

Universidade do Minho
Escola de Economia e Gestão

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Opinion Polls, Political Connections, and
Firms

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Bruno Fernandes

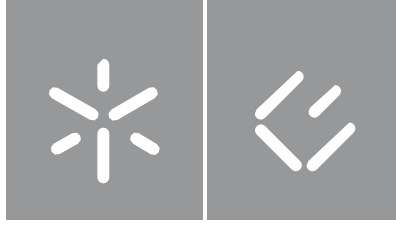


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Escola de Economia e Gestão

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Opinion Polls, Political Connections, and Firms

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STATEMENT OF INTEGRITY

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Sondagens, Conexões Políticas e Empresas - Resumo

Um dos temas mais debatidos em Economia Política é o impacto da economia na popularidade dos líderes políticos. É amplamente aceite que esta tem impacto na popularidade, no entanto, a investigação tem produzido resultados instáveis e, por vezes, contraditórios. Os três primeiros ensaios desta dissertação procuram dar foco a potenciais causas deste problema.

O primeiro ensaio estuda a diferença entre a economia “objetiva” e “mediada”. O impacto da evolução verificada da economia na aprovação dos políticos pode ser menor do que o impacto da economia retratada nos *media*. Com uma base de dados para Portugal, para o período de 2001 a 2018, analisamos se a aprovação melhora quando utilizamos a informação económica que é disponibilizada ao público. Concluimos que esta é prevista com maior rigor quando usando o crescimento económico projetado para o ano em curso.

Num sistema semipresidencial, a aprovação quer dos primeiros-ministros, quer dos presidentes, pode ser influenciada pela economia. Usando uma base de dados para Portugal entre 1986 e 2018, o segundo ensaio estuda a possibilidade de os efeitos económicos serem assimétricos, ou seja, períodos de crise a exercerem efeitos mais significativos, e se tais efeitos são mitigados em períodos de coabitação. Os resultados sugerem que a coabitação e a falta de incentivos à reeleição para os presidentes, contribuem para obscurecer a responsabilização dos políticos pelos resultados económicos.

Adotando uma abordagem diferente, o terceiro ensaio aprimora o uso das ferramentas *wavelet* na ciência política, alargando o foco para a análise multivariada e introduzindo estimações de equações usando wavelets. O ensaio explora o impacto de três variáveis económicas na popularidade do último presidente dos EUA a cumprir dois mandatos, Barack Obama. Os resultados mostram que a sua aprovação está estruturalmente ligada às taxas de desemprego e de inflação, com diferentes padrões de sincronização, e relacionada de forma transitória com o sentimento do consumidor.

Finalmente, o quarto ensaio aborda a relação entre política e negócios, um tema multidisciplinar. Investiga as características e o impacto das conexões políticas nas empresas cotadas na bolsa portuguesa entre 2002 e 2022, estimando a probabilidade de ter conexões políticas e o impacto nas variáveis financeiras. Os resultados do ensaio sugerem que as conexões políticas são mais comuns em empresas de maior dimensão, especialmente em indústrias reguladas e localizadas na área de Lisboa. No entanto, o impacto financeiro dessas conexões parece ser limitado.

Palavras-Chave: Análise com Wavelets; Coabitação Política; Conexões Políticas; Funções Popularidade; Variáveis Económicas

Opinion Polls, Political Connections, and Firms - Abstract

One of the most studied and debated topics in the field of Political Economy is the impact of the economy on how voters evaluate their political leaders. It is widely accepted that the economy influences political popularity, yet research has often produced unstable and sometimes contradictory results. The first three essays of this dissertation aim to shed light on the potential causes of this problem.

The first essay studies the difference between the “objective” and the “mediated” economy. Economic developments on the ground may less influence voters’ approval of incumbents than the economy portrayed by the media. Using evidence from Portugal from 2001 to 2018, we examine whether the ability to predict approval is improved when we employ economic information made available to the public. We conclude that approval is best predicted by forecasted growth for the current year.

In a semi-presidential system, the approval of prime ministers and presidents can be affected by economic performance. The second essay uses approval data and GDP growth figures from 1986 until 2018 in Portugal. We examine the possibility that economic effects are *asymmetric*, with bad economic times exerting stronger effects, and whether such effects are suppressed in periods of cohabitation. Results suggest that cohabitation combined with a lack of reelection incentives for presidents contribute to obscure accountability for economic outcomes, diminishing the role of economic performance.

Taking a different approach, the third essay enhances the use of the wavelet toolset for political science by extending the analytical focus from bivariate to multivariate and introduces regression estimation using wavelets. It explores the impact of three economic variables on the popularity of the most recent two-term US President, Barack Obama. The results show that Obama’s approval rating was structurally linked to unemployment and inflation rates, with different synchronization patterns, and transiently related to consumer sentiment.

Finally, the fourth essay addresses the relationship between politics and business, a multidisciplinary topic. It investigates the characteristics and impact of political connections on Portuguese publicly listed firms between 2002 and 2022 and estimates the probability of political connections and their effect on firms’ financial outcomes. The results suggest that political connections are more common in larger firms, especially in regulated industries and those located in the Lisbon area. However, the overall financial impact of these connections appears to be limited.

Keywords: Economic Variables; Political Cohabitation; Political Connections; Popularity Functions; Wavelet Analysis.

Table of Contents

1. Introduction	1
2. Economic Forecasts and Executive Approval	5
2.1. Introduction	5
2.2. The “Real” and the “Mediated” Economy	6
2.3. Data and Methods	9
2.4. Results	14
2.4.1. Vintage vs. First Values	14
2.4.2. The Forecasted Economy	16
2.5. Conclusion	18
3. The Economy and Executive Approval in a Semi-Presidential Regime: the Case of Portugal	20
3.1. Introduction	20
3.2. Public approval and the economy in Portugal	22
3.2.1. Economic Contexts and Asymmetry	22
3.2.2. Portuguese Semi-Presidentialism and its Implications	23
3.3. Data, Variables, and Estimation Strategy	26
3.3.1. Data and Variables	26
3.3.2. Estimation Strategy	30
3.4. Results	31
3.5. Conclusion	36
4. US Presidential Approval Rating: Time-Frequency Approach	39
4.1. Introduction	39
4.2. Wavelet analysis and the study of popularity functions	40
4.2.1. The challenge of instability	40
4.2.2. The (partial) wavelet coherency, gain, and phase-difference	41
4.3. An example	43
4.3.1. The Data Generating Process	43
4.3.2. Reading the results	44
4.4. Data	46

4.4.1. The approval rating	47
4.4.2. Economic Core Variables.....	48
4.4.3. Economic Perceptions.....	50
4.5. Analysis.....	50
4.5.1. OLS Estimations	50
4.5.2. Wavelet Analysis	53
4.6. Conclusion.....	56
5. Political Connections in Portugal	58
5.1. Introduction	58
5.2. Literature Review	60
5.3. The Portuguese Case.....	64
5.4. Data.....	66
5.5. Empirical Strategy	73
5.5.1. Firm Characteristics and Political Connections	73
5.5.2. Impact on Corporate Variables	74
5.6. Results	75
5.6.1. The Effect of Political Connections on Firms' Financial Variables	81
5.7. Conclusion.....	83
6. Conclusion	85
Bibliography.....	88
Appendix.....	95

List of Tables

Table 1: Economic variables employed.....	10
Table 2: Descriptive statistics of the variables employed.	13
Table 3: Prime Minister approval rate as a function of vintage, first values, and real-time GDP growth. 15	
Table 4: Prime Minister approval rate as a function of forecasted GDP growth.	17
Table 5: Portuguese Presidents and Prime Ministers between 1986 and 2018.	27
Table 6: Descriptive statistics of the variables employed.	28
Table 7: Economic symmetry and asymmetry in the popularity functions of Portuguese prime ministers and presidents.....	32
Table 8: Presidential and prime ministerial approval, the economy, and cohabitation.	35
Table 9: Obama's approval rate as a function of economic and political variables, estimated by OLS..	52
Table 10: Descriptive statistics.....	69
Table 11: T-test on the differences in the means of financial indicators between politically connected and non-connected firms.....	70
Table 12: Average number of board members and political connections by industry.....	72
Table 13: Probit estimations results for the existence of political connections in Portuguese publicly traded companies.	77
Table 14: Poisson estimations results for the number of politicians on boards of Portuguese publicly traded companies.	79
Table 15: Probit estimations results for political connections in Portuguese publicly traded companies.	81
Table 16: OLS estimations results for the impact of political connections on corporate variables of Portuguese publicly traded companies.	82
Table A1: Correlations between economic indicators.	95
Table A2: Parliamentary elections, winners, and government formation.	96
Table A3: List of companies and years of data.....	97
Table A4: Matrix of correlations. Own calculations.	99

List of Figures

Figure 1: Quarterly data on approval rating for Portuguese Prime Ministers from the first quarter of 2001 to the third quarter of 2018.	9
Figure 2: Quarterly data on Real GDP Growth Rate, percentage change from the year ago.	11
Figure 3: Quarterly data on annual OECD forecasts and annual real GDP final values.....	12
Figure 4: Response of the prime ministerial approval rate to a transitory/permanent increase of 2 p.p. in GDP growth forecasts.....	18
Figure 5: Prime Ministerial and Presidential Approval Rating, quarterly data.....	28
Figure 6: Quarterly Growth Rate of Real GDP, percentage change from the year ago, and recessions.	30
Figure 7: Phase-Difference circle.....	42
Figure 8: Example of Wavelet Analysis using Multiple Wavelet Coherency, Partial Coherency, Partial Phase-Difference, and Partial Wavelet Gain.....	45
Figure 9: Plots of Obama's Approval, Unemployment Rate, Inflation Rate, and Consumer Sentiment and the respective Wavelet Power Spectrum.	48
Figure 10: Wavelet Analysis: Obama's Approval, Unemployment Rate, and Inflation Rate.	53
Figure 11: Wavelet Analysis: Obama's Approval, Unemployment Rate, Inflation Rate, and Consumer Sentiment.....	55
Figure 12: Average number of board members politically connected by year (2002-2022).	70
Figure 13: Average number of board members, average number of board members politically connected, and percentage of board members politically connected by year (2002-2022)...	71
Figure 14: Percentage of politically connected members on boards in regulated and non-regulated firms by year.	72

List of Acronyms

CNE - Portuguese National Electoral Commission

CPI - Consumer Price Index

ERS - Portuguese Health Regulatory Authority

EU - European Union

FRED - Federal Reserve Economic Data

GDP - Gross Domestic Product

GNP - Gross National Product

IMF - International Monetary Fund

INE - Statistics Portugal

OECD - Organization for Economic and Co-operation and Development

OLS - Ordinary Least Squares

ROE - Returns on Equity

SRMR - Standardized Root Mean Square Residual

UK - United Kingdom

US - United States of America

1. Introduction

Understanding the complex relationship between the economy and political popularity is one of the most studied and debated topics in the political economy and political science fields. The economic environment deeply influences voter attitudes toward incumbents, but the precise mechanisms of this influence are difficult to identify and measure. Traditional economic indicators, such as unemployment, inflation, and GDP growth rates, have been found to have weak correlations with political support.

In this dissertation, I delve into this paradox by exploring different issues. Through the elaboration of three essays, the aim is to contribute to this topic by shedding light on possible solutions/tools to deal with this paradox. In the following two chapters, I investigate the impact of the Portuguese economy, through different measures of economic growth, on the prime minister's approval and the popularity of the two main Portuguese political entities: the head of state and the executive branch leader. In the fourth chapter, we evaluated the impact of the US economy on the popularity of President Obama by using a new approach. Complementing the traditional econometric techniques and contributing new information, we used the multivariate wavelet analysis to highlight the potential advantages of using this new approach. The added econometric information may be important to understand the paradox discussed above.

There is a considerable number of economic indicators which proxy the state of the economy, and a set of them impact the voter's perceptions of economic performance. Moreover, a strand of the literature has been delving into the understanding of how these perceptions are shaped. Media coverage plays an important role in conveying economic information to voters, impacting their perceptions. Chapter 2 aims to understand the potential influence of media coverage on voter's perceptions, emphasizing the role of a "mediated" economy. Therefore, we distinguish the "real" or "measured" economy from the "mediated economy." The last is based on the economic information available to the voter by the media, which is not necessarily the most accurate and actualized version of it.

Considering the difference between the "real economy" and the "mediated economy," the methodology adopted in this chapter aimed to create a set of economic indicators that empirically test this difference. Following Kayser and Leininger (2015), we created "vintage" and "real-time" economic

indicators. While “vintage” indicators provide a more accurate measure of past economic performance, “real-time” indicators capture the economic information available to voters. In addition, as the “mediated” economy takes into consideration the economic information available to voters, it is plausible that voters use not only information about past performance but also information about future performance. Thus, we also considered the OECD economic projections as indicators of the expected future performance of the economy, which are widely conveyed in the Portuguese media.

The relationship between economy and popularity differs depending on whether the economy is running well (Mueller, 1970). Chapter 3 investigates whether the impact of economic performance on Portuguese executive approval varies based on the economy's behavior. We study whether the two most important Portuguese political entities, the president and prime minister, are punished when the economy is underperforming and the other way around. Being the prime minister responsible for the economic policy and so responsible for the economic outcomes, a differentiated result is expected for the impact of the economy on each entity's approval.

The instability in the relationship between economy and political approval is not only due to economic issues but also to the political and institutional context. Being a semi-presidentialist country, Portugal is a good case for studying the impact of the economy in a context where two political entities play an important role. While the prime minister is responsible for the executive branch, the two-term-limited president is the guarantor of democratic institutions functioning and enjoys considerable public visibility. Moreover, despite not sharing the executive role with the prime minister, the president can intervene in several spheres of influence. Therefore, when they are from opposite parties, mainly in the president's second term, a conflictual relationship can emerge. In those periods of political conflict, the clarity of responsibility for economic performance is blurred. Chapter 3 also addresses this issue in a context where economic performance may affect differently each political entity.

Keeping in mind the difficulties of measuring the impact of the economy on political popularity and analyzing now the case of the United States, Chapter 4 aims to introduce a new tool into the analysis of the Political Science field. To circumvent the problems identified above, I used wavelet analysis to complement the traditional econometric estimation and inference. In this context, the wavelet analysis allows us to estimate a political popularity function in the time-frequency domain, contributing to the differentiation of short-term and long-term relationships between economic variables and political approval. Moreover, it allows the identification of transient or unstable relationships, which means that it captures short-lived moments where economic perceptions (e.g., Consumer Sentiment) are strongly correlated with political popularity.

In times of economic turbulence, the impact of the economy on popularity is perceived to be significant. Thus, in Chapter 4, I studied the presidency of Barack Obama, characterized by a slow economic recovery after the subprime mortgage crisis in 2007. To do so, I used two important economic variables, the unemployment rate and the inflation rate, as proxies for the state of the economy, and an additional variable able to catch voter's perceptions, which is the consumer sentiment, sourced by the Michigan University. Comparing the results of OLS estimations and the results of wavelet analysis, running estimates that are time-varying can shed some light on the reasons why the relationship between economy and political popularity has not been consistent.

Politicians care about their popularity because they desire to win elections. Maximizing the probability of being elected is a priority for the incumbent. The literature on political business cycles is abundant, stating that politicians make an effort to accelerate economic performance by reducing unemployment or fostering the economy or by increasing visible expenditures when the elections draw near. One mechanism by which the incumbent may use to cause this political cycle is through political connections. Politically influenced firms can benefit incumbents around the election time by fostering employment (Bertrand *et al.*, 2018) or contributing directly or indirectly with funds to the campaign (Claessens, 2008; Sukhtankar, 2012).

