

# **Economic Effects of Government Budget Restrictions in Uruguay**

Bachelorarbeit zur Erlangung des Grades  
Bachelor of Science (B.Sc.)  
im Studiengang Volkswirtschaftslehre  
an der Rheinischen Friedrich-Wilhelms-Universität Bonn

Themensteller/in: Prof. Farzad Saidi

vorgelegt im Juli 2022 von:

Martin Franco

Matrikelnummer: 3087311

Index



## 1. Introduction

One of the problems to face after the COVID 19 pandemic is going to be the level of debt countries have accumulated because of the economic crisis that came along with it. The International Monetary Fund (2020) projects that global debt will rise by about 13 percent of world GDP. In order to avoid future problems regarding government debt, the Uruguayan government implemented a new law, called LUC (Ley de Urgente Consideración), with 476 articles, which from article 207 till article 212 are about a new fiscal rule that regulates government budget and spending.

In 2020, for the first time in 15 years, there was an alternation of power. The left-wing coalition, Frente Amplio, that had been governing Uruguay for 3 terms, was defeated. This defeat, must be said, occurred by a very narrow margin against the Partido Nacional, making Luis Lacalle Pou the new president of Uruguay.

The region of South America was going through several macroeconomic problems, which made it hard for Uruguay to be able to improve their numbers. Increasing regulations, economic stagnation, rising insecurity and poverty, and an increasing government intervention have caused the country to drop to the 101st. position in the World Bank's Doing Business ranking a year before elections (World Bank, 2019).

With all the previous panorama, the government of Lacalle Pou has managed to introduce important changes in Uruguay, which were changes very different from those that are being made in all the countries of the South American region. Of all the reform processes that the Uruguayan government has launched in recent years of the new presidency, there is one that stands out above the rest. This process is the already mentioned Law of Urgent Consideration, or LUC. We are talking about a very long law that, with 476 articles, has touched on all kinds of issues, from the economy to education, including communications services. It is the largest project of transformation of the new government but after its approval, there was an appeal from the Frente Amplio that meant that a large part of the changes had to be submitted to a referendum. And here the Uruguayans, and again by a narrow margin, voted in favor of the reforms to not abolish 135 articles out of 476.

In economic matters, the LUC has presented a new fiscal rule that set a maximum limit on the growth of public spending and a limit on the level of debt, as well as the creation

of a fiscal council to evaluate the different public spending projects and try to avoid political waste.

The Uruguayan Economics and Finance Ministry defined the new fiscal rule as a structural reform that aims to give sustainability to public finances in order to avoid an increase in taxes on citizens to deal with fiscal expenses not contemplated in the Budget Law (Ministerio de Economía y Finanzas, 2022). It is also argued that the rule allows spending on social policies to be increased in extraordinary situations. The minister of Economics Azucena Arbeleche commented on the fiscal rule, "it is flexible, but with rigid compliance, with political commitment to improve the results of public finances" (Azucena Arbeleche, 2020). There was already a fiscal rule in 2006 in Uruguay that would control government spending setting a maximum debt. The parliament approved new debt ceilings on several occasions during previous presidencies, leading to a breach of the pre-established limit.

The experience with the global financial crisis in 2008 was an indicative test for the fiscal rules that existed at the time and led to important changes in those rules in about one-third of countries with such rules (Caselli et al. 2018).

With the new crisis due to the pandemic, the Uruguayan government decided to change its previous fiscal rule taking 3 main pillars into account. The 3 main pillars regarding the government budget restrictions in the LUC are the following: First is the structural fiscal result (correction after being affected by an expansionary or recessive phase of the economic cycle). The second is the variation of net debt (variation of the sum of the debts minus the financial assets of the country). And third is the annual growth cap on expenses before interest, for which quantitative goals are established that have been met in the first two years of validity. If there are fiscal surpluses, they go to a fund to finance fiscal policies in recessionary phases. The advisory council, elected by the executive power, will set a ceiling on public spending depending on the possible growth of the economy (for example, if it is going to grow by 2.5 percent of the GDP. The budget cannot be exceeded by 2.5 percent).

When the main goal of a new fiscal rule is austerity in order to lower debt-to-GDP ratios, studies like Alesina and Ardagna (2010) show that the deficit reductions that successfully achieve this goal without causing indirectly recessions are those that not only focus on spending cuts but also that implement measures as deregulation, certain liberalizations of the markets, and tax reforms that increase labor participation. This

new LUC law also includes some deregulations among the 476 articles but the focus point here is going to be the new fiscal rule.

From another perspective, Krugman (2012) strongly opposed budget cuts during the recession as he states that fiscal cuts and austerity measures help deprive the economy when during a recession is when the government should stimulate expansionary policies in order to achieve economic recovery.

Beyond the different opinions about the measurements a government should take, Uruguay seems to have already decided for fiscal cuts with a new fiscal rule.

This paper aims to analyze the effectiveness of this new fiscal rule included in the LUC regarding macroeconomic values, these being government spending; inflation rate; GDP growth; unemployment; government budget value; and the money supply variables M0; M1; and M2.

This paper proceeds as follows. First the data structure and its sources are going to be described. Section 3 presents the methodology used to analyze the effect of the LUC on the variables. Section 4 presents the results of the study applied. In section 5, a robustness check is conducted to address possible confounding factors in the estimations. And finally in section 6 the conclusions.

## 2. Data

The data used for this paper regarding government spending; GDP growth; M0; M1; and M2 are from the Uruguayan Central Bank (Banco Central del Uruguay, 2022) datasets. Government spending refers to public expenditure on goods and services and is a major component of the GDP. Government spending in this dataset is reported quarterly. Policies like setting up budget targets, adjusting taxation, increasing public expenditure and public works are very effective tools in influencing economic growth. This makes this dataset one of the important factors to analyze in order to explain the effect of the LUC law intervention. GDP growth is reported also quarterly by the central bank and is the percentage points of GDP increase/decrease. For M0; M1; and M2 are reported monthly. These represent the money supply which refers to the total volume of

currency held by the public at a particular point in time. Each represents a form to quantify the volume of currency that circulates in an economy. M0 is the most liquid measure of the money supply including coins and notes in circulation and other assets that are easily convertible into cash; M1 is M0 plus checkable deposits in banks; and M2 is M1 plus short-term time deposits in banks.

For the inflation rate and the unemployment rate, the National Statistics Institute of Uruguay (Instituto Nacional de Estadística, Uruguay, 2022) was used as source. Both were reported monthly. The inflation rate measures changes in the prices paid by consumers for a basket of goods and services; and the Unemployment Rate measures the number of people actively looking for a job as a percentage of the labor force.

