Czech University of Life Sciences Prague

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Bachelor Thesis

Evaluation of the Selected Country's Fiscal Policy in the Context of Historical Events

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

BACHELOR THESIS ASSIGNMENT

Iliia Pergament

Business Administration

Thesis title

Evaluation of the selected country's fiscal policy in the context of historical events

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Objectives of thesis

The goal of the bachelor thesis is to evaluate the development of the French fiscal policy in the selected time period with the emphasis paid on the indebtedness of the country, expenditures and revenues. A partial objective of the thesis is to identify the causes and significant changes on the expenditure and revenue side of the budget with an insight taken into historical and other factors influencing the country's current state of the budget. The final partial objective of the thesis is to provide recommendations on how the French budgetary situation can be improved.

Methodology

The methodology involves the utilization of both qualitative and quantitative methods in tandem. Qualitative methods, primarily represented by the document study technique, are used in the theoretical part of the work, while quantitative techniques are represented by time series, descriptive, and linear regression analyses. The time period covers 23 years from 2000 to 2022, which is explained by data availability. The thesis uses secondary data from the World Bank and the National Statistical Office of the French Republic, which is then processed and incorporated into time series, descriptive, and linear regression analyses.

The proposed extent of the thesis

30 – 40 pages

Keywords

budget, expenditures, fiscal policy, France, government, revenues, taxes

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Recommended information sources

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Declaration

I declare that I have worked on my bachelor thesis titled "Evaluation of the Selected Country's Fiscal Policy in the Context of Historical Events" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break any copyrights.

In Prague on 15.03.2025 ______________________________

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Evaluation of the Selected Country’s Fiscal Policy in the Context of Historical Events

Abstract

This bachelor thesis evaluates the development of French fiscal policy from 2000 to 2022, highlighting a critical state marked by increasing national debt and persistent budget deficits. Major economic shocks, such as the Eurozone Debt Crisis and COVID-19 pandemic, have significantly impacted France's public finances, revealing a struggle to stabilize the budget. Despite efforts by François Hollande's government, lasting stability remains elusive. The thesis suggests a strategic shift in fiscal policy, recommending the adoption of mid-2010s policies to improve financial health. While potentially controversial, these measures are deemed necessary to achieve sustainable fiscal stability and avoid further indebtedness.

Keywords: budget, expenditures, fiscal policy, France, revenues, taxes

Hodnocení fiskální politiky vybrané země v kontextu historických událostí

Abstrakt

Tato bakalářská práce hodnotí vývoj francouzské fiskální politiky a zdůrazňuje kritický stav poznamenaný rostoucím státním dluhem a přetrvávajícími rozpočtovými deficity. Velké ekonomické šoky, jako je dluhová krize v eurozóně a pandemie COVID-19, významně ovlivnily francouzské veřejné finance a odhalily snahu o stabilizaci rozpočtu. Navzdory snahám vlády Françoise Hollanda zůstává trvalá stabilita v nedohlednu. Práce navrhuje strategický posun ve fiskální politice a doporučuje přijetí politik v polovině roku 2010 ke zlepšení finančního zdraví. I když jsou tato opatření potenciálně kontroverzní, považují se za nezbytná k dosažení udržitelné fiskální stability a zamezení dalšího zadlužování.

Klíčová slova: rozpočet, výdaje, fiskální politika, Francie, příjmy, daně

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EU	European Union
USA	United States of America
VAT	Value Added Tax
GDP	Gross Domestic Product
EEC	European Economic Community
OLS	Ordinary Least Squares
IMF	International Monetary Fund

1 Introduction

In every country and economy, ordinary consumers and inhabitants often fear specific actions on the part of their government, where one of the most feared events in the eyes of citizens is an increase in taxes. Undeniably, more economically educated people tend to realize that such hikes in taxes are linked to the fiscal policy cycles rather than to desire of public officials to earn more, in developed and democratic countries at least. This thesis' creation is motivated by the recent events that took place in one of the leading EU economies – France, where the projected changes in taxation have been causing a massive amount of public discontent and anger, often resulting in massive manifestations with devastating consequences for the public infrastructure. Another motivation prompting the creation of this thesis dedicated specifically to France is the recent change in the government structure with a clear leftist presence that is likely to have its effect on the taxation for exceptionally rich people, which was already a big issue during François Hollande's presidency, leading to massive exodus of rich people, e.g., Gérard Depardieu among others.

Therefore, this thesis aims to evaluate the development of the French fiscal policy in the selected time period between 2000 and 2022 with the emphasis on the indebtedness of the country, expenditures and revenues. The thesis equally aims to identify the causes and significant changes on the expenditure and revenue side of the budget with an insight taken into historical and other factors influencing the country's current state of the budget as a partial objective of the work.

Eventually, recommendations are expected to be drawn based on the empirical results of the thesis on how the country can continue evolving and modifying its fiscal policy to reach the point of fiscal sustainability. Those objectives are met using an empirical research design as specified in the earlier part of the paragraph, where time series, descriptive and linear regression analyses are implemented.

This thesis follows a particular structure, where the subsequent chapter, Chapter 2 introduces goals and objectives of the thesis in more detail; Chapter 3 presents the theoretic background of the studied topic and introduces the key concepts related to fiscal policy and French economy; Chapter 4 is entirely dedicated to the empirical analysis; Chapter 5 deals with the comparison of the thesis' findings with the findings of other scholars; Chapter 6 concludes the thesis' findings and summarizes what has been done.

2 Objectives and Methodology

2.1 Objectives

The goal of the bachelor thesis is to evaluate the development of the French fiscal policy in the selected time period with the emphasis paid on the indebtedness of the country, expenditures and revenues. Partial objective of the thesis is to identify the causes and significant changes on the expenditure and revenue side of the budget with an insight taken into historical and other factors influencing the country's current state of the budget. The final partial objective of the thesis is to provide recommendations on how the French budgetary situation can be improved.

2.2 Methodology

The methodology involves the utilization of both qualitative and quantitative methods in tandem. Qualitative methods, primarily represented by the study of secondary sources technique, are used in the theoretical part of the work, and the quantitative techniques represented by time series, descriptive, and linear regression analyses. The time period covers 23 years from 2000 to 2022, which is explained by data availability. The thesis uses secondary data from the World Bank and the IMF, which is then processed and incorporated into time series, descriptive, and linear regression analyses.

In the first two chapters of the practical part, the selected variables reflecting the fiscal policy domain of the French Republic are analyzed. Below, a brief description of the variables and the rationale behind choosing them are presented:

1) **Budget balance (% of GDP).** Given the focus on the fiscal policy domain and the identification of the type of budget used in France and the effect of historical factors on its status, it was essential to select a variable that will properly describe the type of budget in France. The first option was to select the amount of deficit/surplus in nominal terms, but this would not be entirely correct as it will not reflect the relative situation in the economy. In that regard, using the budget balance variable expressed in the percentage from the GDP is the most sensible solution.

2) **Revenue (% of GDP).** As discussed, one side of the fiscal policy is constant earning of revenues by the government, traditionally through taxes. The selected units are once again expressed in the percentage from the GDP.

3) **Expense (% of GDP).** In the same manner, another side of the fiscal policy is constant spending by the government on the public policy. The selected units are once again expressed in the percentage from the GDP.

4) **Debt (% of GDP).** Constant increase in indebtedness results in a negative situation for the country and increased concerns on the part of creditors. Additionally, this is one of the most important indicators reflecting the way how good government manages its finances.

