DID FISCAL RULES CONTRIBUTE TO IMPROVE PROVINCES' FISCAL SITUATION IN ARGENTINA?

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I. INTRODUCTION

The mounting interest over the performance of fiscal responsibility rules is shown by the increased number of papers in the Literature devouted not only to assessing central governments' response to them in countries of the European Union but also, and to a wide extent, when they were aimed to assessing rules' impact, efficacy and effectiveness when these were extended or applied to provinces or state governments' perfotmance (e.g. Argentina, USA and Canada).

In spite that what the above paragraph highlights is undeniable, the literature does not reflect a unanimous stance both with respect to what motivated the use of fiscal rules and to their real impact upon governments´ fiscal situation. In this connection J, Poterba (1996), a pioneer in the study of the fiscal policy of states in USA, held that fiscal rules behaved as a formal enforcement mechanism seeking to restraint short term borrowing on the part of states

The paper by Poterba summarized state balanced budget requirements, and the available empirical evidence on the effect of these rules over state fiscal policies. Existing state rules differed from many current proposals at the federal level. They were typically restricted to part of the state budget, they frequently permitted short-term borrowing, and they lacked formal enforcement mechanisms. The paper also surveyed previous research on how anti-deficit provisions affected state fiscal policy.

Another worth quoting paper (A. Melamud (2010)) viewed fiscal rules appearing in emerging and developed economies, during the nineties, as a means to limiting governments' discretionary behaviour regarding levels of spending and indebtedness in order to ensure macroeconomic stability. In his analysis of the Argentine case, fiscal rules helped in 2002 to restore subnational public finances badly hurt since 2001 due to three main factors:

a long lasting economic recession, the excessive burden of debt services and the no possibility to acceding to financial and capital markets.

By expressing a rather different vision upon fiscal rules' efficacy, V. Koen and P. van den Noord (2005) held that margins for one off and creative accounting procedures would mean that the budget still retained some ability to respond to adverse shocks even in the presence of a numerical budget rule, and that in turn implied that fiscal rules would not be always binding.

In turn, S. Tapp (2010), in his paper devoted to analyzing how fiscal rules were used in Canadian provinces, asserted that they played a supportive role in achieving improvements in many of the most important Canadian fiscal consolidations over the past three decades. Nevertheless, Tapp raised serious doubts on fiscal rules' capability to improving governments' finances by their own unless they in turn relied on "clear policy goals, political will, public support and a strong budget and reporting practices".

In line with what has been highlighted above, the following three objectives will be addressed in this paper: first, a conceptual discussion of fiscal rules, for what a number of related papers in the literature will be reviewed; second, an analysis of programmes and laws through which Argentine Fiscal Rules were articulated since 2002 to the present and third, quantitative analysis of Argentine fiscal rules´ performance at the provincial level for what econometric approaches will in turn be used, as logit models, in so far as they offer a more direct and parsimonious way of assessing fiscal rules´ variables compliance. Thus, quantitative results are expected to shed light on fiscal rules´ performance regarding public spending and debt ratio limits as well as provinces´ compliance of required balanced budgets[1].

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[1] It is important to note here that balanced budget compliance might here put at stake provinces´ capability to successfully handle stabilisation plans during recessions should the former mean public spending curtailments.

The remainder of the paper is organised as follows: Section II presents an empirical literature review. Section III focuses upon programmes and laws articulating Argentine Fiscal Responsibility Laws whose compliance is also mandatory for provinces and municipalities. Section IV presents stylized facts regarding the performance of Fiscal Rules in Argentina. Section V describes the econometric logit model used and reports empirical results and Section VI concludes.

II. RELATED LITERATURE REVIEW

In a pioneering study of fiscal rules' behaviour. J. Poterba (1996) addressed the case of USA states in which, he asserted, these differed from many current proposals existing at the federal level. In such a context the author summarized state balanced budget requirements as well as available evidence of the rules on state fiscal policies.

After carrying diverse surveys found correlation between states´ balanced budget rules and fiscal policy showing that constitutional or legislative made costlier to balance budgets either by resorting to tax increases or by issuing long term debt; in this connection, short run effects of anti-deficit persisted as states reducing spending to satisfying the constraint also exhibit lower long-run spending levels.

For what was highlighted above, Poterba posed that the critical question for policy evaluation is how to interpret correlations between budget institutions and fiscal policy outcomes; that is, whether they simply reflected a correlation between fiscal discipline, fiscal institutions, and an omitted third variable such as voters taste for fiscal restraint.

In a paper of 2099, the IMF placed the origins of fiscal rules in developed and developing countries' concern for the sustainability of their public finances due to the sharp increases in their deficits and public debt

and, in this connection the article discussed design and implementation of rules based on its members' new databases and the former's usefulness for support fiscal consolidation.

For the Fund, fiscal rules needed being credible for putting debt on a sustainable path as well as flexible enough to respond to shocks while at the same time insisting in that although the use of cyclically adjusted balanced rules could be better to dealing with output shocks, cyclical adjustment required care. For that, the paper also included aspects such coverage of rules, extent to which rules should respond to past deviations and the importance of effective monitoring and enforcement procedures.

In analyzing the Argentine public sector, Melamud and Rosenwurcel (2018) stressed that existing fiscal deficit levels were no sustainable in the medium term given that financing needs would provoke acceleration of inflation or, even worse, the growth of public debt to levels no compatible with macroeconomic equilibria.

As adjusting the fiscal deficit by resorting to shock policies could be neither feasible nor desirable in economic, political or social terms, the authors envisaged a gradual reduction of debt mainly based on economic growth and a viable rule whereby spending grew less than inflation (as stated in the last reform of the Fiscal Responsibility Law as only this would be conducive to a reduction in the relation between deficit and product.

While the authors stressed that fiscal rules, according to international experiences, were best fitted to achieving the above mentioned objective, they pointed out that the problem in Argentina resided in the instability and changes in the existing legal mechanisms. Nevertheless, they considered adequate changes introduced by Lay 27428 (standing as of January 2018) whereby a period of gradual convergence, with primary deficit targets for the national government of 2.7% and 2.2% of GDP for 2018 and 2019 respectively, notwithstanding that certain ambiguities still existed in fiscal rules.

In their paper on whether EU fiscal rules supported or hindered counter-cyclical fiscal policy Larch et al (2020) addressed the matter by using first a conventional reaction function equation later completed with an interaction term aimed at better examining possible drivers of pro-cyclical fiscal policy.

Although results from their estimated regressions were not all the conclusive they expected as and in authors' words "m*any different aspects were at play, such as the design and coverage of the rules, their enforcement, and the type of national arrangements that have been put in place to complement the commonly agreed EU fiscal rules with the objective to increase ownership".* However, further conclusions from the authors after running a logit model –in which compliance objectives were tested- seemed to be more optimistic as tjey asserted that not following EU fiscal rules contributed to pro-cyclicality[2].

In studying patterns of public investment behaviour during fiscal consolidations in advanced and emerging economies, M. Ardanaz et al (2021) found that results could greatly differ depending on whether fiscal rules' designs were flexible or rigid ones. They included in the first group designs with mechanisms accommodating exogenous shocks (cyclically adjusted fiscal targets, well-defined escape clauses, and differential treatment of investment expenditures). Contrariwise, rigid designs were those setting numerical limits on fiscal targets with no consideration of flexible features.

