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Drivers and Channels of a Long-Lasting Marriage

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Abstract

Fiscal policy can play a critical role in mitigating business cycle volatility. However, between 1990 and 2022, Argentina was one of the most procyclical countries globally. This paper scrutinizes Argentina's fiscal policy conduct throughout the business cycle, pinpointing procyclical budget components and estimating the cyclically adjusted primary balance, incorporating transient and structural factors. The study reveals a significant decline in Argentina's cyclically adjusted primary balance. It shows that Argentina's fiscal procyclicality stems primarily from expenditure policies, particularly those related to pensions and public

wages, setting Argentina apart from its peers. Furthermore, through an in-depth analysis of Argentina's procyclical pensions and public wage policies, the paper finds that both have been influenced by the "price" effect, while the "quantity" effect has been particularly relevant for the public wage bill in recent decades. Additionally, Argentina's unconventional taxes exacerbate procyclicality. These contributions hold significant implications for policy makers, offering valuable guidance in designing more effective policy levers to achieve fiscal policy objectives, including macroeconomic stabilization.

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Procyclical Fiscal Policy in Argentina: Drivers and Channels of a Long-Lasting Marriage¹

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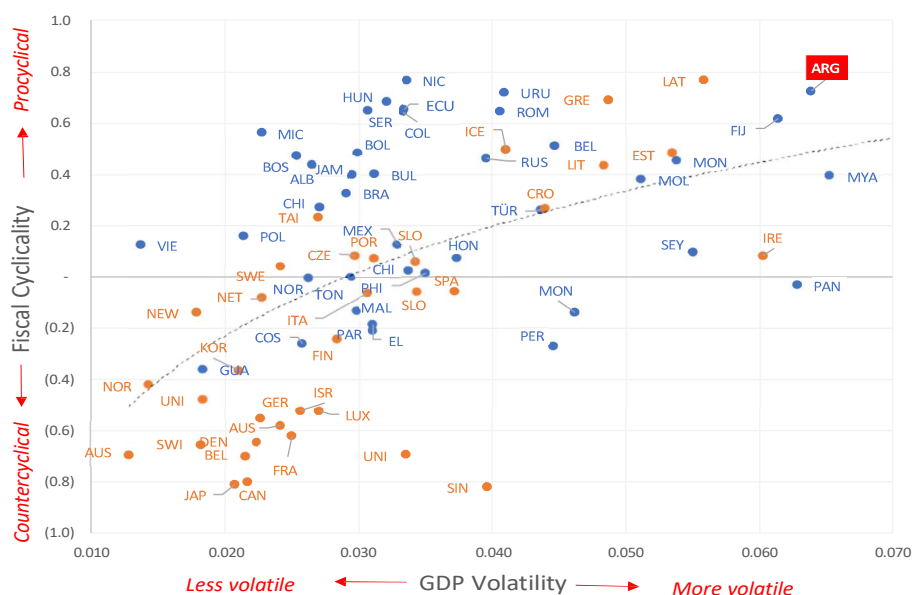
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1. Introduction

This paper investigates the influence of fiscal policy on macroeconomic stability and welfare in Argentina, with a specific focus on the widely accepted economic consensus that underscores the role of fiscal policy in stabilization. Both Keynesian and neoclassical economic paradigms concur on the potential detrimental consequences of procyclical fiscal policies—those that expand during economic upswings and/or contract during downturns—especially for low-income households. Such policies tend to exacerbate macroeconomic volatility, accentuate the business cycle, suppress investment, curtail potential economic growth, and ultimately affect the well-being of the poor (Braun, 2003; Fatas and Mihov, 2003, 2012; Aghion and Marinescu, 2007; Woo, 2009; Izquierdo, et al. 2018;). Consequently, an in-depth analysis of the cyclical attributes of fiscal policies emerges as a pivotal element in shaping effective policy responses to fluctuations in the macroeconomic landscape.

It is well documented that developing countries tend to display higher volatility and lean towards more procyclical fiscal policies when compared to advanced economies. Drawing upon prior research (Frankel, Vegh, and Vuletin, 2011; Vegh et al., 2021), **Figure 1** illustrates the correlation between the cyclical component of public spending and real GDP, as well as the standard deviation of GDP growth across 74 countries during the period from 2000 to 2022. The findings are compelling: Most advanced economies (represented by orange dots) tend to pursue acyclical or countercyclical fiscal policies and greater economic stability. In contrast, developing economies (represented by blue dots) generally tend to exhibit the opposite trend, albeit with varying degrees of heterogeneity.³

Figure 1. GDP Volatility and Fiscal Cyclicity 2000-2022



Source: OECD Stats, IMF, World Bank.

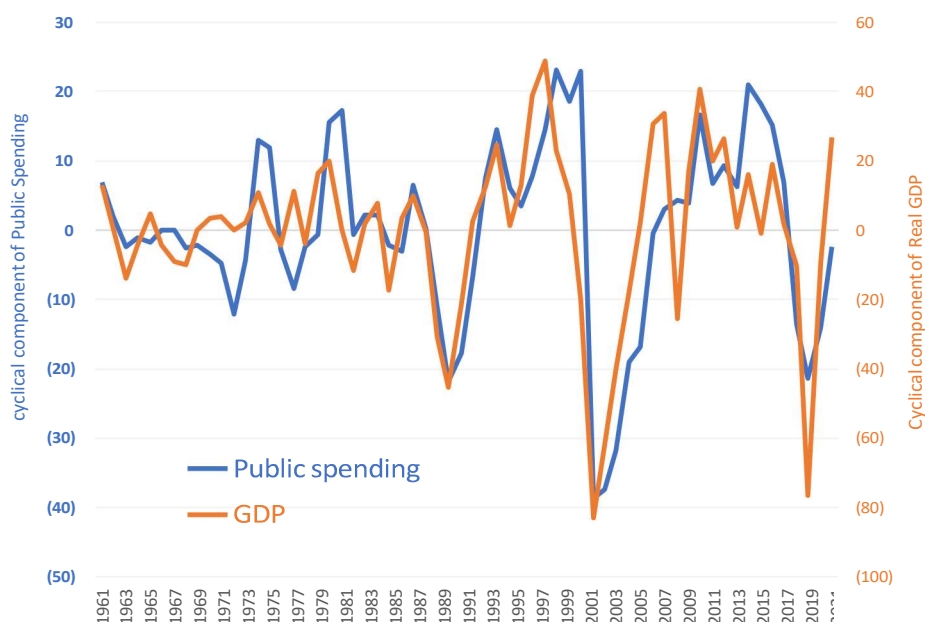
Note: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI. Fiscal cyclicity is measured as the correlation between the cyclical component of real spending and real GDP. GDP volatility is measured as the standard deviation of the annual growth rate for each country.

³ The focus, here, remains on establishing correlations rather than delving into causal relationships between fiscal procyclicality and GDP volatility. For a more comprehensive exploration of causality links, see Ilzetzki & Vegh (2008).

Argentina has exceptionally high fiscal pro-cyclicality and GDP volatility. Over the past seven decades, the nation has grappled with economic recessions for approximately 33 percent of the time, making it one of the world's most volatile economies, surpassing even nations beset by conflicts in terms of political and civil violence.⁴ Argentina's GDP volatility, as gauged by the standard deviation of economic growth rates, ranks consistently high among the 74 countries in our sample spanning the last 22 years.⁵ This susceptibility to economic shocks has, over time, been associated with a decline in output growth. The average annual growth rate over the past five decades stands at a disappointing 2.1 percent, notably below the regional average of 3.3 percent.⁶

Argentina's fiscal policy has historically been highly procyclical, characterized by persistent fiscal deficits that exacerbate economic fluctuations and hinder stable growth. The country ranks among the top four nations, alongside Nicaragua, Latvia and Uruguay, in terms of the correlation between public spending and GDP's cyclical component over the past 22 years. Moreover, as shown in **Figure 2**, this is a long-lasting story. The cyclical component of public spending has been strongly linked to the business cycle, failing to serve as a buffer against economic volatility. This fiscal approach has contributed to significant macroeconomic imbalances, resulting in frequent credit events and magnified business cycles. From 2005 to 2016, public spending in Argentina rose significantly, reaching 41 percent of GDP (up from 25 percent of GDP, similar to the historical average) due to favorable global conditions driven by the commodities super-cycle. This spending increase, primarily in recurrent expenditures, outpaced revenue, leading to additional fiscal imbalances, liquidity constraints, and debt restructuring.

Figure 2. Cyclical Components of GDP and Public Spending 1961-2022



Source: OECD Stats, IMF, World Bank.

Note: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI.

⁴ From a sample of 128 countries, Argentina stands out as being the country that has spent more time in recession in the past 70 years (33% of the time), followed by the Democratic Republic of Congo (31% of the time).

⁵ Clearly, correlations do not provide us with direct information about causal effect that, in principle, could go both ways.

⁶ Based on the Conference Board Database. Regional average includes Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Paraguay, Peru and Uruguay.

This paper investigates the cyclical aspects of Argentina's fiscal policy to identify the sources of fiscal procyclicality. The analysis comprises two exercises. The first dissects the public budget to pinpoint sources of procyclicality and assess how fiscal policy behaves over the business cycle. This aims to reveal whether Argentina's fiscal instruments exhibit procyclical patterns and if this is driven by spending or revenue policies. The second exercise focuses on estimating the cyclically adjusted primary balance (CAPB) by accounting for transitory or structural factors. This estimation is particularly relevant in Argentina, given the agriculture sector's significance and its potential impact on the fiscal stance. Recurrent shocks, like droughts or commodity price fluctuations, affect economic activity, revenue collection, and potentially public spending, leading to changes in the fiscal balance. Therefore, the CAPB estimate specifically differentiates cyclical shocks related to commodities.

The study introduces innovative contributions to the analysis of procyclical fiscal policies in Argentina. It employs a novel approach to decompose the sources of procyclicality in specific spending items, offering potential avenues for further exploration. By scrutinizing the historical series of both the "price" and "quantity" components of pension and public employment compensation spending, it disentangles the procyclical effects, identifies their priority effects, and replicates this analysis for various pension subsystems and government levels (where data is available).

The paper's key findings show that Argentina's high fiscal procyclicality is concentrated on the spending side. Argentina ranks among the countries running the most procyclical public spending policies in recent decades. Both automatic and non-automatic spending budget items appear to positively co-move with the business cycle in a deterministic manner, with traditional automatic stabilizers having a minor role and a weak overall effect. However, the paper highlights the need to explore the determinants of cyclicity in the two most significant items of the budget: pensions and public wages. Although conventional literature suggests that there are no objective reasons for these spending items to behave countercyclically, there is a vast consensus that these items should be executed in a neutral way concerning the business cycle.

Results indicate that Argentina has exhibited significant procyclical pension spending in recent decades, contributing to overall fiscal procyclicality. The evidence reveals that public spending in major pension schemes has been strongly influenced by "price" effects, which refer to the evolution of the real value of benefits over time through indexation. Additionally, there is a partial influence of "quantity" effects. Interestingly, while indexation rules typically prevent social security spending from being procyclical in most countries, the Argentine case shows the opposite. The design and erratic implementation of indexation rules have fueled procyclicality.

Furthermore, the analysis reveals that Argentina's public wage bill has displayed strong procyclicality, driven by both "price" and "quantity" effects. In addition to having a larger public wage bill compared to regional and global peers, Argentina's wage bill has exhibited significant procyclicality in recent decades, even when compared to global and regional standards. The number of public servants, representing the "quantity" effect, as well as their average wage, representing the "price" effect, have both shown a pronounced procyclical behavior at both the national and subnational levels of government.

On the revenue side, the analysis suggests fairly acyclical tax policies for primary traditional taxes. Nevertheless, unconventional taxes, with limited data for analysis, diminish the relevance of traditional taxes, as a significant portion of tax revenue in Argentina comes from unconventional taxes. Evaluating these unconventional taxes poses challenges due to the limited availability of detailed information.

Finally, the study highlights a significant deterioration in Argentina's structural fiscal balance (CAPB) over the past decades, even prior to the conclusion of the commodities super-cycle. This deterioration indicates the presence of procyclical discretionary policies. The paper also demonstrates that discretionary policies tend to be more pronounced during economic booms. Additionally, given Argentina's heavy reliance on agricultural commodities, the paper conducts a separate assessment of the impact of commodity price shocks. The findings reveal the potential benefits of establishing a commodity-related stabilization fund, which could have generated revenue equivalent to nearly 2 percent of GDP between 2006 and 2008, a period when the country still had fiscal surpluses.

The paper is organized as follows. In Section 2, we define fiscal cyclicity and discuss its significance in terms of its impact on economic welfare, drawing upon the main findings of the existing literature. Section 3 presents detailed estimates of the procyclicality of public spending and key tax revenues, providing a breakdown of their sources of cyclicity to the best extent possible. Where applicable, international comparisons are also included. Section 4 offers an overview of the fluctuations of the fiscal balance in Argentina throughout the business cycle, utilizing innovative estimates of the CAPB for the country that account for the influence of commodity prices. Finally, in Section 5, we summarize the main conclusions of the paper.

2. Fiscal cyclical: Theoretical framework and literature review

The adoption of macroeconomic policies aimed at minimizing business cycle volatility is a widely recognized consensus in economics. Substantial research has demonstrated a negative correlation between macroeconomic instability and medium- to long-term economic growth, household consumption, and poverty reduction (Ramey and Ramey, 1995; Fatás, 2002; Acemoglu et al., 2003; Hnatkovska and Loayza, 2005).

However, the adverse impacts of macroeconomic instability are notably more pronounced in developing economies, attributable to several factors (Loayza, 2007). Firstly, these economies exhibit higher vulnerability to external shocks, such as abrupt shifts in capital flows or significant fluctuations in commodity prices, primarily because they are often reliant on commodity exports.⁷ Secondly, emerging economies confront a greater incidence of negative shocks stemming from domestic issues, including political instability, highly procyclical policies, and less sophisticated economic institutions. Thirdly, these economies typically possess smaller and weaker financial systems, constraining the capacity of both public and private sector actors to mitigate the effects of business cycle fluctuations through credit channels. Furthermore, less sophisticated institutional and regulatory policy frameworks, commonly found in emerging economies, introduce inflexibilities into the economic landscape, impeding efficient resource allocation in response to shocks (Caballero, 2004).

Therefore, the role of fiscal (and monetary) policies in stabilization has been a central subject of empirical macroeconomic research in recent decades. Notably, the exploration and analysis of fiscal policy as a tool for macroeconomic stabilization have gained greater prominence in recent years, primarily due to the challenges faced by monetary policy, especially in advanced economies (Spilimbergo, et al. 2008).

The economic consensus advocates for governments to implement fiscal policies that do not exacerbate (either positively or negatively) economic shocks. Fiscal policy is characterized as procyclical (countercyclical) when it is expansionary (contractionary) during economic upswings and contractionary (expansionary) during downturns. Alternatively, fiscal policies may exhibit a more neutral cyclical effect if they display no significant biases across the business cycle. Procyclical fiscal policies are widely recognized as detrimental to welfare, as they tend to amplify the business cycle, suppress investment, diminish potential growth, and ultimately impact low-income segments (Woo, 2009; Aghion and Marinescu, 2007; Fatas and Mihov, 2003, 2012; Izquierdo, et al 2018; Braun, 2003).

From a Keynesian perspective, the aggregate fiscal policy should follow a countercyclical approach to smooth the business cycle as effectively as possible. On the other hand, the neoclassical tax-smoothing theory (Barro, 1979) recommends implementing neutral (acyclical) fiscal policies by maintaining consistent levels of spending and taxation over time. Regardless of the theoretical framework, the overarching consensus underscores the importance of avoiding fiscal policies that positively co-move with the business cycle. Furthermore, if excessive spending or tax cuts during economic booms are not fully reversed during downturns, fiscal procyclicality can lead to a deficit bias, introducing additional macroeconomic risks related to debt sustainability.

⁷ A “sudden stop” is an abrupt decline of capital flows into a nation's economy, which is often accompanied by economic recessions and market corrections. Sudden stops may also be followed by a currency crisis, as foreigners lose faith in a nation's economy (Calvo 1998).

