such as the green and digital transitions.

The policy response to COVID-19, therefore, seemed to open a window of opportunity for a substantial review of the European fiscal framework. However, despite some improvements, the reform adopted in 2024 introduced more limited changes than initially anticipated, both in scope and ambition (Saraceno, 2024). What could be the reason for this lack of ambition?

The central argument of this article is that more profound changes will not be achieved without a critical reassessment of the theoretical framework underpinning the institutional design of the EU's system of economic governance. The issue is not merely one of "design" in the technical sense but, rather, concerns the conception of the role that fiscal policy can and should play in the functioning of the economy and its implications for short-, medium-, and long-term growth. While improvements in the formulation of the rules are certainly possible, enhancing the role of fiscal policy will not be feasible without challenging two core theoretical premises embedded in the current framework: the principle of balanced budgets—derived from the approach of sound finance rather than functional finance, as noted by Sawyer (2012)—and the belief in a supply-determined equilibrium that acts as a strong attractor for economic activity over the medium term (which, in dynamic terms, corresponds to the supply-led theory of growth). These assumptions not only constrain the countercyclical capacity of fiscal policy but also shape the trajectory of public debt and determine the conditions under which fiscal sustainability is assessed.

From our perspective, demand-led growth theory, and particularly the supermultiplier model, based on Harrod (1939) and "revived" by Serrano (1995), Bortis (1997), and Dejuan (2005), offers a robust alternative framework for rethinking the role of fiscal policy. By highlighting the ability of autonomous demand components, such as public spending, to determine the long-run growth path, the model provides a coherent theoretical basis for understanding fiscal policy as a structural growth driver. This article surveys how this literature can be applied to the analysis of fiscal policy and public debt dynamics and uses a simplified supermultiplier model to briefly review the case of the Spanish fiscal policy over the period 2000–2024, a context marked by two major recessions with markedly different responses. This comparison offers a good opportunity to assess how the nature of fiscal policy shapes macroeconomic dynamics.

The remainder of the paper is organized as follows: Section 2 examines the theoretical assumptions implicit in the current EU fiscal framework and contrasts them with the perspective of demand-led growth; Section 3 outlines the key features of the supermultiplier model, while Section 4 reviews recent literature that has employed this framework in the analysis of fiscal policy and debt dynamics. Section 5 presents the empirical application to the Spanish case. Finally, Section 6 concludes with a discussion of the main findings.

2. The role of fiscal policy and theories of supply- and demand-led growth

As outlined earlier, a core idea underlying the fiscal framework of the EMU is that potential economic growth is primarily driven by supply-side factors. Potential output is identified with the level of GDP that can be achieved by fully utilizing available resources, to the extent compatible with price stability—typically defined by the NAIRU—and the efficiency gains associated with technological progress.

Although changes in aggregate demand may influence economic activity in the short run, they are assumed to have no effect on potential output. Within this framework, in the medium term, aggregate demand does not represent a meaningful constraint on economic growth, nor can more expansionary macroeconomic policies promote it. On the contrary, these policies may be counterproductive if they generate inflationary pressures or undermine fiscal sustainability. From this perspective, macroeconomic stability and the design of taxes and public spending in ways that enhance supply-side performance are regarded as the most effective contributions that monetary and fiscal policy can make to sustain long-term growth.

It is further assumed that this supply-side equilibrium is essentially stable. That is, market mechanisms—through adjustments in prices and wages—tend to neutralize the effects of demand shocks that temporarily push the economy away from its potential output and the NAIRU. Structural reforms that promote more "flexible" markets are therefore viewed as essential for growth, particularly within a monetary union. In this context, the loss of national control over interest and exchange rates makes enhanced price flexibility a necessary adjustment mechanism.

This theoretical framework has significant implications for macroeconomic policy, whose role is substantially constrained—limited primarily to short-term stabilization around supply-determined potential output—and ultimately subordinated to the functioning of market mechanisms. Within this context, monetary policy is granted a leading role: it is considered to operate with shorter time lags, to avoid crowding out private investment, and to be more effectively managed by independent central banks, which are less subject to political economy constraints than elected governments. Fiscal policy has only recently regained some relevance, largely within the context of theories of "secular stagnation" and the lower bound on interest rates (Summers, 2015; Blanchard, 2023).

If this theoretical view of the economy is accepted, the role of fiscal policy is effectively confined to the operation of automatic stabilizers, with structural budget balance, i.e., net of cyclical effects, becoming the primary fiscal objective. Moreover, central bank intervention in sovereign debt markets, or its role as lender of last resort to governments, is typically deemed undesirable. Such interventions are argued to undermine fiscal discipline and compromise the ECB's price stability mandate.

There is little doubt that the institutional framework currently governing economic policy coordination and supervision in the EU reflects the key implications of this theoretical approach. An independent central bank has been established with price stability as its primary mandate and is institutionally shielded from fiscal policy influence—evidenced by the prohibition of direct public deficit financing. National fiscal policies are subject to strict surveillance mechanisms under the Stability and Growth Pact. Furthermore, the EU lacks a sufficiently large federal budget capable of addressing asymmetric cyclical shocks through inter-state transfers or running deficits and issuing debt

to respond to shortfalls in aggregate demand. Structural reforms oriented toward market flexibility, particularly regarding wage and price adjustments, are also promoted.

Nevertheless, the experience of two decades under the fiscal rules does not appear to confirm the core assumptions of this theoretical model. Uxó (2023) summarized six key lessons from this period: (1) the numerical limits on deficit and debt lack theoretical justification and do not serve as a valid reference for the practical implementation of fiscal policy (Pasinetti, 1998); (2) the austerity policies resulting from strict application of the rules in 2010–2013 led to a second recession; (3) this strategy failed even on its own aims, as the debt-to-GDP ratio increased rather than declined; (4) as is typically the case under fiscal consolidation programs, public investment was significantly reduced; (5) by contrast, when governments adopted a different fiscal stance in response to the pandemic, fiscal policy proved to be an effective instrument; and (6) during the recent inflation surge, national fiscal and regulatory measures were more effective than restrictive monetary policy.

In sum, the trajectory of the past two decades has highlighted the relevance and effectiveness of fiscal policy as a tool for economic stabilization and recovery. This evidence suggests the need to reform the existing fiscal rules to allow for a more proactive and counter-cyclical use of public finances. Yet such a shift cannot be fully achieved without rethinking the theoretical foundations that have shaped the current institutional architecture.