However, politicians also have interests other than electoral or political. They have their own private interests. Therefore, it is not difficult to find politicians as members of firms' boards or other relationships of different natures (e.g., lawyers, consultants, or auditors). Firms also benefit from establishing these connections with politicians in a quid pro quo relationship. Otherwise, they would not exist (Faccio and Hsu, 2017). They can be benign, with connected firms reaping the benefits of having reputed people who know how the government administration works, or malign. Some firms are interested in establishing connections to obtain advantages against their competitors, which could be associated with rent-seeking activities or corruption.

A survey conducted in 2024 by the European Union (EU) to measure “[...] the level of corruption perceived and experienced by businesses [...]” indicates that 40% agree with the idea that in their country, the only way to succeed in business is to have political connections (European Commission, 2024a). The percentage becomes more pronounced with the Portuguese businesspeople, with 65% agreeing with the statement (the highest value among the EU countries). In addition, the majority of the EU businesspeople (79%) agree that links between businesses and politics lead to corruption. The percentage increases to 82% when we restrict the analysis to Portuguese businesspeople. Another survey conducted in 2024 by the EU to evaluate “[...] the level of corruption perceived and experienced by European citizens [...]”

highlights that 51% agree that political connections are key to succeed in business, and the percentage increases to 55% among Portuguese citizens (European Commission, 2024b). As in the survey for businesses, 75% of European citizens agree that links between business and politics are associated with corrupt behavior. Within the Portuguese citizens, the percentage increases to 81%. The perceived link between political connections and corruption undermines voters' confidence in politicians and influences their evaluation of how good or bad politicians are handling their jobs (Anderson and Tverdova, 2003). However, this perception does not prevent politicians from being elected, even if they have been accused or condemned for corruption (de Sousa and Moriconi, 2013).

Literature has studied political connections and the complex network between politics and businesses. Many of these networks are associated with rent-seeking behavior and corruption, which have a pervasive impact on economic outcomes (Schoenherr, 2019; Khwaja and Mian, 2005). Often, this relationship involves a *quid pro quo* dynamic characterized by reciprocal exchanges and benefits: increasing political influence for politicians or extracting rents, easing regulations, or creating barriers to entry for incumbent firms. The presence of politicians and former politicians on company boards is a global phenomenon, not exclusive to developing countries.

In Portugal, it is common to find former politicians on company boards. Chapter 5 of this dissertation delves into the existence and characteristics of political connections in Portugal. Studying these connections in Portugal is important because it allows researchers to analyze their impact on the economy. This chapter examines political connections in publicly traded Portuguese companies from 2002-2022. Firm size and regulated sectors are associated with political ties, particularly those headquartered in Lisbon. Additionally, right-wing politically connected members are common in larger firms, whereas left-wing politically connected members are more noticeable in firms whose headquarters are located in the Lisbon area. However, the analysis shows no significant impact of political connections on financial performance.

Finally, Chapter 6 summarizes the main findings from the dissertation, discusses limitations, and offers suggestions for future research.

2. Economic Forecasts and Executive Approval¹

2.1. Introduction

One of the most established ideas in the study of public opinion and elections is that voters care about the economy when evaluating incumbents (Lewis-Beck and Stegmeier, 2000 and 2013). Yet, objective economic performance indicators, such as GDP growth, unemployment, or inflation, do not seem to be very strongly related to political support as expressed in executive approval or voting for the incumbent. Although “the (real) economy matters,” “its effects are weak and contain little explanatory power” (Van de Eijk *et al.*, 2007: 180). “[T]he economy is only a small determinant of electoral outcomes (...) and captures a tiny proportion of the overall variation in support for the lead party” (Kayser, 2014: 117). Some even argue that, at least for the wealthier and more established democracies, economic growth may have no effect on the electoral fate of incumbents (Brender and Drazen, 2007). How can we reconcile the seemingly obvious notion that the economy is essential for voters with the weak explanatory power of objective economic indicators?

In a 2015 study, Kayser and Leininger (2015) use an imaginative research design to address this puzzle. Taking the case of the United States, they estimate different election forecasting models employing *vintage* data on GDP growth (the revised historical estimates of economic performance, reflecting the most accurate measurements of economic activity available) and *real-time* data on GDP growth (the first estimates of economic performance released immediately after the period to which they are referring and circulated in the media). They conclude that the data that most accurately reflects the state of the economy (the vintage data) ends up being a *worse* predictor of political support than the less accurate initial economic estimates conveyed by the media (the real-time data). In other words, the best measure

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of “real” economic growth and the mediated information about economic growth available to voters do not necessarily match, and the latter is more politically consequential than the former.

This essay draws inspiration from Kayser and Leininger’s approach but to test yet an alternative answer as to why objective indicators about the recent performance of the economy may not be very good predictors of political support: the available information people are more likely to use to evaluate incumbents is not about recent economic performance, but instead about expected *future* performance. In other words, voters rely upon information of even more uncertain accuracy than real-time data to evaluate incumbents, and they do so prospectively rather than retrospectively.

We test this hypothesis for the case of Portugal by looking at different series of economic data as predictors of prime ministerial approval. First, we consider the most recently available Statistics Portugal (INE) historical time-series data on the year-on-year GDP growth rate for each quarter, which have been revised for accuracy. However, we also consider both the preliminary — less accurate — estimates of the same GDP growth announced by Statistics Portugal in their quarterly publications since 2000 and the OECD’s forecasts of GDP growth obtained from the organizations’ Economic Outlook issued in the second and fourth quarters of each year. We show that the information made available over time about the *forecasted growth for the current year* is the best predictor of prime ministerial approval. In other words, like Kayser and Leininger (2015), we find indirect evidence that voters respond less to the “objective economy” than they do to the information that happens to be available about it. However, in the case of Portugal, the most consequential available economic information seems to be not about the past but rather about the near future.

The chapter is structured as follows. Chapter 2.2 discusses the literature on popularity functions and the media’s impact on people’s expectations and perceptions. Chapters 2.3 and 2.4 describe the data and methodology used and the econometric results. Chapter 2.5 concludes.

2.2. The “Real” and the “Mediated” Economy

A long tradition in political science, initiated by Mueller (1970) and Goodhart and Bhansali (1970), has shown that voters’ support for the executive is related to economic performance. GDP growth, inflation, and levels of/changes in unemployment rates have all been shown, at one time or another, to account for part of the variance in the support awarded by the public to the executive, as captured by survey-based indicators or by the vote in the incumbent party or president.

However, since those founding works, research has increasingly moved away from a conception of “a public that almost mechanistically responds to economic conditions” (Gronke and Newman, 2003: 506). The central aspect of this movement is the notion that what should ultimately be consequential for political support is voters’ subjective perceptions of economic performance. Those perceptions, although themselves shaped by economic conditions (Becher and Donnelly, 2013), are also affected by a myriad of other factors besides the “real” performance of the economy. These include voters’ political predispositions (Wlezien *et al.*, 1997; Evans and Andersen, 2006; Chzhen *et al.*, 2014), news coverage, and people’s exposure to it (Goidel and Langley, 1995; Sanders and Gavin, 2004; De Boef and Kellstedt, 2004; Boydston *et al.*, 2018), and combinations of the above (Duch *et al.*, 2000).

This basic idea at once clarifies and complexifies the relationship between the economy and political support. On the one hand, it suggests that the substantively small correlations between economic aggregates and political support that have emerged in the literature should not be interpreted as signaling that voters do not care about the economy. Instead, they suggest that the study of the economic drivers of political support was never primarily about the “real” or the “measured” economy but rather about the economic information made available to different voters by the media — the “mediated economy” — and how those voters deal with that information to form subjective perceptions (Stevenson and Duch, 2013). On the other hand, relying on subjective economic perceptions as predictors of political support raises the risk of overestimating how much economic perceptions really matter for voters when evaluating incumbents, particularly if we consider how much those perceptions may be driven by political support itself and how difficult it is to address the related measurement and endogeneity problems in observational studies (Anderson, 2007, and many others). This dilemma remains, until today, one of the most contentious in the sub-field (Hellwig and Marinova, 2017).

However, the importance of the “mediated economy” can be shown, at least indirectly, in ways that circumvent such threats to inference. Kayser and Leininger (2015) examine the predictive power of different forecasting models for U.S. presidential elections that employ economic variables. As economic input, they use two types of indicators. The first, *Vintage*, corresponds to GDP or GNP growth estimates as revised by the U.S. Bureau of Economic Analysis. The second, *Real-Time*, is the early estimates of GDP or GNP growth for each quarter published one to two months after the end of that quarter. In other words, while *real-time* data capture the economic information available to voters as each election approaches, as conveyed by the media, *vintage* data correspond to enhanced measurements that more accurately capture economic activity and performance. They find that *vintage* data introduces greater forecasting errors than *real-time* data and that the error increases as the number of revisions increases.

In other words, the more accurate the economic data, and the more different they become from the initial estimates, the worse predictors of political support they become. Indirectly, this suggests that voters' response to economic performance is a response not so much to the "objective" experience of how the economy has performed but rather to information about economic performance as conveyed through the media.

However, taking the mediated economy seriously forces us to consider that it is not composed exclusively of information about recent economic performance. It also contains information about the future, including forecasts of economic performance from professional economists, the government, central banks, or international organizations. Several studies have shown that, at least in countries like the US, the UK, or Canada, the positivity and negativity of economic news seems to mirror more closely *leading* rather than current or past economic indicators. In other words, the tone of economic news is more a reflection of future economic developments than past ones (Soroka *et al.*, 2015; Wlezien *et al.*, 2017).

Correspondingly, media messages about the economy seem to shape not only people's subjective perceptions about how the economy has been doing but also their subjective expectations about how the economy is likely to perform in the future (Soroka *et al.*, 2015). Some even argue that media messages' primary role is to shape expectations about a more uncertain future rather than affecting evaluations of an already experienced past (Boomgaarden *et al.*, 2011; Damstra and Boukes, 2021; Boukes *et al.*, 2019). And there is, of course, considerable evidence that past economic performance or people's perception of it are not necessarily the best predictors of political support. Instead, voters may behave like "bankers," judging governments based on *expectations* regarding the future economy (MacKuen *et al.*, 1992; Erikson *et al.*, 2000), at least for some voters (Alt *et al.*, 2016; Lacy and Christenson, 2017; Acevedo *et al.*, 2017), in some contexts (Singer and Carlin, 2013), and in some political systems (Cohen, 2004).

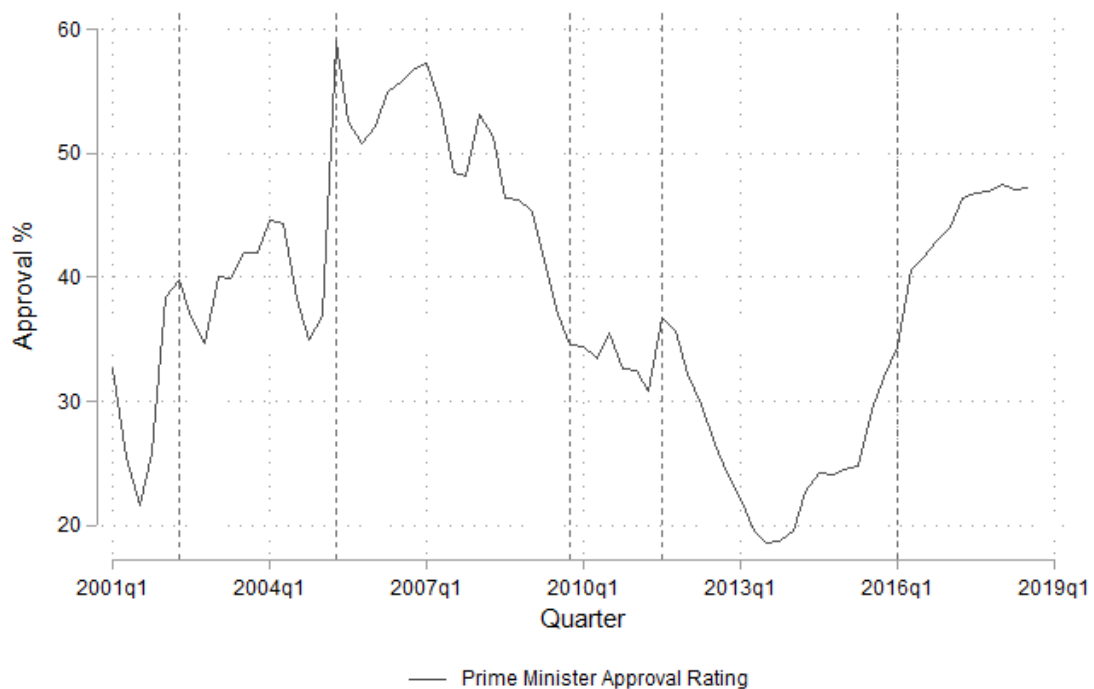
That the "mediated economy" also contains information about the future and that voters care about such information is a possibility not contemplated by Kayser and Leininger's (2015) comparison of "vintage" and "real-time" economic indicators in predicting political support. In their approach, voters who have "experienced the past" or are informed about it are assumed to derive political support from that experience or information. However, if economic information is also shaped by economic forecasts and/or voters are prospective instead of retrospective, information about the future should also matter to explain political support. This is exactly what we propose to examine in this study: besides examining the

role of different measures about the recent performance of the economy, we also examine the role of *forecasts* of that performance.

2.3. Data and Methods

Our dependent variable is a measure of prime ministerial approval in Portugal available at the Executive Approval Project (Carlin *et al.*, 2019). We use quarterly data from 2001 to 2018, resulting from polls conducted by Portuguese pollsters. We use a smoothed version of the variable *Approval* (% of positive ratings) available in the Executive Approval Database 2.0 for Portuguese Prime Ministers. Figure 1 plots the evolution of prime ministerial approval from the first quarter of 2001 until the third quarter of 2018, covering eight governments and six prime ministers.

Figure 1: Quarterly data on approval rating for Portuguese Prime Ministers from the first quarter of 2001 to the third quarter of 2018.



Note: Each dashed line corresponds to a government's inauguration. Source: Carlin *et al.* (2019).

To measure economic performance, we consider several different variables to capture the growth rate of Portuguese's real GDP (Table 1): *GDP Vintage Growth*, *GDP First Values Growth*, *GDP Real-Time*

*Growth, OECD Forecast Current, and OECD Forecast Next.*² Because the differences are subtle, we will describe them in detail. *GDP Vintage Growth* represents the most accurate data on the evolution of real GDP, the revised values for each quarter. This information is conveyed by the Portuguese Statistics Institute (INE). We use the revised data published in the first quarter of 2021, representing the best information available regarding the evolution of real GDP throughout the entire 2001-2018 period. For the purpose of our econometric analyses, we take into consideration that voters need time to internalize economic information and thus assume a conventional short lag between the economic measures and approval (one quarter, $t-1$).

Table 1: Economic variables employed.