Developing economies are particularly susceptible to procyclical policies due to their weaker institutions, limited access to international credit markets, and vulnerability to external and domestic shocks (Frankel, Vegh, Vuletin, 2011). The findings presented in the introduction are in alignment with existing literature. While most advanced economies tend to implement countercyclical or acyclical fiscal policies, the majority of developing countries typically adopt procyclical policies (Gavin and Perotti, 1997; Kaminsky, Reinhart, and Vegh, 2004; Alesina, Campante, and Tabellini, 2008; Frankel, Vegh, and Vuletin, 2011; Galeano et al., 2021).⁸

Developing countries often lack robust automatic fiscal stabilizers, essential for effective fiscal stabilization. Automatic stabilizers comprise spending and revenue mechanisms that respond to economic conditions with a slower and less discretionary nature compared to other support actions. They also contribute to fiscal sustainability by naturally scaling back during expansions. Instruments like unemployment insurance, targeted social protection programs, and well-structured income taxes typically fulfill the role of automatic stabilizers. However, in low- and middle-income economies, these mechanisms often have limited impact due to their low levels of generosity, design vulnerabilities, and weaker labor markets marked by higher informality rates. Furthermore, some developing countries exhibit procyclical spending patterns for remaining budget items, further undermining the stabilizing capacity of fiscal policy. In these cases, recurrent and typically inflexible spending items tend to rise during economic upswings, accentuating the procyclical stance and heightening fiscal sustainability risks. The absence of robust automatic stabilizers during economic downturns exacerbates the procyclical effects of fiscal policy initiated in the previous phase of the economic cycle.

Argentina provides a prominent example of grappling with many of these challenges. Informality is widespread in Argentina, contributing to high tax evasion rates. Despite improvements in the social safety net, identifying impoverished households remains an administrative challenge for authorities. Fiscal sustainability has consistently been a concern in Argentina, with recurring fiscal imbalances and financing strategies significantly contributing to macroeconomic instability. The Treasury has frequently resorted to Central Bank monetization of deficits, public debt issuance, and even the use of international reserves to finance these imbalances. These events have left the economy vulnerable to various macroeconomic crises. Consequently, a comprehensive examination of the cyclical bias of fiscal policy in Argentina becomes imperative. Subsequent sections of this paper are dedicated to presenting empirical evidence in this regard.

⁸ Noteworthy, literature reflects that while still more procyclical than advanced economies, most emerging countries managed to reduce their level of procyclicality in the last couple of decades (Vegh, et al 2017).

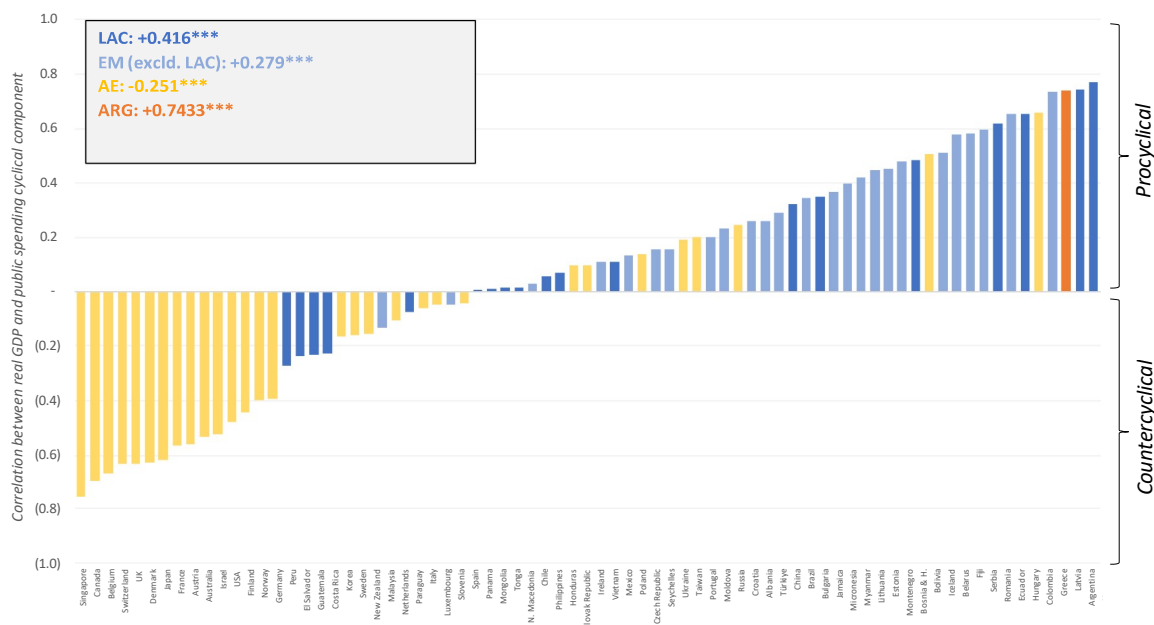
3. Breaking down fiscal cyclicity in Argentina

3.1 Public Spending

Substantial evidence from recent decades suggests a strong correlation between the cyclicity of public spending and the income level of countries. The literature on this subject underscores that advanced nations typically employ countercyclical or acyclical fiscal policies, while less developed countries tend to exhibit procyclical policies (Galvin and Perotti, 1997; Kaminsky, Reinhart, and Vegh, 2004; Alesina, Campante, and Tabanello, 2008; Frankel, Vegh, and Vuletin, 2011). It is worth noting that the majority of these studies primarily focus on public spending patterns, as a comprehensive analysis of revenue cyclicity necessitates a more detailed investigation, including the evaluation of fluctuations in tax rates.

A cross-country comparison of public spending reveals that Argentina ranks among the most procyclical countries globally. **Figure 3** illustrates the outcomes of an analysis spanning the last three decades (1990-2022) across 74 economies, encompassing 30 advanced and 44 developing nations. The findings are quite evident: developing countries tend to embrace procyclical public spending policies, with a statistically significant average correlation of 0.279 for non-LAC (Latin American and Caribbean) countries and +0.416 for LAC countries, while the countercyclical policy category predominantly comprises advanced economies, exhibiting a statistically significant correlation of -0.251. Notably, Argentina boasts the third-highest correlation coefficient of +0.74, underscoring its substantial procyclical stance.

Figure 3. Public Spending Cyclicity 1990-2022

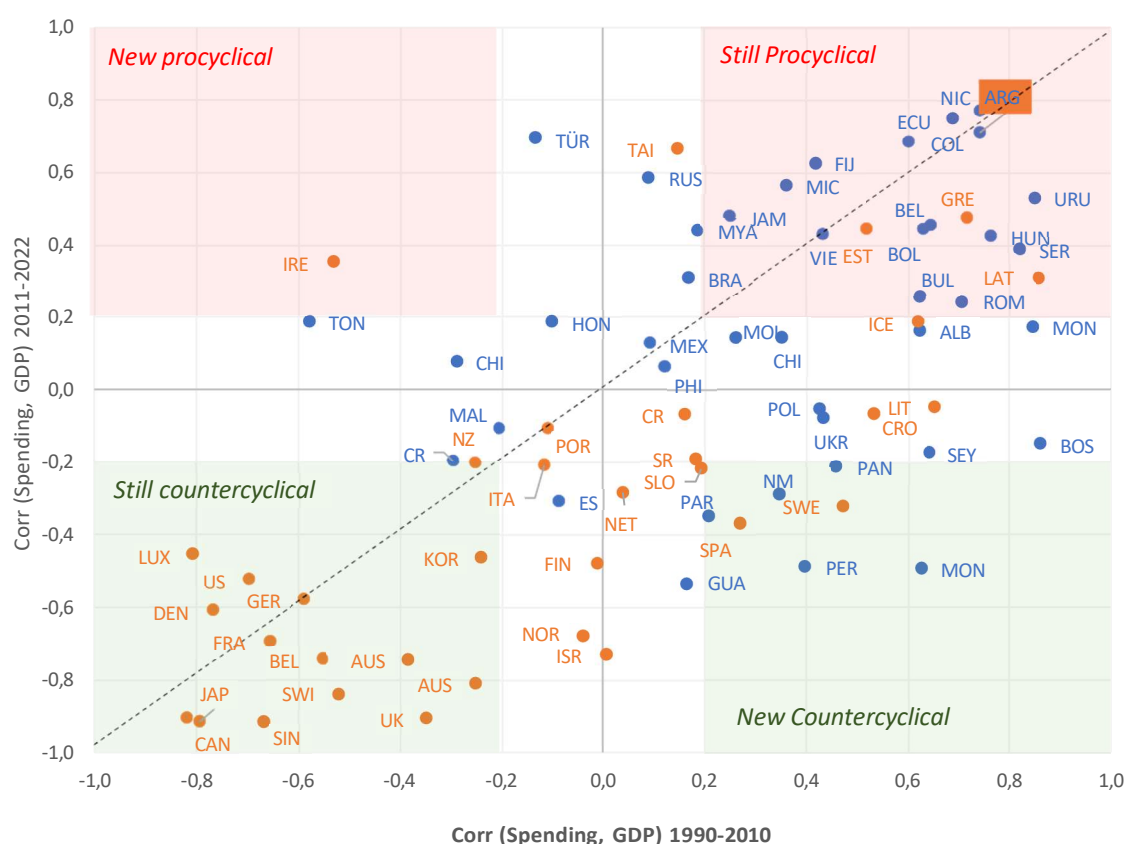


Source: IMF WEO, INDEC. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Additionally, Argentina distinguishes itself as one of the few nations that has consistently conducted procyclical fiscal policies over the past three decades (1990-2022) and has not managed to reduce this procyclicality over time. The period spanning from 2011 to 2022 holds particular relevance, marking the

conclusion of the global commodities boom, which had a substantial impact on developing economies, including Argentina. Among the 74 countries examined in the sample (comprising 30 advanced and 44 developing countries), 51 countries exhibited a shift towards reduced procyclicality or a more countercyclical fiscal policy approach over the past decade, compared to the preceding two decades (1990-2010). Results show that Argentina continued to pursue fiscal policy as procyclical as in previous decades. As depicted in **Figure 4**, there were minimal instances of countries transitioning from a procyclical to a countercyclical stance or vice versa. Most nations remained within the same policy stance, irrespective of whether they increased or decreased the correlation between their spending and the business cycle, positioning themselves in either the upper-right or bottom-left segments of the chart.

Figure 4. Public Spending Cyclicality per country over time 1990-2010 vs 2011-2022



Source: IMF WEO, OECD, INDEC. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI.

3.1.1 Determinants of spending procyclicality: automatic vs non-automatic spending items

The public budget can be categorized into two main groups: automatic and non-automatic spending (as illustrated in **Figure 5**). Automatic spending includes expenditures governed by specific legislation or constitutional mandates, typically designed to benefit individuals who meet specific eligibility criteria. These items are structured to limit interference by policymakers due to their normative guidance. Generally, automatic spending includes unemployment insurance benefits, social programs (e.g., cash transfer programs, family allowances, etc.), and the social security system, primarily centered around old-

age pension spending. Social security spending typically represents the largest component of the budget in most countries. In contrast, non-automatic spending results from budgetary decisions made by policy makers, subject to regular discussions, usually on an annual basis. The primary categories of non-automatic spending are public consumption (mainly encompassing wages and the purchase of goods and services) and public investment. Although it can be argued that personnel management policies (e.g., teachers, doctors, police officers, civil servants, etc.) inherently possess automatic features, the wage bill remains subject to budgetary decisions that can and do experience policy changes. Public consumption, alongside social security, is typically among the most substantial budget items in most countries.

In theory, neither non-automatic nor automatic spending is inherently expected to exhibit a countercyclical behavior. As mentioned earlier (Section 2), there is a broad consensus across the economic spectrum regarding the significance of governments avoiding the adoption of procyclical fiscal policies that would intensify the impact of the business cycle on the real economy. However, not all fiscal policy tools are intended to counteract the economic cycle, as certain items tend to respond to long-term dynamics.

For instance, automatic spending items such as unemployment insurance and specific social programs are designed to absorb negative shocks, rendering them countercyclical. These are commonly referred to as automatic stabilizers (**Figure 5**) since they automatically activate and deactivate based on specific criteria, aiming to assist eligible beneficiaries. Unemployment insurance serves as a textbook example of an automatic stabilizer, aiming to mitigate output volatility and stabilize household income and consumption by providing income support to workers who have lost their jobs for a certain period (depending on the institutional design of each country). It is worth noting that unemployment insurance is not prevalent in developing countries due to their low generosity, design vulnerabilities, and, most importantly, weaker labor markets with high informality levels, which hinder its effective operation (Duval and Loungani, 2019; Asenjo and Pignatti, 2019). While social programs can also act as automatic stabilizers, their specific programs and effectiveness vary significantly across countries.⁹

Conversely, automatic expenditures, such as old-age spending, are not expected to be consistently linked to the economic cycle but rather to demographic trends. The amount of public funds allocated to pension systems is influenced by both "quantity" and "price" effects, reflecting the number of beneficiaries and the real value of benefits, respectively. As the number of beneficiaries should primarily be shaped by slow-moving demographic trends,¹⁰ any pension system should aim to maintain benefits at a stable level in real terms rather than react to the business cycle. This is particularly crucial in countries experiencing high inflationary pressures, as benefits must keep pace with rising costs to ensure income stability for the elderly. In theory, neither price nor quantity effect should co-move with the economic cycle, making the case for old-age spending to be acyclical. Indeed, most studies examining the fiscal aspects of social

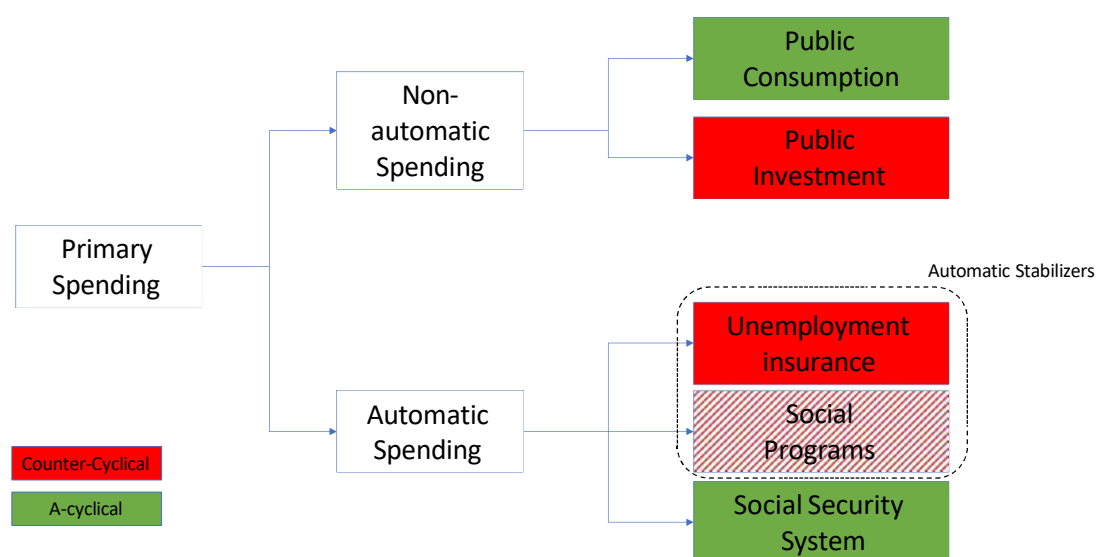
⁹ This usually contains all sort of programs such as: unconditional and conditional cash transfer programs to households, food transfers programs, family allowances, etc. However, as shown in **Figure 5**, the labeling of this item is more debatable, as there are lots of different programs that could potentially be categorized as "social program". Arguably, specific social programs, such as cash transfers aimed to protect the most vulnerable households could be expected to have a neutral link with the cycle (acyclical), as they are oriented to assure the provision of a basic set of goods and services (or its equivalent in money) and should avoid fluctuations. On the contrary, if we think of emergency social programs created during a crisis, these should be part of the set of discretionary spending items. Nonetheless, we decided to schematically include "social programs" as part of the automatic stabilizers items, thinking about automatic social benefit programs that are activated in crisis (social benefit for informal or unemployed workers), usually imperfectly replacing a broad-based unemployment insurance.

¹⁰ For instance, in terms of coverage ("quantity" effect), even though it is possible to consider the potential effects of having more retirements during crisis periods, these are usually long-term decisions involving both employers and employees and materializing with much more lag than other budgetary items (i.e. automatic stabilizers).

security systems tend to concentrate on potential demographic effects on fiscal sustainability rather than their cyclical behavior.