Uxó et al. (2024) represented an attempt in this direction, applied to the case of Spain. Their approach begins by challenging the conventional definition of potential output and proposing instead an alternative grounded in the full utilization of available resources. This is operationalized through an updated application of Okun's Law, as proposed by Fontanari et al. (2020, 2022). The results suggest that the Spanish economy does not fluctuate around potential output but rather faces a persistent structural insufficiency of aggregate demand, which prevents it from reducing its chronically high unemployment rate. Building on this diagnosis, the authors show that a fiscal expansion aimed at lowering the unemployment rate would outperform an alternative based on strict adherence to current fiscal rule recommendations. Moreover, such a policy would remain sustainable in terms of the debt-to-GDP ratio, as its positive impact on output would offset the need for a higher structural deficit.

This approach is useful in highlighting the limitations of current fiscal rules and the imposition of adjustment programs based on a questionable definition of potential output and the structural deficit. However, it still treats the upper limit of what the economy can achieve through demand-side policies as exogenously given. A further step is therefore needed: to acknowledge the potential positive effects that fiscal policy itself can have on potential output, as assumed in demand-led growth theory.

From a long-term perspective, a higher rate of economic growth ultimately requires both a sustained expansion in demand and the availability of resources and technology to meet it. The relevant question is which of these two sides—demand or supply—actually drives the growth of the economy.

Conventional growth theory, rooted in Solow (1956), assumes that, beyond short-term fluctuations, demand adjusts to supply. Demand-led growth theory, by contrast, emphasizes the validity of the Keynesian principle of effective demand not only in the short run but also over the long term (Setterfield 2002; Hein 2014): beyond some limits, supply adjusts to demand.

This does not imply that the economy's supply side is ignored. Instead, as stated by Fazzari et al. (2020), increases in demand trigger mechanisms through which capital accumulation, productivity,

and even labor force participation adjust endogenously (within some boundaries defined, for instance, by the minimum achievable unemployment rate[1]).

Obviously, if this approach is adopted, macroeconomic policy implications differ significantly. For instance, the implementation of fiscal austerity policies, or the absence of sufficient stimulus to offset weak private demand, can result in a growth path that falls below its feasible potential. Over time, capital accumulation and even productivity growth adjust to this lower trajectory, giving rise to hysteresis effects (Lavoie, 2018). Consequently, the estimation of potential output based on conventional methodologies (Havik et al., 2014) becomes downward-biased. Even the output gap, as calculated by these methods, eventually converges to zero, reinforcing the mistaken interpretation that weak growth stems from supply-side constraints rather than insufficient demand. This interpretation, in turn, legitimizes a continued restrictive fiscal stance, now aligned with the revised potential, and contributes to entrenching economic stagnation, as Fatás (2019) documented for the case of the EU[2].

Conversely, a mechanism of "reverse hysteresis" (Girardi et al., 2020) enables the growth rate of the economy (and of supply) to adjust to a more vigorous pace of demand expansion.

Therefore, the role of macroeconomic policy—particularly fiscal policy—extends beyond short-term stabilization around a supply-determined trajectory. The medium-term growth path itself can adjust endogenously to the evolution of aggregate demand and, by extension, to fiscal policy decisions. There is no single "natural" growth rate toward which demand must converge, but rather a range of possible trajectories shaped by the dynamics of aggregate demand.

Another example that illustrates well how underlying theoretical assumptions can shape the way fiscal rules and budgetary decisions are designed and applied in practice is the DSA, currently implemented by European authorities.

As is well known, this methodology plays a central role in the evaluation of structural fiscal plans submitted by national governments under the reformed framework adopted in 2024. According to the new rules, these plans must ensure that, after an adjustment period of four or seven years, public debt follows a declining path—or stabilizes at low levels—even under adverse scenarios simulated through the DSA. However, the outcomes of these simulations depend heavily on the assumptions embedded in the model (Heimberger et al., 2024; Paetz and Watzka, 2024).

In particular, the evolution of the debt-to-GDP ratio depends significantly on the projected path of GDP and on how this variable is expected to respond to fiscal consolidation measures aimed at reducing the public deficit. The methodology developed by the European Commission incorporates three key assumptions that shape the simulation results in line with the theoretical approach discussed above. First, from the second year of the projection period onward, GDP growth is assumed to converge

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[1] Fazzari et al. (2020) calibrated the parameters of their model and argued that demand-led growth, with supply adjusting accordingly, is both theoretically sound and empirically plausible. Their results highlight the significant role that alternative demand-side policies can play in shaping actual economic growth paths.

[2] The European Commission has responded to these criticisms by introducing successive technical adjustments to the methodology used for estimating the output gap and the structural budget balance (Buti et al., 2019). In fact, it has implicitly acknowledged the difficulty of using these estimates for the design and evaluation of fiscal policies by introducing the concept of "limited discretion" to address cases in which there is an evident mismatch between the estimated values and other observable indicators (Hristov et al., 2017).

toward its potential rate, estimated using a conventional supply-side model. Second, the framework acknowledges that fiscal adjustment may entail some output losses, but applies a fiscal multiplier of 0.75, which is lower than the values suggested by a substantial body of empirical research (Gechert and Rannenberg, 2018). Finally, these negative effects are assumed to be merely transitory, as the output gap generated by contractionary fiscal policy is expected to close within three years.

These assumptions effectively preclude, ex ante, any impact of fiscal consolidation on the trajectory of potential output and, by extension, on medium-term growth. However, Suresh et al. (2024), in a comparable exercise conducted for the UK Office for Budget Responsibility, estimate that an increase (or reduction) in public investment can produce a positive (or negative) effect on potential GDP amounting to 0.5 percentage points after five years and approximately 2.5 percentage points after fifty years. Similarly, Deleidi et al. (2020), using data for eleven-euro area countries over the period 1970–2016, estimated the public investment multiplier and concluded that "an increase in the government investment positively affects economic growth both in the short and long run, by generating a permanent and positive effect on the level of economic activity", and Pérez-Montiel and Manera (2022) found similar results for Spain. Clearly, the implications for assessing the impact and sustainability of fiscal policy shift significantly if these findings hold. This point was also made by Pierros (2025), who noted that the current European framework for debt sustainability analysis does not adequately capture the positive impact of public investment on private investment and productivity.

From this perspective, a more fruitful analysis of fiscal policy and its sustainability requires moving from the supply-led growth framework to an alternative where demand plays a central role in determining output not only in the short term but also over the medium and long term. In the next section, we show that, within this family of demand-led growth theories, the supermultiplier model appears particularly well-suited to the analysis of fiscal policy.

3.   Demand-led growth theory and the supermultiplier model

While supply-side growth theories typically assign a limited role of short-term stabilization to fiscal policy, this instrument can also act as a structural driver of economic growth if we adopt a demand-led perspective.