From their statistical analysis, these authors found that in countries with either no fiscal rule or with a rigid fiscal rule, a fiscal consolidation of at least 2 percent of GDP was associated with an average 10 percent reduction in public investment, whereas in countries with flexible fiscal rules, the negative effect of fiscal adjustments on public investment

[2] The authors provided evidence that compliance with EU rules improved the cyclical behaviour more than others.

disappeared, for that they concluded that flexible rules better protected public investment during consolidationS. From that, Ardanaz et al (2021) suggested to add a growth friendly dimension to the design of fiscal rules whose typical emphasis basically focused on fiscal sustainability.

In a previous paper by Rezk et al (2022), the performance of discretionary fiscal policies of Argentine provinces was analysed by resorting to a modified interaction term reaction function used by Larch et al for assessing the impact of fiscal rules in the EU. For this purpose, the authors regressed an econometric panel model, in which a binary variable (1,0) was used for assessing the performance of the Fiscal Responsibility Law in the period 2005-2017.

Of notice, the authors stressed the contribution of the FRL, which counteracted cyclical patterns during the period considered by placing ceilings to the budgetary increase of Primary Public Spending and limits to overall indebtedness, not to mention that the mandate that subnational governments should run their budgets preserving financial equilibrium measured as the difference between really perceived current and capital resources and total primary spending was also met. The authors finally emphasized that all this and in particular the mandate that provinces should restructure their debt stocks in line with their capacity to meet limits on annual debt services permitted that fiscal rules be credited for some improvement of provinces´ fiscal situation during the period.

In a recent and inspiring paper N. Potrafke (2023) addressed and offered new insights on the economic consequences of fiscal rules, for what he examined the new and fast growing growth of the related empirical literature which encompassed all government levels. It is here useful to point out that the author’ s assertion that fiscal rules were controversial as even when they reduced budget deficits, public spending and borrowing costs and increased GDP growth without decreasing necessary public investment, there still were unintended effects deserving being examined with more detail, as for instance how fiscal rules related to creative accounting.

As Fiscal rules were implemented to handle the trade-off between flexibility and commitment, Potrafke held that strict rules were more effective than lax rules, and that features such as escape clauses helped to sustain some flexibility, even when those effects did not help to make inferences about unobservable welfare. For this author, an important field for future empirical research should be related to compliance with the rules and quoted results showing that the probability to comply with national rules was positively associated with the presence of independent monitoring and enforcement bodies (issuing real-time alerts). Potrafke ended by asserting that compliance required both the willingness of citizens and politicians and incentive schemes and institutions to follow the rules.

A study carried out by the Central Bank of Colombia, coordinated by G. Javier Pérez Valbuena (2024), assessed the background and lessons learnt from the application of subnational fiscal rules in that country. For the experts that contributed to the study, Colombian fiscal rules were a rapid response to the marked deterioration of subnational fiscal indicators of departments and municipalities, brought by the 1991 Constitution that deepened decentralisation in terms of higher public spending and indebtedness levels and deficits.

In this connection, the study included a revision of instruments of fiscal discipline mandatory for departments and municipalities whereas the fiscal relation between central and subnational government levels was also revised by mainly focusing on the role of transfers. Likewise, the experts studied whether fiscal rules impacted on the cyclicality of subnational fiscal policy and finally, after a careful and ample study of international experiences, main lessons and best practices were highlighted, aimed at enhancing the performance of Colombian subnational fiscal rules.

III. FISCAL RESPONSIBILITY LAWS IN ARGENTINA

Fiscal rules became, in words of Artana et al (2021), increasingly important when defining long term budget sustainability. The enactment of fiscal responsibility laws, as is well described by Melamud (2010), gained impulse in Argentina with the Law 24156 (1992) whereby budgetary norms were put forward together with key principles for the correct application of public resources at national and subnational government levels[3].

Notwithstanding that a number of fiscal arrangements followed the above mentioned legal instruments, as for instance the Fiscal Solvency Law (1999), the 1999 and 2000 Federal Commitments between the national government and the provinces (laws 25235 and 25400) and the Deficit Zero Law 25453 (2001), the roots for Fiscal Rules in Argentina must be sought at the profound political and socioeconomic crisis that followed the traumatic exit from the convertibility regime established in 1991 and the subsequent distorting fiscal behaviour of provinces which, seeking to rebuild their ailing public finances, resorted to compulsory bond printing[4].

With the purpose of restoring subnational fiscal order, the national government carried out a generalized ´bail out´ of provincial debt consisting in converting subnational bonds in guaranteed national bonds (BOGAR), In addition to this, provinces would also receive (added to shared revenues) 30% of receipts from the Tax on Banks´ Credit and Deposits. In change of that, provinces compromised to achieve a 60% reduction of their 2002 public deficits (related to those of 2001) with a total balanced result for 2003[5].

[3] In particular, principles promoting higher transparency are particularly worth pointing out.
[4] Mandatory provincial bonds made up a part of civil servants´wages and they were in fact used as quasi money.
[5] It is also important to point out that provinces should also ask authorisation from the Ministry of Economics before taking new debt.

In seeking to deepen the cleansing and strengthening of provincial public finances Bilateral Financial Agreements (PAF) between each province and the national government were instrumented as the only source of provincial indebtedness, subject to the former meeting quarterly fiscal and debt targets (such as deficits reduction and a progressive reduction of the so called floating debt including wage arrears).

The above mentioned actions aimed at achieving more orderly public finances at all government levels somehow paved the way for the enactment, in 2004, of the Law 25917 which, with several changes, still stands today as a reference point for fiscal rules in Argentina; as Artana et al (2021) pointed out[6], 21 provinces[7] accepted the national government invitation to apply the law in their jurisdictions and, in some cases also, alongside with pre-existing provincial fiscal rules laws.

The mandatory aspects of law 25917 are summarised by the ensuing three main quantitative rules:

a) **ceilings to primary public spending by which the annual maximum nominal rate of increase of primary public spending[8] would not be greater than the nominal rate of increase of GDP.**

b) **limits to provincial public debt whereby services of the instrumented debt in each fiscal exercise should not exceed the 15% of the province's current revenues, net of shared revenues transferred to their local governments. Furthermore, provinces should accept no to issue quasi money public bonds.**

c) **In executing their budgets provinces should preserve the financial equilibrium measured as the difference between actual current and**

[6] Section 3.2 and Table 2.

[7] The exceptions were CABA, La Pampa and San Luis.

[8] Primary spending defined here as current and capital spending exclusive of public debt interests, spending financed through international organizations´ loans and capital spending corresponding to social basic infrastructure needed for social economic development financed with use of credit.

capital revenues and accrued current expenditures net of those financed with loans from international organisms and accrued capital expenditures excluding credit-financed spending in basic social infrastructure for economic and social development.