When it comes to the linear regression, Equation 1 presented below summarizes the structure of the estimated equation:

$$y_t = \beta_0 + \beta_1 x_{1t} + \beta_1 x_{2t} + \beta_3 x_{3t} + \beta_4 x_{4t} + \varepsilon_t \quad (1)$$

y_t is the annual budget balance-to-GDP ratio of the French Republic, x_1 is the War on Terror dummy variable, highlighting the years when the War on Terror was announced and French participated in American operations, x_2 is the Great Recession that had its peak in Europe in 2008 dummy variable, x_3 is the Eurozone Crisis dummy variable, highlighting the years, when the crisis persisted in the EU, x_4 is the dummy variable showing the most severe years of the COVID-19 pandemic, t is an indicator of an annual time series frequency, β_0 is the intercept term, $\beta_{1 \ldots 4}$ are structural parameters of the independent variables that shows the effect of each of the defined event, and ε is the error term.

3 Literature Review

3.1 Fiscal Policy: Overview

According to Auerbach (1997), the fiscal policy is an integral part of the government mechanism that addresses the exact way how the government finances are allocated, distributed and eventually earned to pay back the future expenses that will occur. Before proceeding to the structure, types and other crucial implications of the fiscal policy, it is first important to pay attention to why governments face a need to spend money at all.

Clements et al. (2015) points out that the government today is a complex mechanism that involves an interaction of the government officials, tax payers, procurement companies and other important actors, but behind all this, there is a very clear need – governments need to protect their citizens and they need to supply them with particular infrastructure that will assist them – hospitals, roads, water cleaning facilities and many other pillars that are all united under the term public goods (Clements et al., 2015). Public goods are goods that are traditionally supplied by the government and public goods have 2 very distinguishable traits – non-rivalry and non-excludability (Ostrom & Ostrom, 2019).

John (2013) suggests that non-rivalry indicates that the goods are supplied in such a way as not to impose a competition between different roads or hospitals, practically meaning that their main function is to provide public service to people belonging to a different locality. Non-excludability indicates that it is either impossible or extremely hard to exclude anyone from consuming such goods. An example of this can be police that protects people and if one imagines a hypothesized situation where a country has a specific tax for police, what happens if someone does not pay this tax? Clearly, not much will happen, and it will surely not mean that policy will not protect this person because it is simply impossible to exclude anyone from consuming those goods.

The problem mentioned earlier is categorized by Hardin & Cullity (2003) by the term "free rider problem" and it has many implications in the modern economy, e.g., foreign trade and concessions made between countries, but it also has its implication in the public and fiscal policies. If someone keeps using public service without paying, this traditionally leads to market failure, and it is exactly the mechanism of the free rider problem. Another issue associated with public goods is the so-called “tragedy of the commons” where an excessive use of public goods leads to a gradual depletion of a public good, eventually leaving all consumers worse-off regardless of their intensity of using a good (Ostrom, 1999). Ostrom (1999) was one of the most prominent economists studying the issue and providing a series of solutions in her work “Coping with tragedies of the commons.”

Hansen (2014) mentions that fiscal policy and notably taxation are ways of tackling the potential issues by collecting enough money from citizens to replace, repair or provide more public goods, substantially lowering the number of market failures that occur, leading to a better environment for people and their economic activities. The most common tool used by governments to collect money are taxes and those taxes can be either direct (income tax or corporate tax) or indirect (value added tax or VAT).

Acemoglu et al. (2005) concludes that, in a sense, taxation is not entirely a positive phenomenon perceived by consumers because it inevitably diminishes the amount of disposable income left for consumers, but it can be viewed as a way to ensure the smooth running of public services on the part of government, eventually resulting in a benefit created for consumers such as the protection of their property rights, better infrastructure and higher economic opportunities.

According to Garland (2014), government revenues are met with government expenses that are allocated to the mentioned public goods, their provision and amelioration, eventually forming a budget balance. Budget balance is a function of government revenues and government expenses, where the latter is subtracted from the former. Budget balance can be of different natures, it can be categorized by either a negative balance (budget deficit), a positive balance (budget surplus), and zero budget balance (budget equilibrium). The second and the third outcomes are not entirely common, especially for large welfare states that are focused on the provision of a good public policy, e.g., France, Sweden, Denmark among others developed high-income countries (Garland, 2014).

Furman & Summers (2019) highlight that every situation with the budget balance has its implication on the economy. When governments are running deficits, those deficits can be of the structural form and of the cyclical one. Cyclical deficit is categorized by a temporary deficit occurring from unfavorable economic conditions often caused by external shocks, e.g., wars, economic crises, etc. Structural deficit is more severe as it is a long-term budget deficit for many years that indicates clear issues with the fiscal policy of a country. Budget deficit can result in higher inflation and theoretically a lower economic growth. Moreover, this will also increase the debt burden of countries because their deficits have to be covered by excessive borrowing. Budget surplus and parity are more positive situations indicating a fiscal sustainability, where government is able to cover its expenses and plan them in the long-term perspective (Furman & Summers, 2019).

Fiscal policy has a slightly different function from the one mentioned earlier, where this policy can be used to make adjustments in the economy and lead to a better economic outcome for a country. According to Temin (1991), before the 20th century, the "invisible hand" hypothesis development by Adam Smith prompted governments and leaders to believe that the economic mechanism has to be left alone as it will constantly adjust itself without any intervention needed on the part of the government. The assumption was working until approximately the mid-20 or the late-20s, when first a series of country faced a massive economic crisis, e.g., Germany, and then the whole world was plunged into the history's biggest economic recession called "The Great Depression" that started in the United States of America (USA) (Termin, 1991). Figure 1 illustrates the extent to which unemployment was a huge issue in the country during the mentioned crisis.

Figure 1. Unemployment during The Great Depression.

Source: Business Insider, 2024

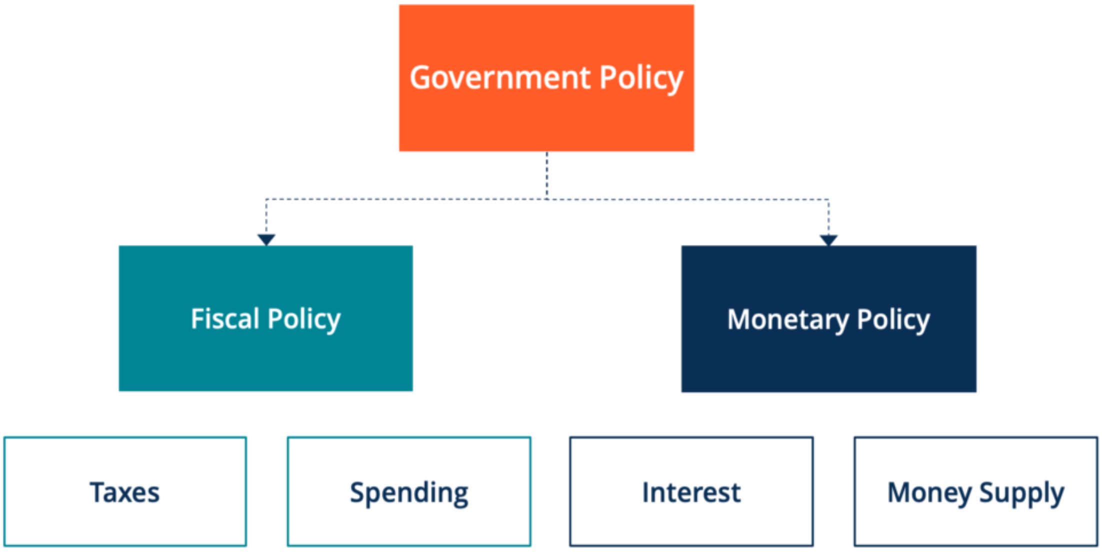
King (2002) indicates that the highlighted recession was initially viewed as something that will quickly resolve by itself, but the reality proved differently when the economy kept on failing and unemployment kept on rising. The tendency had continued until Franklin D. Roosevelt took the charge of the country by becoming a president and staying in office for three terms. The Roosevelt era was categorized by the New Deal and the end of the minimum state, when the government started to quickly use spending as a tool for creating workplaces and ending the recession. The president was influenced by the work of John M. Keynes who believed in the force of the fiscal policy to positively influence the expenditure and lead to better economic outcomes, establishing thus the Keynesian school of economics (King, 2002).