As Morlin et al. (2022) pointed out, however, "the demand-led approach is not a monolith but rather an archipelago, with its own internal debates and nuances and a number of alternative constructions to describe the growth process". Within this broader framework, supermultiplier models have recently gained traction as a focal point for debate among post-Keynesian[3] economists, both within the Sraffian and Kaleckian traditions (Lavoie, 2016; Serrano, Suma et al., 2023). Their appeal

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[3] We use this term to refer to the strand of economic theory that builds on the legacy of Keynes's close circle at Cambridge and the work of those who further developed his ideas, such as J. Robinson, M. Kalecki, R. Harrod, N. Kaldor, and P. Sraffa. According to Hein (2017), its main characteristics today include: the analysis of market economies as "monetary production economies"; the principle of effective demand, not only in the short run but also in the long run; the notion of "fundamental uncertainty" about future events; the idea that economic processes are historically grounded and largely path-dependent; and an emphasis on distributive issues and the conflicts they generate as central to the functioning of the economy. See also Lavoie (2014).

stems from their capacity to bring theoretical clarity to complex macroeconomic issues, especially those involving fiscal policy, which are at the heart of this study.

The supermultiplier theory has experienced a notable boost from Serrano (1995), which has led to a substantial body of theoretical and empirical discussion that has helped refine its core concepts and demonstrate its potential applications. It distinguishes between two main components of aggregate demand: autonomous and induced. Autonomous demand refers to expenditure components that are not determined by income generated within the production process and that do not create productive capacity in the private sector. This includes public consumption, exports, private consumption financed through credit or public transfers (rather than wages), and certain types of investment, such as residential or R&D spending. Induced demand, in contrast, is dependent on the level of output and income generated in the production process itself. It includes wage-financed consumption—captured by the traditional Keynesian multiplier—and investment by firms aimed at adjusting productive capacity to meet expected demand, reflecting the accelerator mechanism. In any given period, total output is determined by the product of autonomous demand and the "supermultiplier", which integrates both the multiplier and the accelerator effects.

Following Freitas and Serrano (2015), three core principles can be highlighted within the supermultiplier framework. First, economic growth is driven by autonomous demand, which sets the long-term pace of expansion. Second, productive investment is treated as an induced component of demand, adjusting endogenously to the evolution of output and capacity utilization. Third, income distribution is treated as exogenous to the model—though not irrelevant, as it can influence both the composition and dynamics of demand.

The first point makes the supermultiplier model particularly suitable for the empirical analysis of fiscal policy, since public expenditure is part of autonomous demand. Regarding the tax rate—the other key policy instrument—its changes do not alter the long-run growth path of the economy, which remains determined by the trend of autonomous demand, but they do produce lasting level effects: although the growth rate eventually returns to its previous trajectory, the economy converges to a higher (or lower) output level[4].

Treating productive investment as an induced component of demand through the propensity to invest, on the other hand, contrasts with growth models from the Cambridge tradition, where investment is typically modeled as an exogenous driver of long-run growth (Pariboni, 2016). Moreover, endogenizing investment in this way brings to the fore two longstanding issues in post-Keynesian growth theory: the possible divergence between the actual and the "normal"[5] (or desired) rate of capacity utilization, and the well-known problem of dynamic instability originally highlighted by Harrod.

The induced nature of productive investment is a central mechanism of the supermultiplier model, as it allows the economy to adjust its productive capacity endogenously in response to the growth of autonomous demand. When autonomous demand increases, the economy may temporarily operate above the normal rate of capacity utilization, encouraging firms to invest and expand their installed

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[4] This is also valid for changes in other parameters, as the marginal propensity to consume.

[5] Firms typically maintain a certain level of unused productive capacity under normal conditions in order to accommodate unexpected surges in demand or to prevent potential market expansions from being captured by new competitors (Ciccone, 2011).

capacity in pursuit of profitability and competitive advantage. Conversely, a persistent decline in autonomous demand can reduce capacity utilization and dampen investment dynamics, potentially leading to a contraction in economic activity.

In this dynamic analysis—which extends beyond the immediate period following a change in autonomous demand—it is possible to distinguish two distinct phases. First, there is a stage commonly referred to as the "long-period analysis", in which the propensity to invest remains constant, and the rate of capacity utilization stabilizes at a level that may differ from the normal (or desired) one. Second, the system may reach a "fully adjusted" or steady-state condition, in which the propensity to invest becomes responsive to deviations in capacity utilization—rising when utilization exceeds its normal level and falling when it is below. Over time, this adjustment mechanism leads the rate of utilization to converge toward its normal value. This distinction, which gives rise to the notion of a "flexible accelerator", is crucial for understanding how the supermultiplier framework addresses a central issue in earlier post-Keynesian growth models, particularly those of the neo-Kaleckian tradition.

Neo-Kaleckian models share with the supermultiplier framework the central role of effective demand in the short run and acknowledge income distribution as a structural variable. However, by not fully incorporating a mechanism for the adjustment of productive capacity, they tend to generate persistent divergences between actual and normal rates of capacity utilization. As noted by Cesaratto (2015), this inconsistency has led many neo-Kaleckian models to introduce ad hoc assumptions, such as continuously redefining the normal utilization rate, thereby undermining their internal coherence.

In this context, authors such as Allain (2015) and Lavoie (2016) have drawn on the insights of the supermultiplier framework to reinforce the structural consistency of neo-Kaleckian models. By introducing an autonomous expenditure component, they ensure that the economy converges to a normal rate of capacity utilization in the long run.

Nevertheless, the endogeneity of investment also reintroduces the well-known Harrodian instability problem (Harrod, 1939): when investment adjusts to deviations in capacity utilization, small shocks may become amplified over time, potentially leading to unstable growth trajectories (Lavoie, 2014; Hein, 2014).

To prevent such instability, a sufficient condition for stability is provided by Freitas and Serrano (2015)[6]: the overall propensity to spend—that is, the sum of the marginal propensities to consume and to invest—must remain below one. In essence, this implies that investment should respond to deviations between actual and normal capacity utilization, but only gradually. This condition appears to be quite realistic in empirical terms, and it is also necessary for the value of the supermultiplier to be greater than one.

Furthermore, an important clarification is that the "autonomous" nature of the demand components leading the growth process does not imply that they are "exogenous"—a common critique of these models (Blecker and Setterfield, 2019). As noted by Serrano et al. (2023), "these expenditures have multiple determinants that reflect economic, social, political and institutional forces", which Morlin et al. (2022) associated with the field of political economy. Freitas and Serrano (2015) further emphasized that "research efforts should focus on the determinants and dynamics" of these autonomous components of demand. Consequently, a significant strand of applied research linked to

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[6] See also Allain (2015).

the supermultiplier theory involves identifying the drivers behind the behavior of autonomous demand. This represents a promising avenue for fiscal policy, for example, by investigating the political and institutional causes that lead to the adoption of austerity measures that trap economies in low-growth trajectories over the medium term.