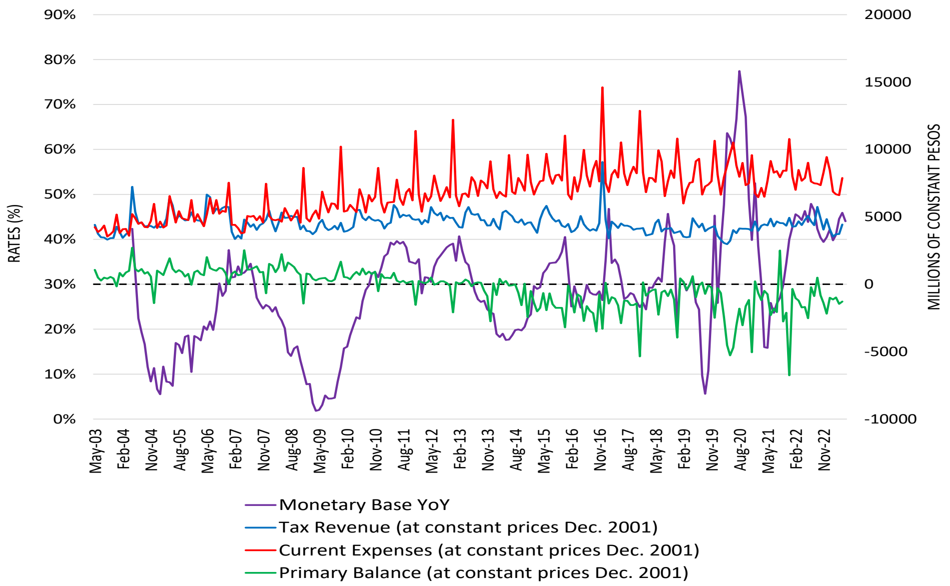
The performance of Argentine fiscal rules cannot be assessed without taking into account the difficult economic situation resulting from a foolish fiscal policy, a long standing high inflation rate, no real stabilisation plans, economic recession, overvalued exchange rates and serious problems in the terms of trade, all these problems mainly aggravated since 2008.

As the following Figure 1 illustrates, total public expenditures from fiscal sources started to run well above tax revenues, this in turn resulting in the government deciding to resort to money printing (monetary base expansion) as the main tool to countervailing the increasing public deficit.

On the other hand, and as depicted by Figure 2, this resulted in increased inflationary levels almost always accompanied by negative growth rates. It is here important to highlight that the emergence of these two unwanted phenomena was not alien to the government decision to keep the exchange rate overvalued (by imposing the so called exchange 'cepo') that favoured imports and in turn deepened recession in domestic producing sectors and an unemployment increase (as diagrammes 4 and 5 reflected below in the case of provinces)

FIGURE 1

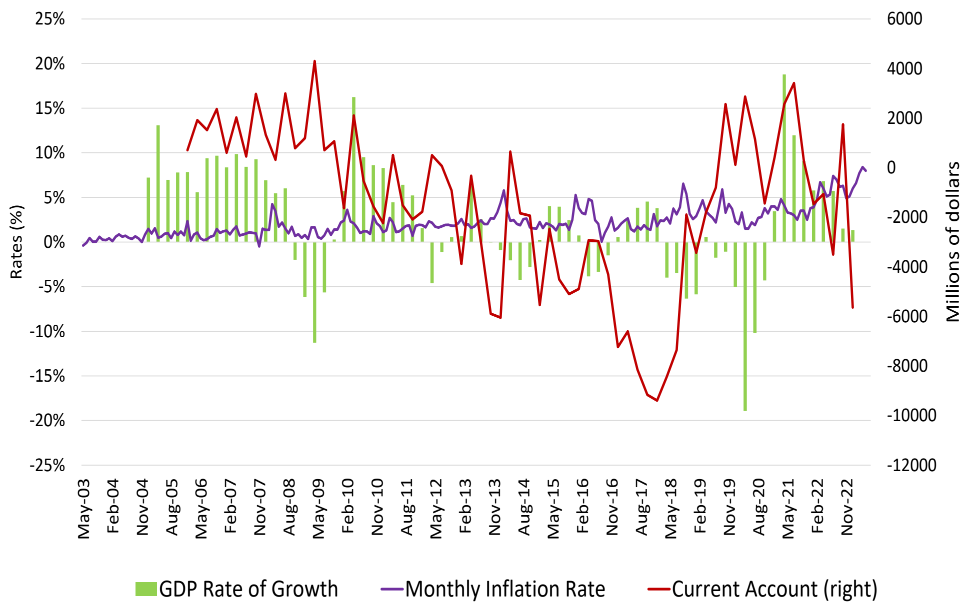
Tax Revenues, Public Expenditures and Primary Balance
vs Inter annual Variation of the Monetary Base. May 2003-June 2023



Source: Rezk et al (2023): Stabilisation plans in Argentina. What have we learnt from thwarted experiences?

FIGURE 2

GDP Rate of Growth and monthly Inflation Rate vs Current Account. May 2003-June 2023 Figure 4. Tax Revenues, Public Expenditures and Primary Balance vs Inter annual Variation of the Monetary Base. May 2003-June 2023



<u>Source</u>: **Rezk et al (2023): Stabilisation plans in Argentina. What have we learnt from thwarted experiences?**

In so far as the described difficult national economic panorama soon impacted upon provinces' own economic situations and fiscal policies, for what changes in Law 25917 were far from being unexpected and soon took place through diverse instruments. The first main amendments to the above mentioned Law took place in response to provinces' fiscal strain due to negative external shocks as well as to difficulties in the field of intergovernmental fiscal relations; it accounted, in the first place negative exogenous shocks derived from the World Crisis of Developed Countries to which it added the until unresolved matter of the new Revenue Sharing Schem and the drop in the percentage of revenue receipts actually accruing to provinces. In this context, Law 26530 (November 2009) and successive modifications Introduced significant changes to the standing fiscal rule by mandating that, since 2009 through 2016, ceilings to public spending and the requirement of financial equilibrium would exclude expenditures oriented to promote economic activity and sustain the employment level as well as these aimed at providing coverage to health emergency and social assistance. It is however worth mentioning here that notwithstanding the exception was also granted to limits on provinces' indebtedness levels, diagrammes 6 and 7 below show these still being met in the period.

Due to changes it brought about, the 2017 Fiscal Consensus is an important reference point for reviewing the performance of fiscal rules. The main changes, enacted under the umbrella of Law 27428 and applied since January 2018, were the following ones:

- **Since January 2018, the ceiling to provinces' public spending would only apply to net primary current spending whose rate of growth should be equal or smaller than the rate of growth of the National Consumer Price Index.**

● It ceased also, as of January 2018, the obligation that provinces – in running their budgets – seek to preserve the principle of financial equilibrium.

● Most of aspects related to provincial budgetary procedures and practices were updated and clearly improved.

In closing this brief survey on fiscal rule legislation, it should be noted that efforts to strengthen the operation of fiscal rules suffered a serious setback when, in response to the impact of the Covid 19 Pandemic, law 27591 suspended for 2020 and 2021 essential aspects of the standing legislation, such as ceilings on spending and limits to indebtedness.