The government budget value of Uruguay comes from the Uruguayan Economics and Finance Ministry (Ministerio de Economía y Finanzas, 2022) and the source for the Argentinean government budget value is the Treasury Department (Ministerio de Hacienda, 2022). The government budget value is the difference between government revenues and expenses. To avoid calling it different names (surplus if positive and deficit if negative) to the same variable in the regression we are going to call this government budget value.

Lastly, the source for the Argentinean inflation rate, government spending and GDP growth is the National Institute of Statistics and Censuses (Instituto Nacional de Estadística y Censos, 2022).

### 3. Methodology

The models used in this paper are the interrupted time series regression, which is a useful statistical method for estimating intervention effects, and the difference in differences method, which an intervention effect is estimated by comparing changes in a treatment group and a control group over.

The segments in a time series are defined when the sequence of measures is divided into two or more portions at change points. Change points are specific points in time where the values of the time series may exhibit a change from the previously established pattern due to an identifiable specific event, an experimental intervention, or a policy

change. In this case, the change point is the moment when the LUC was approved and promulgated which happened in July 2020.

We start by estimating the following model:

$$Y_t = \beta_0 + \beta_1 * Time_t + \beta_2 * Law_t + \beta_3 * Time\ after\ Law_t + \varepsilon_t \quad (1)$$

Here,  $Y_t$  is the dependent variable which in this analysis are inflation rate; government spending; GDP growth; unemployment rate; M0; and M2 in period  $t$ . Inflation rate, M0, M1, M2 and unemployment rate are monthly analyzed, while government spending and GDP growth are quarterly analyzed. Each variable is studied individually.

Time is a continuous variable indicating time in months/quarters (depending of the variable) at time  $t$  from the start of the observation period. Law is an indicator for time  $t$  occurring before the implementation of the LUC, which was implemented in July 2020. And finally, Time after Law is a continuous variable counting the number of months/quarters after the intervention at time  $t$ , coded 0 before the intervention of the LUC and  $1 \dots n$  after the Intervention.

In this model,  $\beta_0$  estimates the baseline level of the outcome at time zero;  $\beta_1$  estimates the change in  $Y_t$  that occurs with each month/quarter before the intervention;  $\beta_2$  estimates the level change in the monthly/quarterly value of  $Y_t$  immediately after the intervention, (that is, from the end of the preceding segment); and  $\beta_3$  estimates the change in the trend monthly/quarterly value of  $Y_t$  after the intervention, compared with the monthly/quarterly trend before the intervention.

The error term  $\varepsilon_t$  at time  $t$  represents the random variation not explained by the model. It consists of a normally distributed random error and an error term at time  $t$  that may be correlated to errors at preceding or subsequent time points.

After the interrupted time series regressions, a difference in differences study will be implemented in order to estimate the effect of the intervention of the LUC. The dependent variables used are: Government budget value; government spending; inflation rate; and GDP growth.

Argentina is selected as a control group to compare the outcome changes. The choice of Argentina as a control group is due to the cultural, economic, and demographical similarities with Uruguay, which makes them have similar pre-intervention trends.

The estimated model is:

$$Y_{st} = \beta_0 + \beta_1 * Subject_s + \beta_2 * After\ Intervention_t + \beta_3 * (Subject_s * After\ Intervention_t) + \varepsilon_{st} \quad (2)$$

$Y_{st}$  is the dependent variable outcome in period  $t$ . Subject is a dummy variable indicating the treatment group (Uruguay = 1) and the control group (Argentina = 0). After Intervention is a dummy variable indicating pre (before July 2020 = 0) and post (after July 2020 = 1) intervention of the law LUC for month  $t$ . Finally, Subject \* After Intervention is a dummy variable indicating whether the outcome was observed in the treatment group (Uruguay = 1) and after the intervention (after July 2020 = 1), or no in any other case (=0).

$\beta_0$  estimates the baseline average outcome of the control group before the LUC was implemented.  $\beta_1$  represents the difference of the dependent variable between the treatment and the control group before the intervention of the LUC.  $\beta_2$  represents how much the average outcome of the dependent variable of the control group has changed in the post-intervention period.  $\beta_3$  represents how much the average outcome of the dependent variable of the treatment group has changed in the period after the law was implemented, compared to what it would have happened to the same group if the intervention had not occurred.

$\varepsilon_{st}$  is the error term, which represents the random variation not explained by the model.

## 4. Results

In this section, the effect of the LUC on macroeconomic values will be estimated. First the variables will be analyzed individually with an interrupted time series regression and after that, a difference in differences method will be used.

Something worth mentioning before showing the results is the clear limitations of the results due to the COVID 19 pandemic which happened at the same time period.

### *4.1 Interrupted Time Series Regression*

Table 1 shows the results for the Interrupted Time Series Regression for the Inflation rate and the unemployment in Uruguay. For instance, the LUC does not seem to have an effect on Uruguayan inflation rate. According to this model, before the beginning of the observation period, Uruguay had an average of 8.0933 percent inflation per month. There seems to be a non-significant month-to-month change in the inflation rate value that occurs before the intervention by -0.0014 percent. Right after the LUC was implemented, the estimated points of inflation rate increased by 61.3242 percentage but



is also not significant. The estimated change in the trend monthly value of the Inflation rate after the intervention, compared with the monthly trend before the intervention has reported a decrease of 0.069960 percentage but once again no significance.

Table 1

Inflation & Unemployment

Sources : National Statistics Institute of Uruguay

	Inflation	Unemployment
Intercept	8.0933*** (0.393904)	7.46*** (0.171273)
Time	-0.0014 (0.012462)	0.04*** (0.005418)
Law	61.3242 (1.737289)	2.41*** (0.326507)
Time after Law	-0.069960 (0.049555)	-0.25*** (0.023011)
Observations	76	76
R <sup>2</sup> / R <sup>2</sup> adjusted	0.05126/ 0.01172	0.714 / 0.702

Standard errors in brackets below the coefficients.

\*, \*\*, \*\*\* denote significance at the 10, 5, 1 percent levels respectively.

For the country's Unemployment rate, Table 1 indicate us that before the start of the observation period, Uruguay had a monthly Unemployment of 7.46 percent. Before the intervention, there is a significant change in Unemployment by 0.04 percent per month. We can also observe a high significant result from the estimation of the country's unemployment just after the implementation of the LUC by 2.41 percent. The estimated change in the monthly trend in unemployment after the intervention, compared to the monthly trend before the intervention, appeared to show a high significant result of -0.25 percent.