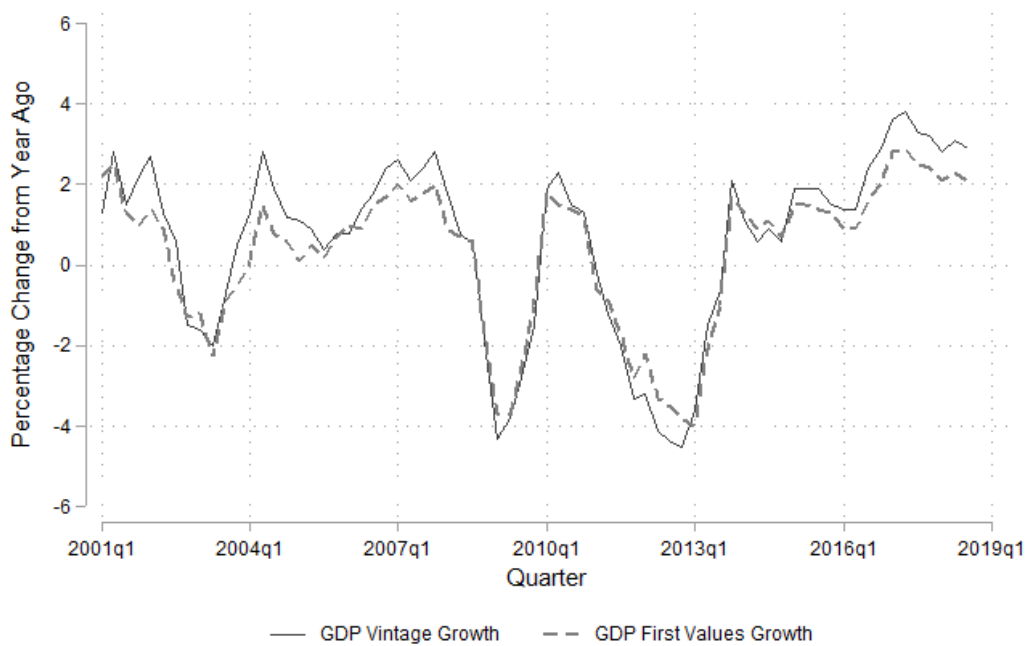
Variables	Definition	Source
<i>GDP Vintage Growth</i> _{$t-1$}	2021 revision of the year-on-year real GDP growth rate at the quarter before approval was measured.	Statistics Portugal (INE)
<i>GDP First Values Growth</i> _{$t-1$}	First estimates made public of the year-on-year real GDP growth rate at the quarter before approval was measured.	Statistics Portugal (INE)
<i>GDP Real-Time Growth</i> _{$t-1$}	The most recent publicly available quarterly year-on-year real GDP growth rate at the quarter before approval was measured.	Statistics Portugal (INE)
<i>OECD Forecast Current</i> _{$t-1$}	The most recent yearly forecast of real GDP growth for the current year publicly available at the quarter before approval was measured.	OECD Economic Outlook
<i>OECD Forecast Next</i> _{$t-1$}	The most recent forecast of real GDP growth for the following year publicly available at the quarter before approval was measured.	OECD Economic Outlook

GDP First Values Growth _{$t-1$} is constructed using the very first values of the year-on-year quarterly real GDP growth rate disclosed by INE in their reports issued since 2000. The difference between vintage or revised and first values of GDP growth rate is observed in Figure 2. At first glance, the preliminary values tend to be more conservative than revised values. Again, in the analysis, we match approval rates

² Economic indicators such as unemployment or inflation rates have also been frequently included in (early) studies of Portuguese government approval functions (Veiga 1998; Veiga and Veiga, 2004a). However, while inflation remained remarkably stable in Portugal throughout the period under examination, unemployment rates, as Goulart and Veiga (2016) argue, were somewhat deceptive indicators of economic performance, particularly in periods when massive emigration (such as during the 2008-2013 economic and financial crisis, when it reached an historical peak) contributed to mask the true magnitude of the crisis as expressed in unemployment rates.

with the value of *GDP First Values Growth* for the preceding quarter. However, if we take the point of view of when information is made available to the public, we should consider the fact that the GDP growth announced to the public by Statistics Portugal in each quarter refers not to the quarter of publication but to previous ones. Therefore, we also include, for each quarter preceding the one when approval is gauged, the most recent publicly available value for the year-on-year GDP growth: it is *GDP Real-Time Growth_{t-1}*.

Figure 2: Quarterly data on Real GDP Growth Rate, percentage change from the year ago.



Note: The full line represents the very first values of quarterly real GDP growth, and the dashed line plots revised values of quarterly real GDP growth. Source: INE.

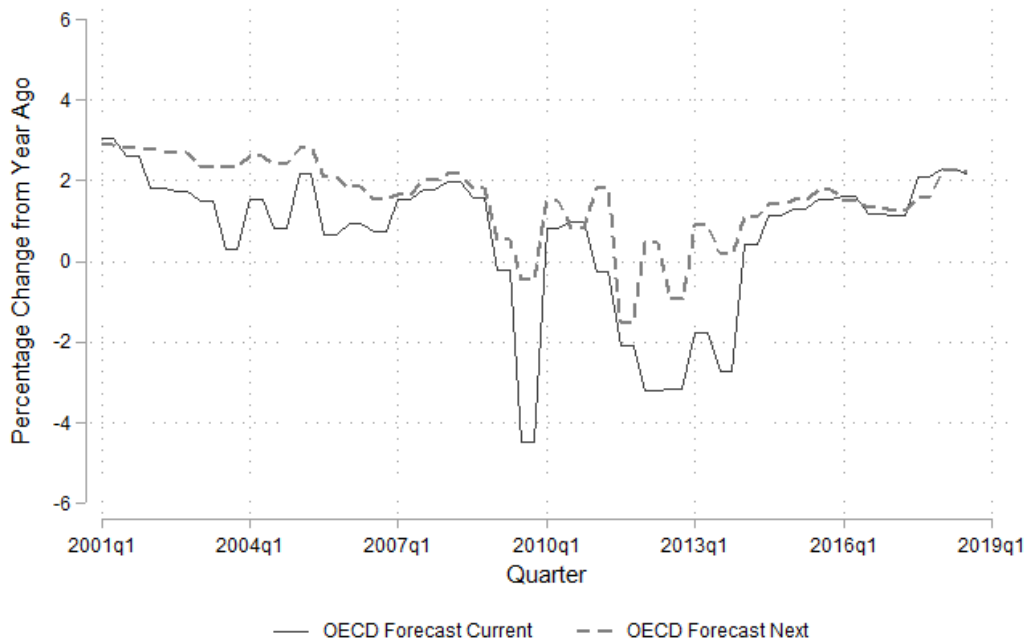
Finally, we consider the role of economic forecasts. We extract them from OECD's reports, i.e., "OECD Economic Outlook." Those forecasts are conveyed twice per year, every second and fourth quarter. In these publications, the OECD discloses annual real GDP forecasts for each member country for the current and following years. Although several institutions produce growth forecasts, the OECD provides the most extended series.³ Its projections are always issued using the same timing. They consistently project growth for the current and the next years and are a highly reputed source heavily covered by the Portuguese media. They are influential in both news content and opinion articles. From 2000 to 2018, *Lusa*, the sole Portuguese National News Agency and a primary source for other media

³ Other options would have been the projections of the IMF or the European Commission. However, while the former has more irregular publication dates in comparison with the OECD, the latter has changed publication schedules in both 2012 and 2018. Moreover, Portugal received aid from both institutions between 2011 and 2014, making them significant political entities, which could affect the perceived impartiality of their forecasts in comparison to the OECD.

outlets, produced 97 news articles with the phrase “economic forecasts” in the headline and nearly 2500 mentions of this term within the body of the text. The specific combination between the same expression and “OECD” occurs in 416 news items in Portuguese news sources available in Factiva in the same period.⁴

Our logic remains the same: we focus on the information available to the public in the quarter before prime ministerial approval is gauged. Therefore, we start by modeling *PM Approval* at the first and second quarters of each year as a function of the most recent OECD’s growth forecast for that year (which was issued in the last quarter of the preceding year), while *PM Approval* at the third and fourth quarters of each year is modeled as a function of growth projection (for that year) issued in the second quarter: *OECD Forecast Current_{t-1}*. Finally, we also consider the possibility that *PM Approval* may be affected by information about forecasts for the year *after* which approval is gauged. Correspondingly, this variable follows the same structure as the previous one, but now we consider the GDP growth forecast for the following year: *OECD Forecast Next_{t-1}*. The plots of these forecasts can be observed in Figure 3. As suspected, forecasts for the current year tend to be more accurate than forecasts for the year beyond.

Figure 3: Quarterly data on annual OECD forecasts and annual real GDP final values.



Note: The full line shows projections for the current year, and the dashed line plots the projections for the next year. Source: OECD.

⁴ We are grateful to Tiago Dias, from *Lusa*, and to Nelson Santos, from ICS-ULisbon, for sharing these data.

Table 1 and Figure 2 show that *GDP Vintage Growth* and *GDP First Values Growth*, while not exactly the same, are very strongly correlated. They are, after all, different estimates of the same statistic for the same quarter. Other measures of economic growth have lower correlations. For example, *GDP Real-Time Growth* pertains to one or two quarters before, while forecasts are for subsequent quarters. *OECD Forecast Current* and *OECD Forecast Next* also exhibit a high correlation of 0.83,⁵ which is unsurprising since they are based on the same information set.⁶ Table 2 provides descriptive statistics for all the variables used in this Chapter.

Table 2: Descriptive statistics of the variables employed.

	Observations	Mean	Std Dev	Min	Max
Prime Minister Approval Rating	71	38.216	10.761	18.536	59.093
GDP Vintage Growth	71	0.624	2.193	-4.5	3.8
GDP First Values Growth	71	0.324	1.827	-4.0	2.9
GDP Real-Time Growth	71	0.401	1.888	-4.0	3.4
GDP Revisions FV Growth	71	0.300	0.568	-1.0	1.3
GDP Revisions RT Growth	71	0.285	0.556	-1.0	1.3
OECD Forecast Current	71	0.637	1.788	-4.485	3.042
OECD Forecast Next	71	1.552	1.039	-1.525	2.877
Durao	71	0.169	0.377	0	1
Socrates	71	0.352	0.481	0	1
Coelho	71	0.254	0.438	0	1
Costa	71	0.155	0.364	0	1
Honeymoon Effect	71	0.211	0.558	0	2
Time in Office	71	10.704	7.116	1	26

Equation (1), estimated by OLS, specifies prime ministerial approval as the dependent variable:

$$PM\ Approval_t = \alpha + \beta PM\ Approval_{t-1} + \gamma X'_{t-1} + \delta Z'_t + \varepsilon_t, \quad (1)$$

where X'_{t-1} is a vector of economic variables. We use quarterly data, so t goes from the first quarter of 2001 to the third quarter of 2018. All models include a lagged dependent variable, $PM\ Approval_{t-1}$, and an error term, ε_t . To avoid the interference of political factors in our results, we also include some basic controls (Z'_t) common in the executive approval literature:^{7,8}

- *Time in Office*, the number of quarters each prime minister has been in office. We expect support for the prime minister to erode with time (Nannestad and Paldam, 2003);

⁵ See Table A1 in the Appendix.

⁶ The mean variance inflation factor (VIF) of every regression included in Table 3 and in the first six regressions of Table 4 is below 5.

⁷ Data used to construct the control variables were collected from the Portuguese National Electoral Commission (CNE).

⁸ Descriptive statistics of the variables constructed are available in Table 2.

- *Honeymoon Effect*, a counter variable coded 2 for the first quarter of a government's life, 1 for the second, and 0 for others (following Veiga and Veiga, 2004a). We expect a new government to enjoy a boost in support in the early period of its life (particularly the first quarter);
- Dummy variables for each prime minister.

2.4. Results

2.4.1. Vintage vs. First Values

We start by considering the role of economic indicators that reflect the recent past: *GDP Vintage Growth* (the most accurate measure), *GDP First Values Growth* (the very first values disclosed about growth in the quarter before approval was measured), and *GDP Real-Time Growth* (the most recent quarterly growth rate available to voters in the quarter before approval was measured).

Table 3 shows our first set of results. In the first column, we have the typical regression with the typical result: the revised estimate of lagged real GDP growth, as collected for the entire period, is a significant predictor of prime ministerial approval. This confirms previous results on popularity (Veiga, 1998; Veiga and Veiga 2004a, 2007, and 2010) and incumbent vote (Veiga and Veiga, 2004b) functions in Portugal, which shows voters reacting positively to positive economic performance. Regarding the lag structure of this variable, our choice seems appropriate: its statistical significance drops to 5% if we consider the previous or the subsequent quarter (not shown). Other relevant results in Table 3 include the negative impact of *Time in Office* (Veiga, 1998 and Veiga and Veiga, 2004a), although, unlike them, we fail to find a relevant honeymoon effect for this more extended period.

In the second column, we replace *GDP Vintage* with the preliminary values, *GDP First Values Growth*. The estimates of Model 2 are basically the same as those of Model 1 and have the same explanatory power. In the third column, we focus on the *GDP Real-Time Growth* measure, the most recent information about year-on-year GDP growth available to the public in the quarter before the approval measure. Again, the lag structure for this variable proved to be appropriate, with significance slightly dropping if we move one quarter up or down. We see in column 3 that, although the coefficient *GDP Real-Time Growth* is slightly larger than those obtained either for *Vintage* or *First Values* of GDP, the model fit is very similar. In column 4, collinearity causes that including both variables in the model makes them both individually insignificant. In column 5, we include a new variable (*GDP Revisions RT Growth*), which

is simply the difference between $GDP\ Vintage\ Growth_{t-1}$ and $GDP\ Real-Time\ Growth_{t-1}$. We observe that this difference adds nothing relevant to the real-time data (p-value=0.46).

Table 3: Prime Minister approval rate as a function of vintage, first values, and real-time GDP growth.

	(1)	(2)	(3)	(4)	(5)
GDP Vintage Growth $_{t-1}$	0.768*** (0.221)			0.532 (0.337)	
GDP First Values Growth $_{t-1}$		0.764*** (0.243)			
GDP Real-Time Growth $_{t-1}$			0.875*** (0.265)	0.374 (0.414)	0.988*** (0.252)
GDP Revisions RT Growth					-0.689 (0.926)
Other Controls					
PM Approval Rating $_{t-1}$	0.636*** (0.128)	0.642*** (0.131)	0.625*** (0.131)	0.624*** (0.130)	0.631*** (0.134)
Honeymoon Effect	0.710 (1.040)	0.721 (1.056)	0.775 (0.997)	0.726 (1.021)	0.834 (1.009)
Time in Office	-0.369** (0.161)	-0.359** (0.166)	-0.362** (0.162)	-0.376** (0.162)	-0.361** (0.165)
Constant	19.580*** (6.995)	19.398*** (7.173)	19.047*** (6.994)	19.536*** (6.933)	18.675** (7.341)
Observations	71	71	71	71	71
Adjusted R2	0.883	0.877	0.880	0.882	0.879
r2	0.896	0.891	0.894	0.897	0.895
F statistic	137.316	130.530	166.304	139.413	152.452

Note: OLS with robust standard errors, prime ministers' dummies not shown. *p<.10; **p<.05; ***p<.01 (two-tailed tests).

In sum, the main message from Table 3 is that the information available to voters at t-1 about recent economic growth captures the relationship between the economy and prime ministerial approval in the same way that the most accurate information about growth in the quarter preceding the measurement of prime ministerial approval. In this way, the results for Portugal are comparable — although not as stark — to the results that Kayser and Leininger (2015) obtained for the U.S. elections

forecasts. They showed that *GDP Real-Time Growth* is superior to *GDP Vintage Growth* as a predictor of incumbent vote shares; we show that *GDP Real-Time Growth* is at least as good as the later revised vintage series to explain the prime ministerial approval rate.

2.4.2. The Forecasted Economy

It is possible, however, that the most consequential information for prime ministerial approval is not about recent but rather future economic performance. If the mediated economy matters, and if it incorporates information about the future, such information could be as important or even more important than that about past performance.