IV. GRAPHICAL PRESENTATION AND ANALYSIS OF STYLIZED FACTS

The ensuing diagrammes not only reflect the instability undergone by Fiscal Rules legislation in Argentina but also help to better visualize how provinces´ fiscal policies behaved vis-à-vis ceilings and limits set by the legislation, mainly in the period 2005-2017[9]. In this connection, diagramme 1 (showing the paths of gross geographic products and total primary spending in nominal values), seems to permit at first sight to intuitively assert that ceilings to total primary spending were somehow met since 2005 through 2018[10], a more careful evidence yielded by diagrammes 2 and 3 did not avail this conclusion. Conversely, the financial equilibrium target, highlighted by total receipts and total primary spending paths in diagramme 1; seemed to be achieved by provinces from 2005 through 2010, even though periods of marked financial disequilibrium prevailed thereafter, in coincidence with the target loosening[11]. Financial equilibrium

[9] Yeara 2018-2022 were not particularly subject to analysis due to the change in the structure of public spending subject to ceilings.

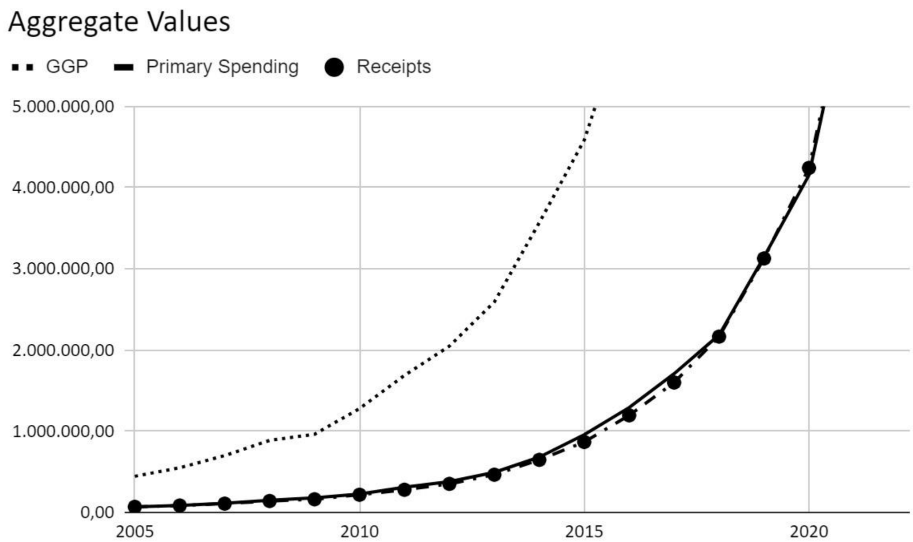
[10] As mentioned, the graphical analysis mostly focuses on the period (2005-2018) in which the original quantitative rules still stood.

[11] **See Section III above**.

was regained since 2019 following the 2018 Fiscal Consensus signed between the national government and the provinces.

DIAGRAMME 1

ARGENTINE PROVINCES – EVOLUTION OF GGP, PRIMARY SPENDING AND TOTAL RECEIPTS

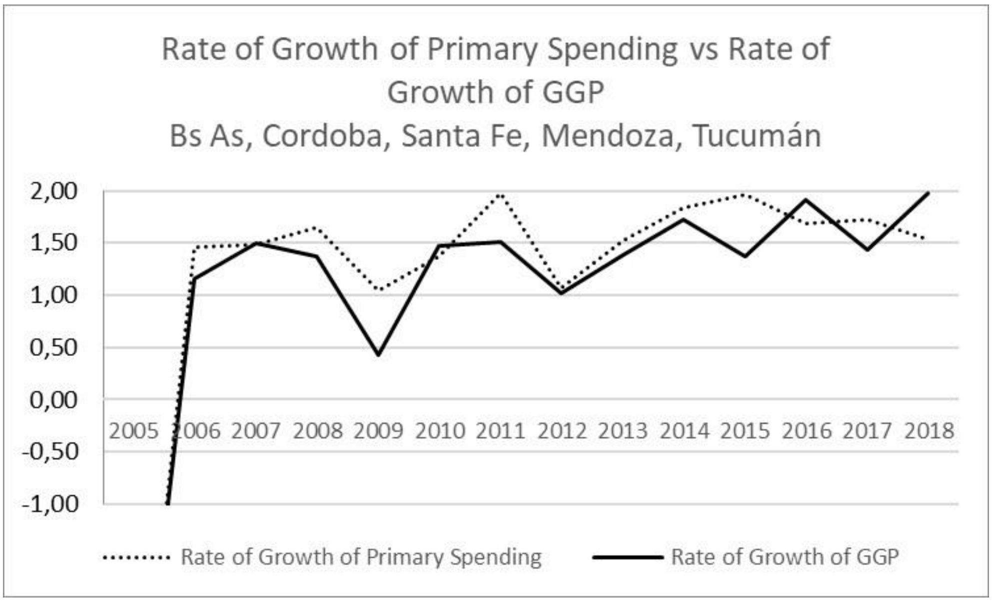


Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales: and INDEC.

As anticipated, diagrammes 2 and 3 permit to visualize how provinces really behaved with respect to the spending ceiling imposed by Law 25917; results drawn for two groups of provinces in general revealed a low degree of compliance throughout the period. As no compliance seemed to be higher in the first group, in which more fiscally strong provinces were included, a plausible explanation could be their greater access both to own tax resources and shared revenues. In both cases, the impact of above mentioned legislation changes whereby ceilings were suspended (particularly from 2008 through 2016) could not be ruled out.

DIAGRAMME 2

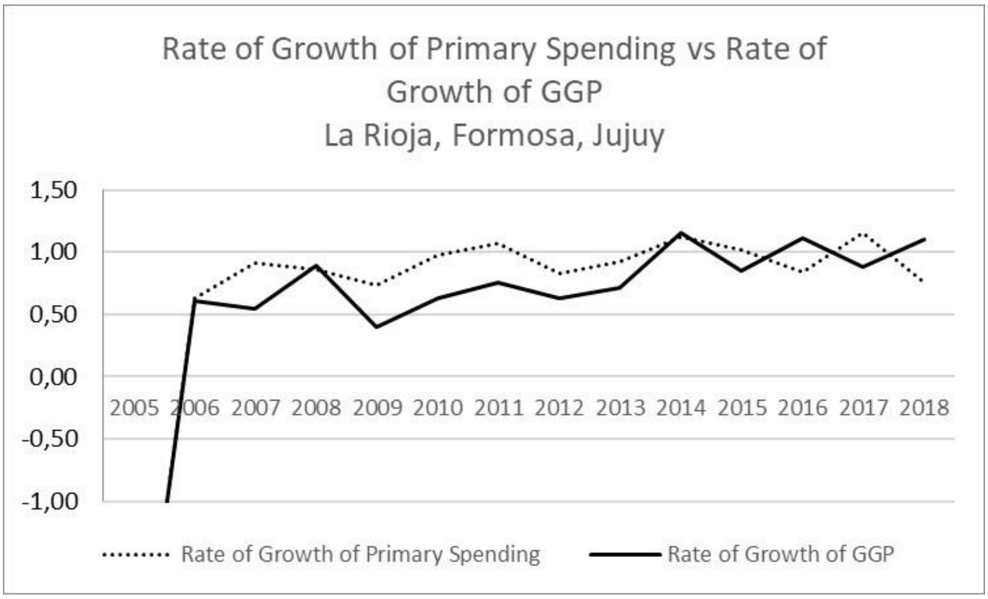
ARGENTINE PROVINCES – CEILING TO TOTAL PRIMARY SPENDING



Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales: and INDEC.