Similarly, while public investment and public consumption are both non-automatic in nature, they could theoretically exhibit distinct cyclical characteristics. Capital spending is often linked with the Keynesian perspective on the public sector, potentially serving as a countercyclical tool. However, it is not categorized as an automatic stabilizer since it is influenced by specific policy and budgetary planning and may involve implementation delays. On the other hand, public consumption, primarily encompassing salaries for professions like education, health, police, and defense, is expected to have a neutral cyclical impact because the number of employees (e.g. teachers, doctors, policemen, and military personnel) and their wages should remain stable throughout the economic cycle (i.e., acyclical). Efforts to employ the wage bill as a countercyclical tool may encounter issues due to the lag between a negative shock and the implementation of an expansion in the public sector workforce, which may lead to unintended consequences (i.e., potentially becoming an automatic destabilizing policy). Moreover, while increasing public spending is relatively straightforward, phasing it out may generate resistance, contributing to inflexible spending items and fiscal sustainability challenges.

Figure 5. Classification of main budgetary spending items



Source: World Bank based on Vegh et al (2021). *Note:* automatic spending are expenditure categories that follow a specific pre-existing legislation (or even a constitutional mandate) and tend to benefit individual meeting certain eligibility criteria. Non-automatic spending are the result of policy makers budgetary decisions.

The literature typically concentrates on analyzing the cyclical behavior of aggregate non-automatic spending categories, including public consumption and public investment, alongside the customary automatic stabilizers. Empirical evidence suggests that public investment tends to exhibit countercyclical patterns in advanced economies, aligning with the Keynesian rationale, but displays strong procyclicality in developing countries. This phenomenon can be attributed to the fact that reducing government investment is often the least politically challenging fiscal adjustment during economic downturns,

particularly in nations with inflexible budgetary structures (Ardanaz and Izquierdo, 2017). Public consumption, on the other hand, tends to be procyclical in the developing world, while findings in advanced countries are less conclusive.¹¹

In addition to these non-automatic spending categories, automatic stabilizers like unemployment insurance and targeted social programs have proven to be effective countercyclical tools. Their effectiveness in smoothing household income and consumption hinges on institutional design and budgetary size, with a more prominent role in advanced economies compared to developing nations, as previously mentioned.

Recent studies have also delved into the role of social security spending, yielding mixed results. Darby and Melitz (2008) discovered that retirement and pension transfers to households have a stabilizing effect in a sample of OECD countries. Wibbels (2006) revealed that social security spending, using a broader definition encompassing pension, has no direct link to the business cycle and is therefore acyclical, both in OECD and Latin American countries. Vegh et al (2021) found that social security spending demonstrates mild countercyclicality or acyclicity in advanced economies while being strongly procyclical in developing countries. In summary, the cyclical attributes of social security spending appear to vary depending on the country and the specific program under consideration.

3.1.2 Breaking down spending cyclicity in Argentina

In Argentina, government consumption, social security spending, and public investment constitute the primary components of the overall budget. Based on official data from 2022, which aggregates the central government and the 24 sub-national administrations' public accounts, public primary spending amounted to an estimated 37 percent of GDP, with these three categories—government consumption, public investment, and social security—accounting for almost three-quarters of this expenditure (**Figure 6**). Public consumption represents the largest portion, constituting 13.5 percent of GDP (with the wage bill accounting for nearly 11 percent of GDP).¹² Social security spending reached 10 percent of GDP, primarily driven by the various pension sub-systems. Meanwhile, public investment comprised 3.8 percent of GDP in 2022. The remaining 9.5 percent of GDP in spending is largely attributed to various types of transfers to households, private and public enterprises, including energy and transport subsidies. Remarkably, the unemployment insurance program is insignificant in budgetary matters and is equivalent to only 0.02 percent of GDP in 2022, pushing other -typically more rigid- items to replace the role of unemployment insurance.

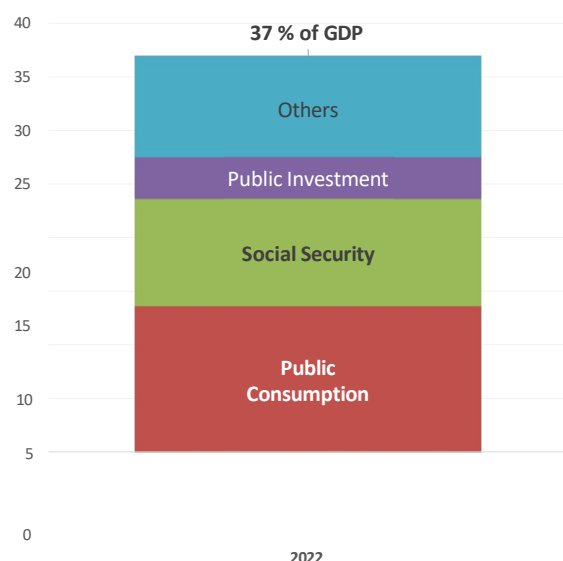
¹¹ For instance, Lamo, Perez and Schuknecht (2007) show evidence that public consumption items, namely the wage bill, co-moves with the business cycle in a procyclical way with a 1–2-year lag, for most of the euro area countries. Moreover, the authors prove that wage bill procyclicality appears to derive mainly from wage-setting behavior as opposed to employment decisions. In a similar vein, Holm-Hadulla et al (2010) build on previous works by showing evidence of strong co-movements between public and private wages, suggesting that governments should be cautious so that wage-setting and employment measures do not put macroeconomic balances at risk. Moreover, opting for a different methodology, Eckardt and Mills (2014) show that public sector wage bill spending across Europe and Central Asia tends to behave pro-cyclically, especially in transition economies. At last, according to Ilzetzki and Vegh (2008), public consumption is mildly procyclical in high income countries, though far less procyclical than in developing countries.

¹² The data for overall public consumption is an estimate since official figures exclude municipal spending. However, they do include the transfers made by the provinces to the municipalities. It is assumed that 70% of these transfers to municipalities are spent on consumption spending (given that consumption spending represents that proportion of total municipal spending and that provincial transfers finance two-thirds of total municipal spending).

Notably, all the major budget items in Argentina exhibit a growing and pronounced procyclical tendency. According to official data spanning from 1961 to 2022, this study reveals that the correlation between the cyclical components of total public spending and real GDP in Argentina stands at 0.72 (statistically significant). When dissecting public spending, the data shows that, throughout the entire period, the wage bill, social security, and public investment demonstrated strong procyclical tendencies (correlations of 0.61, 0.56, and 0.59, all statistically significant). Intriguingly, public consumption and government investment have exhibited an even stronger correlation with the business cycle over the past two decades compared to the preceding 40 years (**Figure 7**).

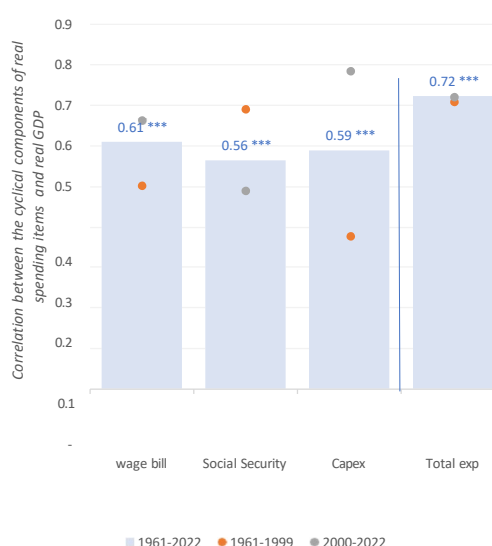
The following sections will delve into the identification of the sources of procyclicality in the two primary expenditure items, namely the public wage bill and pension spending.

Figure 6. ARG Public Spending as percent of GDP 2021



Source: Ministry of Economy. Note: Includes both Federal and provincial administrations (excluding municipalities).

Figure 7. Breakdown of Argentina Public Spending Cyclicalities per item (1961-2021)



Source: Ministry of Economy, INDEC. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI. *, ** and *** indicate statistical significance at the 15%, 10% and 5% levels, respectively.

3.1.3 Public Wage bill

Argentina stands out for its substantial public wage bill compared to its regional and global counterparts. In 2022, Argentina allocated nearly 11 percent of GDP to public employee compensation, with subnational administrations absorbing most of these expenditures. Specifically, provinces accounted for 7 percent of GDP, municipalities for 1.5 percent of GDP, and the central government for 2.4 percent of GDP in public wage spending. According to data from a sample of 66 advanced and developing countries, Argentina ranks within the top 25 percent of nations with the highest allocation to public wages (See the Annex).

Furthermore, Argentina's public wage bill has displayed significant procyclicality over the past few decades, even when compared to international standards. Among a sample of 70 advanced and developing countries, Argentina's wage bill policy ranked as the fifth most procyclical over the last 30 years (**Figure 8**). Particularly, the correlation coefficient between the cyclical components of real public

spending on wages and GDP in Argentina stands at 0.65 (statistically significant). Unlike other spending items, such as unemployment insurance, there appears to be no clear connection between income levels and the cyclicity of the public wage bill across countries. Over half of the advanced economies in the sample (15 out of 27) adopted counter- or acyclical wage bill policies (i.e., a negative correlation or a positive correlation below 0.2), compared to 49 percent of developing economies.

To comprehend the drivers behind Argentina's wage bill procyclicality, it is imperative to analyze both the "price" and "quantity" effects. The "quantity" effect is influenced by whether a government expands or contracts its workforce during different phases of the business cycle. Conversely, the "price" effect hinges on whether a government decides to increase or decrease the compensation per employee during economic booms or recessions, irrespective of the number of staff. Therefore, examining historical series of public employment staff and their compensation measures is essential. In Argentina's case, given the significant fragmentation of public employment across various levels of government, it is crucial to examine the wage bill policies of subnational and central authorities.¹³

In recent decades, the size of the civil service ("quantities") and the average wage ("price") have both exhibited strong procyclical patterns, both at the provincial and central government levels. The data reveals that at the provincial level, both the "price" and "quantities" effects have contributed to overall provincial wage bill procyclicality, with statistically significant correlation coefficients of 0.69 and 0.65 for staff and average wage, respectively. It is noteworthy that this trend encompasses diverse realities within each of the 24 provinces (See the Annex). As for the central administration, the results show a positive but weaker "quantities" effect (0.39, not statistically significant), indicating that real wage policies (positive correlation of +0.66) have played a more critical role in terms of cyclicity than personnel recruitment policies (**Figure 9**).

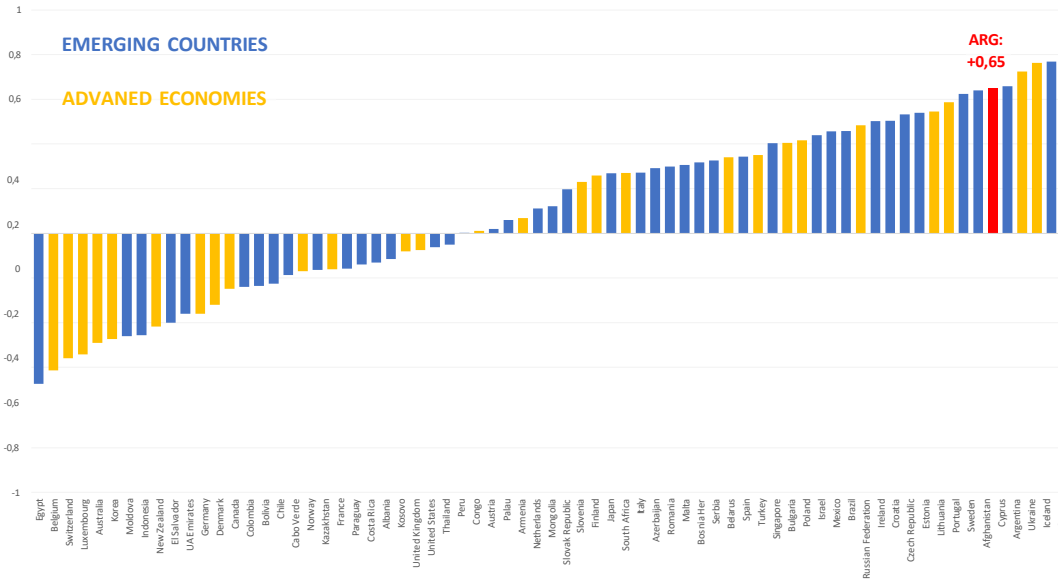
One reason for this trend is the significant increase in public employment during the period 2002-2015, which almost doubled the number of public servants across all levels of government. While there were around 2 million public employees on average during the 90s, in 2015, the figure peaked at 3.7 million, with an average yearly growth rate of 3.7 percent, almost three to four times the population growth rate. The most significant expansion occurred at the subnational level, with the number of public servants increasing from 1.3 to 2.2 million from the late-90s to 2015 (See the Annex). Notably, this surge in the public sector workforce coincided with an overall expansion of primary public spending, which increased from 24.8 percent of GDP in 2005 to 40.3 percent of GDP in 2015, partially reverting to an estimated 37 percent of GDP in 2022.

Furthermore, the absence of automatic indexation mechanisms has contributed to the significant fluctuations in the real value of wages during this period. Inflationary pressures have been a constant feature of the Argentine economy, and any increase in the rate of inflation (usually accompanied by a depreciation of the peso and a slowdown in economic activity) has had an immediate negative impact on real wages, given the annual or semiannual frequency of wage negotiations with unions. As a result, the execution of wage bill policies has been subject to significant shocks, which have further contributed to their procyclical behavior.

¹³ There is available data for the number of staff both for provincial administrations and the National Administration. Note that this is a subset of the overall Argentine public sector. Namely, municipalities, SOE, Trust Funds and other decentralized public entities of the central government are not included, due to lack of available data. Regarding compensation per employee, this is measured by the average wage bill spending per employee on each administration. Naturally, this hides a large set of heterogeneities among public employees, which are not being captured.

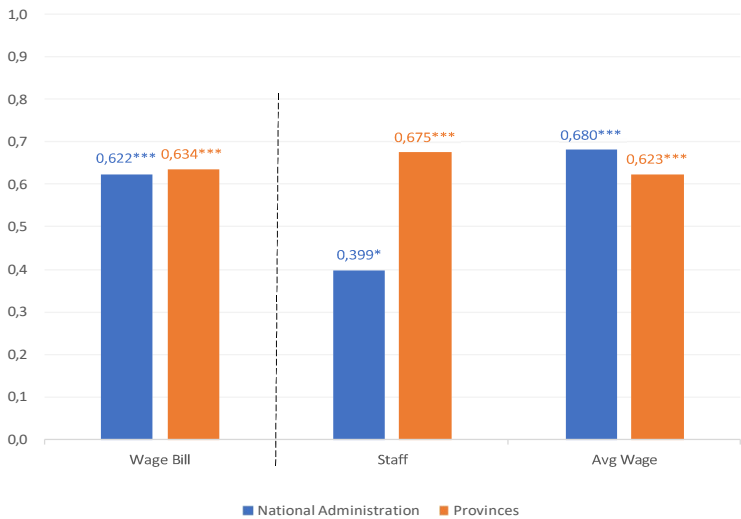
Creating greater fiscal space to guarantee wage stability during crisis situations and adopting institutional and regulatory innovations to guide personnel hiring policies would greatly benefit the state and help reduce procyclicality. It is important to avoid large swings in the real wage of public servants (i.e. teachers, doctors, police officers) without objective reasons. A more accurate regulatory framework to govern hiring policies would also help prevent substantial increases in staff (typically occurring during economic upturns) that are challenging to reverse. However, in countries such as Argentina, where the wage bill is mainly decentralized across subnational administrations, coordinating these policies may be more challenging. Therefore, achieving more stable wage policies is contingent on establishing coordination mechanisms among different levels of government and ensuring the effective implementation of regulatory frameworks.

Figure 8. Wage bill cyclicality per country 1992-2022 (or closest years)



Source: Ministry of Economy, INDEC, GFS IMF, OECD. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI.

Figure 9. Wage bill procyclicality: staff, average wage and level of government (1992-2022)



Source: Ministry of Economy, INDEC. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI. *, ** and *** indicate statistical significance at the 15%, 10% and 5% levels, respectively.