Ramey (2012) notes that the earlier mentioned mechanism, i.e., government spending, is a part of the fiscal policy landscape and it is its second tool. Together with taxes and government spending, governments can exercise fiscal policy aimed at accelerating or decreasing economic. Whenever taxes are lowered, this leads to lower revenues (traditionally, but an alternative is also plausible according to Laffer curve) but results in a higher amount of disposable income. This disposable income is then spent by consumers, leading to a faster economic growth. This is an expansionary fiscal policy, but using taxes is not entirely a conventional way to exercise this kind of policy because people tend to use the money that they receive to buy goods for immediate consumption that they wished to buy long ago. A drawback to the government consumption is the “crowing-out effect”, when the government investments made into the economy will result in a lot of factors allocated to those projects, while there can be issues with the private investment of firms (Ramey, 2012).

According to Anderson (2004), using government spending and, more particularly, increasing it is a more conventional way because of the multiplier effect. Consider building a hospital or a massive road – workers are hired, and they instantly get a job with subsequent earning of income, increasing their consumption and providing spillover effects to the whole economy (Anderson, 2004).

According to Spilimbergo et al. (2009), an alternative to the expansionary fiscal policy is a contractionary one and it is traditionally implemented in cases when inflation is surging, and the government has to make an intervention by lowering it. Lastly, fiscal policy is a tool used alongside another type of the government policy – the monetary one. Figure 2 summarizes and compares the two types of the government policy.

Figure 2. Fiscal policy versus monetary policy.

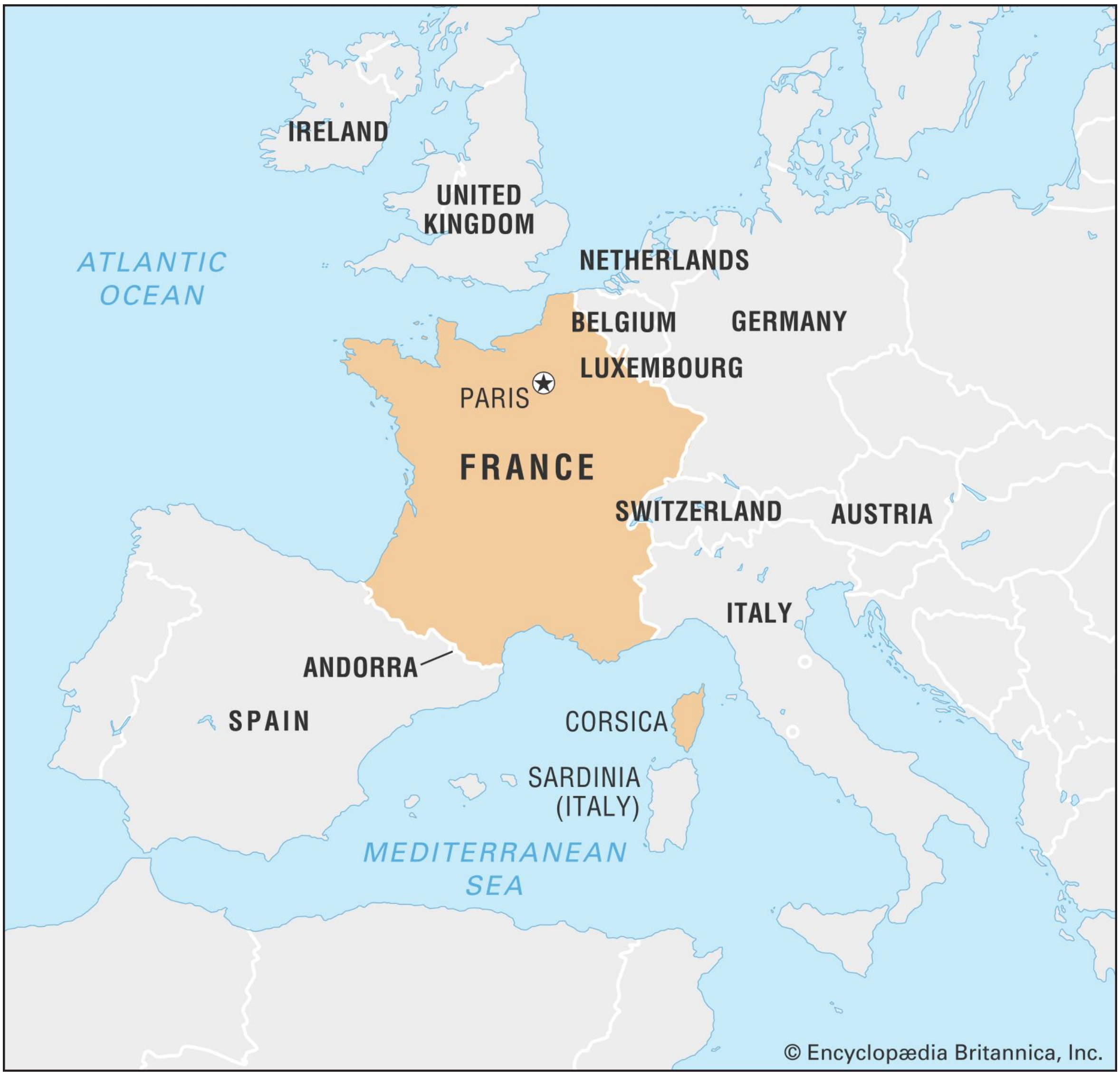


Source: Corporate Finance Institute, 2024

3.2 French Economy: Key Insights

Dormois (2004) mentions that after the Second World War, France (see Figure 3 for the country on the world map) set its foot on the path of economic recovery and transformation following the WW2 devastation. The period immediately following the war saw France implementing a series of structural reforms and state-led initiatives aimed at rebuilding its economy under the heavy rule of Charles De Gaulle. The establishment of the Fourth Republic in 1946 marked the beginning of a new era of modernization and industrialization, which was assisted by the initiatives on the part of the allies in the form of the Marshall plan (Dormois, 2004). Alongside the Marshall plan, another key to this transformation was the implementation of the Monnet Plan, named after Jean Monnet, which focused on reconstructing the nation’s infrastructure and boosting industrial output. Significant investments were made in industries such as steel, coal, and transportation, laying the groundwork for what would become known as the "Trente Glorieuses" or the thirty glorious years of economic growth and prosperity (Goubert, 2002).

Figure 3. France on the world map.



Source: Britannica, 2024

Cameron and Freedeman (1983) mention that as the decades progressed, France continued to adapt its economic strategies to changing global dynamics and the changing geopolitics of the 20th century. The oil shocks of the 1970s posed significant challenges for a US-aligned country, leading to periods of stagflation. However, the nation's integration into the European Economic Community (EEC) in 1957, and later the European Union (EU), facilitated greater economic stability and growth through increased trade and investment opportunities, which was nevertheless met with certain criticism on the part of the French officials, notably of the president De Gaulle himself, which eventually led to the reform of the EEC (Caron, 2014). By the 1980s and 1990s, France had embraced a more liberal economic approach, privatized several state-owned enterprises and reduced barriers to trade and investment, which was in line with the agenda exercised by the European Community and the European Union later one. In the 21st century, France continued to innovate and adapt, with sectors like technology, aerospace, and luxury goods becoming increasingly prominent (Caron & Bray, 2014). In aerospace, French Airbus company has lately become the world leader following the controversy surrounding its largest American competitor, Boeing (Abdeldayem et al., 2023).

Another key sector, according to Depeyre et al. (2018), is the luxury goods industry, where France's reputation for quality and sophistication has cemented its status as a global leader. Brands like Louis Vuitton, Chanel, and Hermès are synonymous with French excellence in fashion, leather goods, and cosmetics. This sector not only drives significant export revenues but also attracts millions of tourists each year, further bolstering the economy. The luxury goods market exemplifies the French ability to combine traditional craftsmanship with modern marketing and global distribution, maintaining a competitive edge in a highly specialized industry (Depeyre et al., 2018).