DIAGRAMME 3

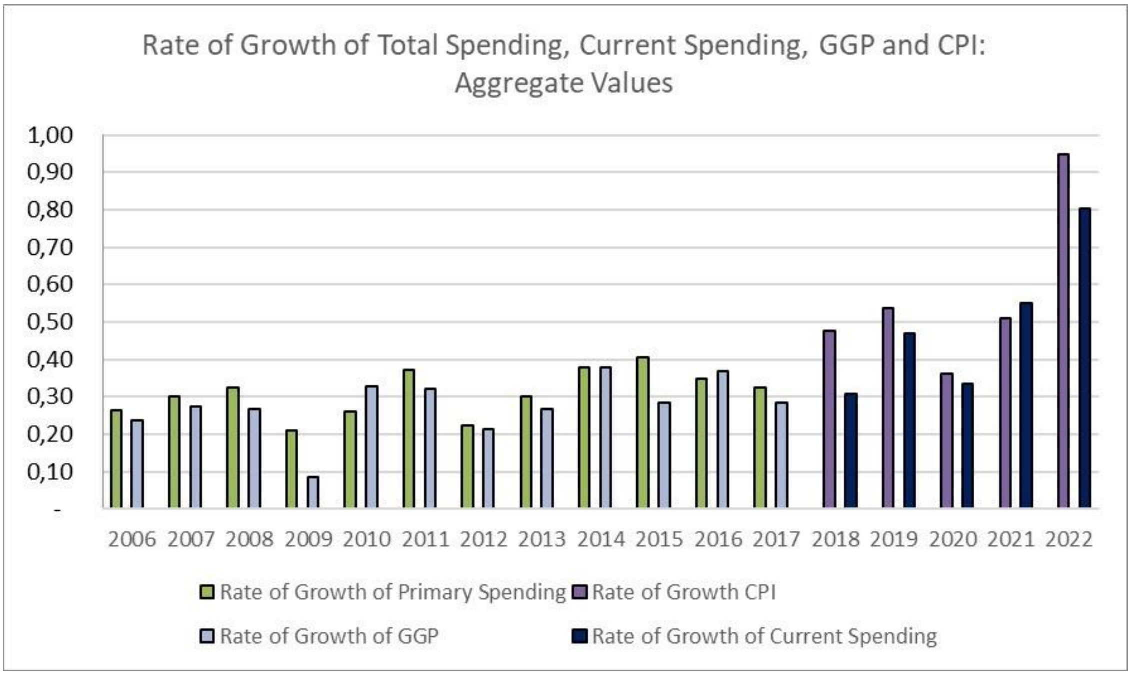
ARGENTINE PROVINCES – CEILING TO TOTAL PRIMARY SPENDING



Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales: and INDEC.

DIAGRAMME 4

ARGENTINE PROVINCES – CEILING TO TOTAL PRIMARY SPENDING



Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales: and INDEC.

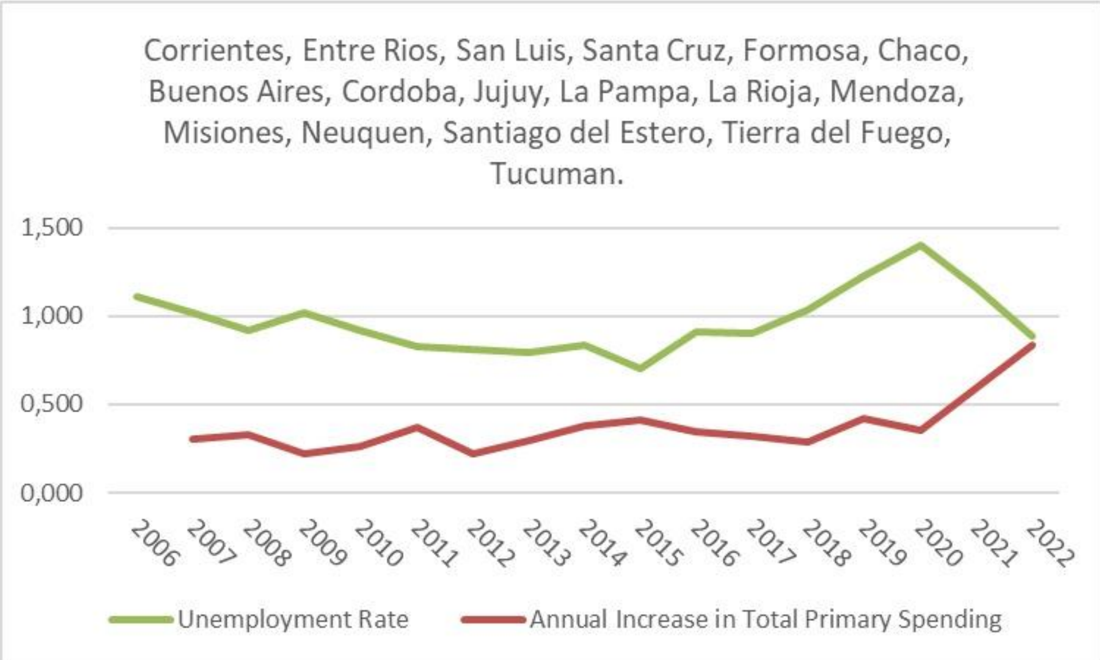
Diagramme 4 is particularly worth analysing as it includes the whole period (2005*2022) and It includes both the period in which the ceiling was imposed upon total primary spending and the rate of growth of GDP was used and the change when only current spending was considered (since 2018) and the Consumer Price Index was resorted to. As can be noticed, although the target seems to be met since 2018, following the Pact with provinces, there is an important change since 2020 in which both the Consumer Price Index and Current Spending both grew swiftly in line with the high inflationary levels prevailing in 2021-2022.

In turn, diagramme 5 below depicts the behaviour of annual growth rates of provincial unemployment and total primary spending; It is in this connection worth pointing out that unemployment and spending seemed to follow opposite paths; that is, provincial spending increased following a greater unemployment rate and contrariwise. Despite that the graphic 5

does not strictly reflected the impact of Fiscal Rules, what it showed is far from being irrelevant: total primary spending clearly revealed a stabilising impact thus highlighting a countercyclical feature on the part of provinces' discretionary fiscal policy in periods in which unexpected recessionary events hit the economic sectors[12].

DIAGRAMME 5

ARGENTINE PROVINCES' UNENMPLOYMENT AND TOTAL PRIMARY SPENDING GROWTH RATES



Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales.

An interesting feature deserving here being highlighted resulted from legal modifications to fiscal rules (described in the previous section) and is also reflected by the diagramme 1 above as the loosening of spending ceilings had rapidly impacted on the financial equilibrium target as provinces began to run not balanced budgets[13]

[12] For instance in 2009-2011 when domestic economic sectors suffered the negative impact of the Developed Countries' Crisis.