To examine this possibility, we constructed two variables that consider the information about the current and subsequent years' Portuguese annual GDP growth forecast available to voters: *OECD Forecast Current* and *OECD Forecast Next*. We collected data from OECD's reports, "OECD Economic Outlook," which were conveyed twice per year, every second and fourth quarter (see Table 1).

In column one of Table 4, we consider the OECD GDP forecasts for the current year known in the previous quarter. In column two, instead of having the forecast for the present year, we have the forecast for the next.

The first two columns show that, the better the more recently available forecasts of GDP growth, the higher the prime minister's approval rate. In column 3, when both the forecast for the current and for the next years are included, only *OECD Forecast Current_{t,t-1}* remains a significant predictor. In fact, the estimations for *OECD Forecast Current_{t,t-1}* are remarkably stable across regressions, and very robust also to the inclusion of other GDP growth measures in columns 4, 5, and 6, which gauge economic performance in the recent past. Column 7 shows that it is even robust to the inclusion of all the other growth measures.⁹ In other words, the forecasts available to the public about growth in the current year are a better predictor of prime ministerial approval than measures of recent economic growth or forecasts of more distant (next year's) performance.

⁹ Coefficients of *GDP Vintage Growth* and *GDP First Values Growth* have undergone significant changes, and they now display opposing signs. It is an obvious case of multicollinearity, given the correlation of 0.98 between these two variables and their associated VIF, which is greater than 30 in this regression. However, it does not contaminate the rest of the model.

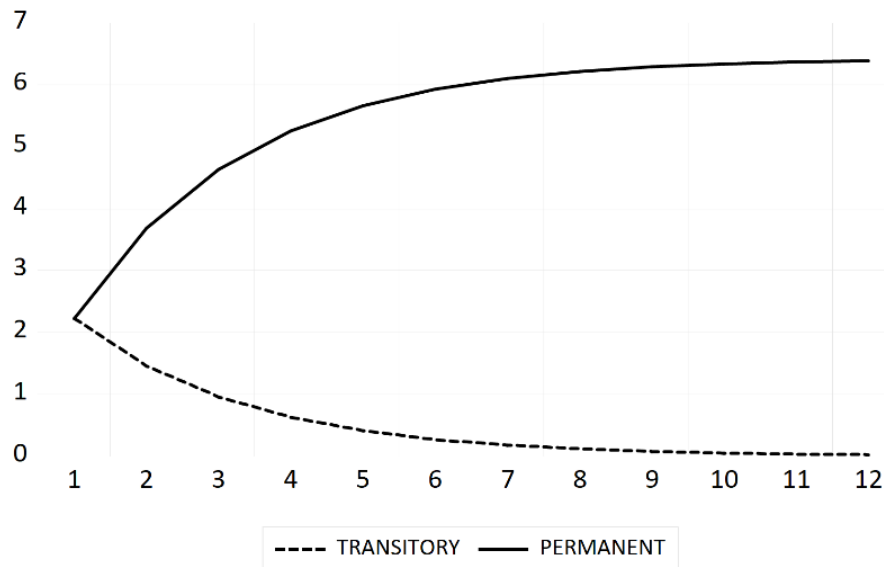
Table 4: Prime Minister approval rate as a function of forecasted GDP growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
OECD Forecast Current t_{-1}	1.113*** (0.358)		1.054** (0.414)	0.854* (0.497)	1.173** (0.562)	1.025* (0.524)	1.345** (0.543)
OECD Forecast Next t_{-1}		1.774* (0.906)	0.146 (1.107)				-0.427 (0.998)
GDP Vintage Growth t_{-1}				0.274 (0.322)			2.918* (1.465)
GDP First Values Growth t_{-1}					-0.073 (0.440)		-3.572* (1.866)
GDP Real-Time Growth t_{-1}						0.108 (0.431)	0.157 (0.489)
Other Controls							
PM Approval Rating t_{-1}	0.654*** (0.126)	0.692*** (0.130)	0.656*** (0.122)	0.643*** (0.128)	0.656*** (0.124)	0.648*** (0.126)	0.656*** (0.113)
Honeymoon Effect	1.047 (1.003)	1.362 (1.280)	1.079 (1.098)	0.956 (1.037)	1.068 (1.048)	1.023 (1.008)	0.994 (1.095)
Time in Office	-0.334** (0.153)	-0.292* (0.152)	-0.332** (0.146)	-0.352** (0.156)	-0.330** (0.151)	-0.340** (0.154)	-0.334** (0.138)
Constant	17.174** (6.350)	13.082** (5.966)	16.813*** (5.650)	17.925*** (6.431)	16.997*** (6.077)	17.366** (6.402)	17.875*** (6.057)
Observations	71	71	71	71	71	71	71
Adjusted R2	0.888	0.880	0.886	0.887	0.886	0.886	0.895
r2	0.901	0.894	0.901	0.902	0.901	0.901	0.912
F statistic	99.364	64.875	88.027	92.950	92.863	91.432	83.02

Note: OLS with clustered standard errors by semester, prime ministers' dummies not shown. *p<.10; **p<.05; ***p<.01 (two-tailed tests).

In order to understand the magnitude of the findings, consider column (1) and Figure 4. Ceteris paribus, the relationship between Portugal's GDP growth forecasts and prime ministerial approval depends on two coefficients, 1.113 and 0.654: $\Delta PM Approval_t = 1.113 * \Delta OECD Forecast Current_{t-1} + 0.654 * \Delta PM Approval_{t-1}$. If GDP growth forecast increases from 0% to 2% in a quarter, the approval rate will increase in the next quarter by 2.226 percentage points. If the forecasted economy returns to its baseline value, the effect on popularity will quickly fade away. However, if the forecasts remain at 2%, the impact on approval rate will increase over time, ultimately reaching 6.4 percentage points.

Figure 4: Response of the prime ministerial approval rate to a transitory/permanent increase of 2 p.p. in GDP growth forecasts.



2.5. Conclusion

The way the economy affects voters' political judgments and evaluations remains the object of vivid discussion (Berlemann and Enkelmann, 2014; Hellwig and Marinova, 2017). With this essay, we aim to contribute to it by following the lead of previous studies (Kayser and Leininger, 2015; Soroka *et al.*, 2015) and consider two possibilities: first, that voters' evaluations of the executive are driven less by the actual state of the economy itself than by the — mediated — information about it that happens to be available; second, that the most consequential aspect of that information concerns expectations about the future.

We analyzed the relationship between prime ministerial approval in Portugal and different economic series. We show that the most accurate GDP growth series does not contribute to our ability to explain government approval above and beyond the preliminary information about economic performance made available to voters in real-time. Furthermore, the variable that captures current projections for GDP growth ends up being the most important and the only statistically significant one when competing with the other economic variables we worked with. In other words, the projected “near future” economy is the best predictor of executive support in Portugal, indirectly highlighting the importance of the “mediated economy” on voters' perceptions and how the information about the future it contains can make voters more prospective than retrospective.

Between 2001 and 2018, Portugal experienced three recessions. The third one, a sovereign debt crisis, was severe enough to trigger a request for international financial assistance. As a result, it is not unreasonable to suggest that the Portuguese electorate may have been particularly attentive to the economic projections presented by international organizations such as the OECD. To ensure the generalizability of our findings, further investigations should be conducted in various regions. A possibility for future research would be to conduct a panel study, taking advantage of the consistent production of the OECD Economic Outlook across several countries.

Furthermore, a complete test of this argument would have to rely on measurements of individual-level perceptions, the way they are shaped by economic forecasts and their media coverage, and, in turn, how they drive executive approval. Still, these results suggest the importance of economic forecasts in shaping public attitudes. They also encourage possible new approaches to modeling in election forecasts, an important field of political economy studies (Stegmaier and Norpoth, 2013). Typically, models that include economic variables resort to “vintage” data for estimation and analysis of fit and then plug “real-time” data to produce concrete forecasts. To the extent that the lessons drawn here about executive approval extend to electoral support for incumbents, economic forecasts may capture better citizens’ overall perceptions of the state of the economy and how they use those perceptions to evaluate political performance.

3. The Economy and Executive Approval in a Semi-Presidential Regime: the Case of Portugal¹⁰

3.1. Introduction

Over the last two decades, several studies have enhanced our understanding of the relationship between the economy and public support for the executive in Portugal (Veiga 1998; Veiga and Veiga, 2004a and 2007). The central finding is clear: the public approval of governments and prime ministers is affected by economic performance. This is not at all surprising. Left-right socio-economic policy issues have almost wholly dominated citizens' concerns throughout Portugal's democratic history (Tsatsanis *et al.*, 2014: 527). Despite a proportional representation electoral system, party system fragmentation in Portugal has remained relatively low and was, until recently, declining, a singular trend among established democracies (Lijphart, 2012: 75). Since 1985, cabinets have either been single-party governments (often with an absolute majority) or minimum-winning ideologically cohesive coalitions. The combination of persistently high salience of economic issues and high clarity of responsibility for outcomes makes Portugal a clear-cut candidate for a solid and stable linkage between economic performance and the executive's public approval.

However, several blind spots remain. We know, for example, that the relationship between objective economic performance and executive approval (Carlin *et al.*, 2023) or support for incumbent parties (Freire and Santana-Pereira, 2012; Lobo and Pannico, 2020) has been stronger in some periods than in others in Portugal. Despite sharply contrasting economic conditions, consecutive elections have yielded similarly hefty punishments for government parties (Magalhães, 2017). Forecasting models of incumbent party vote have been required to incorporate political variables to account for the insufficient

¹⁰ A version of this Chapter was published as: Aguiar-Conraria, L., Fernandes, B., & Magalhães, P. C. (2023a). The economy and executive approval in a semi-presidential regime: the case of Portugal. In T. Hellwig, & M. M. Singer (Eds.), *Economics and politics revisited: Executive approval and the new calculus of support* (pp. 108–130). Oxford University Press.

predictive power of economic variables (Magalhães and Aguiar-Conraria, 2009). In other words, the questions of whether vote or popularity functions are stable and of the variance in public support for the incumbent explained by the economy (the "e-fraction" of those functions), famously raised by Paldam (1991), remain relevant and intriguing for the case of Portugal.

In this chapter, we advance two arguments about how to reconcile the evidence about the simultaneous importance and instability of economic performance as a driver of executive support in Portugal. The first points to the *economic context* itself and what it should imply for the clarity of performance signals available to voters. More specifically, we investigate whether executives are more punished by adverse economic developments than they are rewarded by positive ones. Although the possibility of such *asymmetry* in the relationship between economic performance and approval has been part of the literature since its modern inception (Mueller, 1970), the relatively short democratic electoral history of Portugal has contributed to leaving that hypothesis unexamined. To address that gap, we investigate whether the relationship between economic performance and executive approval in Portugal differs depending on whether the economy is expanding or contracting.

The second relevant context, we argue, is *political* and *institutional*. In Portugal's semi-presidential system, prime ministers who head the executive coexist with popularly elected and term-limited presidents who, while not sharing governing responsibilities, hold substantive powers and enjoy considerable public visibility. We suggest that the unstable nature of the political relationship between prime ministers and presidents in Portugal shapes the economics-approval link. To be sure, the literature on executive approval in semi-presidential systems has already suggested this is the case, treating periods of cohabitation — when the president and prime minister come from different parties or party coalitions — as causing a switch of responsibility from one incumbent to another, and therefore a switch in which actor voters hold accountable for the economy (Hellwig and Samuels, 2008; Elgie, 2018). We argue, however, that Portugal displays different features with different consequences. What matters in Portugal's brand of semi-presidentialism is not cohabitation per se but rather whether these periods are characterized by a *conflictual relationship* between prime ministers and presidents. In such conflictual contexts, we argue, clarity of responsibility for policy outcomes should be obscured, and the relationship between economic performance and the approval of both entities weakened. This calls attention to the importance of institutional factors behind the "instability dilemma" addressed in Carlin *et al.*, 2023.

Taken together, the two arguments help us understand some of the puzzling instability in the relationship between the economy and approval in Portugal, hopefully also contributing to the study of public support for prime ministers (and presidents) in semi-presidential systems similar to the Portuguese.

The chapter is structured as follows. Chapter 3.2 discusses asymmetry and semi-presidentialism in the literature on popularity functions. Chapters 3.3 and 3.4 describe the data and methodology used and the econometric results. Chapter 3.5 concludes.

3.2. Public approval and the economy in Portugal

3.2.1. Economic Contexts and Asymmetry

The study of the relationship between economic performance and executive approval in Portugal has resulted in relatively few studies but with broadly consistent results. The pioneering work of Veiga (1998), using monthly approval data from 1986 to 1996, showed that prime ministerial popularity, besides receiving a boost immediately after the election (a honeymoon effect) and declining with time (cost or ruling), was negatively affected by increases in the unemployment rate. Later, revisiting a more extended time series of similar data, Veiga and Veiga (2004a and 2007) confirmed the previous findings. Other subsequent studies using aggregate data, this time focusing on the vote function, have confirmed the importance of economic performance — particularly of unemployment and GDP growth — as drivers of incumbent support (Veiga and Veiga, 2004b and 2010; Freire and Lobo, 2005; Magalhães and Aguiar-Conraria, 2009; Goulart and Veiga, 2016).

However, has economic performance been equally consequential at all times? Recently, Lobo and Pannico (2020) showed that "economic voting" in Portugal seems to have become stronger with the economic crisis of the early 2010s. Similarly, Carlin *et al.* (2023) show that the relationship between objective economic indicators and executive approval in Portugal became stronger in the period that encompasses the worst economic crisis experienced by the country in decades. This suggests that crises may render economic performance more politically consequential. In fact, from a cross-national perspective, Lewis-Beck and Nadeau (2012: 475) had already detected that economic variables had a greater impact on incumbent support in Southern than in Northern Europe. They concluded that "[t]he greater weight of the economic vote in the PIGS [Portugal, Italy, Greece, and Spain] countries appears almost entirely due to their poorer economic position, coupled with their less complex links between governance and policy execution." In sum, the economy seems to "matter more" in contexts where economic conditions are more adverse.

Why should that occur? A well-known hypothesis points to an *asymmetry* in economic voting (Mueller, 1970; Nannestad and Paldam, 1997; Bélanger and Meguid, 2008; Dassonneville and Lewis-

Beck, 2014). As Evans and Andersen put it, economic downturns "elicit shared and reasonably perceptive responses that are not powerfully affected by political conditioning" (2006: 195). Under an economic crisis, the information conveyed by the mass media is more unequivocally negative than it is positive under economic good times (Soroka, 2006), and the salience of economic issues increases, boosting the relevance of economic performance for government approval (Singer, 2011). In contrast, during periods of growth, the economy loses importance, and the signals conveyed by the "mediated economy" become less unequivocal (Evans and Andersen, 2006:195; see also Chzhen *et al.*, 2014 and Dickerson, 2016). The 2011 and 2015 elections in Portugal illustrate this phenomenon. In the former, a major economic crisis led to large losses for the incumbent center-left Socialist Party (PS). However, in the latter, a clear economic recovery failed to prevent an almost equally large punishment for the ruling center-right coalition. Magalhães (2017) shows that while citizens' evaluations of the economy were fundamentally exogenous in relation to political predispositions during the period of economic crisis, in 2015, they were powerfully contaminated by partisanship.

This suggests that the instability in the vote function in Portugal may partially result from how buoyant or stagnant economic conditions are differentially transmitted to incumbent support. To the extent that these general ideas about the vote function also apply to the popularity function, we should see the approval of the Portuguese prime minister suffering more under economic downturns than it is boosted by economic recoveries. In other words, we should expect the relationship between economic performance and prime ministerial approval to be *asymmetric*.