Additionally, Jasper (2014) concludes the energy sector is a vital component of the French economy, particularly its nuclear energy industry. France is one of the world's largest producers of nuclear power, with over 70% of its electricity generated from nuclear energy. This reliance on nuclear power has allowed France to achieve a relatively low carbon footprint and energy independence. The energy sector also includes a growing focus on renewable energy sources, as France aims to diversify its energy mix and enhance sustainability. Investments in wind, solar, and hydroelectric power are increasing, reflecting a broader commitment to environmental responsibility and innovation in energy technologies (Jasper, 2014).

3.3 Historical Events Influencing Budget Balance

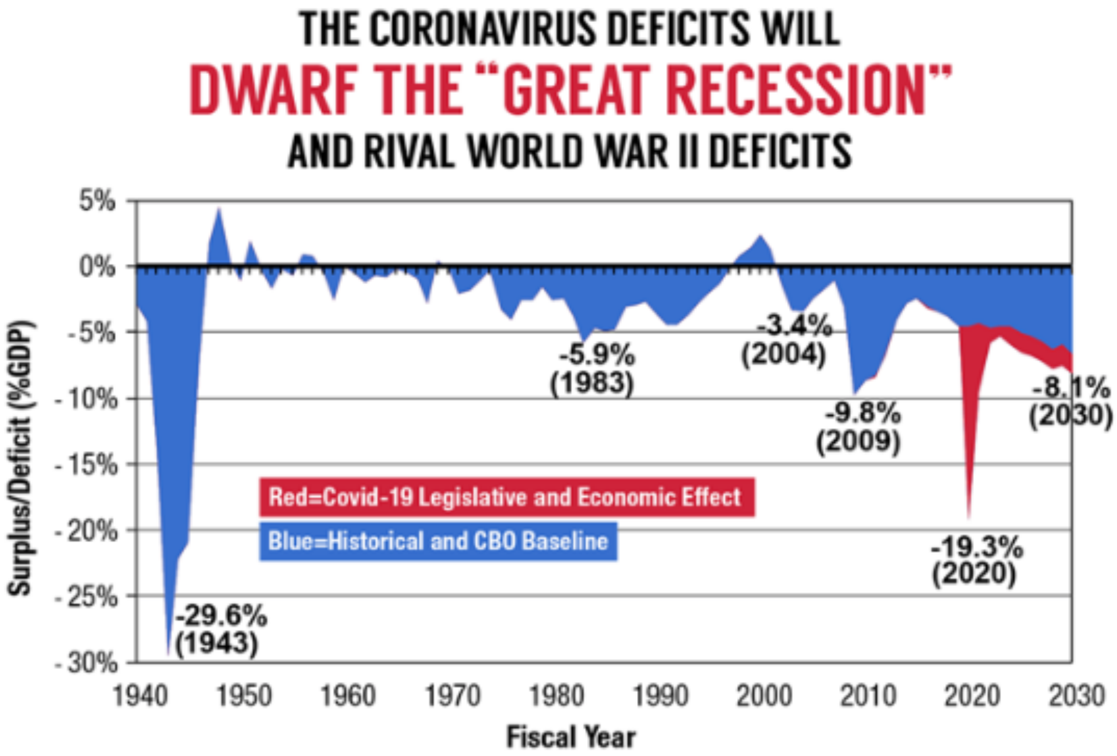
After specifying the key concepts related to the fiscal policy and also providing an overview of the French economy from the historic perspective and the perspective of its main sectors, this chapter provides an overview of the recent (the ones from the 21st century) events that significantly influenced budget balances of developed nations. One of the first events that influenced the expenditure side of modern industrialized nations, according to Belasco (2009), was the so-called "War on Terror" that was initially announced in the USA with a series of countries joining forces with the USA. Of course, those events concerned just a limited number of countries with relatively big armies, but the participation of industrialized nations along the USA resulted in higher defense spending, eventually shrinking the budget balance and often putting into the deficit state. In this context, the USA with the biggest effort made should have suffered the most but it is important to realize that the country had had a massive defense budget for years, where just a given portion of it was increased and the rest re-allocated from the rest. France, which is the key country of the interest was an active participant of the military operations, substantially raising concerns of the citizens about the sensibility of such operations with regard to fiscal balance of the country (Belasco, 2009).

The second event that seriously challenged budget balances and raised concerns about the future budget sustainability of a large portion of the world's countries in the 21st century, according to Rueben et al. (2018), was The Great Recession that started in the late 2007 and reached its peak in 2008. The crisis that had initially been caused by the real estate bubble and inadequate investments into bubbly assets on the part of major banks resulted in the collapse of the banking system first in the USA and then in the rest of the developed and developing (the one dependent on the economy of the USA) worlds. The crisis resulted in a need for fiscal stimulus and influx of money in the form of bailouts, which was especially the case in the USA but not only there. Inappropriate regulation on the part of the world's governments that time costed them millions and sometimes even billions of public money that had to be allocated to the banking sector to save failing banks (Rueben et al., 2018).

Da Costa Cabral et al. (2017) point out that the European Union, compared to the USA faced a more serious aftermath that manifested itself in the form of "The Eurozone Debt Crisis" of 2011-2013, when the economy of Greece was failing under the repercussions of The Great Recession and massive bailouts had to be provided to the country's economy, resulting in shrinking of available public finances for a series of countries that became the key donors to Greece, e.g., Germany among others (Da Costa Cabral et al., 2017).

One of the most recent events that took a serious and probably the most severe toll on the public finances of nearly all countries on Earth, according to Tahepoor et al. (2020), was the COVID-19 pandemic. The pandemic had a series of ways through which it increases expenditures – first, upon introducing restrictions, businesses had to be compensated. Secondly, the health sector was facing shortages that had to be compensated with higher wages for doctors and potentially more hospitals built (especially in the case of China). Thirdly, restrictions had to be followed and a sufficient number of policemen controlling public compliance with regulations had to be ensured. Moreover, the severity of this crisis for public finance is further confirmed by the behavior of the EU that had initially never relied on money from external sources of financing (that is, debt) but had to do so in order to remain buoyant (Taherpoor et al., 2020). Figure 4 illustrates the severity of the COVID-19 pandemic.

Figure 4. COVID-19's effect on public finances.



Source: CERP, 2020

As of 2024, the final major event that led to increased government spending and put under a serious question the fiscal sustainability of many nations and particularly the

European ones was the hike in prices for natural resources and subsequently energy, as Colgan et al. (2023) note. This led to assistance provided on the part of particular governments to households and businesses, where a part of this cost was compensated by the government (Colgan et al, 2023).

4 Practical Part

Table 1 from the next page introduces the underlying data to be analyzed. The data for the budget balance variable is obtained from the IMF (International Monetary Fund), the data for revenue and expense is collected from The World Bank, and the data for indebtedness is collected once again from the IMF.

Table 1. French fiscal data (2000 – 2022).

Year	Budge balance (% of GDP)	Revenue (% of GDP)	Expense (% of GDP)	Debt (% of GDP)
2000	1.36	42.47	44.13	58.88
2001	1.36	42.73	44.37	58.34
2002	-0.33	42.02	45.35	60.26
2003	-1.27	41.52	45.64	64.42
2004	-0.85	41.46	45.02	65.94
2005	-0.26	41.79	45.14	67.38
2006	0.22	42.18	44.70	64.61
2007	-0.05	41.63	44.20	64.54
2008	-0.41	41.58	44.68	68.78
2009	-5.14	40.98	48.02	83.04
2010	-4.64	42.54	49.32	85.26
2011	-2.45	42.32	47.59	87.84
2012	-2.36	43.18	48.07	90.60
2013	-1.78	44.18	48.12	93.41
2014	-1.74	44.30	48.29	94.89
2015	-1.63	44.04	47.99	95.58
2016	-1.80	43.86	47.88	97.96
2017	-1.23	44.36	47.71	98.13
2018	-0.58	44.02	46.77	97.78
2019	-1.62	42.96	46.30	97.43
2020	-7.73	42.83	51.92	115.06
2021	-5.10	42.63	49.91	113.00
2022	-2.93	43.56	49.00	111.67

Source: IMF, 2024 and The World Bank, 2024

4.1 Descriptive Analysis

The first sub-chapter of the practical part addresses the descriptive analysis using the most basic statistical measures. The selected measures are average, minimum, maximum, range and standard deviation. The results of the analysis are in Table 2.