Allain (2022) made a valuable contribution to the debate by proposing the replacement of the term "autonomous" with "semi-autonomous", drawing on earlier ideas developed by Fiebiger (2018, 2020) and Fiebiger and Lavoie (2019). This approach acknowledges that the demand components classified as autonomous do not depend on current income, yet are not fully exogenous either, as they may be influenced by broader economic dynamics, particularly in the long run. Building on this reinterpretation, Allain introduced the possibility that multiple semi-autonomous demand components may coexist. In realistic scenarios, one of these components will tend to dominate and determine the long-run growth rate, while the others adjust endogenously. This interaction gives rise to path dependency, whereby the evolution of the system is not pre-determined but shaped by historically contingent dynamics.

Allain also emphasized the importance of adjustment or synchronization mechanisms among the various semi-autonomous demand components to ensure the model's internal consistency and sustainability. Such convergence does not result from a fixed structural hierarchy but may instead emerge from external constraints, for instance, when public spending is subject to fiscal or debt limits, thus avoiding the imposition of a rigid, unidirectional causality between different forms of expenditure.

The third point outlined earlier is that income distribution is determined outside the formal equations of the model. As a result, it does not play the stabilizing role that it does in models from the Cambridge tradition (Kaldor, 1956; Robinson, 1962). This does not mean, however, that distributive issues fall outside the scope of analyses based on the supermultiplier framework. For instance, the decline in the wage share observed in advanced economies since the 1970s may have weakened the supermultiplier and the growth of aggregate demand. In turn, this could have triggered various adjustment mechanisms that affect autonomous demand, such as the shift toward export-led growth strategies or the prominent role of credit-fueled residential investment prior to the 2008 crisis.

To conclude this overview of supermultiplier theory, it is worth noting that the theoretical debate has been accompanied by empirical research[7], which generally provides supportive evidence on two key aspects of this framework: first, the causal relationship running from autonomous demand to both productive investment and output; and second, the empirical validation of the model's stability condition.

Girardi and Pariboni (2016) made a pioneering contribution; using a VECM applied to the U.S. economy, they identified a cointegration relationship between GDP and autonomous demand, as well as long-run causality running from the latter to output, thereby validating the structural linkage posited by the supermultiplier framework.

Building on this methodology, the contributions by Pérez-Montiel and Manera (2020) and Barbieri et al. (2024) are particularly relevant for the European context. Both of them identified long-run causality running from autonomous demand to output, with no significant evidence of reverse causality. In addition, Pérez-Montiel and Manera (2020) showed that investment responds to changes in autonomous demand, supporting the endogenous adjustment mechanism embedded in the

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[7] See Barbieri et al. (2024) for a comprehensive review.

supermultiplier model. Pérez-Montiel et al. (2023) presented a long-run study of the relationship between autonomous and induced demand for the United States and demonstrated that the long-run equilibrium relationship between autonomous and induced demand is robust to exogenous shocks and changes in the parameters. Finally, Haluska et al. (2021) also reported low values for the parameters governing firms' investment responses to changes in expected output growth in the U.S., consistent with the satisfaction of the model's stability condition.

Fazzari and González (2025), in turn, empirically validated the hypothesis that supply-side variables adjust to the growth of aggregate demand, in line with the dynamic adjustment mechanisms proposed in the model developed by Fazzari et al. (2020) and discussed in the previous section.

4.   Use of the supermultiplier model for fiscal policy analysis

This section outlines three possible ways, among others, to explicitly incorporate fiscal policy analysis into supermultiplier models.

The first and most straightforward approach is to examine the medium-term implications of changes in public spending, as it constitutes one of the components of autonomous demand. For instance, Deleidi and Mazzucato (2019) analyzed the impact of various types of fiscal policy on private investment, productivity, and overall economic performance over the medium term[8].

Their main contribution in this regard lies in the incorporation of different types of monetary, social, and fiscal policies into supermultiplier models and the analysis of their long-term implications. Specifically, they assume that the government alters the growth rate of the autonomous components associated with fiscal policy and examine the resulting effects on both the level and growth rate of GDP. These changes, in turn, influence private sector expectations and investment decisions, as well as productivity dynamics, following the Kaldor-Verdoorn law.

In this regard, they also distinguish between traditional policies aimed at increasing public spending and "mission-oriented" fiscal policies, which are characterized by their capacity to drive structural change by being embedded within industrial strategies focused on fostering technological progress. As they note, "these expenditures, which have historically led to major technological advances, are oriented to transforming the production systems by generating an innovation cascade and therefore an endogenous productivity growth" (p. 14).

Deleidi and Mazzucato (2021), for their part, combined the supermultiplier framework with a neo-Schumpeterian approach to support the central role of the "entrepreneurial state" and provide empirical evidence that innovation-oriented fiscal policies have a greater impact on GDP growth than conventional fiscal expansions.

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[8] Notably, they also emphasized the need to revise the theoretical framework underpinning fiscal policy in order to move beyond conventional ideas that constrain its use. Referring specifically to the austerity policies implemented after the 2008 financial crisis, they pointed out that even international institutions that initially supported them, such as the IMF, have since questioned their outcomes. As they ask, "why has this eureka moment not led to a fundamental shift in policies?" Their answer is clear: "while different economists, and the media, have questioned austerity, its theoretical pillars remain alive and well. If austerity is to be retired, we must debunk these pillars" (p. 2).

Nevertheless, these and other contributions generally do not examine changes in the fiscal deficit and public debt, which may appear inconsistent with the notion that autonomous components of demand are not financed through income generated by the productive process itself (Cesaratto and Di Bucchianico, 2020).

Therefore, a second way of incorporating fiscal policy into supermultiplier models is to explicitly address, in addition to its effects on GDP, the dynamics of public debt and its sustainability. Framed in this way, the analysis of alternative fiscal strategies should not only assess their impact on output levels and growth rates but also their capacity to induce supply-side adjustments (through investment, productivity, and labor force expansion). It must also consider the trajectory of the debt-to-GDP ratio.

Building on this line of research, Freitas and Christianes (2020) developed a particularly useful framework for systematizing the effects of fiscal policy decisions—both public spending and taxation—on output levels, growth rates, public debt, and other macroeconomic variables within a supermultiplier model. Notwithstanding, their analysis focuses on the changes that take place once the economy has reached a fully adjusted state. This leaves room for further investigation of the transitional dynamics that may unfold following a fiscal policy shift, or of the path the economy might follow between two steady states. To some extent, this gap is addressed by Freitas et al. (2021), who simulated the effects of expansionary fiscal policy under different scenarios using a calibrated supermultiplier model.