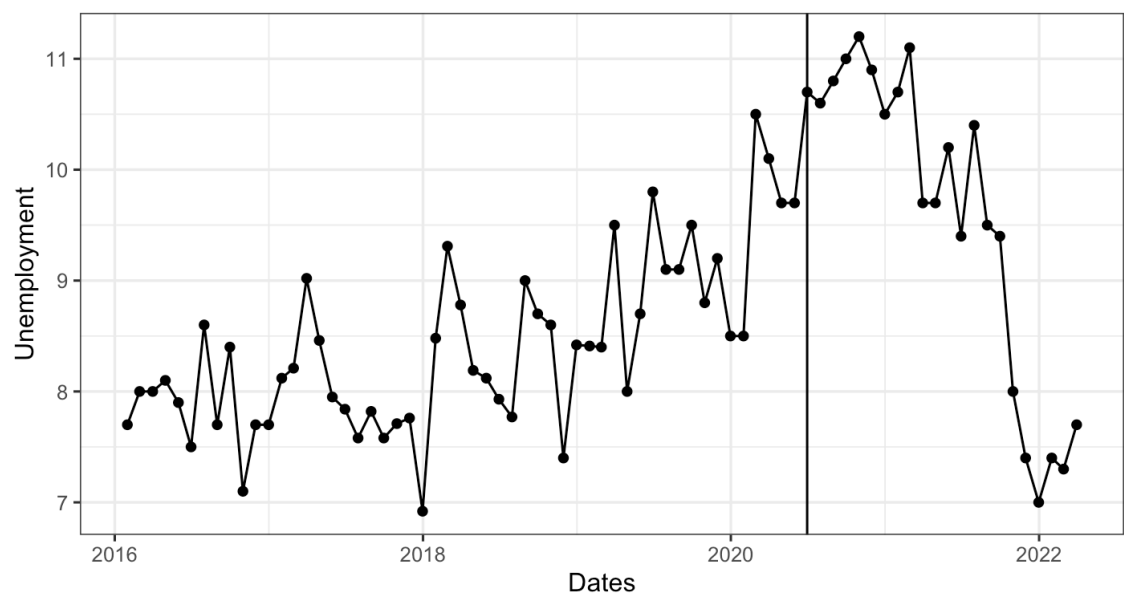
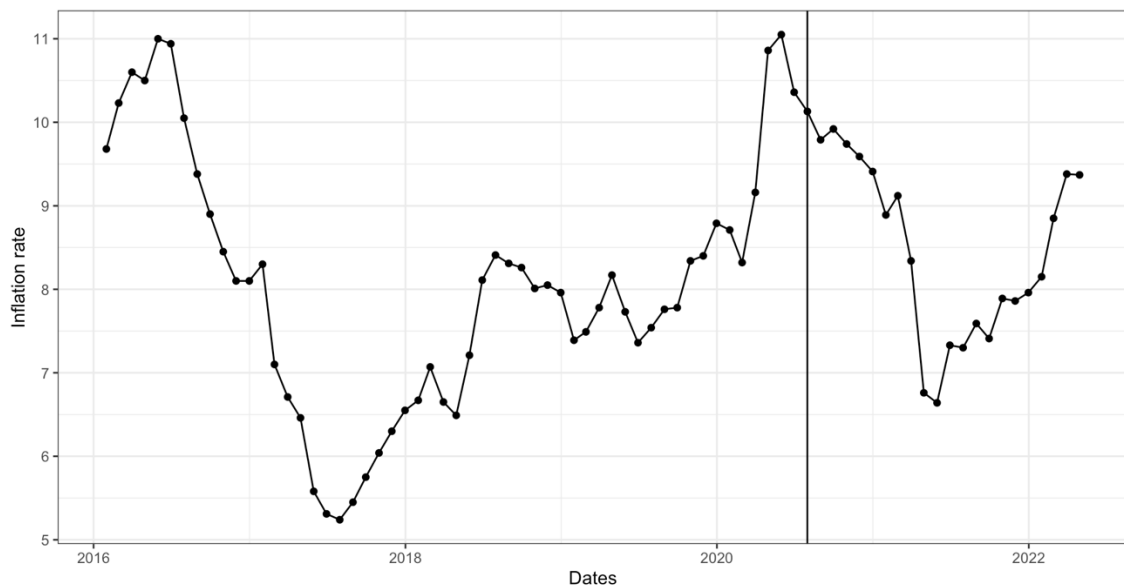


Table 2

government Spending & GDP Growth

Sources: Uruguayan Central Bank

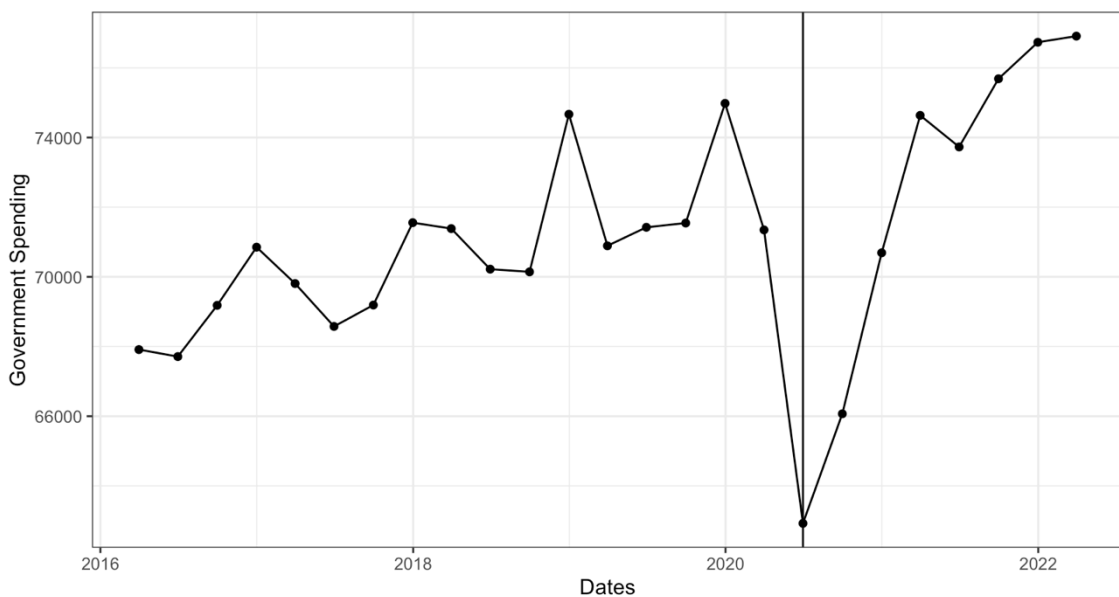
	Government Spending	GDP Growth
Intercept	69206.20*** (1232.5)	3.72* (1.7516)
Time	108.80 (113.9)	-0.38* (0.1618)

Law	-4194.64 (2402.6)	-5.27 (3.6867)
Time after Law	1522.21** (487.1)	3.25** (0.8667)
Observations	25	24
R <sup>2</sup> / R <sup>2</sup> adjusted	0.503 / 0.432	0.470 / 0.391

Standard errors in brackets below the coefficients.