Table 2. Descriptive analysis.

	Budge balance (% of GDP)	Revenue (% of GDP)	Expense (% of GDP)	Debt (% of GDP)
Mean	-1.78	42.74	46.96	84.12
Lowest	-7.73	40.98	44.13	58.34
Highest	1.36	44.36	51.92	115.06
Range	9.09	3.38	7.79	56.72
St. Dev.	2.17	1.03	2.09	18.54

Source: own processing based on IMF, 2024 and The World Bank, 2024

The average ratio of the budget balance to the GDP of France between 2000 and 2022 was negative, theoretically implying that the country was running deficit for most time. On the other hand, the magnitude of the average deficit is not as high as it once happened in France, where the highest-ever deficit reached 7.73 per cent, which presumably happened during the COVID-19 pandemic (to be identified slightly earlier during the time series analysis). The best ratio of budget balance to GDP was 1.36 per cent, which is not a really high value, indicating that the country has not been running really large surpluses.

The average value of revenue to GDP is 42.74%, which is quite a high value confirming that the average tax burden in France in quite high. On the other hand, the lowest and highest values for the indicator do not vary much with just 3.38 percentage points for range, practically implying that the country's taxation policy widely remained the same.

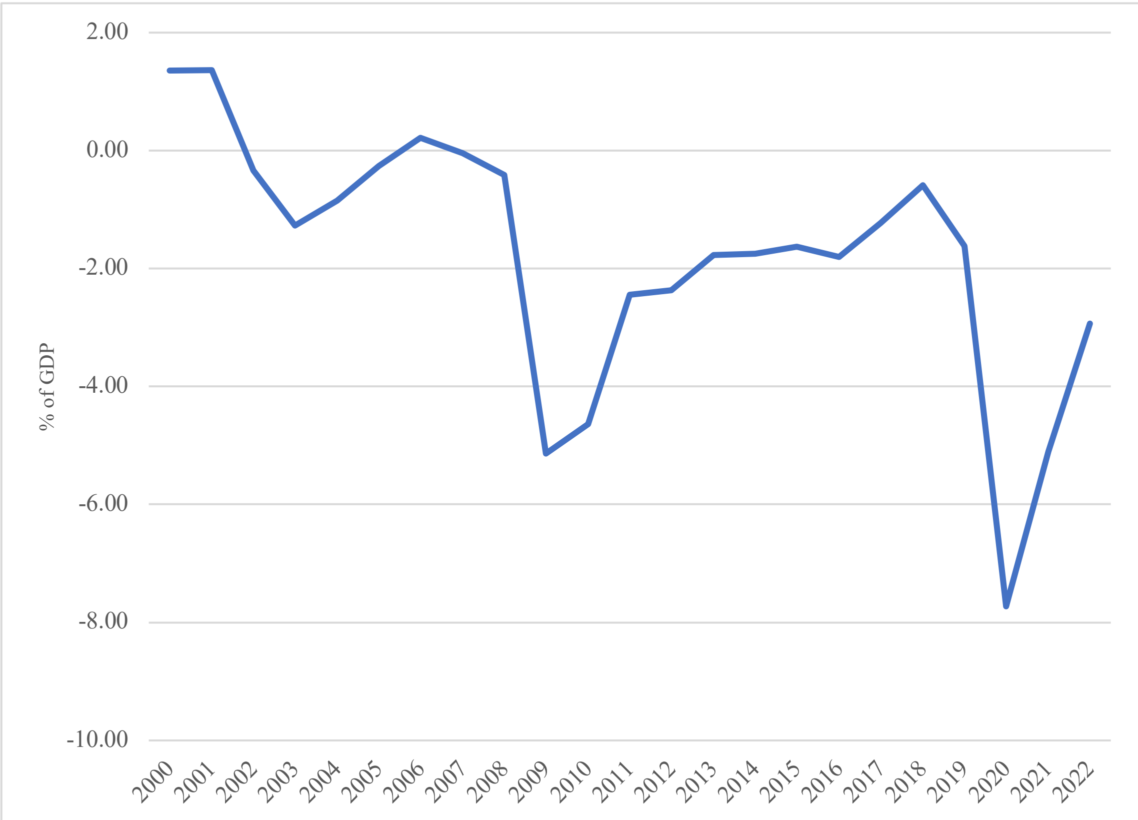
For the expenses, a similar situation is perceived, but a range is higher, which is influenced by the hikes during the most troubled periods that will be identified later. The average expense, nevertheless, is equal to 46.96%, which is slightly higher than the average revenue, explaining thus the situation with the average deficit rather than surplus.

The situation with indebtedness is France is not really good, the average debt-to-GDP ratio is 84.12%, which is quite close to the figure of 100%, which is often viewed as a point of no return and a sign of a failing fiscal policy and budget planning. The range is quite high, which is likely influenced by the trend underlying the variable. More discussion will follow in the next sub-chapter presenting the time series analysis.

4.2 Time Series Analysis

This chapter analyzes the development of the same set of variables over time. Figure 5 is the first one, presenting the evolution of the budget balance-to-GDP ratio for France between 2000 and 2022.

Figure 5. Budget balance to GDP ratio in France (2000 - 2022).