3.2.2. Portuguese Semi-Presidentialism and its Implications

A second potential source of instability in the economics-approval link concerns the institutional and political context under which voters evaluate incumbents. The idea is far from new. The "clarity of responsibility" argument is predicated on the notion that the relationship between economic performance and public support depends on the extent to which there is a "perceived unified control of policymaking by the incumbent government" (Powell and Whitten, 1993: 398). In contexts where such perceived control is lacking — characterized by greater horizontal or vertical power-sharing — the economics-approval link should weaken. In such circumstances, it becomes more difficult to determine who should be retrospectively blamed or rewarded, and voters should discount economic performance as a signal of government competence (Duch and Stevenson, 2008).

In the study of executive approval in semi-presidential systems — where a popularly elected head of state coexists with a prime minister accountable before parliament (Elgie, 1999) — the notion that context affects responsibility for the economy has also been present. However, informed by the experience of Fifth Republic France, the main focus of that inquiry has been how semi-presidentialism allows for two alternating patterns of economic accountability. Under a unified government, when French presidents are supported by a parliamentary majority of their own party, they become the leaders of that majority and thus of the executive, giving the system an unmistakable presidential dynamic (Shugart, 2005). In contrast, under "cohabitation," when presidents and prime ministers belonged to different parties, power shifts to the latter, creating a "parliamentary" dynamic. The presence or absence of cohabitation was thought to determine an oscillation between phases when the system became *de facto*, respectively, parliamentary and presidential (Duverger, 1980; Lijphart, 2012).

This, in turn, generated another oscillation: on whom voters held accountable for economic performance. In the presidential phases, under a unified government, the French president's approval was strongly affected by economic performance. However, in the parliamentary phases, under cohabitation, the responsibility for economic governance shifted to the prime minister. During these periods, the economy's influence on presidential support dropped significantly, while the opposite occurred with prime ministerial approval (Lewis-Beck, 1997; Lewis-Beck and Nadeau, 2004).¹¹

In 2002, the synchronization of presidential and legislative elections made cohabitation in France much more unlikely, ending this oscillation. However, the French experience still molds the thinking about economic accountability in semi-presidential systems, with studies finding the same kind of oscillating pattern in countries other than France. Looking at election results in many semi-presidential systems, Hellwig and Samuels (2008) showed that presidents are rewarded and punished for the economy only under conditions of unified government, while the PM's party is only rewarded and punished under conditions of cohabitation. Elgie (2018), finding similar results, suggested the existence, in the study of semi-presidential systems, of "a basic scientific consensus about the effect of cohabitation on economic voting" (Elgie, 2018:103).

However, we propose that this pattern is unlikely to extend to a semi-presidential system like Portugal's. Since 1986, all presidents in Portugal have been prominent political figures, all former leaders of their parties. Presidents enjoy important powers, including the possibility of vetoing legislation or referring bills or statutes for constitutional review. Presidents also employ "going public" tactics, using the authority and prestige of their office to direct public attention to the issues they prioritize (Neto and

¹¹ But see also Turgeon *et al.* (2015) showing that only prime ministerial approval is affected by economic variables, and only during cohabitation.

Lobo, 2009; Jalali, 2011). And they even have the (mostly) unconstrained possibility of dissolving parliament in the absence of a prime ministerial resignation or a successful motion of censure. This is a power they have used with parsimony in the last four decades, but which nevertheless has been used and stands as a relevant shadow over governments.

Yet, while never becoming purely parliamentary, the Portuguese system's dynamic has never become presidential either, *de jure* or *de facto*. Portuguese presidents are not the leaders of their parties. The head of the executive is always the prime minister, i.e., the party and parliamentary majority leader with whom presidents coexist. Accordingly, presidential elections in Portugal bear some traits of a "second-order" election (Reif and Schmitt, 1980), most notably their lower level of turnout in comparison with legislative elections (Fortes and Magalhães, 2005; Franco, 2020). The implication is that, at least in Portugal, there has been no oscillation between parliamentary and presidential phases depending on cohabitation or unified government. This, in turn, suggests that an oscillation in how voters hold prime ministers and presidents accountable for the economy should be absent as well.

However, this does not mean that the relationship between presidents and prime ministers is irrelevant to the role of the economy in the V-P function. Although it does not change who runs the everyday operation of government, cohabitation has nevertheless been a source of *political conflict* between presidents and prime ministers under semi-presidentialism (Protsyk, 2005a and 2005b; Elgie, 2010). The existing literature provides clear evidence about the conditions that have favored such conflictual relationship in Portugal. Portuguese presidents can only serve two consecutive terms of office. First-term incumbents who seek reelection for a second term in office — so far, all of them — have incentives to preserve a non-conflictual relationship with prime ministers and their parliamentary majorities in order to secure the required absolute majority of the vote in their reelection bid. This has occurred even in contexts of cohabitation. Since 1986, presidents Mário Soares, Jorge Sampaio, Cavaco Silva, and Marcelo Rebelo de Sousa successfully avoided major confrontations with prime ministers during their first term, even when they belonged to different parties. By defusing the potential for conflict, some incumbent presidents have even been able to secure opposing governing parties' explicit or implicit support in their reelection bids, as in the case of the Socialist Mário Soares in 1991 or PSD's Marcelo Rebelo de Sousa in 2021.

However, in their second term, the combination of cohabitation and the lack of a reelection incentive has typically led presidents to engage in a more conflictual relationship with prime ministers. As Jalali (2011: 170) puts it, while presidents' first terms are characterized by a "considerably weaker activism (...), not least motivated by the need to maintain a majority for reelection," second terms typically

show a rise in “legislative interventionism” and “guerrilla warfare” on the part of presidents. In fact, second terms have only been historically peaceful when presidents face a government majority congruent with them in partisan terms (Freire and Santana-Pereira, 2019). However, under cohabitation, presidents in their second and last term of office have used their veto and constitutional referral powers more frequently and have engaged in more open political confrontations with the government (Magalhães, 2001; Neto and Lobo, 2009; Jalali, 2011; Franco 2020).

This suggests that, by favoring inter-institutional conflict between prime ministers and presidents, *second-term cohabitations* should contribute to blurring accountability for the economy. By fostering “legislative interventionism” on the part of presidents and “constraining the governments’ capacity for political leadership” (Jalali, 2011: 169), second-term cohabitations are periods when what Powell and Whitten defined as “clarity of responsibility” — the “perceived unified control of policymaking by the incumbent government” (1993: 398) — is undermined. This leads us to expect that the relationship between economic performance and prime ministerial approval, as we hypothesized earlier, should be weaker when the president is of a different party and is serving in their second and last term of office.

In summary, we propose two main hypotheses. H1 is that the relationship between economic performance and prime ministerial approval should be contingent upon the economic context itself: stronger under crises and weaker under expansions (i.e., asymmetric). H2 is that it should also be contingent upon the relationship between prime ministers and presidents: stronger under peaceful coexistence, weaker under contexts that have favored political conflicts, i.e., during (presidential) second-term cohabitations.

3.3. Data, Variables, and Estimation Strategy

3.3.1. Data and Variables

Our dataset encompasses two measures of approval and a set of economic and political variables. We extracted two approval ratings from the Executive Approval Project dataset (Carlin *et al.*, 2019). Our dependent variables are smoothed versions of the quarterly approval ratings of the Portuguese president and prime minister (*Presidential Approval Rating* and *PM Approval Rating*). The data available in the Executive Approval Database 2.0 goes from the second quarter of 1986 to the third quarter of 2018.

Table 5 lists the prime ministers and presidents throughout this period and indicates whether presidents were serving their first or second term and whether they and the prime ministers belonged to

the same or different parties. The latter two aspects are crucial to test our second hypothesis and show considerable diversity through time.

Portugal has had five presidents since the promulgation of the current 1976 democratic constitution. Since the approval series began in 1986, the first president, Ramalho Eanes, is excluded from our analysis. The last we consider is Marcelo Rebelo de Sousa, who was elected in 2016. At the time of this writing, all presidents spent ten years in office,¹² serving two consecutive terms of five years. Regarding the executive branch, headed by the prime minister, several personalities have been in power since 1986. Only two parties occupied the prime ministerial post during this period: the PS and PSD. Another party, CDS-PP, has integrated some of PSD's governments to achieve a parliamentary majority.

Table 5: Portuguese Presidents and Prime Ministers between 1986 and 2018.

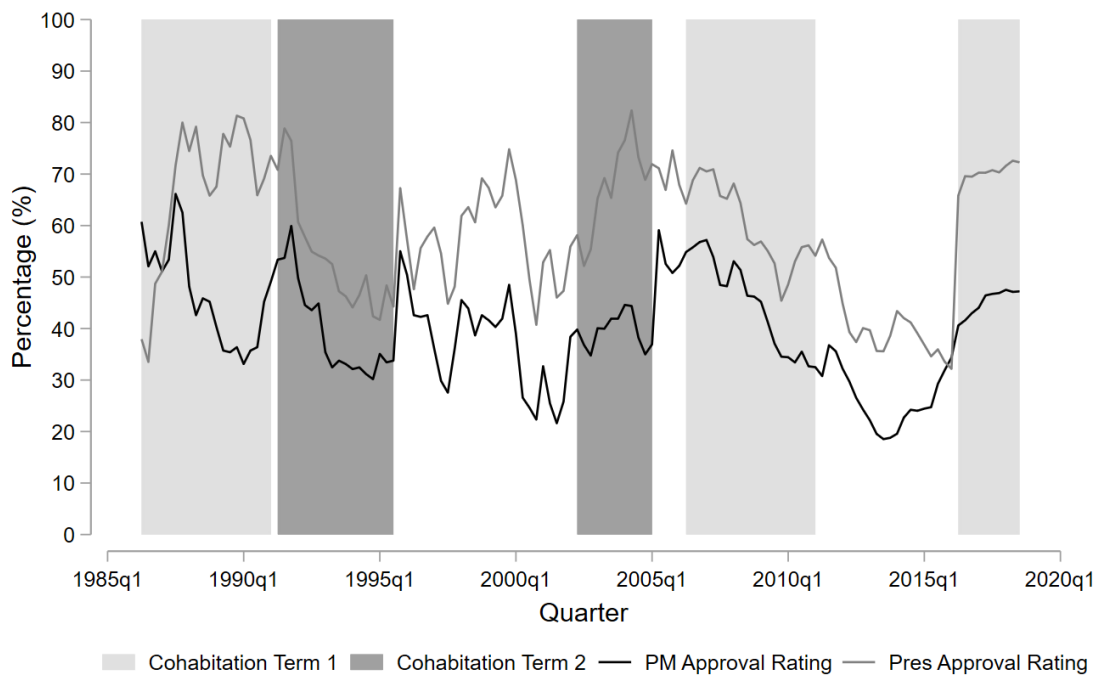
Period	Prime Minister (Party)	President (Party)	Presidential Term	Cohabitation
1986-1991	Cavaco Silva (PSD)	Mário Soares (PS)	First	Yes
1991-1995	Cavaco Silva (PSD)	Mário Soares (PS)	Second	Yes
1995-1996	António Guterres (PS)	Mário Soares (PS)	Second	No
1996-2001	António Guterres (PS)	Jorge Sampaio (PS)	First	No
2001-2002	António Guterres (PS)	Jorge Sampaio (PS)	Second	No
2002-2004	Durão Barroso (PSD)	Jorge Sampaio (PS)	Second	Yes
2004-2005	Pedro Santana Lopes (PSD)	Jorge Sampaio (PS)	Second	Yes
2005-2006	José Sócrates (PS)	Jorge Sampaio (PS)	Second	No
2006-2011	José Sócrates (PS)	Cavaco Silva (PSD)	First	Yes
2011	José Sócrates (PS)	Cavaco Silva (PSD)	Second	Yes
2011-2015	Pedro Passos Coelho (PSD)	Cavaco Silva (PSD)	Second	No
2015-2016	António Costa (PS)	Cavaco Silva (PSD)	Second	Yes
2016-2018	António Costa (PS)	Marcelo Rebelo de Sousa (PSD)	First	Yes

Figure 5 shows the quarterly approval rates of Portuguese prime ministers (black line) and presidents (grey line). Shaded areas represent periods of cohabitation, either during the president's first

¹² The exception is the current president, Marcelo Rebelo de Sousa, who was elected in 2016 and reelected in 2021.

(light-grey) or second term (dark-grey). The data covers four presidencies and ten prime ministerial cabinets. With brief exceptions in the early 1990s and late 2015, Portuguese presidents have been more popular than prime ministers throughout the entire period. While visual inspection suggests the two series are related, the relationship is clearly imperfect, and there are even periods where trends seem to diverge, suggesting that they may be driven by somewhat different processes. Table 6 provides descriptive statistics for both the Prime Ministerial and Presidential approval ratings.

Figure 5: Prime Ministerial and Presidential Approval Rating, quarterly data.



Note: Data from Carlin et al. (2019).

Table 6: Descriptive statistics of the variables employed.

	Observations	Mean	Std Dev	Min	Max
PM Approval Rating	130	39.80	10.41	18.54	66.13
Presidential Approval Rating	130	58.59	13.06	32.18	82.35
GDP Growth	130	2.20	2.83	-4.53	8.71
GDP Growth Negative	130	0.40	1.03	0.00	4.53
GDP Growth Positive	130	2.60	2.21	0.00	8.71
Honeymoon PM	130	0.21	0.55	0.00	2.00
Honeymoon President	130	0.16	0.49	0.00	2.00
Cohabitation 1st term	130	0.38	0.49	0.00	1.00
Cohabitation 2nd term	130	0.25	0.43	0.00	1.00
Unified government	130	0.37	0.48	0.00	1.00

To evaluate the relationship between economic performance and the public approval of prime ministers and presidents, we chose real GDP growth as our primary economic variable (*GDP Growth*). As Goulart and Veiga (2016) note, there are conditions in which unemployment rates may become deceptive indicators of economic performance, such as when massive emigration — particularly high in the 2008-2014 period in Portugal, for example — have contributed to mask unemployment. Therefore, we use instead the quarterly year-on-year growth rate of Portuguese's real GDP.¹³ This information is conveyed by the Portuguese Central Bank, which issues long-term economic data every year. For this study, we used the 2020 version of the revised estimates.

Figure 6 plots the evolution of the Portuguese real GDP growth since 1986, with shaded areas corresponding to recession periods. We start by observing the strong and steady economic boom that followed an earlier recession in 1983-1984, coterminous with Portugal joining the European Economic Community in 1986. This economic cycle ended in 1992-1993. Another economic boom was observed in the rest of the '90s, at the same time Portugal was preparing to join the Euro. The first decade of the 21st century has been marked by three economic recessions. The recession of 2011-2013 lasted several quarters: real GDP decreased sharply, unemployment reached 17% — despite massive emigration — and social conditions worsened. This economic situation originated from a tight fiscal program to reduce debt and public deficit, imposed by a bailout negotiated by the Portuguese government, IMF, and European institutions.