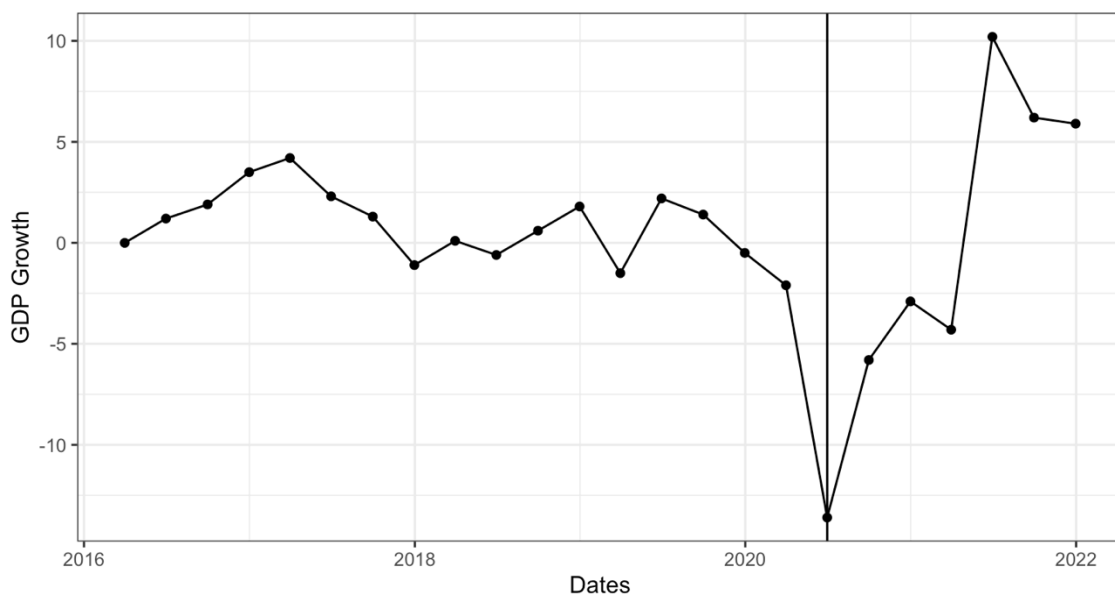
\*, \*\*, \*\*\* denote significance at the 10, 5, 1 percent levels respectively.

In table 2 we can find the results for the Interrupted Time Series Regression for the government Spending of the country. The estimated change in the trend monthly amount of government spending after the intervention, compared with the monthly trend before the intervention seemed to show a significant result of 1522.21 UYU thousand pesos on government spending at the 5 percent level. Also, from the data of this model, we can deduct that before the beginning of the observation period, Uruguay had an average of 69206.20 UYU thousand pesos per month on government spending. Before the intervention, there is no significant month-to-month change in the government spending (P-value for baseline trend = 0.350). Right after the implementation of the LUC, the estimated government spending amount decreased by -4194.64 but the results were as well not significant (P-value for level change after the LUC = 0.350).



We can find the results for the country's GDP Growth on the right side of table 2. The estimated change in the quarterly trend in GDP growth after the intervention, compared to the quarterly trend before the intervention, appeared to show a significant 3.25 percent increase at the 5 percent level of significance. We can also deduce from the data that before the start of the observation period, Uruguay had a quarterly GDP growth of 3.72 percent. Before the intervention, there is a significant change in GDP growth of -0.38 percent per quarter at the 10 percent level of significance. There is no significant result from the estimation of GDP growth just after the implementation of the LUC (P value for the change in level after the LUC = 0.168).

For these two variables it can be counterargued that the changes over time were caused by the pandemic and not directly by the new fiscal rule. Due to the sanitary emergency of the pandemic, government spending around the world was increased. The quarantine combined with several restrictions for safety reasons and the reactions of the economy after makes the interpretation of these variables difficult.



For the quantification of the volume of currency that circulates in an economy we have M0; M1; and M2 shown in table 3. There is no significant result from the estimation of the change in the trend monthly value of M0 just after the implementation of the LUC (P value for the change in level after the LUC = 0.147) compared with the monthly trend before the intervention.

M0, before the start of the observation period, had a monthly average amount of 43289.60 UYU million pesos. The estimation of the change in M0 that occurs with each month before the intervention has a high significant result of 315.77 UYU million pesos. For the change level in the monthly value of M0 immediately after the intervention of the LUC, the data also shows high significant results, this time of 3909.62 UYU million pesos.