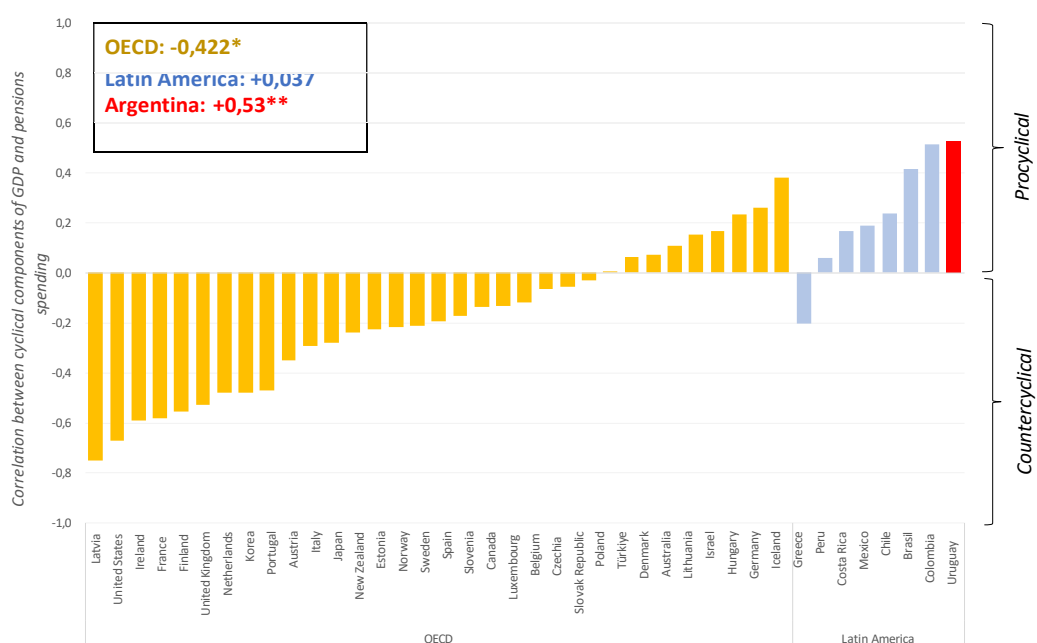
3.1.4 Pensions Spending

The public pension system in Argentina is fragmented into various sub-systems and constitutes the second most significant expense, ranking among the highest globally. Among a sample of 33 advanced, emerging, and regional peers, Argentina's estimated pension spending in 2022, accounting for 10 percent of GDP, ranks within the top five countries (see the Annex). At the regional level, Argentina performs similarly to Uruguay and Brazil, surpassing the rest of its neighboring countries.

Argentina has conducted its pension spending in one of the most procyclical manners during the past decades (

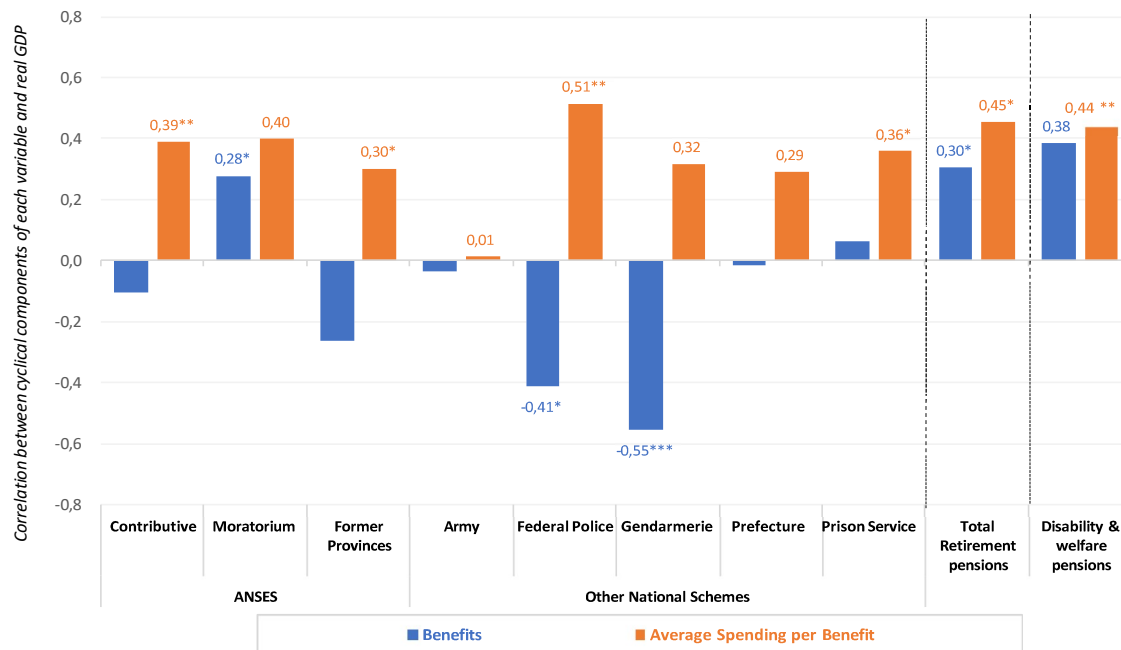
Figure 10), and this has significantly contributed to overall fiscal procyclicality. During the period of 1995-2021, nearly 80 percent of the countries in the sample pursued either counter-cyclical or acyclical pension spending policies. In contrast, the correlation between the cyclical component of pension spending and real GDP in Argentina stood at +0.53, which is statistically significant (at 5 percent level) and the highest in the region, significantly surpassing OECD figures (-0.422, statistically significant). Therefore, instead of remaining neutral to the economic cycle, as theory suggests, the Argentine public spending on pensions has reinforced economic fluctuations.

Figure 10. Pension spending cyclicality (1995-2021 or closest year)



Source: OECD, CEPAL, Ministry of Economy, INDEC, ANSES. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI. *, ** and *** indicate statistical significance at the 15%, 10% and 5% levels, respectively.

Figure 11. Breaking down ARG pension spending cyclicity: number and value of benefits per sub-system (2000-2022)



(1)NCP stands for Non-Contributory pensions, including disability pensions

Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI. *, ** and *** indicate statistical significance at the 15%, 10% and 5% levels, respectively.

Source: Ministry of Economy, INDEC, ANSES.

What drives the cyclicity in pension spending? Similar to the wage bill, the dynamics of pension spending are determined by both "quantities" and "price" effects - the number of benefits/beneficiaries and the evolution of the real value of benefits. Theoretically, the number of benefits granted by a pension's retirement scheme should be determined by demographic trends (i.e. aging) as well as structural labor market dynamics, with little, if any, short-term determinants. Hence, an aging population or economies with a steady reduction in potential growth, which limits formal employment generation, will face higher fiscal pressure to support pension systems. Therefore, in the absence of structural reforms, the number of benefits should behave neutrally with respect to the cycle. Similarly, there is no social security rationale to see the real value of benefits co-moving with the cycle. Moreover, evidence shows that countries lacking automatic pension indexation mechanisms tend to exhibit more procyclical behavior (Galeano et al. 2021). Ideally, benefits should follow a stable path, ensuring income stability for pensioners. Paradoxically, Argentina does not fit well with this finding, as it has chosen inherently procyclical indexation mechanisms, as we will demonstrate later.

Interestingly, in the case of Argentina, the quantity effect - determined by the number of benefits - has been slightly procyclical, with two pension schemes standing out in particular: the semi-contributory scheme (moratorium) and the non-contributory pensions (i.e. disability and welfare pensions) (**Figure 11**). Data suggests that the procyclical performance of almost all the different pension schemes is not driven by the number of benefits, aligning with theoretical expectations. However, the evolution of benefits granted by the "moratorium" program does reflect a more procyclical behavior, with a cyclical correlation coefficient of +0.28, statistically significant at a 15% level. This program -that took place between 2006-2009 and a second phase since 2015- involved incorporating nearly 3.5 million new beneficiaries (almost

doubling the overall number of pensioners) into the regular pension system who had not contributed as formal workers according to the normative (i.e. more than 30 years).

Moreover, in the 2000s, Argentina witnessed a significant rise in the number of disability and welfare pension beneficiaries. The number of beneficiaries surged from an average of 0.33 million to 1.5 million between 2004 and 2015, without any discernible objective justification for the increase, and this level has persisted through 2022. Accordingly, when confronting this (cyclical) trend with the business cycle, results show that the number of disability and welfare pension benefits exhibited a mildly procyclical behavior, with a statistically significant correlation coefficient of +0.38, at a 15% significance level. Given the substantial size of both the moratorium and, to a lesser extent, the disability pension scheme, which together account for 58 percent of all pension benefits under the national purview, the overall "quantity" effect appears to be slightly procyclical, with a correlation coefficient of +0.31, also significant at a 16% level.

Furthermore, the 'price' effect (i.e. the real value of benefits), exhibited an even stronger procyclicality in recent decades, being the primary contributor to overall retirement pension spending cyclicity, while showing similar results for the disability and welfare scheme. The data reveals a statistically significant cyclical correlation of +0.45 (statistically significant) between the real value of benefits and GDP for the overall retirement pensions schemes under the central government umbrella. In a similar vein, for the disability and welfare scheme the cyclical correlation is +0.44, statistically significant (**Figure 11**).

Considering the fragmented nature of the pension system, we can further dissect these figures. Using a newly compiled database for this study, the statistics indicate that the 'price' effect was positive in almost all identifiable schemes, although some of them show small correlations, thus pointing towards a more acyclical behavior. Notably, the general contributory regime managed by the central government (ANSES) exhibited a cyclical correlation of +0.39 (statistically significant), while the semi-contributory scheme (moratorium) also showed a positive correlation of +0.40 with statistical significance.

The "price" effect procyclicality is directly influenced by the various indexation policies in place during the past decades. Since the early 2000s, the indexation mechanism for schemes managed by ANSES (the Social Security Agency) has undergone several erratic reforms. In fact, this period can be divided into at least five distinct phases with different indexation policies:

- 2000-2008: During this period, there was no automatic indexation. Following the 2002 economic crisis, the government began implementing discretionary increases to pension benefits between 2003 and 2008. Initially, these adjustments were focused on minimum benefits but were later extended to all beneficiaries. As a result, minimum benefits increased substantially in real terms, while other benefit scales experienced mixed evolutions.
- 2009-2017: At the end of 2008, the National Congress passed the Social Security Mobility Law (26,417), introducing a new automatic indexation mechanism for pension benefits. This mechanism involved increasing benefits nominally every six months based on the evolution of wages and tax collection per beneficiary. Therefore, increases in tax collection translated into higher benefits, subject to a formula-imposed ceiling. This use of tax collection as part of the indexation formula was unconventional, with only 5 percent of countries using similar approaches, while 95 percent predominantly employed inflation and/or wage evolution (Rofman 2020). During the first half of this period, benefits increased substantially in real terms, aligning with the expanding economy and tax revenue.

- 2018-2019: In late 2017, the Social Security Mobility Law underwent reforms, adopting a new indexation formula more in line with international standards. This formula involved quarterly nominal indexation linked to past inflation (70 percent) and formal wage increases (30 percent), with a lag of six to nine months. However, the three-month transition between the previous and new formulas created issues and eroded the purchasing power of benefits.
- 2020: In late 2019, the incoming administration suspended the indexation formula, replacing automatic adjustments with discretionary quarterly increases. Throughout 2020, minimum benefits received increases relatively in line with inflation, while higher benefits levels experienced significant declines in real terms.
- 2021-2023: At the end of 2020, the Congress approved a new indexation formula, resembling the one in place during the 2009-2017 period. Consequently, the real value of social security benefits remains strongly linked to the economic cycle, as it depends on the evolution of tax collection and formal wage dynamics.¹⁴

The current indexation formula is inherently procyclical by design. Substantial evidence demonstrates a strong correlation between tax collection and the business cycle, as illustrated in **Figure 12**.¹⁵ Therefore, when the predominant variable for adjusting pension benefits is tax collection (as in the current indexation formula), it implies that the indexation mechanism will broadly move in tandem with the business cycle. The degree of cyclicity is primarily influenced by the duration of the cycle and the lag in implementing the indexation.¹⁶

It is noteworthy that even if the indexation were based on CPI inflation, a significant implementation lag could still produce a procyclical effect, stemming from abrupt changes in the rate of inflation. Similarly, depending on the phase of the economic cycle, the introduction of a new (procyclical) indexation mechanism can have lasting effects. If this kind of indexation is implemented during the end of a severe crisis or at the onset of a positive phase of the cycle, it becomes evident that benefits would increase rapidly as the economy and tax revenue begin to recover.

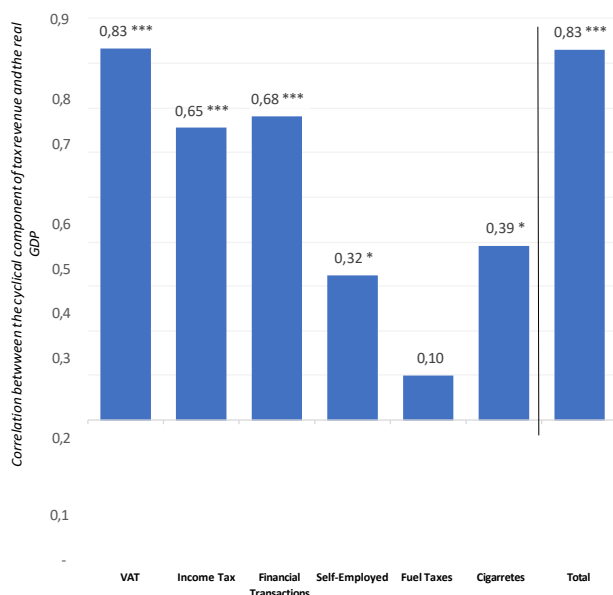
Interestingly, while indexation rules typically help prevent social security spending from becoming procyclical in most countries, the Argentine case appears to demonstrate the opposite. Recent literature (Vegh, et al 2021) suggests that the absence of automatic indexation can exacerbate cyclical fluctuations in public spending. However, Argentina's uniqueness lies in its adoption of strongly procyclical indexation rules (linked to tax collection) for 10 out of the past 20 years, along with a history of unstable indexation rules (**Figure 13**). Consequently, it is natural to expect a more pronounced procyclical behavior in the Argentine pension system.

¹⁴ At the moment of finalizing this paper, by December 2023, the new presidential administration sent a new bill to the congress aiming to suspend again the current indexation formula, replacing it with discretionary adjustment until a new formula is discussed in the Congress.

¹⁵ The cyclical correlation between the main tax receipts and the real GDP is very high and statistically significant in all cases. VAT, Income Tax and selected Excise Taxes show correlation coefficients of +0.83, +0.59 and +0.60, respectively.

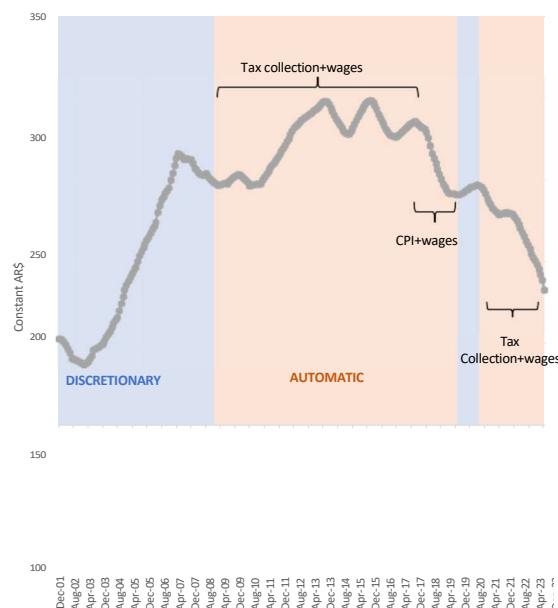
¹⁶ However, it is hard to predict, as it depends on the duration of the cycle and the parameters of the formula. Indeed, the only way in which the current formula could end up having a countercyclical effect is that the lag with which the formula kicks-in is negatively equivalent to the size of the cycle. Certainly, this is very unlikely given the current indexation lag is between 3-to-6 months.

Figure 12. Tax collection cyclicality (2000-2022): correlation between cyclical component of real GDP and tax sources.



Source: Min. Economy, INDEC. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI. *, ** and *** indicate statistical significance at the 15%, 10% and 5% levels, respectively.