For the purpose of our analysis, we also collected data on several political variables:¹⁴

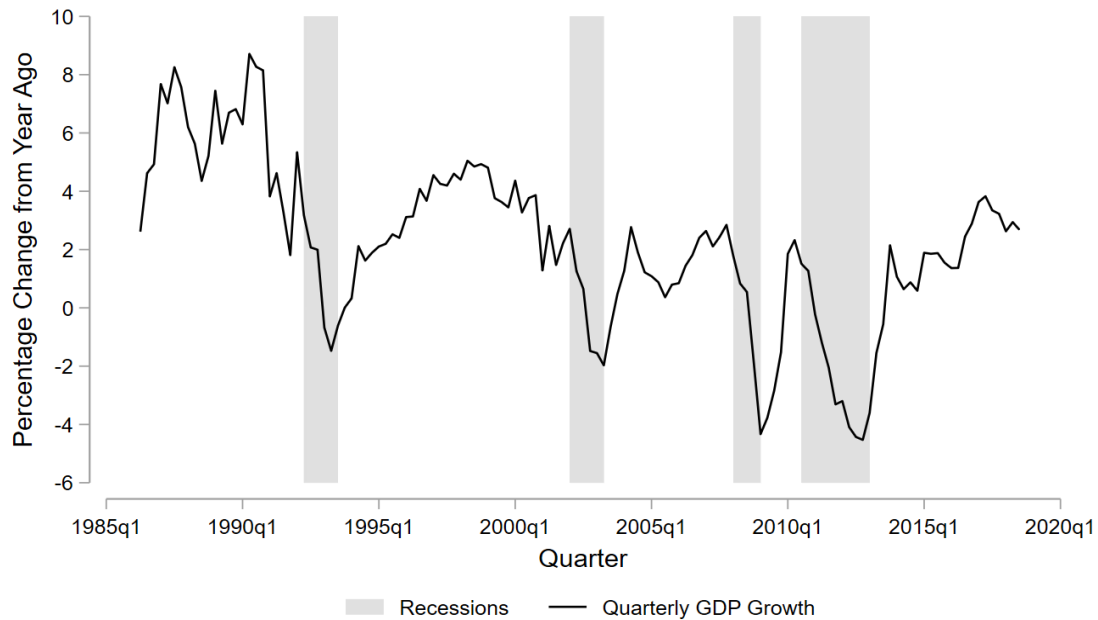
- Honeymoon effect for President (*Honeymoon President*) and honeymoon effect for Prime Minister (*Honeymoon PM*). We follow Veiga and Veiga (2004a) and coded 2 for the first quarter of each presidential (prime ministerial) term, 1 for the second quarter, and 0 for others; for robustness purposes, we also estimated models where dummy variables identify the first, second, and third quarters in office.
- *Cohabitation 1st Term* and *Cohabitation 2nd Term* are dummy variables. The first is coded 1 for periods when presidents and prime ministers are from different parties and presidents are serving their first term of office, and 0 otherwise. The second is similar, with the difference that the value one is reserved for those periods when presidents and prime ministers are from different parties and presidents are serving their *second* term of office;

¹³ Chain linked volume data, with 2016 as the reference year.

¹⁴ The descriptive statistics for the political and economic variables are presented in Table 6.

- *Unified government.* This variable is coded 1 in the cases where the President and the Prime Minister belong to the same political party, whatever the president's term.

Figure 6: Quarterly Growth Rate of Real GDP, percentage change from the year ago, and recessions.



Note: The recession dates were sourced from the Portuguese Central Bank and FFMS Portuguese Cycles Dating Committee.

3.3.2. Estimation Strategy

We have two dependent variables we wish to explain; hence, we have two equations to estimate. If we were to estimate (e.g., by OLS) two independent equations, we would be imposing the restriction that the approval rates of prime ministers and presidents were independent. Given that one of the objects of our study is the interplay between these two political actors, imposing uncorrelated disturbances between the two equations seems to be a somewhat restrictive assumption. Therefore, we relax that assumption and estimate simultaneous equation models.¹⁵

Formally, we estimate a model of the type:

¹⁵ The first paper to study popularity functions in Portugal, Veiga (1998), also used estimated simultaneous equation models, using the seemingly unrelated regression (SUR) method, arguing that the residuals between the popularity functions of the prime minister, the president, the parliament, and the government were correlated. The same happens in our estimations, with the correlation between the residuals being about 0.5. With such a considerable correlation, efficiency requires simultaneous estimation.

$$\begin{cases} y_1 = X_1\beta_1 + \varepsilon_1 \\ y_2 = X_2\beta_2 + \varepsilon_2 \end{cases}$$

Crucially, disturbances (ε_1 and ε_2) are not independent. Efficient estimation requires considering those in a structural equation setup. Also, note that we are not imposing any particular constraints on the vectors of independent variables (X_1 and X_2). In each equation, we include the lagged dependent variable as an explanatory variable, allowing for autoregressive dynamics as standard in the literature. We assessed the existence of unit roots in our dependent variables and verified that both series are stationary.¹⁶ GDP growth is also lagged by one quarter, which is also common. Initially, we also allowed for cross-influence of the lagged dependent variable. In such a case, the model would be equivalent to a vector autoregression model with exclusion restrictions. However, these cross-influences with the lagged dependent variable turned out to be not statistically significant, and we ended up excluding them from our estimations.

3.4. Results

We start by examining H1 as it relates to the shape of the relationship between economic performance (GDP growth) and prime ministerial approval measures. We hypothesized that it should be asymmetric. In Table 7, the results of Models 1 and 2 allow us to examine the hypothesis. Model 1 regresses prime ministerial approval (as well as presidential approval) on GDP growth lagged by one quarter, introducing specific "honeymoon" variables and lagged approval for each entity. Model 2 introduces a modification: following Dassonneville and Lewis-Beck (2014), we replace $GDP\ Growth_{t-1}$ with two variables: $GDP\ Growth\ Negative_{t-1}$ and $GDP\ Growth\ Positive_{t-1}$. The former is simply the value of $GDP\ Growth_{t-1}$ if negative, multiplied by -1 and zero otherwise, and the latter is $GDP\ Growth_{t-1}$ if positive and zero otherwise.

The Standardized Root Mean Square Residual (SRMR) values are, in both cases, below the .08 rule of thumb, suggesting a good fit between the models and the data.¹⁷ The results for Model 1 show several familiar results. First, we obtain honeymoon effects for prime ministers but not for presidents.¹⁸

¹⁶ Augmented Dickey-Fuller tests were employed to check for unit roots. Test statistics are -3.252 for prime-ministerial approval and -3.077 for presidential approval. Both follow between the 1% critical value (-3.500) and the 5% critical value (-2.888). If we consider the null of stationarity, KPSS tests provide even stronger evidence in favor of the stationarity hypotheses.

¹⁷ The SRMR is an absolute measure of fit very common in Structural Equation Modeling — e.g., see Maydeu-Olivares *et al.* (2018). The closer to zero, the better the fit.

¹⁸ In the model where we employ dummy variables for quarters 1, 2, and 3 in office, results are similar: a significant 7 points boost in popularity for the prime minister in the 1st quarter, followed by (smaller) significant corrections in quarter 2 (-2 points) and 3 (-3.6 points); and no effects for presidential popularity. These results are similar across all specifications.

Veiga and Veiga (2004a: 109 and 2007:84), who first uncovered this contrast, did not speculate on the reasons behind it. However, one potential explanation may have to do again with the different roles of prime ministers and presidents in the political system. As Brody (1991) notes, the notion of a "honeymoon" represents that the period of initial positive response to a new incumbent "is limited, and beyond it, a different set of processes affect the evaluation of (...) performance" (Brody, 1991: 28). However, while this period of suspension of criticism that executive office holders such as prime ministers are likely to get from the opposition, the media, and the public, in general, is indeed likely to be short, presidents without direct executive responsibilities, such as those in the Portuguese semi-presidential system, are likely to be able to deflect criticism and negative coverage for a more prolonged period. Therefore, it is not too surprising that (short-lived) "honeymoon effects" emerge for prime ministers but not for presidents in Portugal.

Table 7: Economic symmetry and asymmetry in the popularity functions of Portuguese prime ministers and presidents.

	Model 1		Model 2	
	PM Approval	Presidential Approval	PM Approval	Presidential Approval
PM Approval Rating t_{-1}	0.785*** (0.037)	-	0.785*** (0.036)	-
Presidential Approval Rating t_{-1}	-	0.801*** (0.050)	-	0.800*** (0.050)
Honeymoon PM	2.976** (0.958)		2.950** (0.937)	-
Honeymoon President	-	1.498 (1.929)	-	1.658 (1.953)
GDP Growth t_{-1}	0.378** (0.134)	0.674*** (0.192)	-	-
GDP Growth Negative t_{-1}	-	-	-0.981*** (0.277)	-0.679† (0.391)
GDP Growth Positive t_{-1}	-	-	0.164 (0.212)	0.677* (0.284)
Constant	6.979*** (1.418)	10.186*** (2.783)	7.768*** (1.521)	10.227*** (2.895)
Var (e.PM Approval)	20.556 (3.275)		20.220 (3.180)	
Var (e.Pres Approval)	36.723 (6.731)		36.723 (6.726)	
Cov(e.PM Approval, e.Pres Approval)	14.829 (3.129)		14.834 (3.100)	
Observations	129		129	
SRMR	0.025		0.022	

Note: Standard-errors between brackets. Statistical significance: †p<.10; *p<.05; **p<.01; ***p<.001 (two-tailed tests).

Second, in Model 1, we obtain significant effects of GDP growth on both prime ministerial and presidential approval. However, Model 2, which allows for asymmetric effects of GDP growth, shows a fundamental difference between the two entities: while presidents seem equally affected by negative or positive GDP growth rates (the estimate is the same, .68), opinion toward the prime minister is affected only by negative growth rates (-.98). Note that these estimates are on impact. The long-run effects are quite larger due to the implied dynamics of the autoregressive model. Imagine that the GDP growth rate is persistently negative, say -1%. The estimated immediate impact is a decrease in the popularity of about one point (0.98). However, in the next quarter, popularity would decrease further, and so on. After two and a half years, the overall estimated impact of a growth rate of -1% would be a decrease in the prime minister's approval of about four points.¹⁹

In other words, H1 is confirmed for the prime minister, but the same asymmetry is not found for presidents. The latter benefit from good times and are hurt by bad times to roughly the same extent; prime ministers, however, get strongly blamed for bad times but are uncredited for good times. Again, the political and institutional role played by presidents in Portugal may contribute to explaining this difference. Their non-executive status and the incentives to secure an absolute majority for election and reelection have led viable presidential candidates to present themselves as being "above parties," running for elections under platforms that have very low policy content, leading to a portrayal of their role as that of a non-partisan "moderating power" (Feijó, 2021). Like French presidents under cohabitation, Portuguese presidents do not cease benefitting from the "warm glow" of a good economy or being hurt by economic downturns (Lewis-Beck, 2004). However, the contamination of economic evaluations by partisan predispositions that, under "good times," is likely to blur the relationship between the economy and prime ministerial approval (Evans and Andersen, 2006) is less likely to occur in the evaluation of entities that present themselves and are primarily perceived, most of the time, as "non-partisan."

We now turn to H2, which proposed that contexts that have favored conflict between presidents and prime ministers should account for another aspect of the instability in the economic-approval link for prime ministers: the blurring of economic accountability during periods of presidential second-term cohabitation. To test this second hypothesis, we estimated Models 3 and 4, whose results are presented in Table 8. Model 3 provides an intermediate step. For prime ministers, we include lagged dependent and "honeymoon" variables. Furthermore, we include *GDP Growth Negative*_{t-1} (capturing the asymmetric relationship between economic performance and the PM's approval shown previously) and the three

¹⁹ For the president, given the autoregressive coefficient of 0.8 and the GDP growth rate coefficient of 0.68, the overall estimated impact of a 1% GDP growth rate over two and half years is of about 3 points.

dummies capturing the three relevant political conditions that configure presidential-prime ministerial relations: *Cohabitation 1st term*, *Cohabitation 2nd term* (with *Unified government* as the reference category). The specification for the presidential equation is very similar, except that, per our previous findings, the specification of the economic variable — *GDP Growth*_{t-1} — assumes a simple symmetrical relationship.

First, note that in Model 3, SRMR values are smaller compared to Models 1 and 2, suggesting improved fit. Second, the results show that, again, the honeymoon effects detected for the prime minister are absent in the case of the president.²⁰ Third, an unexpected result is that the coefficient for 1st term cohabitation is positive and significant at $p < .10$ for both presidents and prime ministers. Interestingly, this result resonates with Grossman and Guinaudeau's (2023) study of presidential popularity in France, which shows that presidential popularity has *benefitted* from cohabitation, independently of economic performance and other factors. In the case of Portugal, that premium emerges both for presidents and prime ministers, but only during first-term (peaceful) cohabitations. It is conceivable that, by generating a political climate in which governments and presidents of different parties are shown to be able to coexist peacefully, first-term cohabitations demobilize popular and partisan opposition from both partisan sides of the aisle to both entities and contribute to boosting their popularity.

In Model 4, we allow the three dummies capturing the three relevant political conditions that configure presidential-prime ministerial relations, *Cohabitation 1st term*, *Cohabitation 2nd term*, and *Unified government*, to interact with our economic performance variables. This allows us to directly check the origin of the marginal effect of *GDP Growth*_{t-1} for presidents and of *GDP Growth Negative*_{t-1} for prime ministers. The specification effectively disaggregates one coefficient into the three that are obtained under the different relevant circumstances — Unified government, Cohabitation 1st term, and Cohabitation 2nd term. This allows us to test H2, which suggested that the relationship between economic performance and executive approval should be contingent upon the relationship between prime ministers and presidents: stronger under peaceful coexistence than under conflictual (presidential) second-term cohabitations.

²⁰ Results for our alternative specification of honeymoon effects are similar.

Table 8: Presidential and prime ministerial approval, the economy, and cohabitation.

	Model 3		Model 4	
	PM Approval	Presidential Approval	PM Approval	Presidential Approval
PM Approval Rating _{t-1}	0.769*** (0.038)	-	0.771*** (0.038)	-
Presidential Approval Rating _{t-1}	-	0.769*** (0.054)	-	0.773*** (0.053)
Honeymoon PM	3.038** (0.920)		3.073** (0.909)	-
Honeymoon President	-	1.638 (1.869)	-	1.634 (1.868)
Cohabitation 1 st term	1.940† (1.037)	3.337* (1.483)	1.998† (1.109)	3.476† (1.796)
Cohabitation 2 nd term	0.069 (1.057)	1.675 (1.372)	-0.356 (1.095)	1.889 (1.558)
GDP Growth Negative _{t-1}	-1.066*** (0.237)	-	-	-
Cohabitation 1 st term* GDP Growth Negative _{t-1}	-	-	-1.331** (0.449)	-
Cohabitation 2 nd term * GDP Growth Negative _{t-1}	-	-	0.511 (0.819)	-
Unified government* GDP Growth Negative _{t-1}	-	-	-1.138*** (0.272)	-
GDP Growth _{t-1}	-	0.596** (0.184)		
Cohabitation 1 st term* GDP Growth _{t-1}	-	-	-	0.566* (0.264)
Cohabitation 2 nd term* GDP Growth _{t-1}	-	-	-	0.442 (0.664)
Unified government * GDP Growth _{t-1}	-	-	-	0.651** (0.250)
Constant	8.112*** (1.558)	10.529*** (2.815)	8.044*** (1.591)	10.250*** (2.676)
Var (e.PM Approval)	19.589 (3.108)		19.046 (3.114)	
Var (e.Pres Approval)	34.984 (6.240)		35.091 (6.232)	
Cov(e.PM Approval, e.Pres Approval)	13.899 (3.074)		13.567 (3.055)	
Observations	129		129	
SRMR	0.013		0.013	

Note: Standard-errors between brackets. Statistical significance: †p<.10; *p<.05; **p<.01; ***p<.001 (two-tailed tests).