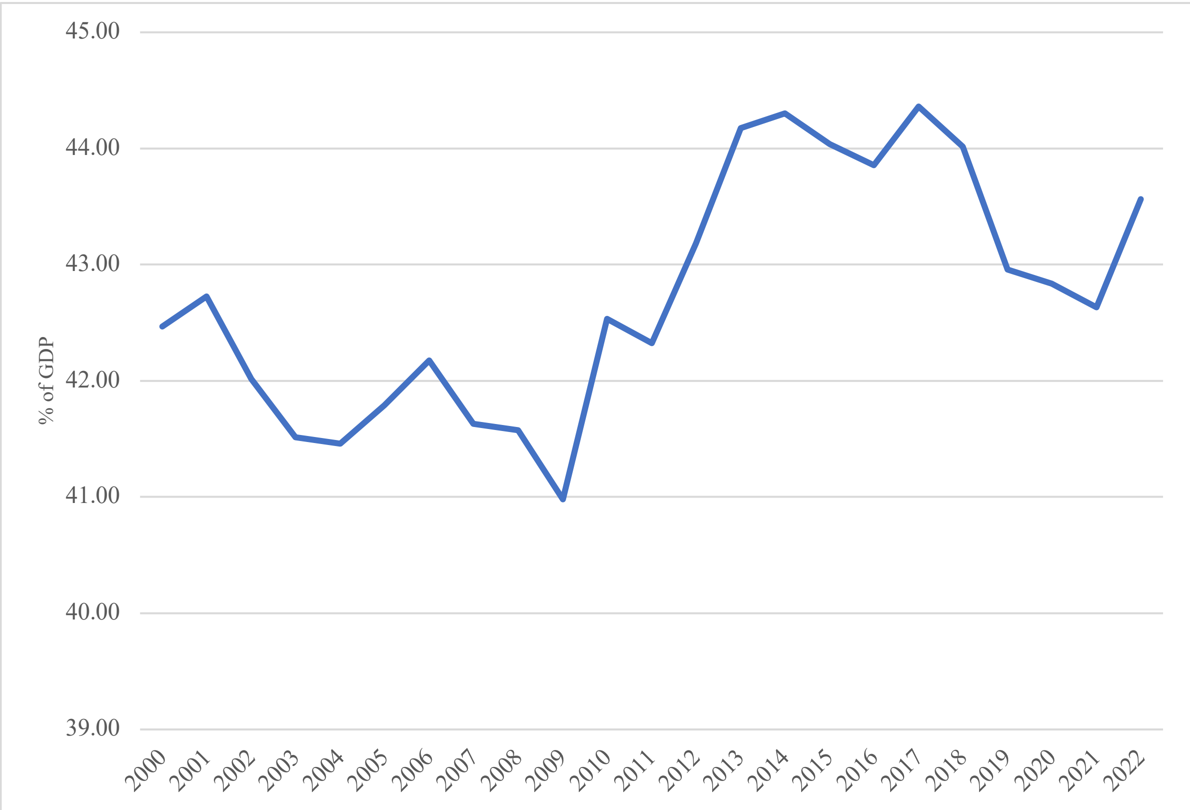


Source: own processing based on IMF, 2024 and The World Bank, 2024

As can be observed, the situation with budget balance was not evolving in a positive way. After a major drop in the value of the ratio, indicating a higher deficit and potentially a higher indebtedness, a period of consolidation and improvement could be traced – between 2003 and 2007 and between 20111 and 2018. On the other hand, every time after an improvement, the situation became even worse – the deficit after the Great Recession and the Eurozone Debt Crisis became significantly higher after the deficit of 2003, which was influenced by a drop in the revenues, and the deficit during the covid pandemic became almost 2 times higher than the deficit during the earlier mentioned events.

In other words, the situation shows that France is not able to recover, and it gets hit with another yet more severe force, making the country even worse off than before. The situation clearly indicates a need for budget consolidation and for a potential change in the approach to taxation and tax collection, whereas cutting expenses is not a likely scenario for such a public-service oriented country as France. Nevertheless, there is no way supposing that any government, especially the one that has just been established will go for an immediate increase in taxes because it would practically mean a political suicide for the incumbent power. Figure 6 presents the revenues of the French Republic to the GDP ratio.

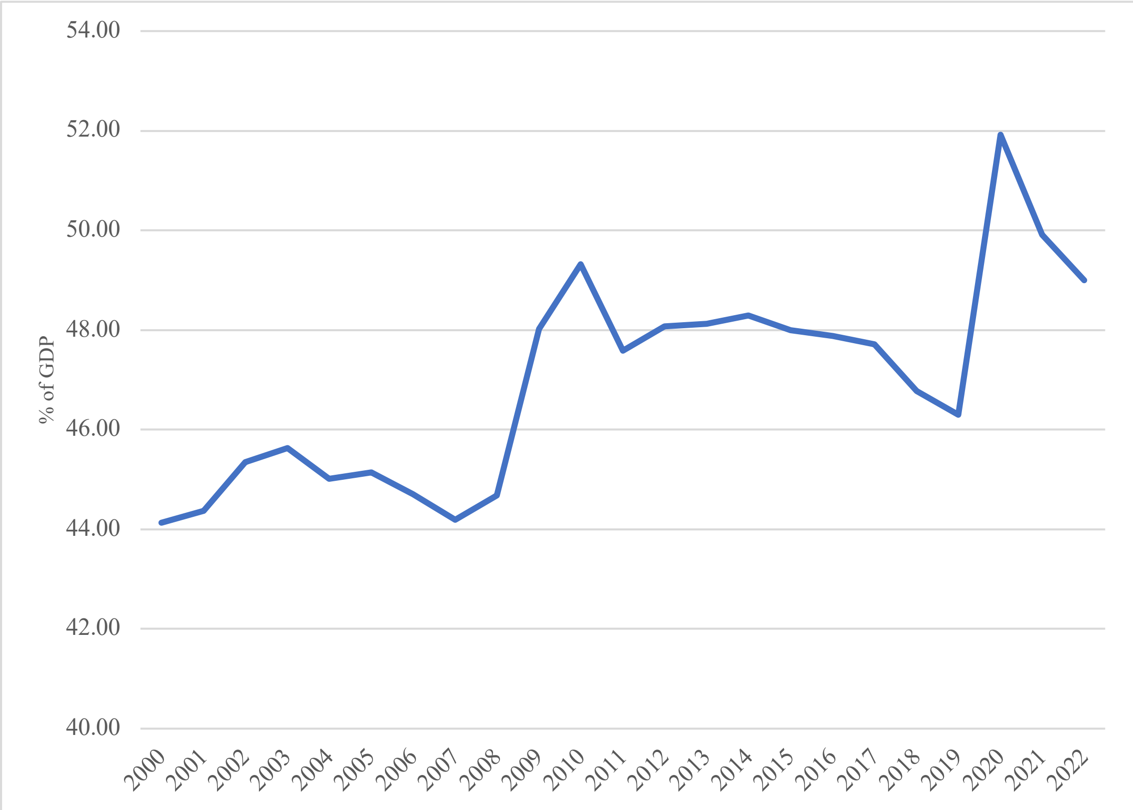
Figure 6. Revenue to GDP ratio in France (2000 - 2022).



Source: own processing based on IMF, 2024 and The World Bank, 2024

There is a major hike in government revenues in the mid-10s, while the previous picture was not an extremely good one since the country's revenue share was almost constantly

Figure 7. Expense to GDP ratio in France (2000 - 2022).



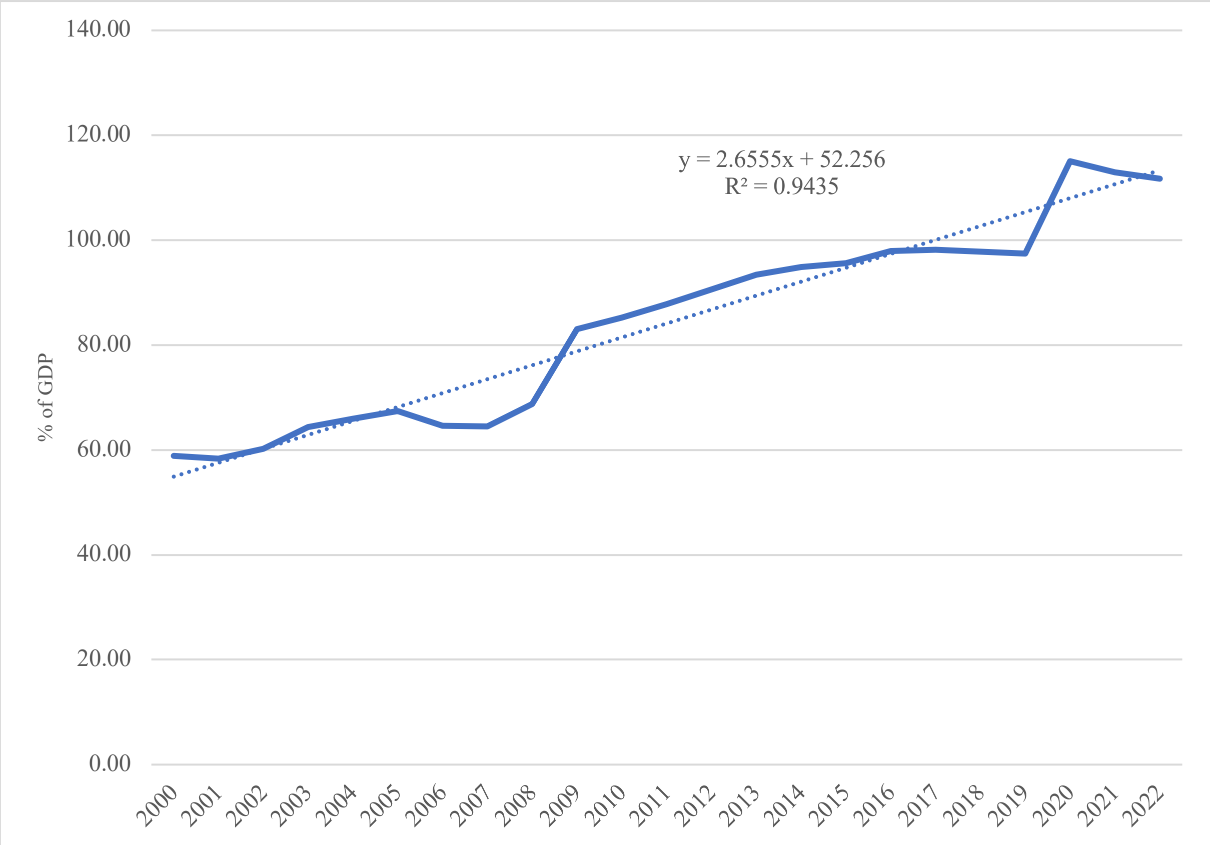
falling before 2011, which is explained by constant taxation and an increase in the GDP. The introduction of new taxes for rich augmentation resulted in a surge in revenue, which was then replaced by yet another drop during the COVID-19 pandemic, which is quite an anticipated situation since the overall level of business activity in the country fell, this resulted in lower taxes collected by the government. Figure 7 presents the other side of the equation, French expenses.