Figure 13. Real value of Minimum pension benefit throughout different indexation mechanisms (2001-2022)



Source: Ministry of Economy

In summary, public spending across major pension schemes in Argentina has consistently shown procyclicality, driven mainly by the "price" effect and, to a lesser extent, the "quantities" effect. The real value of benefits has exhibited a procyclical trend, influenced by fluctuating indexation rules and variables tied to the economic cycle, such as tax collection. Only the semi-contributory and non-contributory schemes demonstrated a procyclical "quantities" effect. Accordingly, in terms of policy implications, it becomes vital to protect the real value of benefits and reduce reliance on exceptional measures, like moratoriums. The implementation of a well-designed indexation formula can mitigate procyclicality and reduce the need for frequent reforms. Additionally, broader systemic reforms, including a gradual expansion of horizontal coverage and reducing fragmentation in a sustainable manner, can enhance the pension system's resilience in both favorable and adverse labor market conditions, ultimately leading to a more equitable, predictable, and robust pension system in Argentina.

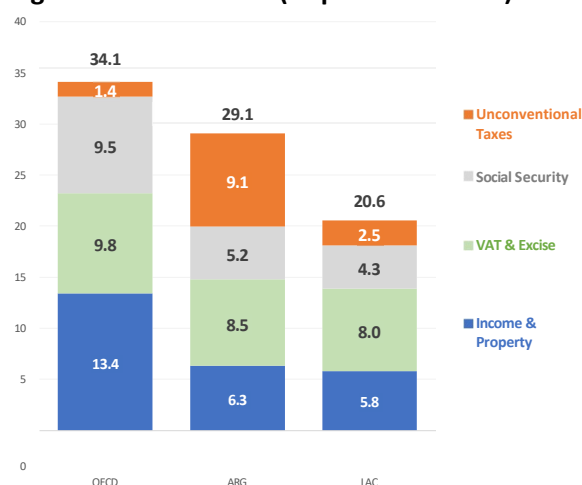
3.2. Tax Policy

The literature suggests analyzing the cyclical behavior of tax policy by focusing on tracking the cyclical patterns of tax rates rather than tax revenue. This approach is recommended due to concerns related to endogeneity. Tax revenue fluctuates with the business cycle and non-policy factors, making it an unreliable measure for policy analysis. The tax base's cyclical movements often dominate any effects from changes in tax rates (Vegh, et al 2017). Therefore, examining tax rate trends is more insightful for understanding tax policy's cyclical behavior in each country.

Recent literature has primarily focused on income taxes (personal and corporate -PIT and CIT, respectively) and value-added tax (VAT) rates due to their significant contribution to tax revenue in most countries (Vegh and Vuletin 2012; Vegh, et al 2017). These studies have made valuable contributions by constructing a comprehensive cross-country database that tracks the historical series of the top statutory tax rates for CIT, PIT, and VAT. Building upon these contributions and using this database, our analysis will concentrate on a sample of 33 countries, including 18 advanced economies and 15 developing economies, spanning a period of 40 years from 1980 to 2020. Additionally, we will extend the analysis to include other taxes, specifically focusing on the case of Argentina and updating the data whenever possible. However, it is crucial to interpret these results cautiously within the specific context of Argentina.

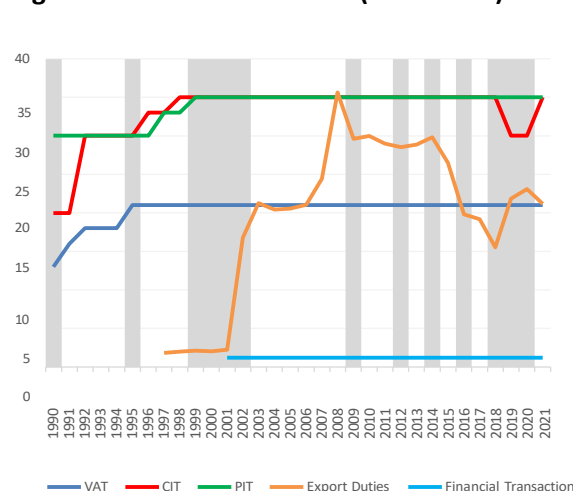
Argentina's tax structure deviates from international standards and theoretical recommendations, relying heavily on unconventional tax components that are more regressive and distortive. By 2021, Argentina's tax burden accounted for 29.1 percent of GDP (**Figure 14**), with nearly one-third (around 9.1 percent of GDP) coming from unconventional taxes, including financial transaction taxes, turnover taxes, taxes on foreign exchange purchases, and export duties.¹⁷ In contrast to developing and advanced economies where VAT, CIT, and PIT make up a substantial portion of total tax revenue, in Argentina, they represent only 40 percent of the total tax revenue. Therefore, conducting standard tax rate cyclical tests on PIT, CIT, and VAT in Argentina may not provide as representative insights as in most other countries.

Figure 14. Tax burden (as percent of GDP)



Source: Ministry of Economy and OECD stats. Note: LAC excludes Argentina. Unconventional taxes in Argentina are represented by the turnover tax (*ingresos brutos*), financial transaction tax, export duties, tax on FX purchase, among others. Data refers to 2021 or closest.

Figure 15. Selected tax rates (1990-2022)



Source: Ministry of Economy. Note: Grey areas denote economic recessions.

In recent decades, Argentina has experienced limited changes in its top statutory income and value-added tax rates, while "emergency" taxes have become more prevalent and unstable. While VAT, CIT, and PIT top statutory rates have remained relatively stable since the 1990s (**Figure 15**), it is important to note that the current tax rate database may not fully capture all policy changes. For instance, modifications in income brackets, income tax floors, and lower marginal tax rates are not reflected in the database, making

¹⁷ These figures represent overall tax collection, regardless of the final destiny of those resources (central or subnational governments). Thus, these figures are different from those in the next section.

it a weak source of information for Argentina. Additionally, export duties, which are among the most distortive taxes, have exhibited significant fluctuations (**Figure 15**).

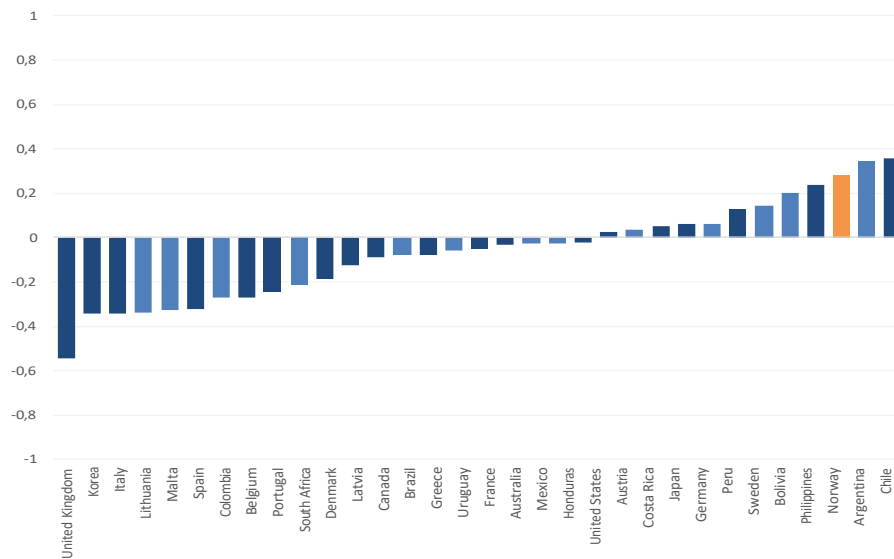
To measure the cyclicity of tax rate policy, it is crucial to consider that tax rates tend to vary very little or remain unchanged compared to government spending and other macroeconomic variables. While government spending is a continuous process, changes in tax rates typically result from parliamentary discussions, leading to a more rigid dynamic. Consistent with recent findings (Vegh Vuletin, 2015) and based on the database used (i.e., CIT, PIT, and VAT top rates), the average frequency of tax rate changes per year ranges from 0.12 to 0.20 globally. Moreover, the frequency of changes in Argentina is even lower, approximately 0.10. This means that top-statutory tax rates of the three main taxes change, on average, once every 10 years. Therefore, while the usual approach to measure cyclicity involves using the cyclical component of a fiscal variable (e.g., government consumption), it is more appropriate to utilize the percentage change in tax rates for analyzing the cyclicity of tax policy. A positive (negative) correlation between the change in tax rates and real GDP indicates a countercyclical (procyclical) tax policy stance. Furthermore, to capture the overall cyclical behavior of taxes in each country, a tax index is constructed, which comprises a weighted average of the three tax rates (weighting on their respective share of tax revenue).

$$T_i = CIT_i * Weight_{CIT} + PIT_i * Weight_{PIT} + VAT_i * Weight_{VAT}$$

When analyzing the three main taxes included in the tax index, it appears that Argentina has pursued a relatively acyclical tax policy. The correlation between changes in the tax rate index and the real GDP cycle for Argentina is +0.27, although not significantly different from zero. This suggests a tax policy that is neutral in terms of its cyclical impact, at least for the subset of taxes analyzed (CIT, PIT, and VAT). Furthermore, in a cross-country comparison, unlike what has been observed on the spending side, the cyclicity of tax policy appears to be less correlated with the country's income level (**Figure 16**).¹⁸ The analysis of each individual tax yields similar results for Argentina (see Annex C). In all three cases, Argentina is positioned towards the right end of the charts, indicating a positive correlation with GDP. However, these correlations are not significantly different from zero, suggesting that, at least regarding the top statutory rate of these taxes, Argentina has pursued a relatively acyclical tax policy in recent decades. In relative terms, these results are more favorable compared to those of its peers.

Figure 16. Correlation between the change in the Tax Index and cyclical real GDP (1990-2020)

¹⁸ See the figures in the Annex for individual cyclical correlation between PIT, CIT and VAT rates with real GDP.

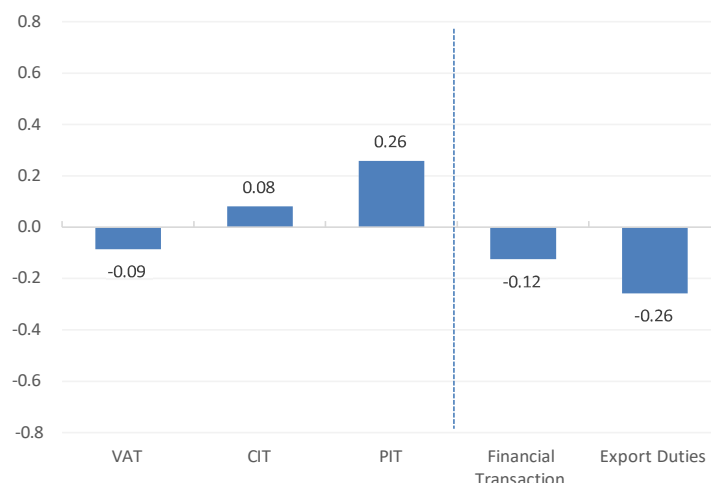


Source: Min. Economy, INDEC. Notes: the cyclical components of GDP and tax rates have been estimated using the Hodrick-Prescott filter. A positive (negative) correlation indicates a countercyclical (procyclical) tax policy.

However, as previously mentioned, traditional taxation in Argentina is less representative due to the significant role played by a wide range of heterodox taxes, as depicted in **Figure 14**. Unusual sources of revenue, which are typically more distortive, contribute to almost one-third of taxation in Argentina. Unfortunately, the availability of data poses a constraint when attempting to expand the analysis to include all sources of taxation, including these heterodox taxes. Specifically, the turnover tax presents extreme complexity as it is collected in different ways by each of the 24 provinces. Furthermore, it varies across economic sectors, and historical data availability is limited. Consequently, it becomes challenging to establish a single historical series to measure the effect of cyclicity. However, for export duties and financial transaction taxes, both collected at the federal level, readily available information is accessible.

Export duties and financial transaction taxes in Argentina exhibit a negative correlation with the economic cycle. Historically, export duties were initially implemented as emergency measures to address the inflationary impact of significant peso depreciation, typically during balance of payment crises. In line with this, export duties were reintroduced in 2002 following a sharp devaluation of the peso. However, unlike previous crisis episodes, export duties have remained a regular source of tax revenue even after the recovery from the 2002 crisis, persisting for more than two decades. The structure of export duties is complex, with varying tax rates for each product or sub-product. Notably, export duties differ across sectors and even within agricultural products. For the purpose of this study, an export tax rate index was constructed, assigning weights to each product based on its contribution to total exports. **Figure 15** illustrates significant changes in export duties over the years. These fluctuations in tax rates demonstrate a negative correlation with real GDP (-0.26), suggesting a procyclical behavior (**Figure 17**). However, the correlation is weak and not statistically significant. Similarly, the financial transactions tax was initially introduced as an emergency tax during the 2001-2002 crisis but has since become a regular tax with a constant rate of 1.2 percent. With minimal changes since its implementation, the correlation with the economic cycle is very weak, albeit negative (-0.12), as it was introduced during the economic recession of 1999-2002.

Figure 17. Correlation between change in tax rates and cyclical component of real GDP in Argentina (1990-2020)



Source: Ministry of Economy, INDEC. *Notes:* the cyclical components of GDP and tax rates have been estimated using the Hodrick-Prescott filter. A positive (negative) correlation indicates a countercyclical (procyclical) tax policy. Note: results are not statistically significant.

In summary, the analysis indicates that Argentina has pursued an acyclical tax policy, with traditional tax sources such as CIT, PIT, and VAT being less representative of overall tax revenue due to the dominance of unconventional tax sources. While correlations between traditional tax sources and real GDP are positive at both the aggregate and individual levels, they lack statistical significance, suggesting an absence of a clear relationship. Conversely, correlations between changes in tax rates for unconventional taxes like financial transactions and export duties and real GDP are negative, indicating an acyclical behavior. However, the study has limitations. It only covers the three traditional taxes, overlooking other significant sources of taxation, which is particularly relevant for countries like Argentina with a prevalence of non-traditional taxation. Additionally, using a single representative rate per tax may not accurately reflect the actual situation within each tax structure. Furthermore, it is important to note that correlations do not imply causality, and a more comprehensive analysis controlling for endogeneity issues would be necessary to establish causality. Nevertheless, previous studies (Vegh & Vuletin, 2012 and 2015; Ilzetzki & Vegh, 2008; Carneiro & Odawara, 2015) have demonstrated that the results hold even after addressing these issues using instrumental variables.¹⁹

¹⁹ These papers tend to use the following as instrumental variables: a weighted index for real GDP growth of trading partners, changes in price of exports and change of real returns on US Treasury Bills.

4. Estimating the Structural (cyclically adjusted) Budget Balance for Argentina 1993-2022

Fiscal policy analysis often centers on a government's observed fiscal balance, but it is vital to consider the impact of both permanent and temporary factors. Permanent elements are those expected under normal circumstances, aligning with optimal economic conditions. In contrast, temporary factors, such as increased social expenditure during a recession, lead to deviations from the economic trend. Failing to differentiate between these components can result in inaccurate assessments, prompting unnecessary adjustments. Notably, some fiscal deficits may not always be detrimental, and surpluses may not always be advantageous.

The structural budget balance, or cyclically adjusted primary balance (CAPB), refines the fiscal balance by excluding revenues and expenditures influenced by temporary factors. This adjustment provides a more accurate assessment by eliminating the impact of economic cycles on the observed fiscal balance. For instance, the CAPB excludes revenues boosted by transitory events or lost due to temporary recessions. This treatment extends to taxes influenced by external shocks, like the 2000s commodities super-cycle in Argentina and the LAC region.

4.1. Methodology to estimate CAPB

The CAPB is obtained by adjusting the original components—revenues and expenditures—based on the economic cycle phase. In practice, observed levels are proportionally adjusted according to the potential output to actual output ratio, considering built-in elasticities that capture the relation between the output gap and changes in revenues and expenditures. Van den Noord (2000) defines the CAPB, b^s as:

$$b^s = \frac{\sum_i T_i^s - G^s + X}{Y^s} \quad (1)$$

where T_i^s is the structural component for the i th category of tax, G^s is the structural current primary government expenditure, X refers to non-tax revenues, and Y^s is the level of potential output. To refine the fiscal stance, especially in Latin American countries, we deduct interest payments on public debt from expenditures, as proposed by Alberola and Montero (2006). As mentioned, we refer to structural components as the elements adjusted proportionally according to the ratio of potential output to actual output and the assumed built-in elasticities. This is

$$\frac{T_i^s}{T_i} = \left(\frac{Y}{Y^s}\right)^{\alpha_i} ; \frac{G^s}{G} = \left(\frac{Y}{Y^s}\right)^{\beta} \quad (2)$$

where Y , G and T_i are the observed output, current primary government expenditure, and receipt of the i th tax category respectively. α refers to the elasticity of i th tax category with respect to output while β is the elasticity of current government expenditures with respect to output.