While Models 2 and 3 showed that *GDP Growth Negative_{t-1}* was harmful to the Prime Minister, Model 4 shows that such negative value results from the aggregation of three coefficients for three different contexts. *Cohabitation 1st term * GDP Growth Negative_{t-1}* and *Unified government* GDP Growth*

*Negative*_{*t-1*} are both negative, significant, and similarly sized. In other words, economic performance affects the popularity of prime ministers under conditions of first-term cohabitation or unified government, and it does so asymmetrically, as posed in H1. In contrast, the coefficient for the interaction *Cohabitation 2nd term* * *GDP Growth Negative*_{*t-1*} for prime ministers is far from statistical significance at conventional levels. In other words, under conditions that have been characterized by a more conflictual relationship between prime ministers and presidents, prime ministerial approval becomes insensitive to economic performance.

Similarly, Models 2 and 3 showed the coefficient *GDP Growth*_{*t-1*} is positive for the president. Model 4 shows these results from *Cohabitation 1st term* * *GDP Growth*_{*t-1*} and *Unified government* * *GDP Growth*_{*t-1*}, whose coefficients are positive, significant, and similarly sized: under conditions that favor peaceful coexistence with prime ministers, presidential approval is (symmetrically) affected by economic performance. However, like what occurs with prime ministerial approval, the interaction *Cohabitation 2nd term* * *GDP Growth*_{*t-1*} for presidents is not statistically significant.²¹

In sum, contextual conditions that combine a lack of reelection incentives for presidents and partisan divergence between them and prime ministers have been inimical to economic accountability: inter-institutional conflict between presidents and prime ministers makes the popularity of both entities less sensitive to economic performance, particularly in the case of the latter.

3.5. Conclusion

It has long been suspected that support for incumbent governments and parties in semi-presidential systems might be characterized by somewhat different dynamics from those observed in pure parliamentary or presidential systems. In the well-studied French case, cohabitation seemed to switch responsibility for the economy from the president to the prime minister, as the leadership of the executive moved from the former to the latter (Lewis-Beck, 1997). Other studies have even suggested this also occurs with semi-presidential systems more broadly, with cohabitation serving as the switch that makes presidents (under the former) or prime ministers and their parties (under the latter) publicly accountable for the economy.

²¹ However, it has the same sign as the other interactions, suggesting the contrast between 2nd term cohabitations and the remaining situations is more robust for the case of the prime minister than for the case of the president.

We suggest, however, that this dynamic has not been reproduced in the case of semi-presidential Portugal, or at least not since the mid-1980s. Because cohabitation in Portugal does not switch the locus of responsibility for economic policy, it also does not switch the locus of responsibility for economic performance from the public's point of view either. Voters strongly punish prime ministers for bad economic performance under either cohabitation or unified government. There is, however, one crucial exception: *conflictual cohabitations*, such as those that have prompted presidents to make more extensive uses of their legislative and oversight powers to place important obstacles to governments' policy agenda during presidential second (and last) terms. Under such conditions, public approval for *both* entities, prime ministers and presidents, has been mostly insensitive to economic performance. These findings are compatible with the notion that conflicts between politically relevant presidents and the prime ministers they oppose contribute to blurring responsibility for the economy. By doing so, the study findings point to a source of instability in the Portuguese V-P function that, while rooted in institutional factors — semi-presidentialism, presidential powers, term-limits — is far from static: it depends on the political context shaping the relationship between prime ministers, presidents, and their parties, a context that has varied significantly throughout the period under examination (see Table 5).

Furthermore, we also show that although the approval of both prime ministers and presidents is affected by the economy outside of second-term cohabitations, that relationship is asymmetric for prime ministers and symmetric for presidents. Future studies may be able to establish with greater certainty the reasons for that difference. However, we speculate that it is consistent with the different roles played by both entities in the political system. As partisan entities in charge of the executive, prime ministers are affected by the economy in a way that is compatible with the lower partisan contamination of economic evaluations in bad times (Evans and Andersen, 2006; see Magalhães, 2017, for Portugal), i.e., asymmetrically. Conversely, the relationship between the economy and presidential approval is less contaminated by such process, given the lower relevance of partisanship as a cue with which to evaluate presidents. The asymmetry found for prime ministerial approval addresses part of the puzzle concerning the apparent instability of the V-P function in the country (Freire and Santana-Pereira, 2012; Carlin *et al.*, 2023). In particular, it helps accounting for the very strong connection between economic performance and prime ministerial approval during Portugal's worst economic times since the 1970s.

More broadly, this chapter makes two main contributions. First, a clearer understanding of some of the reasons why, in the case of Portugal, the link between economic performance and executive support appears unstable if approached in a way that ignores the variability introduced by economic and institutional contexts. A second contribution consists of potentially important clues to be explored in the

study of semi-presidential systems that bear similarities to the Portuguese. In countries such as Bulgaria, Poland, Lithuania, Romania, Slovakia, or Slovenia, for example, popularly elected presidents are neither like the French heads of the executive nor like the mostly ceremonial figureheads that can be found in the semi-presidentialism of Austria, Ireland, or Iceland. Their powers are often relevant, and their cohabitation with prime ministers who belong to different parties has been characterized by peaceful coexistence in some cases but conflict and even policy stalemates in others (Protsyk, 2005a and 2005b; Elgie, 2010). The Portuguese case provides a few testable hypotheses about how economic performance should affect the approval of both prime ministers and presidents in such contexts.

4. US Presidential Approval Rating: Time-Frequency Approach²²

4.1. Introduction

One of the challenges posed by the study of popularity functions has been the difficulty in distinguishing between structural and transient effects on government approval of different economic variables while at the same time addressing issues of non-stationarity and non-linearity. One of the consequences of this difficulty has been a plethora of inconsistent findings, even in the case where the relationship between economic factors and government approval has been most exhaustively studied: the United States (Berlemann and Enkelmann, 2014).

In this work, we show how wavelet analysis can be employed in conjunction with other econometric methods to address these problems. We describe the advantages of wavelet tools, particularly how they allow us to decompose time series data into a sum of waves of different frequencies, provide local analyses unaffected by non-stationarity and non-linearity problems, and, with advancements (Aguiar-Conraria and Soares, 2014; Aguiar-Conraria *et al.*, 2023), perform multivariate analysis. To show how the use of multivariate wavelet analysis allows for a more nuanced understanding of the relationship between the economy and presidential approval, we illustrate this approach, focusing on the approval ratings of President Barack Obama and comparing the results with OLS estimations. To analyze the relationship between the economy and the approval, we utilized the conventional economic variables: unemployment and inflation rates. We also used consumer sentiment as a measure of economic perception. As our focus is President Obama's presidency, our data goes from January 2009 to December 2016.

The results reveal how Obama's approval rating was structurally influenced by economic variables such as unemployment and inflation, with different synchronizations, but also how they were transiently related to consumer sentiment, in a result that would not emerge from traditional econometric models.

²² A version of this chapter has already been submitted to a academic journal.

The study is organized as follows. In Chapters 4.2 and 4.3, we provide a self-contained summary of wavelet analysis, describing the advantages of the tools we use and why they are relevant to the study of popularity functions and complementing with an example. In Chapter 4.4, we describe the data that will be employed to illustrate the potential of wavelet analysis to this topic. Chapter 4.5 presents the results of both a traditional OLS approach and wavelet analysis, highlighting the added value of the latter. Chapter 4.6 concludes.

4.2. Wavelet analysis and the study of popularity functions

4.2.1. The challenge of instability

Ever since Mueller (1970), a profusion of studies has empirically investigated how the economy affects presidential approval in the United States. While several indicators have been used as proxies for assessing economic conditions, unemployment and inflation rates have been among the most employed in the V-P function literature since the 1970s. Voters are assumed to recognize that the state of the economy is unfavorable when unemployment is high, and that high inflation acts as a burden on their income, and they should use that information to assess the performance of incumbents.

However, contrary to initial expectations, the correlation between economic performance and executive popularity has been less than consistent. This instability can be attributed to many factors. One possibility is the disparate reactions elicited by left- and right-wing incumbents. For example, left-leaning executives may experience intensified criticism during periods of heightened unemployment, whereas their right-leaning counterparts face amplified scrutiny amidst inflation (Hibbs, 1977; Powell and Whitten, 1993; Swank, 1998). Moreover, the responses to economic shocks are not symmetric. As Soroka (2006) noted, adverse economic developments typically result in a sharper decline in popularity compared to the mild uptick associated with positive economic surprises.

However, yet another possibility is that these effects may be more or less transitory. For example, events may lead voters to set aside economic and political preferences temporarily. In the V-P function literature, events such as wars or terrorist attacks elicit a well-known phenomenon referred to as the “rally ‘round the flag” effect (Mueller, 1970; Newman and Forcehimes, 2010), wherein individuals unite in support of their political leadership, blurring the relation between economic fundamentals and approval ratings. For instance, despite the American economy facing an economic recession in 2001, President George W. Bush’s popularity experienced a significant surge following the 9/11 terrorist attack.

More generally, as Gronke and Newman (2003) highlight, presidential performance evaluations are likely to be inherently unstable. Based on the media priming literature, they argue that media emphasis on specific issues shapes the criteria citizens employ to evaluate presidential performance. If public expectations of presidents are dynamic and evolve over time, a single statistical model cannot universally capture the drivers of approval ratings. Accordingly, they advocate for the development of new estimation methods that accommodate time-varying coefficients. Similarly, Berlemann and Enkelmann (2014), while suggesting that inflation and unemployment seem to exert a long-term influence on presidential approval in the U.S., show inconsistencies in short-term effects, attributing them as well to a potentially evolving relationship between economic factors and popularity. Furthermore, they also question both the prevalent use of linear estimation in previous studies, proposing that nonlinear relationship might exist, as well as the fact that many studies have not adequately considered stationarity issues. In fact, Berlemann *et al.* (2015) and Choi *et al.* (2016) find an interdependent and non-linear impact of the unemployment and inflation rates on US presidential popularity.

These different insights serve as an invitation to take advantage of the possibilities awarded by wavelet analysis. Ever since Fourier's time, we have known that many time series can be expressed as a sum of periodic cycles. This has laid the foundation for methods like the Fourier transform and wavelet transform, which enable us to decompose time series data into a sum of sinusoidal waves of varying frequencies, offering insights into the data's periodic patterns. The wavelet transform has, however, a crucial advantage over the Fourier transform: it allows for patterns in the data and in the relationships between variables to be *time-varying*. Accordingly, as a *local* analysis, it assumes neither a time-invariant generating process (stationarity) nor that relationships between variables are linear. In the following Subchapters, we underscore the benefits of employing continuous wavelet analysis in conjunction with traditional econometric methods to address the challenge posed by instability.

4.2.2. The (partial) wavelet coherency, gain, and phase-difference

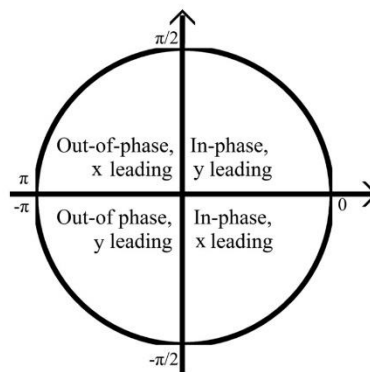
Earlier studies have already delineated the merits of wavelet analysis for political science (Aguar-Conraria *et al.*, 2012 and 2013). More recently, we find some applications of the bivariate analysis in political science (Wang, 2023a and 2023b). Aguair-Conraria *et al.* (2014) went a step further by allowing an analysis involving more than two series – multivariate wavelet analysis. This methodology has been applied in different topics, such as macroeconomics and, to a less extent, in political science (Wang,

2023a). Recently, some studies have estimated equations in the time-frequency domain. Aguiar-Conraria *et al.* (2023) provide a recent application, though its utilization in political science remains unexplored.

The studies primarily utilize three wavelet tools: the wavelet power spectrum, (partial) wavelet coherency, and (partial) wavelet phase-difference. The **wavelet power spectrum** estimates a variable's variance in the time-frequency domain, pinpointing the contribution of specific frequencies to total variance and identifying significant cycles. **Wavelet coherency**, akin to the absolute value of the correlation coefficient, estimates the strength of the association between two variables across different times and frequencies, revealing varying correlations. **Phase-difference** informs the sequence/synchronization and nature (positive/negative) of variable correlations. The extensions, **partial wavelet coherency**, akin to the partial correlation coefficient, and **partial phase-difference**, provide the same information while accounting for third variables. Finally, the **multiple wavelet coherency**: its interpretation is similar to the R-squared but, of course, done in the time-frequency domain.

In particular, the partial phase-difference allows us to distinguish between positive and negative correlation, after taking into account the effects of a third variable, and it also informs us on which variable is leading which. Let $\phi_{x,y|z}$ be the phase-difference between Y_t and X_t after controlling for Z_t . If $\phi_{y,x|z} = 0$, then the two variables' series move together at a given time and frequency. If $\phi_{y,x|z} \in \left(0, \frac{\pi}{2}\right)$ then they are in phase (positive correlation) with Y_t leading X_t , and if $\phi_{y,x|z} \in \left(-\frac{\pi}{2}, 0\right)$, the series are in phase, with X_t leading. On the other hand, if $\phi_{y,x|z} \in \left(-\pi, -\frac{\pi}{2}\right)$, series Y_t leads X_t in an out of phase relation (negative correlation), and if $\phi_{y,x|z} \in \left(\frac{\pi}{2}, \pi\right)$ the series Y_t and X_t are out of phase, with X_t leading. Figure 7 summarizes this information in a circle scheme.

Figure 7: Phase-Difference circle.



Note: Aguiar-Conraria and Soares (2014).

Although highly beneficial, the wavelet tools described previously could not perform regressions in the time-frequency domain. This limitation was addressed by Aguiar-Conraria *et al.* (2023) who extended the concept of wavelet gain, proposed by Mandler and Scharnagl (2014), to a multivariate context. They demonstrated that the **partial wavelet gain** of Y_t over X_t , while controlling for Z_t , and Y_t over Z_t , while controlling for X_t , can be interpreted as the coefficient in the linear regression of Y_t on the explanatory variables X_t and Z_t at each specific time and frequency.

In the following Chapter, we provide an intuitive explanation, illustrated by a specific example, of interpreting graphical representations and extracting pertinent information related to partial coherency, partial phase-difference, and partial wavelet gain. For the formulae and rigorous mathematical treatment, the reader is directed to Aguiar-Conraria *et al.* (2012) and Aguiar-Conraria and Soares (2014).

4.3. An example

4.3.1. The Data Generating Process

Suppose a variable X_t is primarily composed of two periodic cycles: a one-year cycle and a three-year cycle, along with some white noise. Assume we have 10 years of monthly data. In this case, the expression for X_t can be written as:

$$X_t = \cos\left(\frac{2\pi t}{1}\right) + \cos\left(\frac{2\pi t}{3}\right) + \varepsilon_{x,t}, \quad \text{for } t = 0, \frac{1}{12}, \frac{2}{12}, \dots, 10. \quad ^{23}$$

Assuming still that we have monthly data spanning 10 years, consider another variable, Z_t , which comprises both white noise and a six-month cycle, expressed as:

$$Z_t = \cos\left(\frac{2\pi t}{1/2}\right) + \varepsilon_{z,t}, \quad \text{for } t = 0, \frac{1}{12}, \frac{2}{12}, \dots, 10.$$

Finally, consider a variable Y_t that is a function of the previous two. However, to fully appreciate the power of wavelet estimation, let's introduce some complexities. First, the relationship between X_t and Y_t is not constant either across time or frequencies. For example, since it is entirely possible for one

²³ The use of cosines might initially appear unusual; however, Aguiar-Conraria *et al.* (2012) demonstrate that several autoregressive processes, as estimated in the political science literature, can indeed be characterized in this manner.

variable to have a positive effect on another in the short term and deleterious effects in the long term, we assume that the relationship between X_t and Y_t is positive at higher frequencies (corresponding to the one-year cycle in our example), while negative at lower frequencies (the three-year cycle).