Morlin (2022) examined debt sustainability by treating both public expenditure and exports as components of autonomous demand. This broader perspective makes it possible to assess the sustainability of external debt alongside public finances. The analysis shows that when the economy grows beyond what is compatible with the balance of payments and external debt limits, the government responds by adjusting its fiscal stance to avoid triggering financial instability. Importantly, the study does not restrict itself to long-run equilibrium scenarios. It also examines the transitional dynamics that can emerge in the short and medium term, offering a richer understanding of how fiscal policy interacts with external constraints over time.

Lastly, it is worth highlighting the contribution of Serrano and Pimentel (2019), who linked the supermultiplier model with Haavelmo's theorem and the concept of the balanced budget multiplier. By accounting for the difference between the spending and tax multipliers, as well as the investment response that is endogenous to the supermultiplier framework, they show that the impact of a "fiscally balanced expansion" can be more than proportional. This result may carry significant implications, as it provides a theoretical basis for identifying combinations of public spending increases and tax hikes capable of achieving a targeted growth rate (such as one consistent with full employment) while maintaining fiscal sustainability. A concrete example in this direction, applied to the Spanish economy, was provided by Uxó et al. (2018), whose framework could be extended using a supermultiplier-based model.

A third approach to integrating fiscal policy into the supermultiplier framework is found in the recent empirical literature focused on classifying different "growth regimes" based on the contribution of each autonomous demand component—including fiscal policy—to the observed growth rate. Woodgate et al. (2023) referred to this strand of research as "supermultiplier demand-led growth accounting", as it uses the theoretical framework "to organize the data and to measure the contribution to growth of several autonomous and induced components of demand". This approach constitutes a

theory-driven decomposition that offers an alternative to both neoclassical growth accounting—based on supply-side factors—and other exercises that merely describe the contribution of aggregate demand components (such as consumption, gross capital formation, or net exports) to observed growth, without distinguishing between autonomous and induced demand elements.

These authors also highlight two key differences between this empirical application of the supermultiplier to fiscal policy analysis and earlier theoretical models. First, this strand of literature relies on real, typically annual, data and does not focus on long-run equilibrium outcomes. Instead, it captures actual disequilibrium conditions, where both the growth rates of autonomous demand components and the parameters of the supermultiplier are subject to change over time. Second, this approach requires a high level of disaggregation for all components of demand. This makes such models particularly well-suited for analyzing specific fiscal policy episodes or even for developing forward-looking projections.

For instance, Labat-Moles and Summa (2024) developed a detailed supermultiplier model of the Spanish economy, showing that exports and public consumption have been the main contributors to autonomous demand growth in recent decades. Additionally, residential investment by households played a significant role during the expansion of the early 2000s. This model could be used to compare the full macroeconomic effects of the different fiscal policy strategies—namely austerity and expansion—implemented in response to the 2009 financial crisis and the COVID-19 pandemic. Looking ahead, it could also serve as an alternative to the European Commission's debt sustainability analysis, which, as previously noted, is grounded in supply-side growth theory and therefore fails to account for the lasting effects of fiscal policy on investment, productivity, and GDP—effects that the supermultiplier framework is explicitly designed to capture.

To conclude our article, the following section presents a brief empirical exercise for the Spanish case, using the methodology of supermultiplier demand-led growth accounting and focusing on the contribution of fiscal policy to GDP growth. By comparing two contrasting fiscal responses to major economic crises, the exercise illustrates the short-term impact of fiscal stance. In doing so, it aims to highlight the analytical value of demand-led models in evaluating the macroeconomic effectiveness and sustainability of fiscal policy.

5. An application: autonomous demand and fiscal policy in Spain (2000–2024)

Once the supermultiplier is established as a particularly suitable analytical framework for examining the role of fiscal policy, we conclude this article with a brief empirical illustration of how it can be applied to the Spanish case over the period 2000–2024. To do so, we follow the methodology proposed by Morlin et al. (2022), while focusing specifically on the impact of changes in public spending and extending the time horizon to include the post-pandemic period. These two elements represent a key innovation compared to the application developed by Labat-Moles and Summa (2024) for the Spanish economy, from which we draw on certain elements to adapt the original approach by Morlin and co-authors. Since our aim is to illustrate the potential of this model to analyze how different fiscal orientations influence growth dynamics, extending the period up to 2024 is particularly useful. It allows us to capture two major recession episodes characterized by markedly divergent fiscal responses. In fact, the choice of Spain as a case study is justified precisely because it offers a clear

contrast between the austerity policies implemented after the 2008 crisis, which ultimately triggered a second recession, and the counter-cyclical fiscal stance adopted in response to the COVID-19 crisis.

As discussed in Section 3, aggregate demand can be divided into two broad categories: autonomous and induced components, including household consumption financed by current income, business investment in productive capacity, and imports. The transmission mechanism through which these induced components amplify the effects of autonomous demand (Z) on output (Y) is captured by three key parameters: the propensity to consume (c), the propensity to invest (h), and the domestic content of demand (μ). The latter reflects the share of total expenditure in the economy that is directed toward domestic production rather than imports. Together, these three parameters determine the value of the supermultiplier (α), which summarizes the overall impact of autonomous demand on the level of output, as expressed in Equation (1):

$$Y = \left(\frac{\mu}{1 - \mu(c + h)} \right) Z = \alpha Z \tag{1}$$

Autonomous components include public expenditure (G)[9], which comprises both public consumption and investment; autonomous household spending (HA), which encompasses residential investment as well as consumption financed through credit; and exports of goods and services (X).

The economy's growth rate results from the combined evolution of the autonomous components and changes in the supermultiplier. Following Morlin et al. (2022), the real GDP growth rate (g) can be decomposed as follows:

$$g_Y = \left[\alpha_1 c_0 g_c + \alpha_1 h_0 g_h + \frac{\alpha_1}{\mu_1} g_\mu \right] + \alpha_1 \frac{G_0}{Y_0} g_G + \alpha_1 \frac{HA_0}{Y_0} g_H + \alpha_1 \frac{X_0}{Y_0} g_X + \alpha_1 \frac{E_0}{Y_0} g_E \tag{2}$$

In this expression, the subscripts 0 and 1 refer to the values of the variables in the base year and the year of analysis, respectively, while g denotes the growth rate of each variable. The first three terms on the right-hand side capture the contribution of changes in the supermultiplier, whereas the remaining terms reflect the contribution of each autonomous demand component, along with changes in inventories (E). In this section, the term of interest is $\alpha_1 \frac{G_0}{Y_0} g_G$, which represents the contribution of fiscal policy, through public expenditure, to economic growth, considering its full influence on the induced components of demand. As shown, this contribution depends on the variation in public spending, its weight in aggregate demand, and the value of the supermultiplier.

For the empirical implementation of the model in the case of the Spanish economy, the various components of demand, both autonomous and induced, have been obtained primarily from national accounts data (see Annex). All variables are expressed in real terms, using 2015 euros.