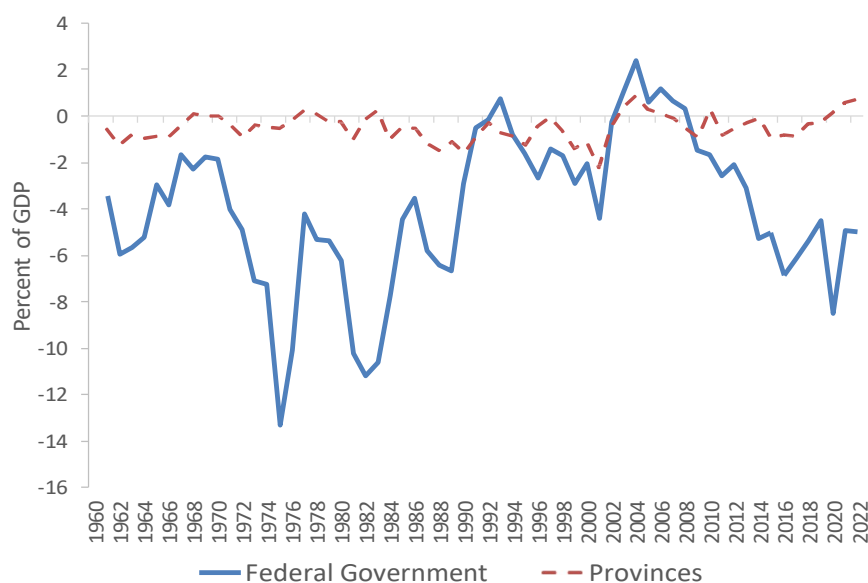
It is essential to note that the cyclical component of the budget balance is influenced by estimated output gaps, weights of tax revenues per category and current primary expenditure, and the built-in elasticities. From the observed budget balance (b) we can also derive the cyclical component (b^e) as

$$b^e = b - b^s \quad (3)$$

In contrast to other regional studies this approach will focus exclusively on the Federal Government Budget Balance. Many comparable studies center their analyses on the evolution of the General Government balance (Alberola & Montero, 2006; Armendáriz, 2006; Basco et al, 2007; Daude et al, 2010).

However, this section opts for a more specific focus on the federal government budget balance for two noteworthy reasons. Firstly, in Argentina's context, the trajectory of the general government fiscal accounts is predominantly influenced by the federal government's accounts. With the exception of a brief period in the late-1990s, sub-national administrations (i.e., provinces) have generally maintained balanced or slightly deficit-ridden public accounts (**Figure 18**). Secondly, in accordance with Musgrave's seminal work in 1959, the stabilizing function is typically entrusted to the central government.

Figure 18. National and Subnational fiscal balances (1961-2022)



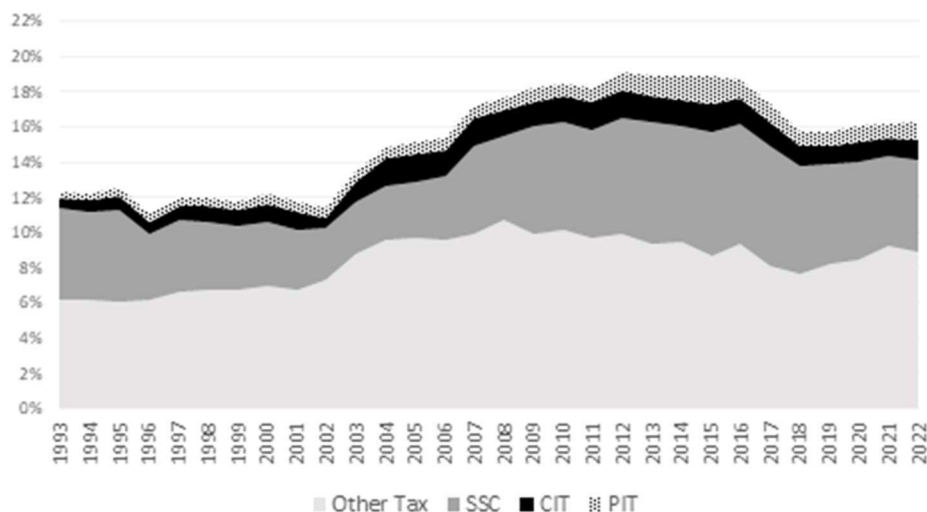
Source: Ministry of Economy.

Conforming to the literature, we categorize taxes into four distinct groups, each exhibiting different elasticities to the economic cycle. Notably, considering that the federal government retains roughly 42 percent of the receipts for various tax categories in Argentina, this study simplifies its analysis by relying on the resulting share of resources officially recorded as central government revenue, an estimation based on data published by the Ministry of Economy (**Figure 19**).^{20 21} These categories are as follows: i) Personal Income Tax (PIT), averaging 2.3 percent of GDP over the past decade, with nearly 1.1 percent of GDP allocated to the Federal Government; ii) Corporate Tax (CIT), constituting an average of 2.9 percent of GDP in the last 10 years, of which 1.3 percent of GDP remained in the Federal Government; iii) Social Security Contributions (SSC), representing approximately 6.2 percent of GDP on average during the last decade; iv) Indirect taxes, aligned with developed countries, emerge as the most significant source of taxation. The portion retained by the Federal Government averaged 8.8 percent of GDP in the last decade, with VAT serving as the primary tax source (3.5 percent of GDP).

²⁰ More than 80 percent of taxation in Argentina is collected by the central government, as part of the fiscal federalism arrangement. Part of the centrally collected taxes is automatically channeled to the revenue sharing scheme (*Regimen de Coparticipacion*), which shares the proceeds between the central government and the provinces. Currently almost 60% of the eligible tax collection is transferred to provinces, while 40% remains at the central government.

²¹ It is worth mentioning the role informality might play in different phases of the cycle. In developing economies, where the informal sector is more prominent and higher growth rates are more common, Heintz (2006) suggests that informality may decline, posing an additional effect on tax receipts.

Figure 19. Tax categories as a share of the GDP (1993-2022)



Source: Ministry of Economy.

Elasticities were primarily calculated through regression analysis (as in Alberola & Montero, 2006) for each tax receipt considered (CIT, PIT, SSC). In order to filter out the cyclical part of revenues, the elasticity of T to output is computed from the following regression.

$$\log T_t = a + b \log Y_t + e_t \quad (4)$$

The output elasticity of indirect taxes with respect to the economic cycle is set to unity given that is mostly proportional to its main tax base, an approach widely adopted by the OECD Secretariat (Van den Noord, 2000, Daude et al., 2010, Girouard and André, 2005). Regarding the adjustment of expenditure for changes in economic activity, Current primary expenditure (G) of the Federal government is assumed to fluctuate in proportion to unemployment-related expenditure. Nevertheless, Giorno et al. (1995) point out that while it would be preferable to adjust unemployment benefit expenditure directly (and any other cyclical components of government expenditure), even with significant increases in unemployment, these expenditures remain a small part of total government expenditures. Due to the lack of data and given the insignificance of unemployment-related benefits in Argentina, we assume, as others, that current expenditures do not respond automatically to the cycle at all (Daude et al., 2010; Alberola & Montero, 2006).

To calculate the potential output, we apply the Hodrick-Prescott (1997) filter, a methodology widely used to derive the long-term output trend. The HP filter refers to a data smoothing technique, typically used to remove short-term fluctuations associated with the business cycle.²² Removing these short-term

²² Some other CAPB exercises make use of the total factor productivity method to calculate potential output. However, for the case of Argentina, the size of the informal economy undermines the confidence of any data availability, particularly regarding the labor statistics that need to be considered for the approach. Capital stocks are also difficult to measure in general, and more

fluctuations helps reveal long-term trends of variables, such as GDP series. The availability of a long time series of the Argentinian GDP (1961-2022) that far exceeds the period analyzed allows for a more precise estimation of the cycle.²³

This study explicitly addresses the direct impact of commodity export taxes on the structural budget balance. Export taxes on food products are tied to global commodity prices. Accordingly, when these prices soar, the governments' tax revenues increase, immediately improving their fiscal position. It is worth noting that second round effects from a spike in commodities prices boosting the agricultural production and exports, are not being captured by this approach, as this exercise focuses exclusively on direct tax revenue stemming from export duties. These sources of taxation are not commonly used but are particularly relevant in a few commodities-reliant developing countries. Thus, several studies recalculate the receipts from these sources of taxation by applying a long-term price adjustment related to the commodities exported by the country under analysis (Marcel et al., 2001; Alberola & Montero, 2008; Basco et al., 2007; Daude, 2010). This study considers export duties generated by commodities exports, thus leaving aside export duties applied to non-commodities products.

$$b^s = \frac{\sum_i T^s - G^s + X + R_c^s}{Y^s} \quad (5)$$

From (5) we can account for the impact of commodities prices through the receipts obtained from export duties. We define structural revenues related to commodities (R_c^s) from the following equation

$$R_{et}^s = R_{et} (p_t^l)^{\gamma} \quad (6)$$

where R_e are the export duties obtained strictly from commodity products, p^l is the long-run price of commodities and p is the spot price of commodities. Price elasticity γ is considered to be unitary following the approach of Marcel et al. (2001), Zettelmeyer & Hollar (2008), and Daude et al. (2010).

Argentina introduced export duties after the 2002 crisis to capitalize on the devaluation of the currency among other considerations. This source of taxation was typically used in the past as an emergency source of funding during a balance of payment crisis. The sharp devaluation of the peso in early 2002 and its potential impact on domestic prices was an opportunity to establish an export tax on all products, with heterogeneous tax rates: higher for the main agri-food export products and oil, and lower for processed products such as heavy manufactures. **Figure 20** shows the evolution of export duties as a share of the GDP, discriminating between those arising from commodities and non-commodities sources. As observed, the increase of global commodities prices during the 2000s contributed to raising tax revenues from this source. Notably, the 2008 peak of export duties, contributing to fiscal revenue with almost 3 percent of GDP, matches the first boom peak in the so-called commodities super-cycle.

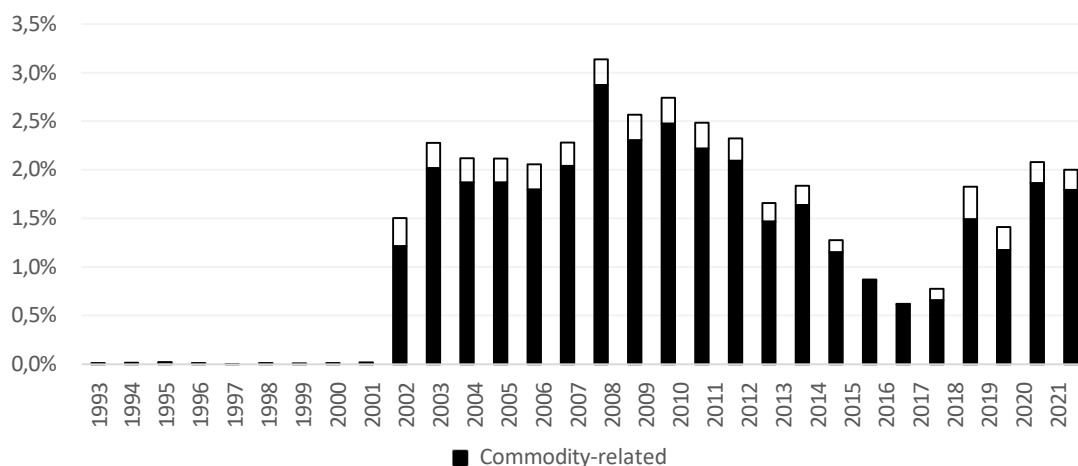
To understand the impact of export duties on public accounts, long-term prices of commodities are considered. We follow Marcel et al. (2001) and Zettelmeyer & Hollar (2008) assuming a unitary elasticity price of the exports and adjusting the revenues applying the long-term price of the exports considered.

prominently in developing countries. It is also worth considering that in unstable economies like the Argentinian, the concept of potential output that points to the use of the full capacity of production factors loses some clarity (Alberola & Montero, 2006).

²³ Real GDP series for Argentina is constructed based on ONP 2004, Ferreres, and current INDEC data.

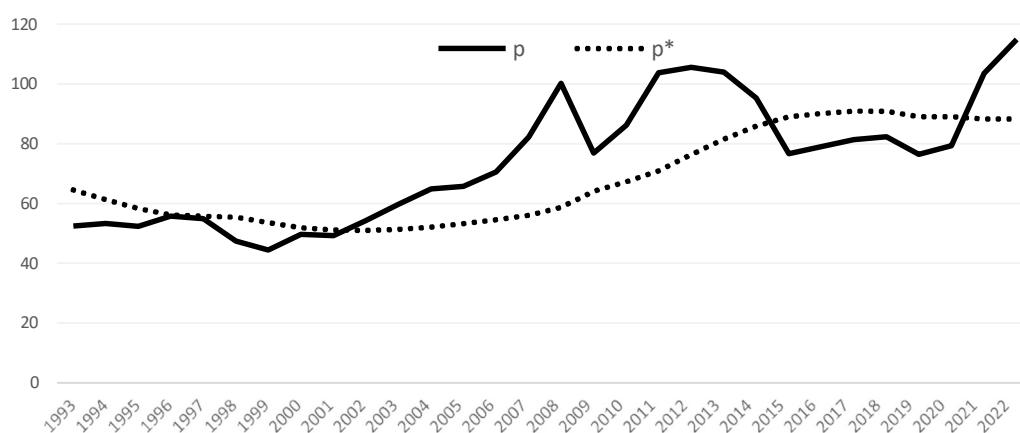
We do this by considering a 10-year moving average of the IMF commodity Terms of Trade database.²⁴ **Figure 21** plots the index considered and the moving average that seeks to replicate a notional equilibrium price of the country's export basket.

Figure 20. Export duties as a share of the GDP (1993-2022)



Source: Own estimates based on AFIP.

Figure 21. Export prices (spot and long-term trend; Index 2012=100; 1993-2022)



Source: Own estimates based on IMF Commodity Terms of Trade index.

Since the introduction of export duties in 2002, commodity prices almost doubled until 2008 and then peaked again in 2012. Since 2014 onwards, prices returned to values comparable to the earlier 1980s (not displayed in the graph) before rising again as a consequence of the Covid-19 crisis and, more recently, the war in Ukraine. Using the 10-year moving average prices (p^*) permits smoothing cyclical shifts. Regardless of the discussion around the transitory or permanent feature of the 2000s so-called commodities super-

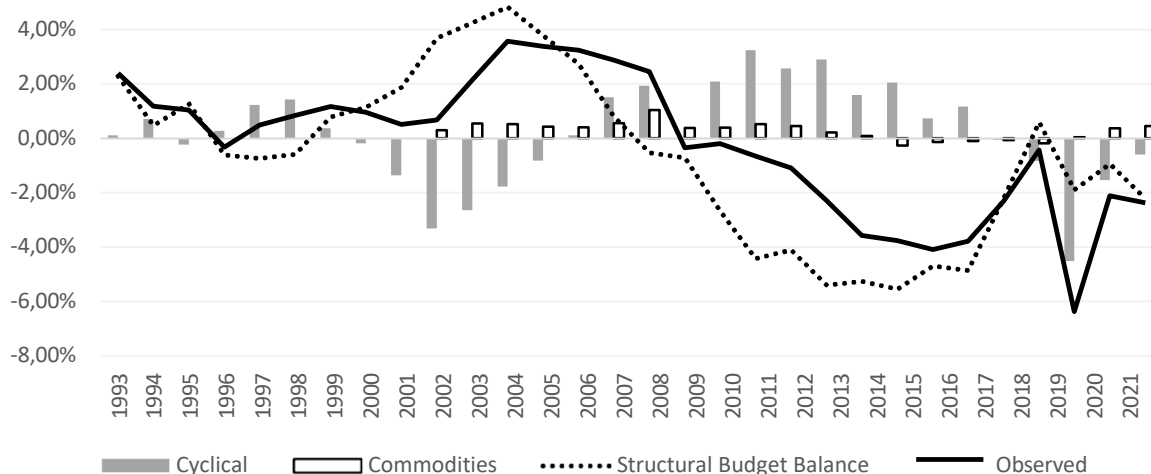
²⁴ The Commodities Terms of Trade database can be found at <https://data.imf.org/>. This and other indices are built from the change in the international prices of up to 45 individual commodities and are weighted using commodity-level trade data. We considered the yearly average of the Commodity Export Price Index, Individual commodities weighted by the Ratio of Exports to Total Commodity Exports (June 2012 = 100).

cycle, notably Argentina maintained its export duties as a regular source of taxation even after the economy fully recovered from 1999-2002 crisis and after the end of the commodities super cycle, providing annual fiscal revenue for more than 1.7 percent of the GDP (on average) since its implementation.