Table 3

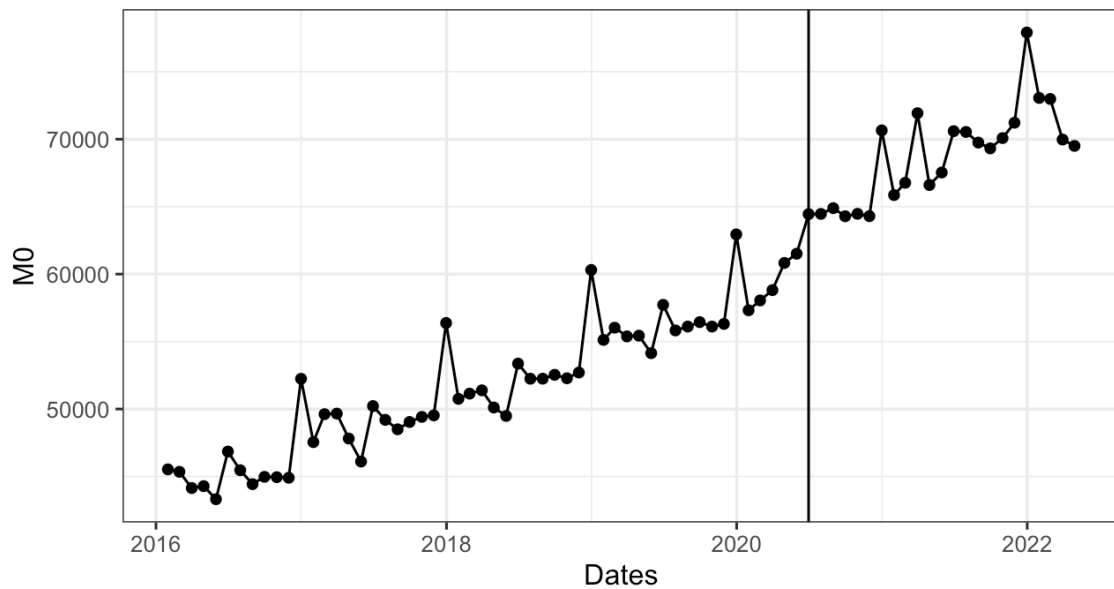
Volume of Currency

Sources : Uruguayan Central Bank

	M0	M1	M2
Intercept	43289.60*** (585.38)	114878.76*** (1554.39)	213051.44*** (2572.04)
Time	315.77*** (18.52)	929.26*** (49.17)	2517.17*** (81.37)
Law	3909.62*** (1095.69)	5243.59 (2909.42)	10615.75* (4814.21)
Time after Law	91.99 (73.64)	1065.43*** (195.55)	1441.73*** (323.58)
Observations	76	76	76
R <sup>2</sup> / R <sup>2</sup> adjusted	0.9484/ 0.9463	0.962 / 0.961	0.982 / 0.981

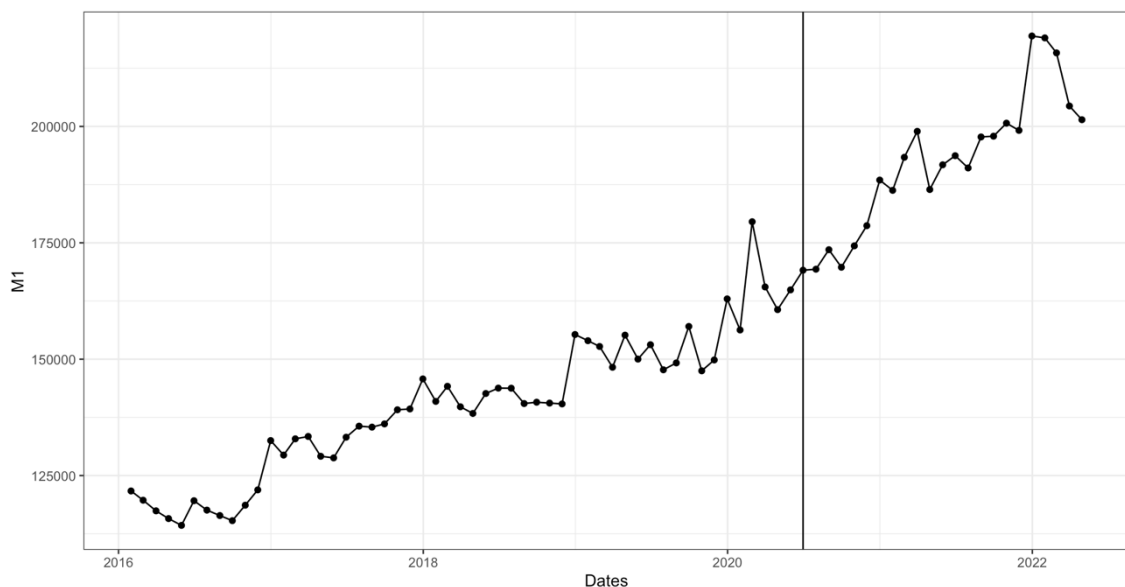
Standard errors in brackets below the coefficients.

\*, \*\*, \*\*\* denote significance at the 10, 5, 1 percent levels respectively.



M1 show significant results of 1065.43 UYU million pesos from the estimation of the change in the trend monthly value after the implementation of the LUC compared with the monthly trend before the intervention.

High significance values are also shown on the monthly amount on the estimation of its change that occurs with each month before the intervention by 929.26 UYU million pesos. The change level in the monthly value of it immediately after the intervention shows no significant result for M1 (P value for the change in level after the LUC = 0.076).



M2 also shows a significant result from the estimation of the change in the trend monthly value after the implementation of the LUC compared with the monthly trend

before the intervention. The increment is by 1441.73 UYU million pesos. M2 shows also high significance values on the monthly amount on the estimation of its change that occurs with each month before the intervention by 2517.17 UYU million pesos. The change level in the monthly value of M2 immediately after the intervention of the LUC, has some significant results of 10615.75 UYU million pesos at the 10 percent significance level.

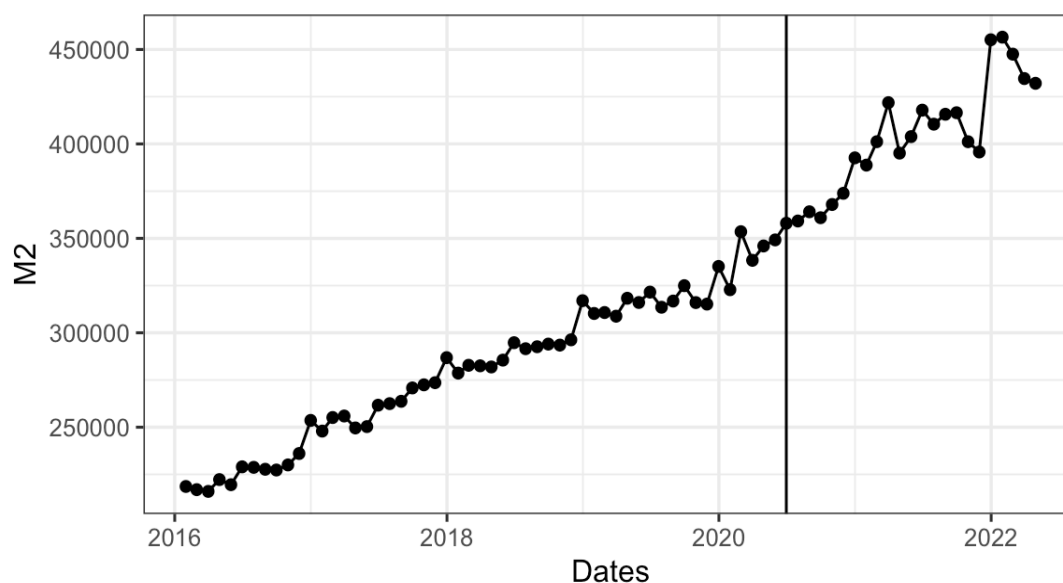


Table 4

Volume of Currency

Sources : Uruguayan Central Bank

	M0	M1	M2
Intercept	1753.80*** (585.38)	6868.08*** (1554.39)	10475.84*** (2572.04)
Time	-82.90*** (18.52)	-309.94*** (49.17)	-476.58*** (81.37)
Law	3909.62*** (1095.69)	5243.59 (2909.42)	10615.75* (4814.21)
Time after Law	91.99 (73.64)	1065.43*** (195.55)	1441.73*** (323.58)
Observations	76	76	76

R2 / R2 adjusted	0.305 / 0.275	0.499 / 0.478	0.449 / 0.426
------------------	---------------	---------------	---------------

Standard errors in brackets below the coefficients.