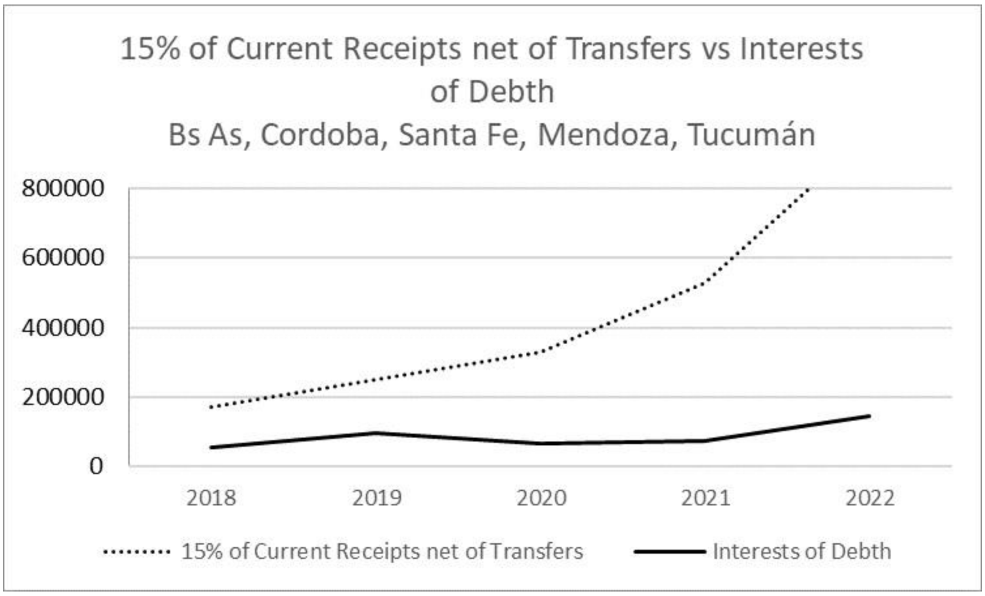
[13] This interesting feature was particularly pointed out by Dr. Jorge Puig in his commentary to Rezk et al (2022).

Next. diagrammes 6 and 7, drawn for two groups of provinces, with the purpose of ascertaining whether provinces met the limits established by Law 25917 are in this case particularly worth pointing out as they highlight the only case in which compliance of quantitative rules beat expectations. As can be observed, in both diagrammes the point line standing for the limit set by Law 25917 to debt increases always run well above the full line standing for interests finally paid. Let it also be noticed that although both groups of provinces met limits in interest services, an inspection of diagrammes clearly shows that the impact in favour of des-indebtedness was more marked in the first group.

The success in the application of this rule -reflected in diagramme 8 for all the provinces, and replicated by diagramme 9 by the marked downward pattern of the line standing for the debt/ggp ratio, immediately raises the question of why the performance of ceilings on spending and requirements over financial equilibrium did not fully accompany that of limits on debt. Apart from measures taken for curtailing provincial indebtedness (already mentioned in Section III), the answer to the question should be sought at the very Law 25917 as it is clearly noticed that penalties in the mentioned legislation were clear and effective in the case of provinces not meeting the target, as for instance the banning to acceding to new debt, loans and national government's endorsements and guarantees until the situation is corrected by the province (or provinces).

DIAGRAMME 6

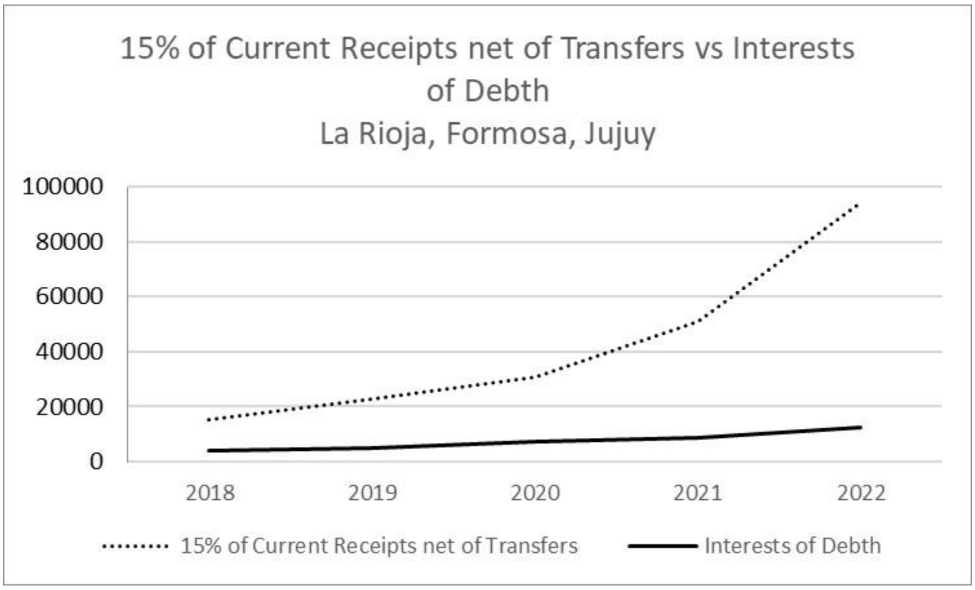
COMPLIANCE OF LIMITS IMPOSE BY LAW 25017 TO ARGENTINE PROVINCES' INDEBTEDNESS LEVELS



Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales.

DIAGRAMME 7

COMPLIANCE OF LIMITS IMPOSED BY LAW 25017 TO ARGENTINE PROVINCES' INDEBTEDNESS LEVELS



Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales.