4.2. Results

As stated before, the CAPB considers only the structural components of tax receipts and public expenditures. **Figure 22** exhibits the Federal Government observed primary balance from 1993 to 2021 as well as the estimated CAPB. Accordingly, the chart breaks down the difference between the non-commodities cyclical components of the budget and the cyclical contribution of commodity-related revenues.

Figure 22. Cyclically adjusted primary balance as share of GDP (1993-2022)



Source: Own estimates based on INDEC, Min. Economy, IMF.

During the "convertibility plan"²⁵ (1991-2001), the Federal Government successfully achieved a balanced primary fiscal position. This accomplishment was a result of both domestic fiscal policy reforms and favorable economic conditions. Specifically, positive cyclical resources played a significant role, contributing over 1.4 percent of GDP at the peak of the economic cycle in 1998.

However, the outbreak and immediate aftermath of the 2001/2002 crisis had a considerable impact on tax receipts. This can be observed from the negative cyclical component experienced during the downturn from 2001 to 2005. To mitigate the effects of the crisis, the government introduced export duties, which not only helped stabilize public accounts but also led to an improvement in the cyclically adjusted primary balance (CAPB).²⁶

²⁵ The Convertibility plan was the monetary reform initiated in 1991, consisting in the implementation of a hard peg between the Argentine peso and the US dollar (AR\$ 1 equals US\$ 1).

²⁶ The considerable improvement observed in the fiscal accounts after 2002 was the result of export duties introduced and a substantial fall in the current primary government expenditure which went down in real terms by 19.6% in 2002 versus the 1999 figures.

In the late 2000s, the country experienced a sustained surplus in its fiscal accounts, primarily driven by a robust economy and favorable commodity prices. The combination of these two factors resulted in cyclical revenues contributing almost 3 percent of GDP in 2008, which marked the last year the country exhibited a surplus in its fiscal accounts.

Special attention should be given to the cyclical revenue derived from commodities. During the peak²⁷ of the "*supercycle*" in 2008, our estimates indicate that commodities-related export duties accounted for nearly 1.1 percent of GDP in additional receipts.²⁸ Furthermore, if a hypothetical stabilization fund based on commodities prices had been established, it could have collected the equivalent of 2 percent of GDP between 2006 and 2008. This period coincided with a fiscal surplus and high commodity prices, which provided extra cyclical resources.

Starting from 2009, the public sector experienced a significant deterioration in its fiscal accounts, running large deficits primarily due to discretionary expansionary policies until the mid-2010s. This led to a further deepening of the structural deficit. Between 2016 and 2019, the government implemented a consolidation path, aiming to achieve a virtual balance by 2019. This was done in the context of a program with the IMF and a balance of payment crisis. In 2020, the response to the Covid-19 crisis resulted in an expansion of the deficit to over 6 percent of GDP, with a cyclical impact of -3.3 percent of GDP.

Unlike the aftermath of the 2009 global financial crisis, by 2022, the country faced a challenging post-crisis period with a worse structural fiscal position. The financial crisis taken place in 2008 shook up numerous economies around the world, forcing severe fiscal adjustments. This was not the case in many Latin American economies, including Argentina, for which strong fiscal positions enabled them to face the crisis in relatively good shape (Daude et al., 2010). However, Argentina has struggled with macro-fiscal imbalances since the end of the commodity super-cycle. Even as commodity prices began to decline from 2012 to 2015, Argentina's public recurrent spending continued to rise. Limited buffers and procyclical policies have further exacerbated the impact of external shocks, such as drought, the pandemic, and rising fuel prices. After a three-year recession and almost a decade of stagnation, along with a severe balance of payments and fiscal crisis (including a debt restructuring operation in 2020), the country now faces the challenge of resuming growth with a much weaker structural fiscal position compared to a decade ago.

4.3. Discretionary fiscal policy cyclicity

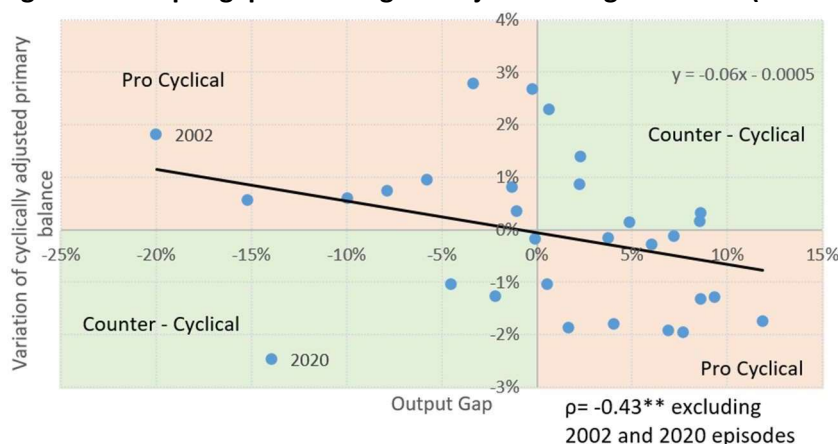
By analyzing the variation in the CAPB along the business cycle, it is possible to estimate the cyclical stance of discretionary fiscal policy. Under this approach, a fiscal policy is considered counter-cyclical if the CAPB increases (reducing the deficit or increasing the surplus) during a year with a positive output gap, or if the CAPB decreases (reducing the surplus or increasing the deficit) when the output gap is negative (Daude et al., 2010). **Figure 23** depicts the changes in the CAPB and the level of the output gap from 1993 to 2021. Our analysis confirms that the fiscal policy in Argentina exhibits a procyclical stance. Only a few years exhibit a countercyclical mix between the output gap and variation of CAPB. Moreover, excluding 2002 and 2020 for their exceptional nature, the overall correlation between the output gap and changes in the

²⁷ Our methodology considers the year 2008 the peak as it is the year where the spot price (p) reaches the highest point relative to the long-term price (p*) considered, even though prices were higher in 2012.

²⁸ These results are below other comparative studies which used other approaches (Basco et al., 2007; Alberola & Montero, 2008; Daude et al., 2010).

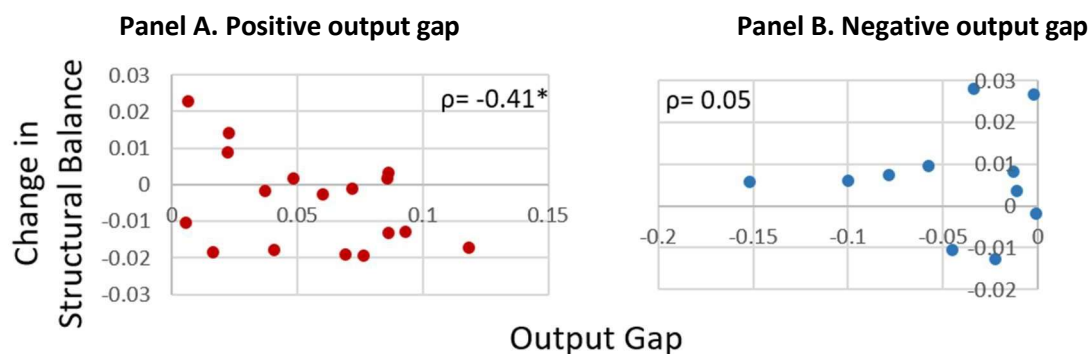
CAPB is negative and significant at -0.43. To deepen our comprehension of the change in the structural balance, **Figure 24** illustrates the fiscal response in different phases of the cycle.

Figure 23. Output gap and change in adjusted budget balance (1994-2022)



Source: Own estimates based on Ministry of Economy, INDEC, IMF.

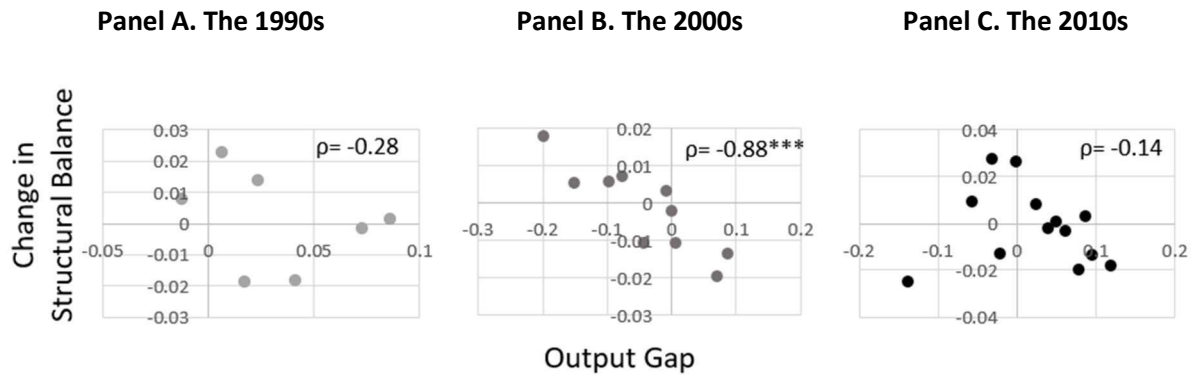
Figure 24. Output gap and CAPB variation (1994-2022)



Source: Own estimates based on Min Economy, INDEC, IMF.

The analysis indicates that discretionary fiscal policy in Argentina is more pro-cyclical during economic booms, when the output gap remains positive (with a correlation of -0.41). While an uptick in economic activity can lead to increased tax revenue and automatic stabilizers, this does not translate into a stronger fiscal position. The higher procyclicality during booms compared to crises (with a correlation of 0.05) suggests the need for additional mechanisms to ensure effective use of public funds during positive phases. Unfortunately, there has been little progress over time. **Figure 25** illustrates this trend by dividing the 29-year sample into three decades. It shows that the correlation between the output gap and changes in CAPB increased significantly in the past two decades compared to the 1990s, indicating a more pro-cyclical fiscal stance, a finding that aligns with Daude et al. (2010).

Figure 25. Output gap and change in CAPB (1994-2021)



Source: World Bank based on Ministry of Economy, INDEC, IMF.

Results show that Argentina's fiscal policy has exhibited a procyclical nature, failing to effectively stabilize the economy. Expansionary fiscal policies during economic upswings have hindered improvements in savings and raised sustainability concerns. This procyclicality amplifies economic fluctuations rather than mitigating them. Adopting a countercyclical fiscal approach would benefit the country by promoting fiscal discipline during economic booms, enhancing resilience to economic fluctuations, and ensuring a more sustainable fiscal framework.

5. Concluding remarks

This paper contributes to the existing literature on fiscal cyclicity analysis by adopting a multi-layered approach that encompasses both aggregate fiscal items and specific policy components. Updating previous studies, our analysis confirms that Argentina has exhibited pronounced procyclicality in its fiscal policies, particularly driven by public spending. Furthermore, focusing on specific fiscal items such as pensions, the wage bill, and traditional tax sources, our findings provide up-to-date evidence that aligns with broader literature highlighting the country's pro-cyclical tendencies.

This paper goes further than existing literature by dissecting the sources of procyclicality within these specific fiscal items. By examining the price and quantity effects, we uncover crucial insights into the underlying dynamics driving fiscal procyclicality in Argentina. Our analysis reveals that pension spending in Argentina is primarily influenced by price effects, attributable to the erratic and poorly designed indexation mechanisms. In contrast, the public wage bill displays strong procyclicality driven by both quantity and price effects, underscoring the complexity of fiscal dynamics in the country.

Looking ahead, the methodology proposed in this paper offers a promising avenue for further research. Expanding this approach to other fiscal items in Argentina and replicating it in other countries could provide a comprehensive understanding of fiscal procyclicality dynamics globally. Such insights hold significant implications for policy makers, offering valuable guidance in designing more effective policy levers to achieve fiscal policy objectives, including macroeconomic stabilization. By leveraging these findings, policy makers can enhance the resilience and effectiveness of fiscal policy frameworks, ultimately contributing to more stable and sustainable economic outcomes.

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Annex A. Methodology to capture procyclicality

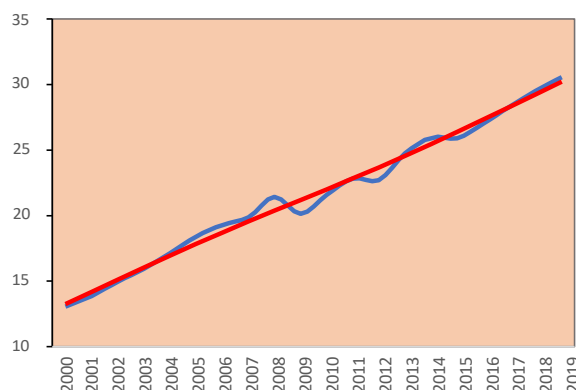
The purpose of the analysis is to see how the fiscal authority is conducting fiscal policy over the business cycle. Accordingly, the initial step is to have historical data both on GDP and fiscal accounts. In particular, the methodology consists in the following:

1. Define any fiscal instrument/variable we want to analyze (e.g. government spending)
2. Put together the historical series of both the fiscal instrument and the GDP, in real terms.
3. Get the trend series of both variables by applying HP filter or similar methods in order to decompose the cyclical and the trend components of the series.
4. The difference between the original series and its trend is the cyclical component of each variable. For instance, if real GDP (at any given point in time) is above its (HP) trend, the economy is in “good times” and the cyclical component would be positive (see Example Figure below).

Cyclical component i: $\text{Original Series } i - \text{HP Trend } i$

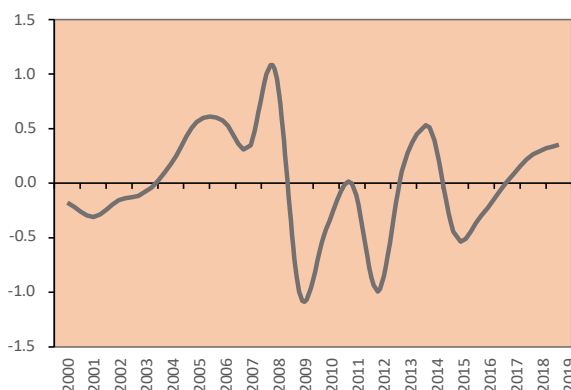
5. Once we have the cycle of both series (fiscal instrument and GDP), we calculate the correlation of both cyclical components.
6. If the correlation is positive, then we define the fiscal instrument as procyclical as it increases in good times and decreases in bad times, and vice versa.

Figure 26. Country A Real GDP vs HP Filter Trend



Source: IMF Database

Figure 27. Country A GDP Cycle (Real GDP-HP Trend)



Source: IMF Database

Annex B. The cyclicity of personnel spending in subnational governments: 24 different realities

Sub-national governments (SNGs) bear most of the public spending on salaries in Argentina, as they are accountable for providing the main public services. The type of federalism in Argentina, characterized by a strong original empowerment of SNGs, has shaped most of the multiple fiscal reforms over time. Following a long period of little decentralization and virtually no vertical fiscal imbalance (SNGs collected and spent close to 30 percent of total public revenue and spending, respectively), Argentina decentralized a large part of its public service provision through the last quarter of the last century. Therefore, since the 1990s, almost 45 percent of total spending has been executed by SNGs, while they collect no more than 22 percent of total revenue. Namely, provinces are now (and for the past three decades) accountable for the provision of public education (except for higher education), public health care and security, as the three main responsibilities. Consequently, almost $\frac{3}{4}$ of the total public wage bill in Argentina is currently executed by SNGs.