\*, \*\*, \*\*\* denote significance at the 10, 5, 1 percent levels respectively.

#### 4.2 Detrend of the volume of currency

A problem that might arise when regressing the volume of currency is that M0; M1; and M2 follow a trend that can make the interpretation difficult. In order to attack this problem a detrend regression of the money supply values will be made followed by a regression with the detrended variables.

A linear detrending regression is used to detrend the data. This is a regression with the values of the money supply variables and the dates, and from it take the residuals, which are the deviations of the trend. After getting the residuals we run the interrupted times series regression with the detrended measures.

We can observe that M1 and M2 are still high significant after detrending the data. This help us to see there is a plausible effect of the LUC on the Uruguayan money supply.

The estimation of the change in trend of M0 after the implementation of the LUC still remains non-significant.

Table 5

#### Difference in Differences

Sources: Uruguayan Economics and Finance Ministry; Treasury Department; Uruguayan Central Bank; National Statistics Institute of Uruguay; National Institute of Statistics and Censuses of Argentina.

	Government Budget Value	Government Spending	Inflation Rate	GDP Growth
Intercept	-38656.27*** (8701)	-96221*** (943)	39.112*** (1.181)	-1.176 (1.504)



Subject	33797.69**	-25982***	-31.058***	2.041
	(12305)	(1334)	(1.583)	(2.126)
A f t e r	-62936.79***	-1086	8.663***	2.376
Intervention	(16172)	(1782)	(1.973)	(2.784)
Subject*After	60702.91**	4341	-8.198**	-3.855
Intervention	(22870)	(2520)	(2.780)	(3.937)
Observations	152	50	130	48
R <sup>2</sup> / R <sup>2</sup> adjusted	0.211 / 0.195	0.913 / 0.907	0.836/ 0.832	0.028 / -0.038

Standard errors in brackets below the coefficients.

\*, \*\*, \*\*\* denote significance at the 10, 5, 1 percent levels respectively.

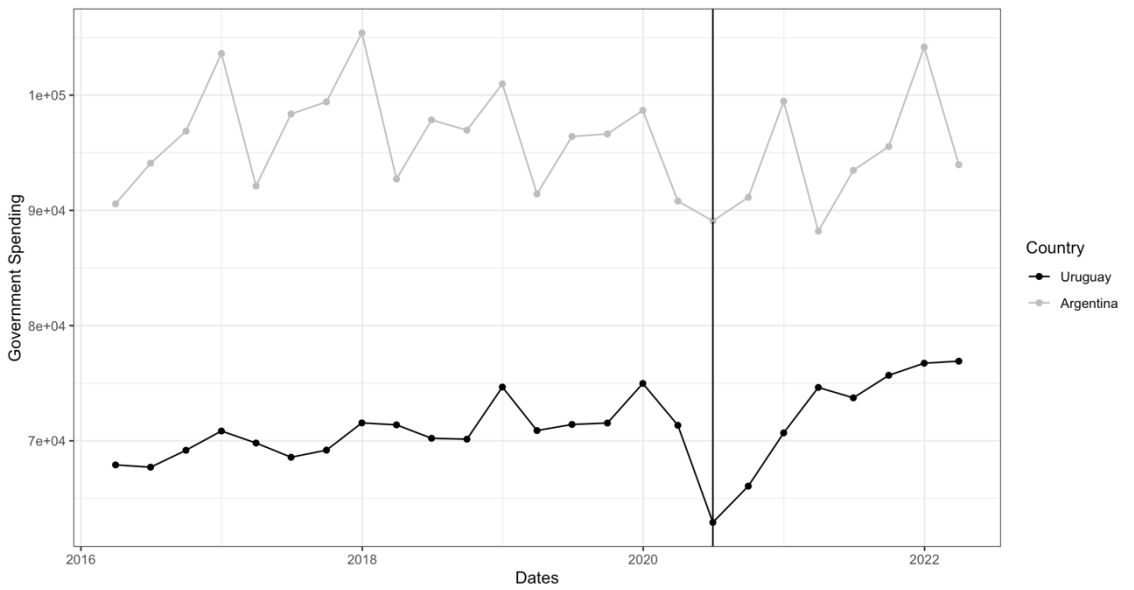
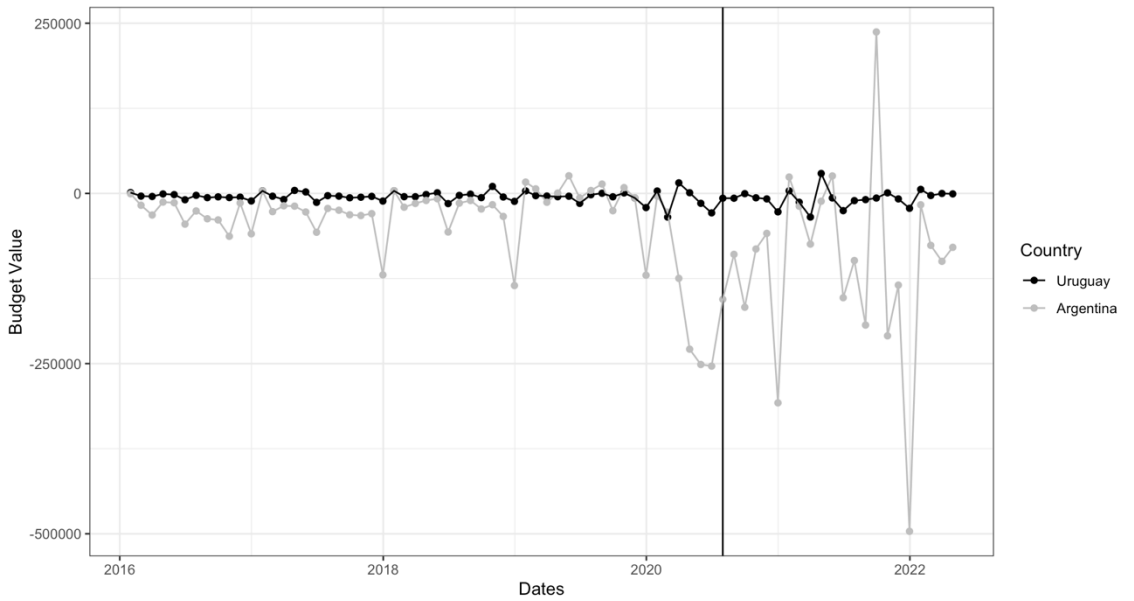
#### 4.3 Difference in Differences