To estimate the parameters, household-induced consumption was obtained by subtracting credit-financed consumption from total consumption. The propensity to consume (c) was then calculated as the ratio of induced consumption to GDP. Induced investment (I) was derived by subtracting public investment and residential investment by households from total gross fixed capital formation. The propensity to invest (h) was likewise computed as the ratio of induced investment to GDP.

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[9] Although our objective is to analyze the role of fiscal policy, which includes both changes in public expenditure and taxation, we focus here solely on the expenditure side for the sake of simplicity. Nevertheless, changes in taxes (net of transfers) are implicitly captured through variations in the propensity to spend out of total income, and thus in the supermultiplier.

The domestic absorption coefficient (μ) is defined as $1 - \frac{M}{DA}$, where M denotes total imports, and *DA* represents final demand, calculated as the sum of household consumption, investment, public expenditure, and exports.

Figure 1 shows how closely real GDP growth tracks changes in autonomous demand. The two series move in a similar direction throughout the period, which supports the idea that economic output tends to follow the pace set by autonomous demand. During the expansion prior to the 2008 financial crisis, and again in the recovery phases after the euro area recession and the COVID-19 pandemic, increases in Z_g typically led or accompanied rises in GDP. In downturns, such as in 2009, 2012, and 2020, sharp contractions in autonomous demand aligned with steep falls in output, underscoring its importance in driving cyclical fluctuations.
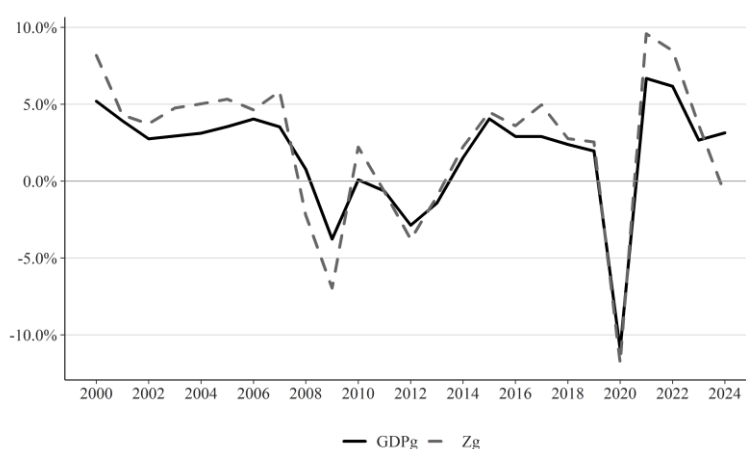
Figure 1. Real GDP growth and autonomous demand in the Spanish economy, 2000–2024.
Source: Own elaboration based on data from Eurostat, Banco de España, and INE.

In parallel, Figure 2 displays the evolution of the supermultiplier, which has followed a downward trend over the past two decades—from levels close to 1.7 in the early 2000s to around 1.5 in the most recent years. Although a detailed examination of its underlying drivers lies beyond the scope of this article, this decline appears to be largely associated with a falling domestic absorption coefficient (μ), indicative of a greater degree of external openness and a rising import propensity.

Figure 3 presents the contributions to economic growth from the different components of autonomous demand, along with changes in the super multiplier, across the subperiods into which we divide our analysis. The first phase (2000–2007) corresponds to a period of strong expansion, supported by a favorable global environment and robust domestic demand. The second period (2008–2013) captures the combined effects of the global financial crisis and the subsequent sovereign debt crisis in the euro area. The third phase (2014–2019) reflects a moderate recovery. The sharp recession caused by the COVID-19 pandemic in 2020 is considered separately due to its exceptional nature, both in terms of the magnitude of the contraction and the rapid rebound that followed. Finally, the years 2021–2024 represent the post-pandemic recovery, characterized by a more active role of fiscal policy and renewed global demand.
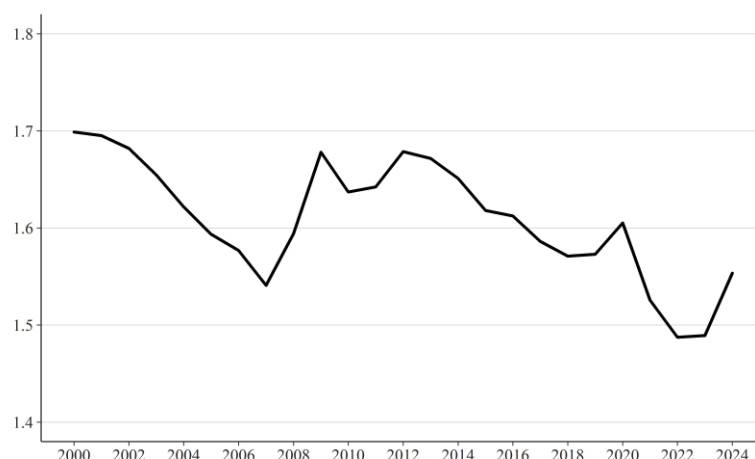
Figure 2. Evolution of the supermultiplier in Spain, 2000–2024. Source: Own elaboration based on data from Eurostat, Banco de España, and INE.
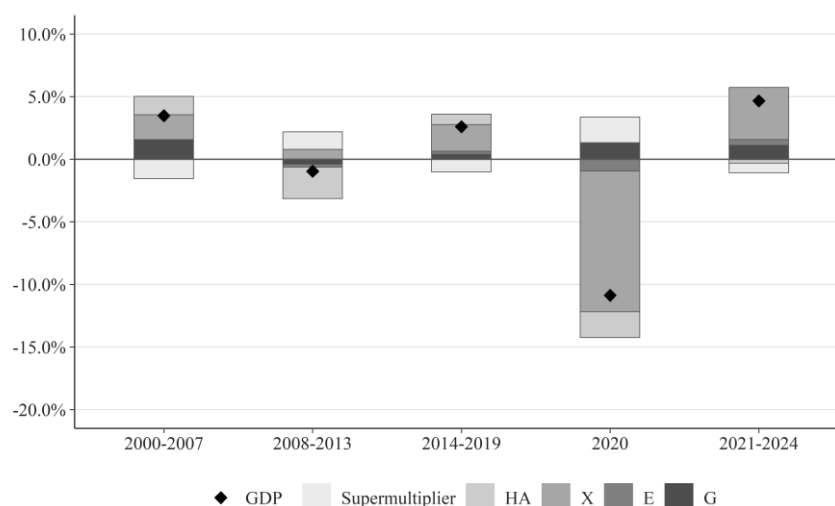

Figure 3. Contributions to growth from the different autonomous components and the supermultiplier, 2000–2024. Source: Own elaboration based on data from Eurostat, Banco de España, and INE.