Source: own processing based on IMF, 2024 and The World Bank, 2024

There is a clear upward-sloping tendency in the expenses of the country. The graph confirms that higher budget deficits in France were not fundamentally caused by drops in revenue but by hikes in expenses. Expenses in France are quite high, which is not really surprising given the scale of the country's public projects, but the tendency is really concerning as over time the expenses were increasing quite fast with no major drops after the periods of hikes.

Moreover, the tendency gets even more concerning considering the median age in France that is well above 40, meaning that the country is rapidly aging and in 20 years from now (Caron & Bray, 2014), the government mechanism can simply fail, which was partially postponed by the introduction of the pension reform, but the introduced graphs clearly show that more has to be done. Figure 8 presents the last piece of the puzzle - the country's indebtedness.

Figure 8. Debt to GDP ratio in France (2000 - 2022).



Source: own processing based on IMF, 2024 and The World Bank, 2024

The graph of French indebtedness is slightly different from the rest of the charts due to a more visible presence of a linear trend. This trend is, however, a sign of no good since the country's debt was increasing quite rapidly by 2.655 percentage points per year. Moreover, compared to the earlier analyzed metrics, there is no sign of improvement, and the country is already well-above 100%, traditionally implying that the country is suffering from a relatively high debt burden that has to be alleviated somehow (recommendations will follow in the results and discussion chapter). Before that, however, the linear regression analysis is performed.

4.3 Linear Regression Analysis

This chapter concerns the creation of a linear regression model that will help to determine the effect that the earlier defines historical events of the 21st century have on the French Republic. The model that is estimated here was already presented in equation (1) in the methodology of the thesis.

In the first step that entails, a data is collected (Table 3) and a subsequent verification follows, where the multicollinearity is evaluated.

Table 3. Linear regression analysis data.

Year	Budge balance (% of GDP)	War on Terror	Great Recession	Eurozone Crisis	COVID-19
2000	1.36	0.00	0.00	0.00	0.00
2001	1.36	1.00	0.00	0.00	0.00
2002	-0.33	1.00	0.00	0.00	0.00
2003	-1.27	1.00	0.00	0.00	0.00
2004	-0.85	0.00	0.00	0.00	0.00
2005	-0.26	0.00	0.00	0.00	0.00
2006	0.22	0.00	0.00	0.00	0.00
2007	-0.05	0.00	0.00	0.00	0.00
2008	-0.41	0.00	1.00	0.00	0.00
2009	-5.14	0.00	0.00	1.00	0.00
2010	-4.64	0.00	0.00	1.00	0.00
2011	-2.45	0.00	0.00	0.00	0.00
2012	-2.36	0.00	0.00	0.00	0.00
2013	-1.78	0.00	0.00	0.00	0.00
2014	-1.74	0.00	0.00	0.00	0.00
2015	-1.63	0.00	0.00	0.00	0.00
2016	-1.80	0.00	0.00	0.00	0.00
2017	-1.23	0.00	0.00	0.00	0.00
2018	-0.58	0.00	0.00	0.00	0.00
2019	-1.62	0.00	0.00	0.00	0.00
2020	-7.73	0.00	0.00	0.00	1.00
2021	-5.10	0.00	0.00	0.00	1.00
2022	-2.93	0.00	0.00	0.00	0.00

Source: own processing based on IMF, 2024 and The World Bank, 2024

In this dataset, multicollinearity is likely not an issue because each of the dummy variables reflect a particular time event and such variables are traditionally not correlated with each other. Nevertheless, a verification is still performed using a correlation matrix (see Figure 9).

Figure 9. Multicollinearity verification.

```
Correlation Coefficients, using the observations 2000 - 2022
5% critical value (two-tailed) = 0.4132 for n = 23

     WaronTerror  GreatRecession  EurozoneCrisis         COVID19
          1.0000         -0.0826         -0.1195         -0.1195 WaronTerror
                          1.0000         -0.0658         -0.0658 GreatRecession
                                          1.0000         -0.0952 EurozoneCrisis
                                                          1.0000 COVID19
```

Source: own processing based on IMF, 2024 and The World Bank, 2024

There is no multicollinearity as suggested earlier, the correlation matrix does not contain a single pair of the dummy variables that will have a correlation coefficient higher than 0.75 or lower than negative 0.75. A linear regression estimation employing the ordinary least squares (OLS) method entails with the results shown in Figure 10 on the next page.

Figure 10. Estimation.

```
Model 1: OLS, using observations 2000-2022 (T = 23)
Dependent variable: BudgebalanceofGDP

                  coefficient   std. error   t-ratio   p-value
  ---------------------------------------------------------------
  const            -1.18026      0.308178    -3.830    0.0012   ***
  WaronTerror       1.10055      0.754880     1.458    0.1621
  GreatRecession    0.765518     1.23271      0.6210   0.5424
  EurozoneCrisis   -3.70800      0.898486    -4.127    0.0006   ***
  COVID19          -5.23364      0.898486    -5.825    1.62e-05 ***

Mean dependent var  -1.780958   S.D. dependent var   2.172596
Sum squared resid    25.64295   S.E. of regression   1.193569
R-squared            0.753062   Adjusted R-squared   0.698187
F(4, 18)             13.72322   P-value(F)           0.000027
Log-likelihood      -33.88649   Akaike criterion     77.77298
Schwarz criterion    83.45045   Hannan-Quinn         79.20085
rho                  0.237586   Durbin-Watson        1.211333

Excluding the constant, p-value was highest for variable 3 (GreatRecession)
```

Source: own processing based on IMF, 2024 and The World Bank, 2024

The coefficients column contains the key parameters of the interest that allow the creation of the equation (2) containing the final result of the linear regression estimation:

$$y_t = -1.18 + 1.10x_{1t} + 0.77x_{2t} - 3.71x_{3t} - 5.34x_{4t} + \varepsilon_t \qquad (2)$$

- If there the effect of all the remaining variables is zero or the events do not take place, the average budget balance to GDP ratio in France will be equal to 1.18.

- During the War on Terror, the budget deficit to GDP in France was on average 1.10 percentage points higher, ceteris paribus.

- During the Great Recession, the budget deficit to GDP in France was on average 0.77 percentage points higher, ceteris paribus.

- During the Eurozone Crisis, the budget deficit to GDP in France was on average 3.71 percentage points lower, ceteris paribus.

- During the COVID-19 pandemic, the budget deficit to GDP in France was on average 5.34 percentage points lower.

The model that is estimated has quite satisfying statistical qualities. The coefficient of determination or R square is equal to 0.753 or 75.3%, implying that the historic events explained 75.3% of the fluctuations in the government balance to GDP, which is not entirely an unexpected outcome given that under no external shocks, the budget will be balanced as it is based on meticulous planning. This, however, implies that there can be further local events that have not been identified that could explain the remaining 24.7% of the variation.