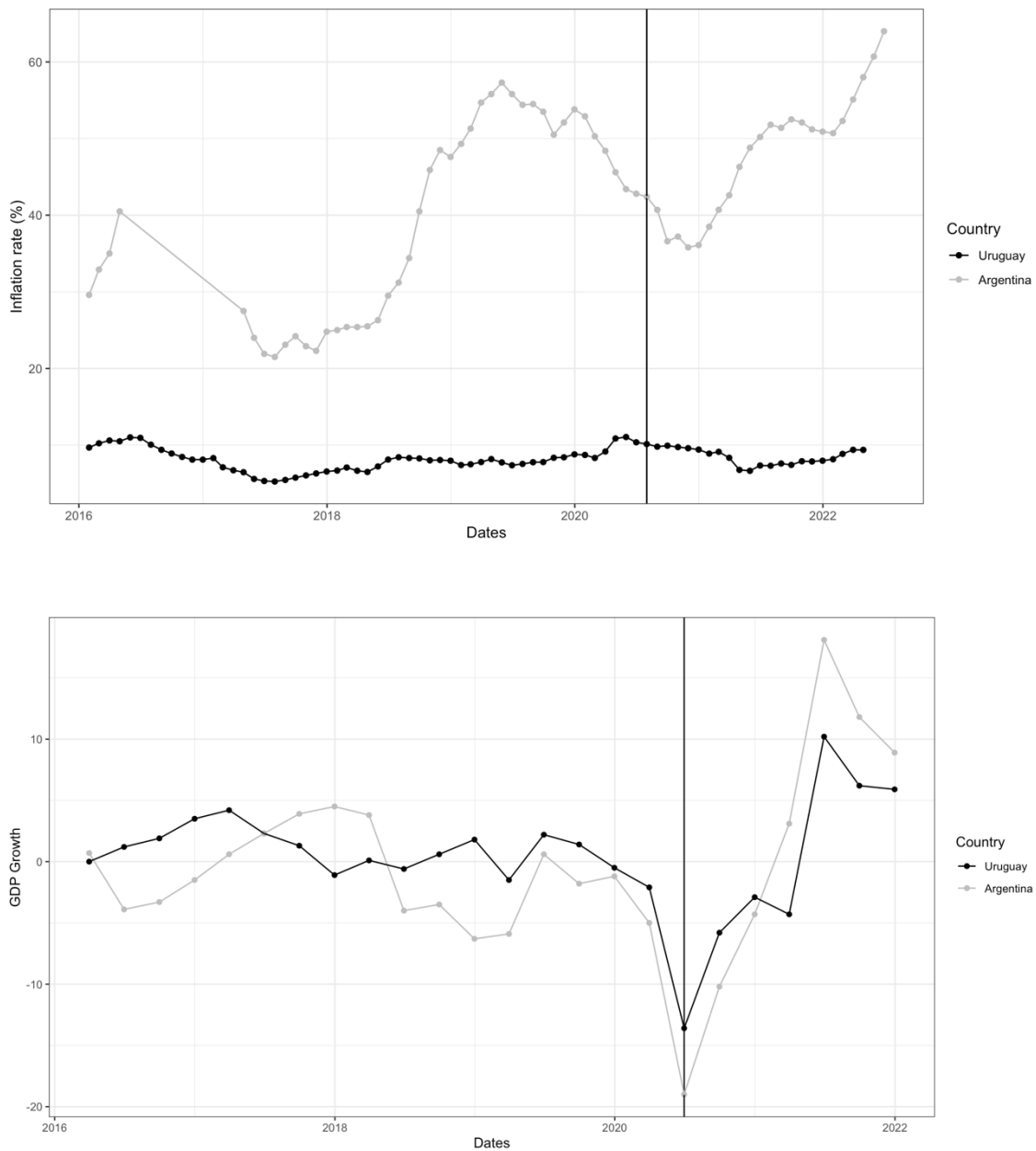
Table 5 reports the results derived from equation (2) using a Difference in Difference method. The government budget value appears to have significant results at the 5 percent level on the treatment group after the implementation of the LUC, showing an increment by 60702.91 UYU million pesos. The Subject results (being Uruguay the treatment group) are also significant at the 5 percent level showing an increment of 33797 UYU million pesos. It is also shown a high significant result for the After Intervention period indicating a decrement of the budget value by 62936.79 million considering both countries. Considering these results, we can conclude that the LUC in Uruguay contributed to increase the budget value of the country.

The second column showing government Spending results does not show a significant effect in Uruguay after the intervention period. The Subject variable does show high significant results of negative 25982 UYU million pesos indicating that the difference of the treatment and the control group before the intervention of the LUC.

When analyzing the inflation rate, we can see that Uruguay due to the implementation of the LUC managed to reduce its inflation rate by -8.198 percent with significant results at the 5 percent level. A problem that comes when analyzing the inflation rate using Argentina as control group is that on the last couple of years during the pandemic, the country had one of the highest inflation rates in the world, which makes it difficult to make comparisons considering its quick increasement during the COVID 19

pandemic. Lastly, it cannot be concluded that the intervention of the LUC had a significant impact on the country's GDP growth and the government spending.





## 5. Robustness checks

In this section, several robustness checks will be performed in order to address possible confounding factors in the estimations. In table 6, GDP growth and government spending do not show significant after the implementation of the LUC, which is the same as the main analysis without the placebo date. The inflation rate and the government budget value show some significant results. This could indicate that the improvement of their respective values comes from other factors that play roll in the model, which are not being considered or from an event that could have happened on the placebo date used. The government budget value has with the placebo test a lower

significance level which could still help us consider that the implementation of the LUC in July 2020 caused an improvement.