SNGs have conducted a strongly procyclical public wage bill policy in recent decades, both by procyclical “price” (wages) and “quantities” (staff) policies. In general terms, this is true for most of the provinces. However, as is usually the case when referring to Argentine provinces, there are relevant heterogeneities worth pointing out. For instance, three provinces stand out for being the less procyclical (or acyclical) quite far from the rest, broadly speaking (Chubut, San Luis, Neuquén) (Figure 28). In aggregate terms, both “price” (wages) and “quantities” (number of staff) effects have been strongly procyclical (correlation coefficients above 0.60, statistically significant). However, while price effect appears more procyclical across the board, the staffing policies (quantities effect) have been quite different between provinces. For instance, provinces such as San Luis, Córdoba and Santa Fe, differ from the rest, by having conducted personnel hiring policies with barely any (or even negative in the case of San Luis) link to the business cycle.

Figure 28. Decomposition of SNG Wage Bill cyclicity 1990-2021 (number of public service staff and average wage)

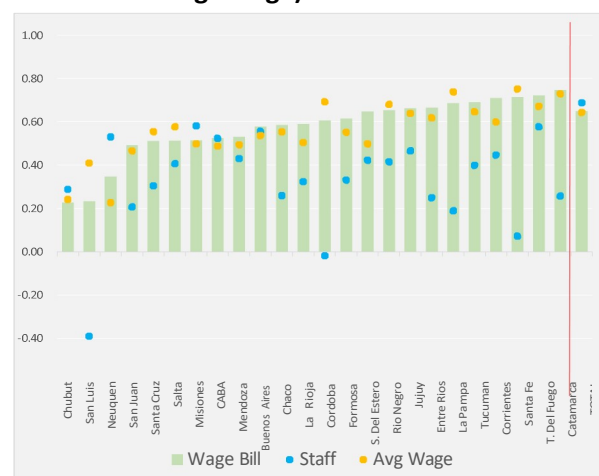
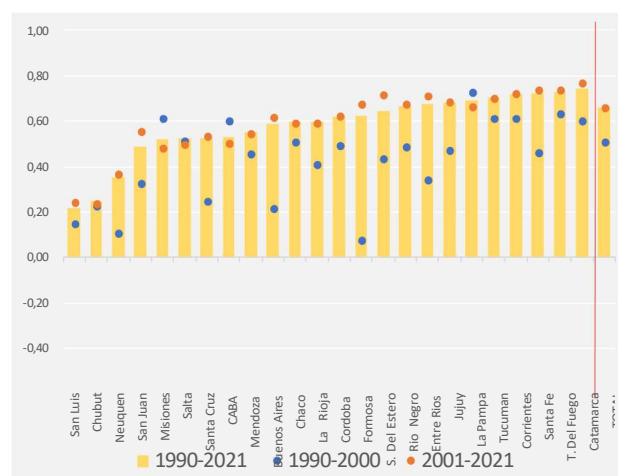


Figure 29. Public wage bill cyclicity over time and per province (1990-2021; 1990-2000; 2001-2021)



Source: Ministry of Economy. Notes: the cyclical components of GDP and public spending have been estimated using the Hodrick-Prescott filter. Public spending is considered in real terms, deflated by CPI.

Moreover, public spending on wages became more procyclical in recent decades for most of the provinces, with only a few exceptions. Regardless of the level of cyclicity, 19 provinces increased their levels of cyclical correlation between public spending on wages and GDP in the past decades. As mentioned before, the unprecedented expansion of the public wage bill during the 2000s (specifically between 2004 and 2015) may have contributed significantly to these dynamics. There are only a few cases, where the public wage bill policies became less procyclical than in the 1990s. Only Misiones, the City of Buenos Aires, and La Pampa managed to mildly reduce their cyclical correlation between their public wage bill and GDP.

Annex C. Sources of Data

Annex: Data Sources

- Public Spending by Country and GDP Growth Rates:

The data on public spending by country and GDP growth rates were sourced from the International Monetary Fund's World Economic Outlook (IMF WEO) database. These figures provide a comprehensive overview of fiscal dynamics across various nations.

- Wage Bill Public Spending per Country:

Information on wage bill public spending per country was obtained from the Government Finance Statistics (GFS) of both the International Monetary Fund (IMF) and the Organisation for Economic Co-operation and Development (OECD) statistics.

- Pensions Public Spending per Country:

The data on pensions public spending per country was collected from two primary sources: the Organisation for Economic Co-operation and Development (OECD) statistics and the Economic Commission for Latin America and the Caribbean (CEPAL).

- Tax Collection per Country:

The data on tax collection per country is derived from the Organisation for Economic Co-operation and Development (OECD) statistics. This dataset offers a comprehensive perspective on tax revenue across different nations, facilitating international comparisons based on general government statistics.

- International Comparison using General Government Statistics:

All international comparisons consider general government statistics whenever available. This approach ensures consistency and comparability across countries, contributing to a robust cross-country analysis.

- Tax Rates:

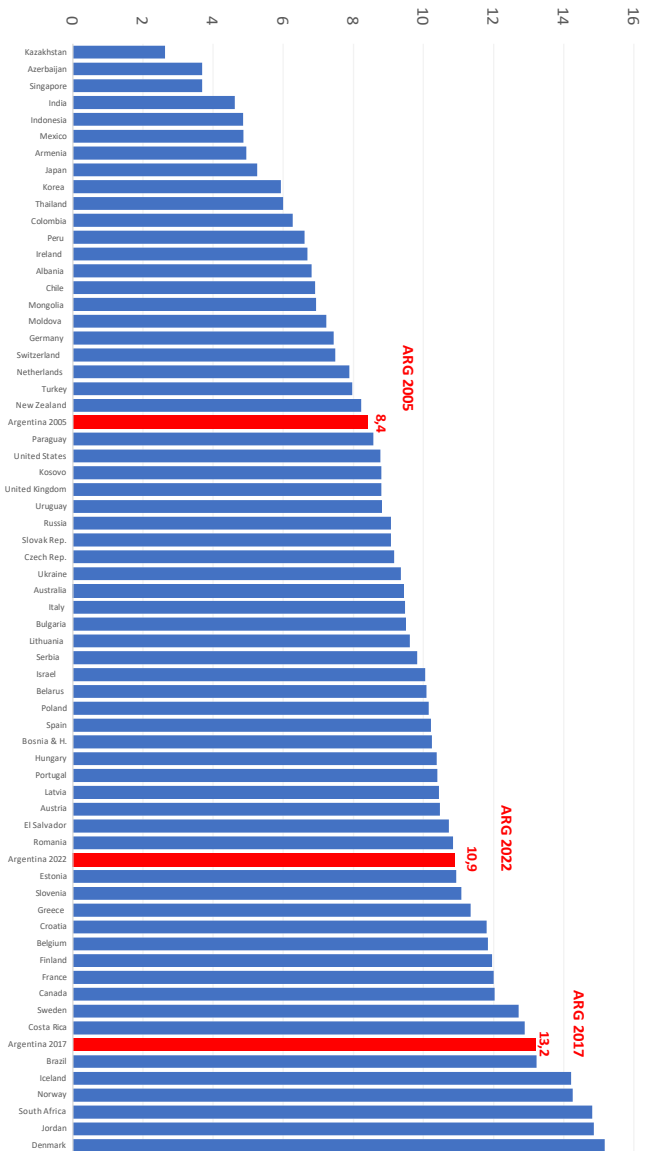
Tax rate data was sourced from the database developed by Vegh et al. in 2017.

- Argentina-Specific Data:

For public spending data specific to Argentina, information was gathered from the Oficina Nacional de Presupuesto (National Budget Office) and the Cuenta de Inversion (Investment Account). Tax revenue data for Argentina was sourced from the Secretaria de Ingresos Publicos (Secretary of Public Revenues) and the AFIP database, providing a detailed breakdown of tax collections in the country.

Annex D. Additional figures and tables

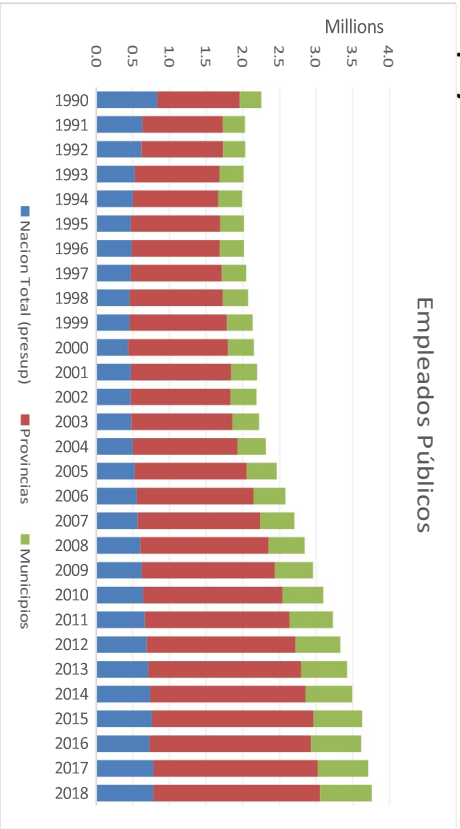
Figure 30. Public Wage bill per country (as percent of GDP – Year 2021)



Source: GFS IMG, Ministry of Economy of Argentina.

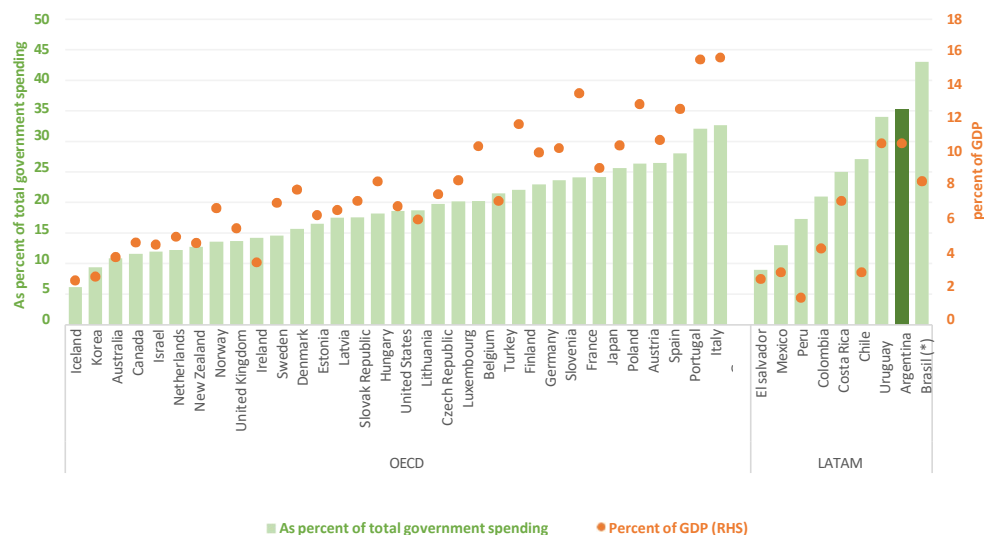
Note: Data refers to 2020/2021, except for Argentina (year 2005-2017 -2022).

Figure 31. Public Employees 1990-2020



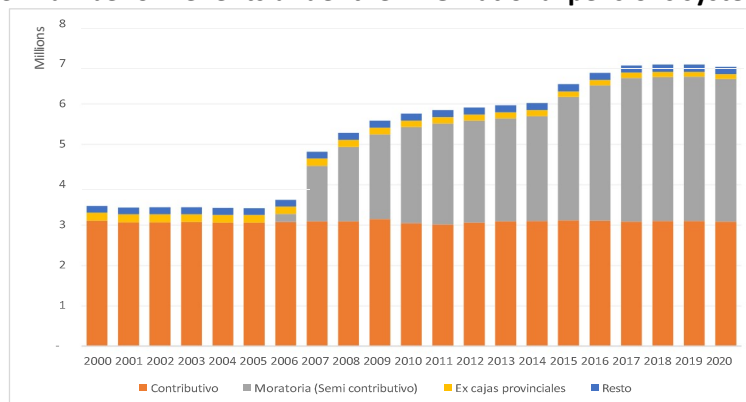
Source: Ministry of Economy and Orlando Ferreres.

Figure 32. Public spending on pensions (as percent of GDP – 2021 or closest year)



Source: OECD stats and Ministry of Economy of Argentina

Figure 33. Number of Benefits under the ARG National pensions system (2000-2020)



Source: Ministry of Economy

Figure 34. Correlation between changes in CIT rate and the GDP cycle

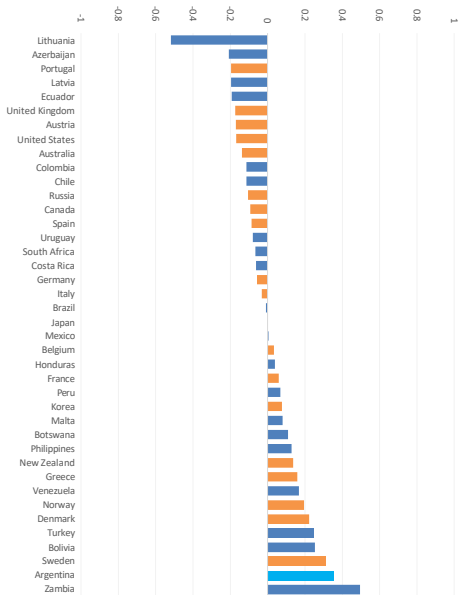


Figure 35. Correlation between changes in PIT rate and the GDP cycle

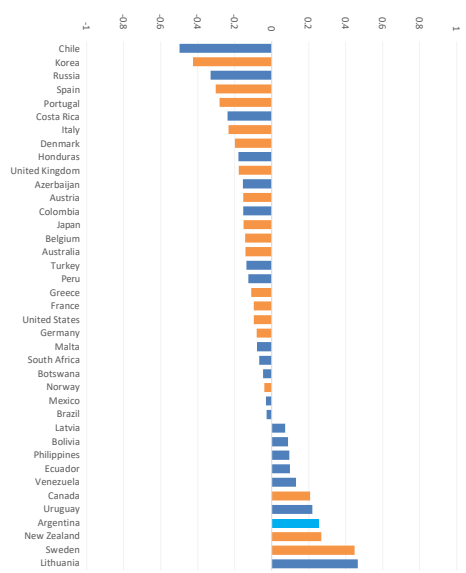


Figure 36. Correlation between changes in VAT rate and the GDP cycle

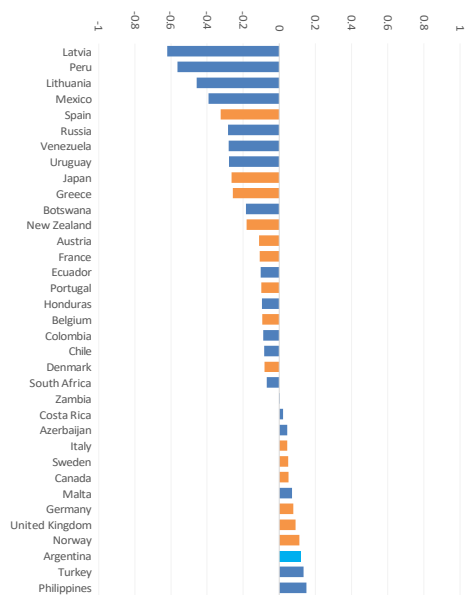
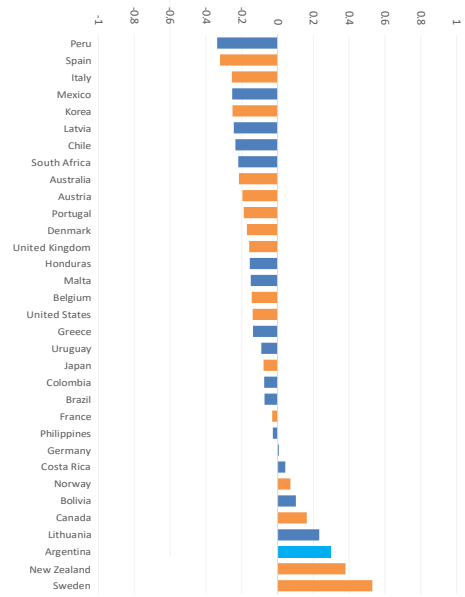


Figure 37. Correlation between changes in Tax Index and the GDP cycle



Source: World Bank data, Ministry of Economy.