During the first period (2000–2007), all components of autonomous demand contributed positively to economic growth. Household autonomous spending played a particularly prominent role, supported by credit expansion—especially linked to residential investment—while public expenditure also made a positive, albeit comparatively smaller[10] contribution. At first glance, the chart suggests

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[10] Woodgate et al. (2023) used this period of the Spanish economy to highlight the importance of properly identifying the component that "leads" autonomous demand in each case, beyond its quantitative contribution. In their view, residential investment was the "active" component of autonomous demand during these years, while fiscal policy played a "passive"

that the external sector was one of the main drivers of growth. However, although exports expanded strongly in the context of Spain's entry into the monetary union, this dynamic was offset by an even faster increase in imports, leading to growing current account imbalances. This is captured in the negative contribution of the supermultiplier during this period, reflecting the decline in the domestic absorption coefficient associated with increased external openness.

During the first recessionary period (2008–2013), the main force behind the initial contraction in economic growth was the decline in autonomous household consumption. This occurred in a context marked by the collapse of the housing bubble, tighter credit conditions, and a rise in defaults. Adding to this, public consumption made a negative contribution due to the onset of austerity policies implemented from 2010 onward. In contrast, exports were the only component of autonomous demand that maintained a positive contribution, showing some resilience despite the deterioration of the global environment. The supermultiplier also contributed positively to growth during this period, although with distinct internal dynamics: induced investment declined in line with the fall in GDP, whereas induced consumption decreased to a lesser extent, raising its relative share. Furthermore, the sharp contraction in imports contributed to an increase in the domestic absorption coefficient, partially cushioning the recession's contractionary effects.

The third period (2014–2019) was marked by a gradual economic recovery, during which all components of autonomous demand contributed positively to growth, albeit moderately. Exports led this rebound, followed by a modest recovery in autonomous household consumption. Public expenditure also made a positive contribution, though with limited intensity.

In 2020, the Spanish economy experienced an exceptional contraction due to pandemic-related lockdown measures, mobility restrictions, and the country's high exposure to international trade and tourism. Exports plummeted, and household consumption also fell sharply. On this occasion, fiscal policy took a clearly expansionary turn to cushion the crisis's impact and remained so during the following period (2021–2024), when dynamic export performance further supported strong economic growth. However, the supermultiplier once again had a contractionary effect, reflecting the rebound in imports and the limited dynamism of business investment.

Focusing on fiscal policy, Figures 4 and 5 illustrate the contrasting contribution of public expenditure to growth during the financial crisis and the pandemic crisis.

Figure 4 specifically shows the cumulative change in real public expenditure from the onset of each of the two crises, relative to their respective reference periods—namely, the fourth quarters of 2008 and 2019. During the first crisis, the initially expansionary fiscal response in 2009, aimed at countering the collapse in private demand, gave way from 2010 onward to a strong contractionary stance. Initially justified by concerns over deteriorating public finances, this shift led to a continuous decline in public spending, which by the end of 2013 (20 quarters after the start of the Great Recession) was nearly 10% below its level at the end of 2008. In contrast, fiscal policy followed a markedly different trajectory after 2020. Public expenditure not only increased in that year (by 4.2%), but this expansionary stance was sustained thereafter, largely supported by the inflow of Next Generation EU

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or derivative role: the housing bubble generated fiscal revenues that subsequently enabled an increase in public spending (without a rise in the deficit), thereby reinforcing the expansion.

funds. By the end of 2024 (also 20 quarters after the beginning of the crisis), public spending was 19% higher than in the fourth quarter of 2019.
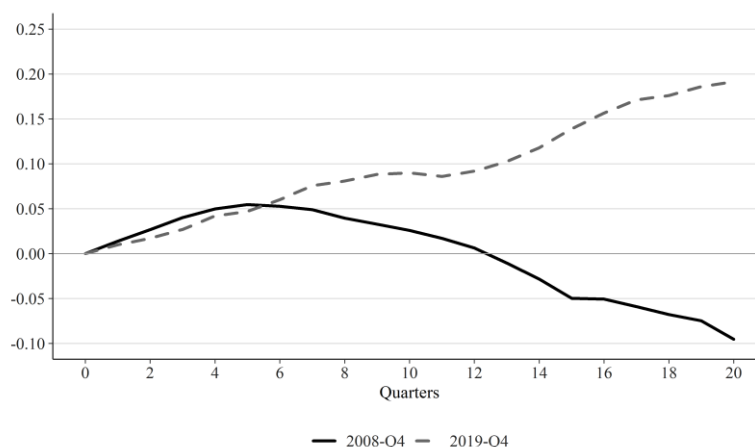

Figure 4. Evolution of public expenditure in Spain since the onset of the financial crisis and the pandemic. Source: Own elaboration based on data from Eurostat.

Figure 5, in turn, translates the evolution of public spending into contributions to growth using the supermultiplier model. Although fiscal policy was expansionary in both 2009 and 2020, the contrast between the two episodes is striking. Between 2010 and 2013, fiscal policy became procyclical and contributed to a second recession, whereas after 2021, public spending made a consistently positive contribution to GDP growth. This countercyclical orientation significantly softened the initial economic downturn and helped accelerate the subsequent recovery. This divergence supports the core hypothesis of the supermultiplier model: fiscal policy not only affects short-term output levels but can also hasten or delay economic recovery, as clearly illustrated by the differing responses to the two crises.
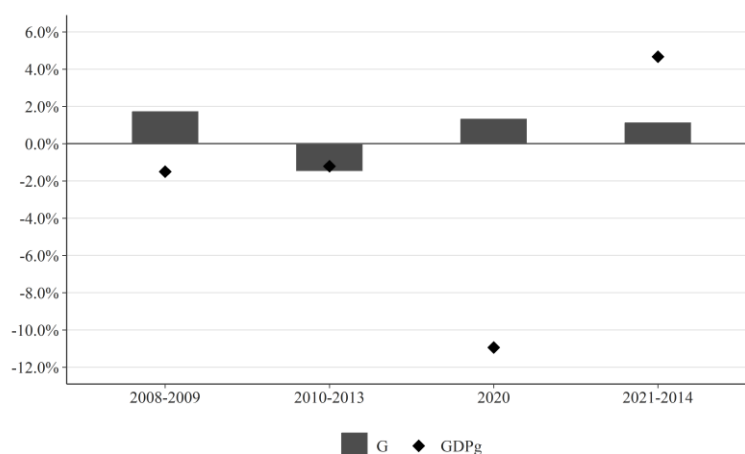

Figure 5. Public sector contribution to Spain's GDP growth rate, 2000–2024. Source: Own elaboration based on data from Eurostat and INE.