DIAGRAMME 8

COMPLIANCE OF LIMITS IMPOSED BY LAW 25017 TO ARGENTINE PROVINCES' INDEBTEDNESS LEVELS

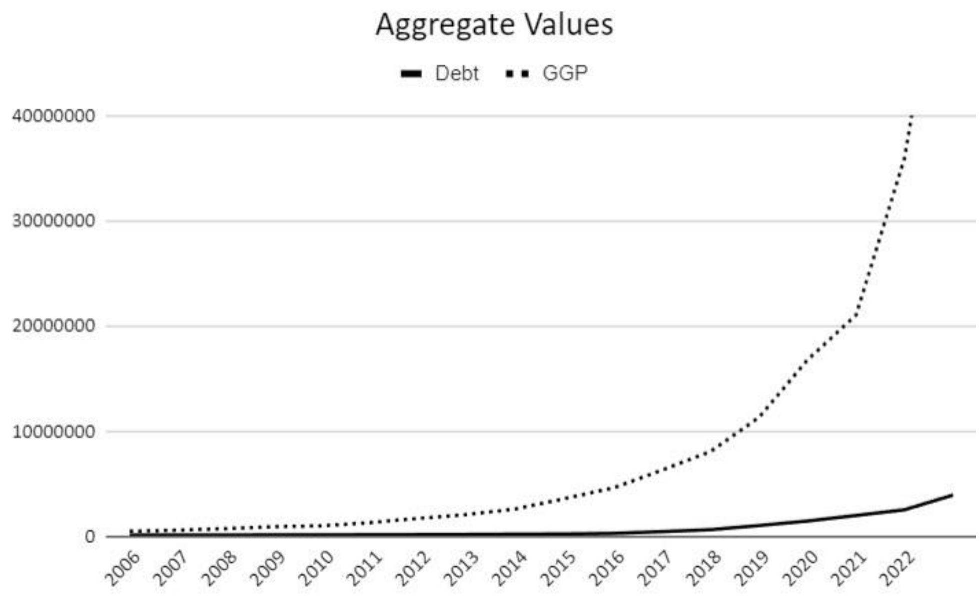
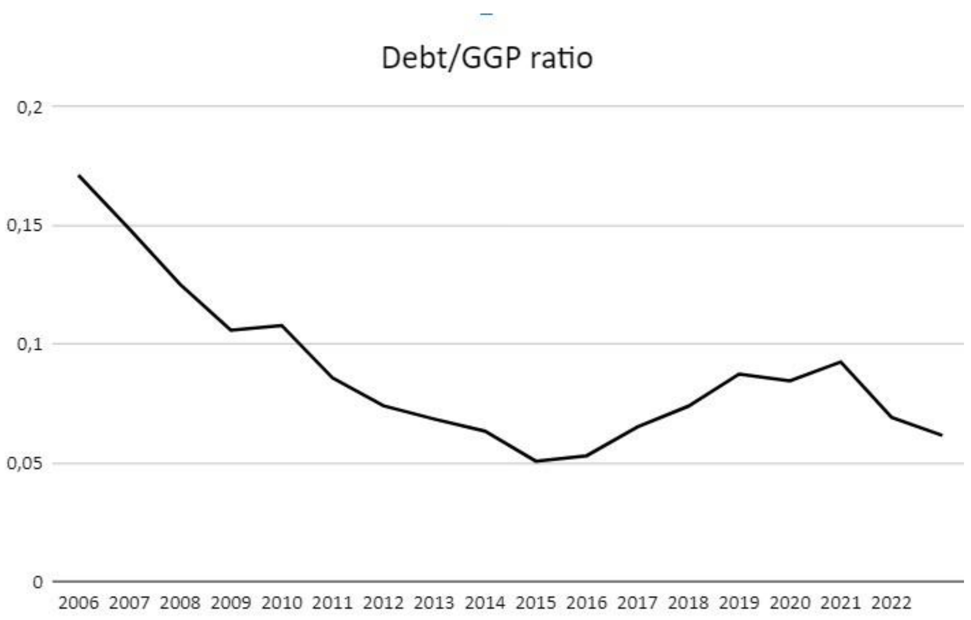


DIAGRAMME 9

COMPLIANCE OF LIMITS IMPOSED BY LAW 25017 TO ARGENTINE PROVINCES' INDEBTEDNESS LEVELS



Source: Own elaboration on the basis of data from the Dirección Nacional de Asuntos Provinciales: and INDEC.

V. THE LOGIT MODEL

So far, the assessment of Fiscal Rules in Argentina entailed to revise the standing legislation, to highlight the principal targets to be met and to carry out a graphical analysis to showing how provinces behaved in relation to them. In seeking now to gather quantitative support that strengthens the evidences rendered by the analysis of stylised facts, a Logit Model was regressed for the period 2006-2017 with the aim of ascertaining how different fiscal and non-fiscal variables affected the probability the provinces' fiscal compliance with the fiscal rules. provinces' fiscal compliance with the fiscal rules.

It is in this connection appropriate to stress that the recourse to a logistic regression results appropriate for binary variables which, in function of independent variables, can only take two values (0.1). The basic model underlying the estimated Logit regression is defined as follows:

$$\ln\left(\frac{p}{1-p}\right) = \beta_1\, election\_year\_dummy + \beta_2\, unemp\_rate + \beta_3\, external4 + \beta_4\, provrec\_totalrec\_ratio + \beta_5\, currTransf\_ggp\_ratio$$

Where p is the probability of a province to comply with the fiscal rules each year.

By focusing on the probability of province to annually complying with fiscal rules, FISCALCOM was the selected dependent binary variable standing for "provinces' fiscal compliance" of quantitative targets mentioned in the law 25917; that is, ceilings on total primary spending, financial equilibrium and limits to indebtedness. Values 1 are assigned to the dummy when provinces meet quantitative targets and 0 otherwise.

In particular, the first quantitative rule would be satisfied if the growth rate of the nominal provincial total primary spending were equal to, or

smaller than. the nominal GDP growth rate[14] whereas compliance of the second quantitative rule required in turn financial equilibrium; that is, total primary spending equal to total receipts. Finally, complying with the third quantitative rule required that provinces´ indebtedness levels did not result in debt services greater than 15% of receipts (net of shared revenue transferred to municipalities). As said above, each of these rules were represented as a dummy variable with value 1 indicating compliance and 0 otherwise.

The following range of fiscal and non-fiscal variables were in turn selected as independent variables are:

PROVINCES' ELECTION YEAR DUMMY (0.1)[15]
UNEMPLOYMENT RATE
EXTERNAL SECTOR DUMMY (0.1)[16]
PROVINCIAL TAX RESOURCES/TOTAL PROVINCES' RESOURCES RATIO
RECEIVED CURRENT NATIONAL TRANSFERS /PROVINCES' GROSS GEOGRAPHIC PRODUCT RATIO

The period examined (2006-2017) responded to the above mentioned quantitative targets as set in the original version of Law 25917, whose validity extended until 2017, when these underwent modifications (Law 27428) following the Nation-Provinces Pact. Needless to emphasize, this altered the quantitative basis upon which the dependent variable was constructed[17].

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[14] **That has changed since 2018, when the rate of growth of GDP was replaced by the rate of growth of the Consumer Price Index.**

[15] **The provincial election year dummy variable is set equal to 1in years in which provinces held presidential, governor o legislature renovations.**

[16] **The external sector variable is a dummy set to 1 during the favourable years of the period (all years except 2009) in the main exporter provinces (Buenos Aires, Córdoba, Chubut, Entre Rios, Mendoza, Misiones, Neuquén, Santa Cruz and Santa Fe).**

[17] **The initial year 2006 only responded to data availability at the moment of initiating this research**.

By using a cross-sectional panel data, the logit model was regressed, incorporating fixed effects and odds ratio coefficients. Results obtained proved to be globally significant considering a confidence level of 95%. Nevertheless, not every odds ratio coefficient was statistically significant on its own. As a matter of fact, the unemployment rate and the external sector dummy variable were not statistically significant considering even a confidence level of 90% whereas the ratio of current national transfers was in turn significant when considering a confidence level of 90% but not for 95%. At the last-mentioned confidence level, the only significant variables were the election year dummy and the ratio of provincial own receipts to total receipts. A plausible explanation for the results could be found in the nature of the variables considered: in real life, almost certainly the performance of some of the variables depended on the performance of others, and that might have a say on its independence thus contributing to its insignificance.

Nevertheless, the decision of including all this variables, leaving aside their statistical significance, was founded on their economic importance and impact over the dependent variable: the absolute size of the coefficients of all the independent variables were indicators of their great influence (positive or negative) and on the probability of helping to complying with fiscal rules; in our judgement, this makes the economic interpretation analysis richer when determining the underlying influence of all the variables upon compliance of fiscal rules. Moreover, recognizable and valuable literature (e.g., Larch et al 2020) also follows the same approach when analyzing the expected or unexpected signs of coefficients and their economic interpretation while acknowledging at the same time inconsistencies and rather scant statistical significance of variables at convention al conventional confidence levels considered.