The main problem is shown on the inflation rate. Here in the placebo test, all the variables are high significant. This can help us conclude that the implementation of the LUC did not play any role on the country's inflation rate and that the change in comparison with the inflation rate of Argentina is made by other factors unrelated to the new fiscal rule.

Table 6

Difference in Differences placebo test – alternative date of the implementation of the LUC.

Sources: Uruguayan Economics and Finance Ministry; Treasury Department; Uruguayan Central Bank; National Statistics Institute of Uruguay; National Institute of Statistics and Censuses of Argentina.

	G o v e r n m e n t Budget Value	G o v e r n m e n t Spending	Inflation Rate	GDP Growth
Intercept	-46192*** (8000)	95751.5*** (845.5)	30.216*** (1.038)	-0.5583 (1.8012)
Subject	40966*** (11314)	-25479.5*** (1195.7)	-22.452*** (1.405)	1.8250 (2.5473)
A f t e r	-73810*** (21029)	1035.5 (2113.7)	19.141*** (1.311)	0.1500 (2.5473)
Intervention	71880* (29740)	4458.3 (2989.3)	-18.440*** (1.789)	-1.8167 (3.6025)
Subject*After Intervention				
Observations	152	50	130	48
R2 / R2 adjusted	0.196 / 0.181	0.918 / 0.913	0.926/ 0.925	0.016 / -0.052

Standard errors in brackets below the coefficients.

\*, \*\*, \*\*\* denote significance at the 10, 5, 1 percent levels respectively.

## 6. Conclusions

In this paper it was analyzed the implementation of a new law that includes a new fiscal rule with regulations in the government spending activities adding more restrictions in order to improve the situation of the Uruguayan government revenues and expenses. This paper offers an econometric investigation for identifying the effect of the new law LUC, implemented in July 2020, on Uruguayan economics.

An interrupted time series analysis was used in order to check the effects of the LUC on different variables individually.

The results of the full analysis reveal that unemployment; GDP growth; government spending; M1; and M2 had significant results indicating that the LUC could have had an effect on them.

The change in the monthly trend in unemployment after the intervention showed a decrement of 0.25 percent. For government spending we can see a decrease of 4194.64 thousand UYU pesos right after the implementation of the LUC, but the results were not significant but the change in the monthly trend after the intervention showed an increment of 1522.21 UYU thousand pesos at the 5 percent level significance. This can be explained by the need of investment in public health during the pandemic and also the recovery of the Uruguayan GDP value might have impacted on the government spending since it is correlated with the revenues of the state. The change in the monthly trend on GDP growth after the intervention shows a positive increment of 3.25 percent. Other possible factors that could have also played a role in the increment of the GDP's growth are the deregulations on the real estate market, the reduction of taxes and benefits for foreign companies that invest and stay in the country, all made during close time periods.

For M1 and M2 we can see a significant increment of 1065.43 and 1441.73 UYU million pesos respectively in change in the monthly trend after the intervention.

Using a difference in differences regression, we can see that the government budget value of Uruguay after intervention of the LUC was increased by 60702.91 million, and how the inflation rate was reduced by 8.198 percent. For the government spending and the GDP growth no significant results were found when analyzing the treatment group after the implementation of the LUC.

However, the robustness check also shows significant results on the government budget value and the inflation rate which can mean that the effect on these variables could have been caused by an external factor and not due to the change of policy. For the

government budget value, we can see that the significance dropped from 10 percent level to 5 level which can still indicate that the LUC played an important role, but it does not explain for itself alone the change of value. The inflation rate being high significant on the placebo test leads us to conclude that the LUC did not influence it and that the change over time was given by factors outside the model.

All these results have a critical limitation considering the COVID 19 pandemic. The pandemic in economic and social terms started in Uruguay in March 2020 when the borders were closed and the quarantine began. This was 4 months before the implementation of the LUC which brings difficulties when analyzing the economic variables used in this paper since both events happened close in time. For any of the variables used, we cannot discard the possibility that the pandemic influenced them which affects the interpretability of the study. Also, the short time period passed since the LUC was implemented has not been long enough yet to be able to see new trends that remained over time.

Papers like Kunkoro et al. (2014) show that government spending cuts in Indonesia had decline inflation rates but the impact of the new policy that led to a lower deficit has also marginally reduced economic growth. Meanwhile, Alesina et al. (1999) showed that cuts in public spending leads to more private investment which implied a faster economic growth.

In conclusion we can insinuate that the implementation of the LUC, while not tackling the government spending, it produced some positive results, but it is still not conclusive to explain the changes in the Uruguayan economy by itself.

## 7. References

Alesina, A.F. and Ardagna, S. (2010). Large Changes in Fiscal Policy: Taxes versus Spending, Tax Policy and the Economy

- Ley de urgente consideración DEFINITIVA (2020) 19889 LUC.

-Banco Central del Uruguay (2022). Estadísticas y Estudios. Retrieved from: <https://www.bcu.gub.uy/Estadisticas-e-Indicadores/Paginas/Default.aspx>

-Ministerio de Economía y Finanzas (2022). Datos y Estadísticas Retrieved from: <https://www.gub.uy/datos-estadisticas>

-Instituto Nacional de Estadística (2022). Retrieved from: <https://www.ine.gub.uy>

-Ministerio de Hacienda (2022). Portal de Datos Económicos. Estadísticas Económicas. Retrieved from: <https://www.economia.gob.ar/datos/>

-Instituto Nacional de Estadística y Censos (2022). Estadísticas. Retrieved from: <https://www.indec.gob.ar>

-Kuncoro, H., Pambudi, D. (2014). The Economic Impacts of Government Spending Cut: The Case of Indonesia, Journal of Advanced Research in Law and Economics.

-Alesina, A., Ardagna, S., Perotti, R., Schiantarelli, F. (1999). Fiscal Policy, Profits, and Investments.

- International Monetary Fund (2020). "Fiscal Monitor. Policies to Support People during the COVID-19 Pandemic." April. Washington, DC: International Monetary Fund.

- Azucena Arbeleche (2020). "Fiscalidad y Ciclo Presupuestal en Uruguay: Lecciones, Desafíos y Recomendaciones."

-Caselli, F., et al (2018). Second-Generation Fiscal Rules: Balancing Simplicity, Flexibility, and Enforceability.

World Bank (2019). Retrieved from: <https://archive.doingbusiness.org/en/rankings>

Krugman, P. (2012). End this Depression Now?, New York: W.W. Norton and Company, Inc.