The model is significant, and this finding is drawn from the F test. The F test's null hypothesis is rejected at 5 per cent significance level and 95% confidence level, therefore. The same cannot be said about individual parameters, just 3 out of 5 (including the constant or the intercept term) are significant. This is yet the most important finding of the thesis, eventually highlighting that the War on Terror and the Great Recession as such did not have a significant effect on the budget balance of the French Republic, unlike the COVID-19 pandemic and the Eurozone Crisis. The COVID-19 pandemic's effect is the highest out of the identified predictors.

The final step of the analysis is the identification if the inference results are true or not, which is a consequence of the biasedness or unbiasedness of the standard errors. The only way to assume if the errors are biased or not is to evaluate the presence of heteroscedasticity and autocorrelation. Moreover, normality has to be checked as it is a fundamental assumption of the tests used to make inference (t-tests and F-test). Figure 11 from the next page presents the result of this verification.

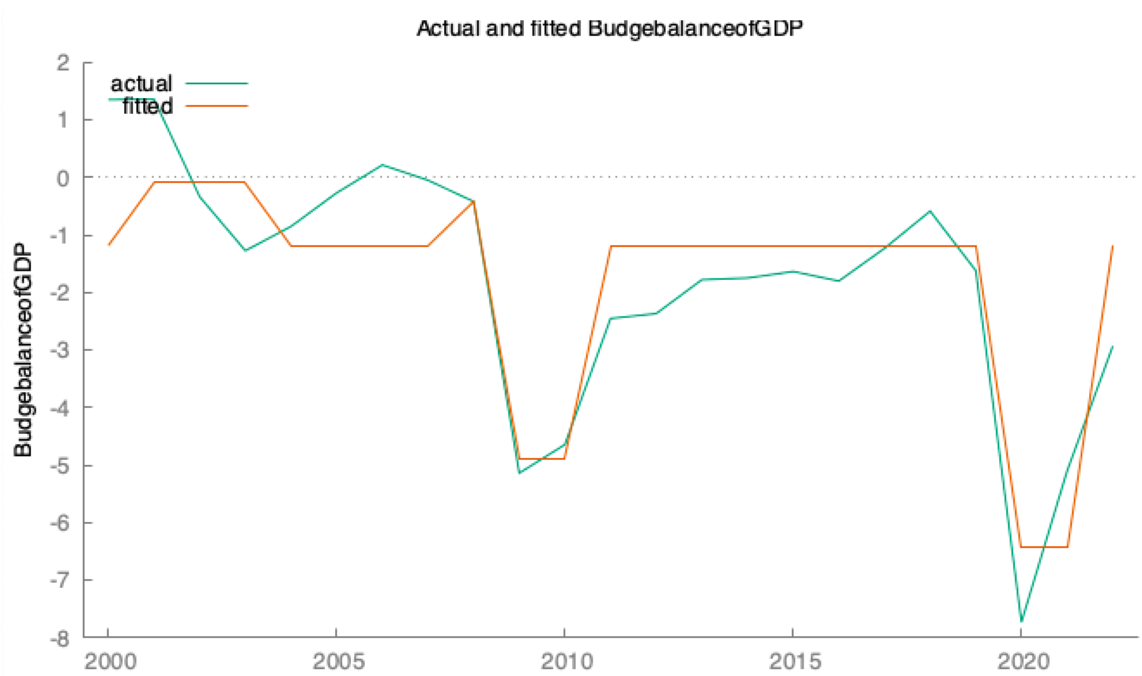
Figure 11. Further verification.

```
White's test for heteroskedasticity -
  Null hypothesis: heteroskedasticity not present
  Test statistic: LM = 2.22677
  with p-value = P(Chi-square(4) > 2.22677) = 0.694131

Test for normality of residual -
  Null hypothesis: error is normally distributed
  Test statistic: Chi-square(2) = 1.28926
  with p-value = 0.524856

LM test for autocorrelation up to order 1 -
  Null hypothesis: no autocorrelation
  Test statistic: LMF = 1.37272
  with p-value = P(F(1, 17) > 1.37272) = 0.257504
```

Source: own processing based on IMF, 2024 and The World Bank, 2024

Heteroscedasticity was not identified in the model (0.69 > 0.05), neither was autocorrelation (0.25 > 0.05). The normality is present, implying that the standard errors and the test that were applied return true results related to the variables' significance. The very final point is the visualization of the curves (see Figure 12).

Figure 12. Visualization.



Source: own processing based on IMF, 2024 and The World Bank, 2024

The curves are almost identical, which is a surprising finding considering that the model contained solely dummy variables. This, however, is a sign that the selected events were the main driving forces behind changes in the budget balance of France. However, adding a few continuous variables can smooth the behavior of the fitted curve even further and make it more identical to the observed. The subsequent chapter compares the thesis' findings with the theory introduced in Chapter 3.

5 Results

The results of the thesis revealed the tendencies that indicate that the public finance of the French Republic is a slowly ticking bomb with the situation constantly getting worse and worse after being hit by an unexpected crisis. The most important finding of the thesis is that the country becomes more and more indebted, where the point of no return happened after the Eurozone Debt Crisis that led to an extremely severe amount of borrowing in order to sustain the country's expenses that were not sufficiently covered with revenue. The situation was not able to improve, and the country was hit by another shock – the COVID-19 pandemic. The same applies to the budget deficit of the French Republic that is on average negative in the period 2000 – 2022.

In other words, the issue of French public finance and fiscal policy is its inability to quickly overcome difficulties and stabilize the balance, because in 4-5 years after the first shock, the country faces another one. Nevertheless, the country had a good opportunity to stabilize its finances after the Eurozone Debt Crisis until it was hit by the COVID-19 pandemic, but it did not succeed in this goal even despite substantially decreasing the deficit.

The other side of the analysis revealed that historic events indeed have their impact on the French budget balance, where the selected four factors (the War on Terror, the Great Recession, the Eurozone Debt Crisis and the COVID-19 pandemic) explained 75% of the variation in the variable, hinting that another 25% can be explained by other events that the thesis did not identify. The thesis' findings are consistent with the works of Da Costa Cabral et al. (2017) and Tahepoor et al. (2020), who indicated that the Eurozone Debt Crisis and the COVID-19 pandemic were significant historical factors that created challenges for public finance, where the case of the French Republic analyzed in this thesis is not an exception.

Based on the results of the thesis and its empirical part, it is recommended that the new French government should change their stance on the public policy and attempt something similar to what was done by François Hollande and his incumbent government in the late 10s and mid-10s, when there was a subsequent slight improvement in the public finance. This might be viewed as quite radical and can equally be seen as something absolutely unacceptable by French, but this is the only way of escaping further indebtedness and continued running of budget deficits.

6 Conclusion

The findings of this bachelor thesis highlight the critical state of the French fiscal policy and its development over the selected time period. The continuous increase in national debt and persistent budget deficits illustrate the ongoing struggle of the French Republic to stabilize its public finances, particularly in the aftermath of major economic shocks such as the Eurozone Debt Crisis and the COVID-19 pandemic. The analysis confirms that these historic events have had a significant impact on the country's budget balance, explaining a substantial portion of the variability in public finance outcomes.

Despite some efforts to mitigate these challenges, such as those undertaken by François Hollande's government, the French fiscal policy has not achieved lasting stability. The repeated inability to recover from financial shocks and return to a balanced budget underscores the need for a strategic and possibly radical shift in public policy.

All in all, the French government must reconsider its fiscal strategies to avoid further indebtedness and continual budget deficits. This thesis suggests that revisiting and potentially adopting policies similar to those implemented in the mid-2010s may provide a pathway to improving the country's financial health. While such measures may be viewed as controversial, they represent a necessary step towards achieving sustainable fiscal stability.

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