TABLE 1

LOGIT REGRESSION MODEL

fiscalcom	Odds ratio	Std. err.	z	P>|z|	[95% conf.	interval]
election_year_dummy	.179726	.0735853	-4.19	0.000	.0805569	.4009765
unemp_rate	.0753149	.951064	-0.20	0.838	1.34e-12	4.22e+09
external4	531705.7	5.48e+08	0.01	0.990	0	.
provrec_totalrec_ratio	5.92e-11	7.01e-10	-1.99	0.047	5.05e-21	.6946659
currTransf_ggp_ratio	5.45e+16	1.17e+18	1.79	0.073	.0283338	1.05e+35

Source: own elaboration based on data from Dirección Nacional de Asuntos Provinciales and INDEC.

The logit's main results (as shown in TABLE 1) indicate that, during a provincial election year, the probability of fiscal compliance is multiplied by 0.1797, which means that for every election year, the chances of provinces complying with fiscal rules lowers compared to years not affected by elections. Another way to interpret the odds ratio coefficient of the considered variable is that, for every election year, the chances are close to 6 to 1 that a province would not comply with the fiscal regime. This result is quite intuitive and does not required further explanation. Nevertheless, and recalling Larch et al (2020) it could be said that on election years, candidates in office could make its priority to buy the support of voters with spending increases and tax cuts leaving aside fiscal discipline.

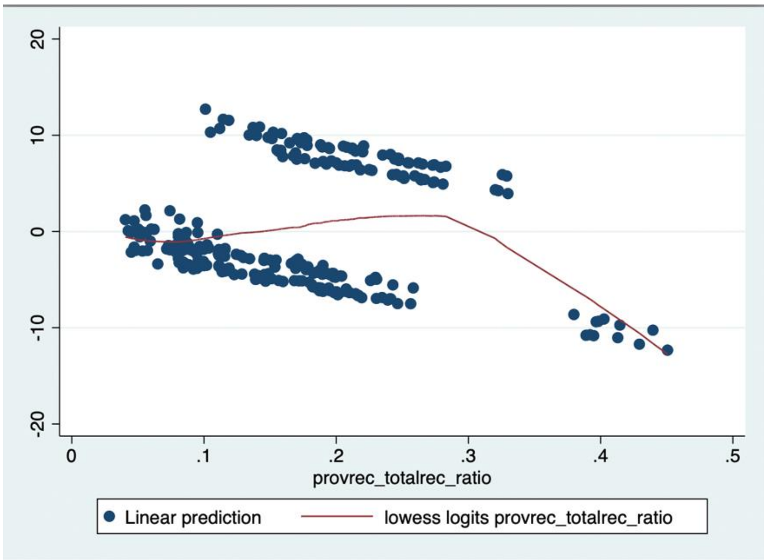
Secondly, for every increase of one percent in the unemployment rate, the probability mentioned is multiplied by 0.0753; in other words, chances are close to 13 to 1 that a province would not adhere to the fiscal rules.

Thirdly, for every favorable external year, the probability of the main exporting provinces complying with the fiscal regime is multiplied by 531,705.7 which is the same to stating that chances are greater than 531,705 to 1 that these provinces will follow the rules. A feasible explanation could relate it to the increase of tax receipts from taxation on their exports giving these provinces more access to resources compared to not exporting provinces or those undergoing bad export years.

Fourthly, for every 1% increase in the ratio of provincial receipts to total receipts, the probability of fiscal compliance is multiplied by almost 0, which implies that chances are almost certain that in this case, the province would not follow fiscal rules. Suffice it to say that this finding is surprising since, the opposite was expected and further research is needed for a correct explanation. Going further, when analyzing the predicted probability of fiscal compliance rendered by the logic model and the ratio (as shown in the diagramme below), it is interesting to note that there is a break on the own provincial taxation resources dependency close to 30% that before that it increases the probability of adhering to the fiscal regime but after, it makes it decrease.

Finally, for every percent increase in the current transfers to GGP ratio, the probability multiplies by more that 54 thousand billion which suggests that chances are practically certain that the province will meet the fiscal rules. This result does not come as a surprise if it is considered current national transfers to provinces (generally discretional) as extra resources for provinces to spend and administrate.

PREDICTED PROBABILITY OF FISCAL COMPLIANCE AND THE RATIO OF PROVINCIAL TAXATION DEPENDENCY



<u>Source</u>: own elaboration based on data from Dirección Nacional de Asuntos Provinciales and INDEC-

As it was already explained above, all variables considered appear to significantly impact the probability of provincial fiscal compliance given great coefficients obtained; however, statistical significance at conventional levels of confidence was not even across the variables considered.

VI. CONCLUSIONS

As shown, actual responses about motivations and real impact of fiscal rules upon governments' behaviour are neither unanimous nor clear.

Generally, fiscal rules were viewed when appearing in developed economies as a means of limiting governments' fiscal discretionary behaviour and of ensuring macroeconomic stability.

In Argentina, efforts to have more orderly public finances and better budgetary practices at government levels began before the convertibility regime ceased to exist and were deepened thereafter. In line with this, the enactment of Law 25917.

This legal instrument thus stood since 2004 as an important milestone whereby ceilings and limits were imposed upon the national and provincial total spending and also to indebtedness levels, together with the financial equilibrium requirement when drawing and executing their respective budgets.

In spite of that, and as shown above, fiscal rules'´ performance, particularly at the subnational level, was seriously harmed by continuous changes in the legislation fueled by the uncertain macroeconomic scenario resulting, among other causes, from not sound fiscal and exchange policies and long standing high inflation levels, let alone the recessive impact developed countries' crisis upon domestic economic sectors.

At the same time, and while fiscal rules' performance seemed to somehow be enhanced following the 2017 Fiscal Consensus signed by the central government and the provinces, the Covid 19 Pandemic implied a new blow upon fiscal rules' quantitative targets compliance, with the exception of limits to indebtedness which were met by the provincial level throughout the period analyzed, basically perhaps for the no access to capital markets...

Regarding fiscal rules' econometric assessment, the estimation of a logit model, in which the binary variable FISCAL COMPLIANCE was the dependent variable, showed an overwhelming impact of all the considered fiscal and non-fiscal variables upon the former one.

While the ELECTION YEAR dummy, the UNEMPLOYMENT rate and the PROVINCIAL TAX RESOURCES/TOTAL PROVINCES' RESOURCES ratio decreased the probability of provinces complying with quantitative targets, the EXTERNAL SECTOR dummy, the PROVINCIAL TAX RESOURCES/TOTAL PROVINCES' RESOURCES ratio and the RECEIVED CURRENT NATIONAL TRANSFERS /PROVINCES' GROSS GEOGRAPHIC PRODUCT ratio increased the probability.

All results above mentioned were expected from a theoretical point of view except in the case of PROVINCIAL TAX RESOURCES/TOTAL PROVINCES' RESOURCES ratio, whose interpretation needs further research.

Finally, results obtained proved to be globally significant considering a confidence level of 95%; however, statistical significance at conventional levels of confidence was not even across the variables individually considered, even at a confidence level of 90% which could be explained by the real-life dependency of their performances. The decision of setting aside statistical significance was taken to enriching the economic analysis and following recognizable and valuable literature asserting that actual

responses of motivations and real impact of fiscal rules upon governments' behaviour are so far neither unanimous nor clear.

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