To conclude, it is also worth highlighting the impact that the combination of fiscal policy stance and GDP growth dynamics has had on the evolution of public debt during the two crises. After all, the main justification for fiscal austerity was the need to safeguard debt sustainability. However, as shown in Figures 6 and 7, the Spanish case clearly illustrates what is known as the "paradox of debt" (Leao, 2013; Freitas and Christianes, 2020). The contractionary effects of fiscal policy can lead to smaller-than-expected reductions in the deficit and even increases in the debt-to-GDP ratio, as observed in Figure 6 between 2010 and 2013—a pattern confirmed by the literature on this period (Di Bucchianico, 2019; Engler and Klein, 2017; Rosnick and Weibstrot, 2015). In contrast, the initial increase in deficit and debt recorded in 2020 was quickly absorbed thereafter—not due to consolidation policies, but thanks to the rapid recovery in GDP growth, to which the expansion in public spending contributed significantly.
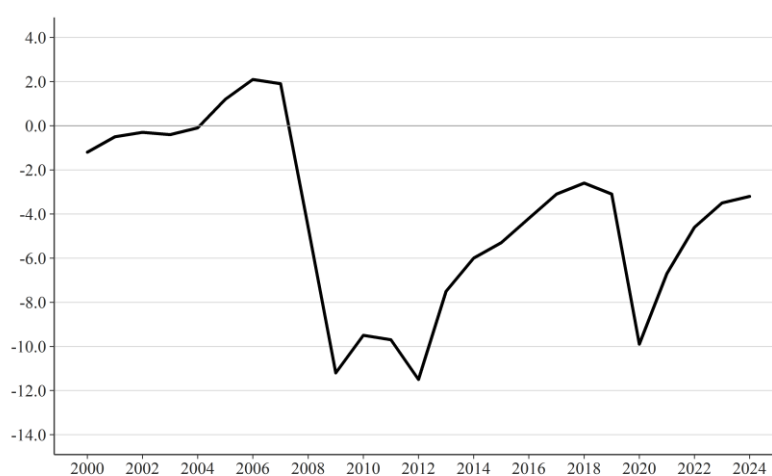

Figure 6. Evolution of the public deficit in Spain (% of GDP), 2000–2024. Source: Own elaboration based on data from Eurostat.
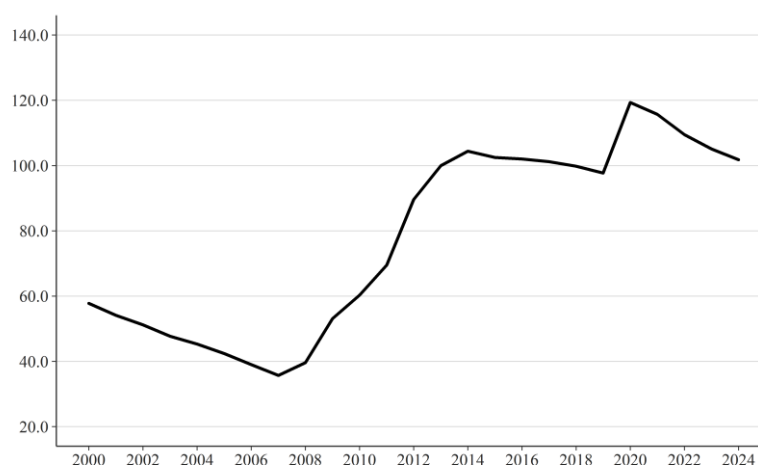

Figure 7. Evolution of public debt in Spain (% of GDP), 2000–2024. Source: Own elaboration based on data from Eurostat.

This is an important lesson for the coming years. The high levels of public debt accumulated in Spain over the past 15 years are not the result of "irresponsible" fiscal policies but rather the consequence of two major crises and, in any case, of the implementation of procyclical policies that deepened the first recession. Therefore, the reinstatement of fiscal rules should not lead to a repetition of the same mistake. The models used by the European Commission for debt sustainability analysis should incorporate the medium-term effects of changes in public spending on potential growth, as illustrated by the supermultiplier model and as demonstrated throughout this article.

6. Conclusions

The role assigned to fiscal policy in shaping economic growth and in assessing the sustainability of public finances depends critically on the theoretical framework employed. European fiscal rules, along with the DSA on which they rely, are grounded in supply-side growth theory, where medium-term GDP follows a path determined independently of aggregate demand. This framework not only limits fiscal policy to a short-term stabilizing function but also leads to a flawed assessment of public debt dynamics following fiscal interventions, as it overlooks their impact on the GDP growth rate. As a result, it embeds a contractionary bias into fiscal policy.

This article has proposed demand-led growth theory, particularly through the lens of supermultiplier models, as a more appropriate analytical framework for evaluating fiscal policy. Within this approach, long-term growth is shaped by the dynamics of autonomous demand components, notably including public expenditure. Consequently, fiscal policy is not confined to a purely short-term stabilization role but can actively influence the growth path itself. This does not imply a disregard for supply-side considerations; rather, the model incorporates adjustment mechanisms through which productive capacity responds to demand-driven growth, albeit within certain structural and institutional constraints.

After briefly reviewing the supermultiplier model, we have identified three main areas in which it can be applied to fiscal policy analysis. These include assessing the short- and long-term impact of changes in public spending on GDP growth; evaluating public debt sustainability under alternative fiscal scenarios; and analyzing the effects of different fiscal strategies in specific historical episodes, within the broader literature on "growth regimes". As an illustration, we used a supermultiplier model to compare the contrasting effects of fiscal policy in Spain following the global financial crisis and the COVID-19 pandemic. In the first case, fiscal consolidation deepened the recession, whereas in the second, expansionary fiscal policy supported a much faster recovery. Paradoxically, the restrictive stance adopted after 2010 coincided with a rising debt-to-GDP ratio, while the post-pandemic stimulus has been accompanied by a significant decline in this ratio since 2021.

In this regard, one particularly relevant application in the current context is the potential review of the methodology used by the European Commission to assess debt sustainability and, consequently, to evaluate the fiscal plans proposed by member states. The existing framework incorporates a number of assumptions, such as the size of fiscal multipliers or the speed at which the economy returns to its potential output following consolidation, that have been subject to critique in academic literature. However, the demand-led growth framework proposed here offers a more fundamental critique: it highlights that the medium-term trajectory of GDP, along with private investment and productivity, is

itself shaped by fiscal consolidation or, alternatively, by expansionary fiscal measures. Adopting this alternative theoretical perspective fundamentally alters the expected path of public debt and, as a result, the perceived role and effectiveness of fiscal policy.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Author contributions

Elena Segarra: Conceptualization, Methodology, Software, Data Curation, Formal Analysis, Investigation, Writing-Original Draft, Writing-Review & Editing, Visualization. Jorge Uxó: Conceptualization, Methodology, Data Curation, Validation, Formal Analysis, Investigation, Writing-Original Draft, Writing-Review & Editing Visualization.

Conflict of interest

All authors declare no conflicts of interest in this paper.

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