Second, to encapsulate time-varying relationships, we modify the regression coefficient that connects the one-year cycle between X_t and Y_t . It is set at 1 for the first five years of data and then adjusts to 3 for the remaining period. Lastly, to address transient relationships, we propose that the influence of Z_t on Y_t is temporary, lasting only for one year, specifically when $2 \leq t < 3$.

Putting all this information together, we have that

$$Y_t = \alpha_{1,t} \cos\left(\frac{2\pi t}{1/2}\right) + \alpha_{2,t} \cos\left(\frac{2\pi(t - 1/12)}{1}\right) + \alpha_{3,t} \cos\left(\frac{2\pi(t - 3/12)}{3}\right) + \varepsilon_{y,t} \quad \text{for } t = 0, \frac{1}{12}, \frac{2}{12}, \dots, 10.$$

With $\alpha_{1,t} = 1$ if $2 \leq t < 3$ and zero, otherwise; $\alpha_{2,t} = 1$ if $t \leq 5$ and $\alpha_{2,t} = 3$ if $5 < t \leq 10$; $\alpha_{3,t} = -2$. We've added another twist to consider: at higher frequencies, there is a one-month lag for the impact of X_t on Y_t , and at the three-year frequency, the lag extends to three months. However, the influence of Z_t on Y_t is instantaneous.

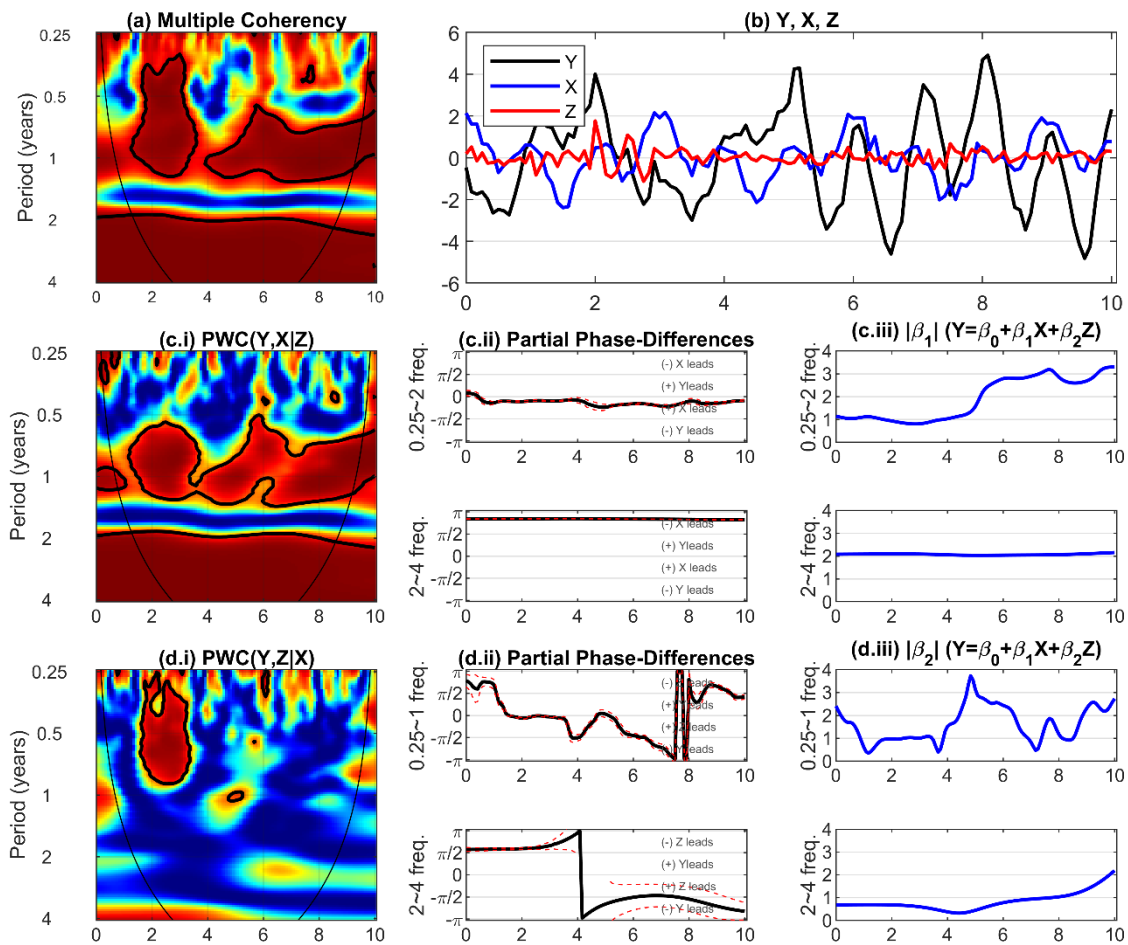
4.3.2. Reading the results

The results of the wavelet analysis of this example are presented in Figure 8. On the top, we have the wavelet multiple coherency (chart a). Still on the left, we have the partial wavelet coherency between Y_t and X_t , after controlling for Z_t (chart c.i), and between Y_t and Z_t , after controlling for X_t (chart d.i). The color code for coherency (partial or multiple) ranges from blue (low coherency – close to zero) to red (high coherency – close to one). The black contours indicate the 5% significance level for the coherency computed with 5000 Monte-Carlo simulations. A parabola-like black line indicates the region affected by edge effects. Results should be interpreted with care in this area.²⁴

²⁴ As with other types of transforms, the Continuous Wavelet Transform applied to a finite length time series suffers from border distortions due to the fact that the values of the transform at the beginning and the end of the time series involve missing values of the series, which are artificially prescribed. One usually pads the series with zeros to avoid wrapping. These edge-effects increase for lower frequencies. In this area of the time-frequency plane, the results are subject to border distortions and have to be interpreted carefully.

Chart c.i tells us the regions, in the time frequency domain, where the relation between Y_t and X_t , after controlling for Z_t , is stronger. We observe mainly two red bands: one at frequencies corresponding to one-year period cycles and another corresponding to three-year cycles. Other than that, the figure is mostly blue, indicating low coherency. Knowing the regions where coherency is high and significant indicates where we should look for the rest of the information.

Figure 8: Example of Wavelet Analysis using Multiple Wavelet Coherency, Partial Coherency, Partial Phase-Difference, and Partial Wavelet Gain.



Note: Chart (a) corresponds to the multiple wavelet coherency, and charts (c.i) and (d.i) show the partial wavelet coherency between Y_t and X_t , after controlling for Z_t and between Y_t and Z_t , after controlling for X_t , respectively. The black contour designates the 5% significance level. The color code for coherency ranges from blue (low coherency – close to zero) to red (high coherency – close to one). The diagrams (c.ii) and (d.ii) are the partial phase-differences. The limits of the confidence intervals for the mean phases are indicated in the pictures with red dashed-lines. The diagrams (c.iii) and (d.iii) show the partial wavelet gain. The graph (b) contains the plots of variables Y_t , X_t and Z_t .

Starting with the partial phase-difference (diagram c.ii) at higher frequencies (ranging from a quarter to 2-year cycle periods), it is observed to consistently fall between $-\frac{\pi}{2}$ and zero, i.e. $\phi_{y,x|z} \in \left(-\frac{\pi}{2}, 0\right)$. This indicates, as expected, that at this frequency, the correlation is positive with X_t leading. However, at lower frequencies, which correspond to cycles with a longer period of about three years, we find $\phi_{y,x|z} \in \left(\frac{\pi}{2}, \pi\right)$, indicating a negative correlation with X_t still leading. This example underscores the type of information that would be challenging to unveil using typical regression analysis.

Finally, still in what concerns the relationship between Y_t and X_t , after controlling for Z_t , we can see the evolution of the partial wavelet gain (diagram c.iii), which provides the absolute value of the regression coefficients. At higher frequencies, it remains around 1 in the first half of the sample and then increases to a value near 3 in the second half, illustrating the time-varying nature of the estimated regression coefficients. For lower frequencies, the estimated coefficient (in absolute value) is consistent at 2 across the entire sample. Consequently, these coefficients are not just time-varying but also frequency-varying, as they change at different frequencies.

In chart d.i, we observe the estimation of the relationship between Y_t and Z_t , after controlling for X_t . The coherency is distinctly red for very specific dates (between approximately years 2 and 3) and at high frequencies. Such a relationship would likely go unnoticed using typical regression analysis, as it is so short-lived. The partial phase-difference (diagram d.ii) informs us that, during those years, the impact of Z_t on Y_t is immediate, $\phi_{y,z|x} = 0$, and on the diagram d.iii, we see that the coefficient is 1. This illustration also serves as a caution not to interpret either the phase-difference or the wavelet gain in regions of low coherency; in these areas, no meaningful relationship exists, and therefore, the estimated values may vary wildly.

4.4. Data

It is now possible to illustrate how these methods can be employed in the study of the impact of the economy on US presidential popularity. We use the case of the popularity of President Barack Obama. We follow existing literature by selecting a political rating that measures the approval of each president among American voters. The widely recognized approval measure is provided by Gallup,²⁵ which surveys a representative sample of American adults by posing the following question: “Do you approve or disapprove of the way (first and last name) is handling his job as President?” For the purpose of this

²⁵ All data were provided by the American Presidency Project at UC Santa Barbara (<http://www.presidency.ucsb.edu>).

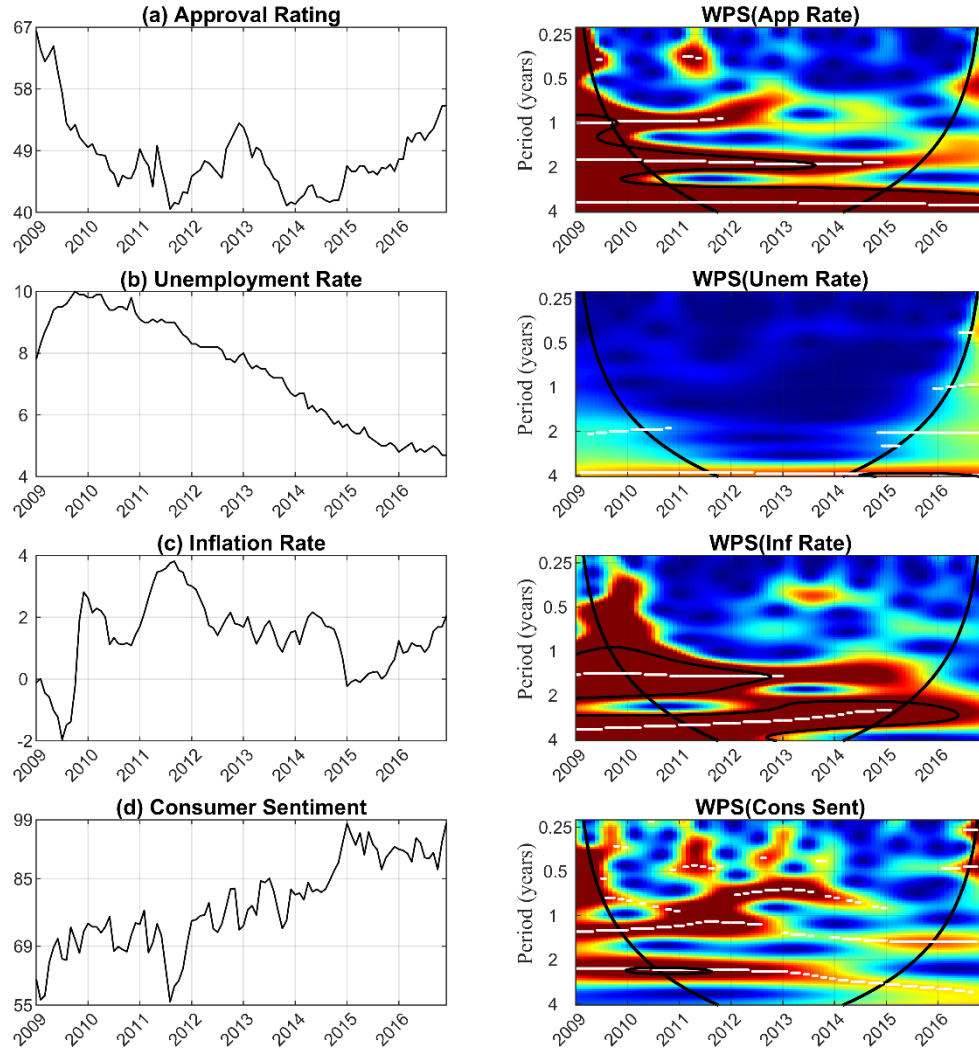
Chapter, we constructed monthly average data for Barack Obama's approval. Working with monthly data offers the advantage of capturing very short fluctuations in approval, providing a more precise assessment of voters' opinions. According to Berlemann and Enkelmann, "[...] monthly data is more useful in popularity studies since high-frequency data allows us to match political events or economic developments more closely to presidential approval" (2014, p. 46). The data spans from January 2009 to December 2016.

4.4.1. The approval rating

Generally, US presidents encounter distinct domestic and international events that influence their popularity in various ways, resulting in noticeable spikes and declines. In Figure 9, the first chart on the left illustrates the evolution of Barack Obama's approval rating. Several aspects are clear. First, Obama's approval rating followed a U-shape in each term: his popularity experienced a decline during the early years of each presidential term, subsequently followed by an increase as each term came to an end. Second, specific events seem to have significantly impacted Obama's approval rating during his tenure. For instance, a relevant decline in popularity occurred in August 2011 and 2013, coinciding with the United States debt-ceiling crisis and a subsequent Federal Government Shutdown. These occurrences were directly linked to the high level of debt owed by the U.S. government and efforts to reduce the deficit. Conversely, two peaks occurred in January and May of 2011, which can be plausibly attributed to the Tucson shooting incident and Osama Bin Laden's death, respectively.

On the right side, we have the wavelet power spectrum, which reveals the presence of several coexisting cycles. The warmer colors correspond to regions of high volatility, and the white stripes identify the local maxima of the wavelet power spectrum, offering an estimation of the dominant cycle. A dominant 4-year cycle was observed throughout the entire period, reflecting the U-shaped curve that was already mentioned in each term. However, there is also a 2-year cycle spanning from the start of the first term to the beginning of the second, and a shorter cycle, approximately 1-year in duration, in the early years. In other words, Obama's first term approval exhibited greater volatility compared to the second term.

Figure 9: Plots of Obama's Approval, Unemployment Rate, Inflation Rate, and Consumer Sentiment and the respective Wavelet Power Spectrum.



Note: On the left: Time-series plots of the several variables. On the right: Wavelet power spectrum, showing the variance of each series at each time-frequency locus. The color code for power ranges from blue (low power) to red (high power). The white lines show the local maxima of the wavelet power spectrum. The black contours indicate the 5% significance level. The cone of influence, which indicates the region affected by edge effects, is shown with a parabola-like black line.

4.4.2. Economic Core Variables

The data for the inflation and unemployment rates were sourced from the Federal Reserve Economic Data (FRED) website. Specifically, the unemployment rate used in our analysis is seasonally adjusted and defined as the ratio of unemployed individuals to the labor force, expressed as a percentage. The inflation

rate is calculated as the percentage change relative to the previous year based on the consumer price index for all urban consumers. In Figure 9, both Chart (b) and Chart (c) depict these two variables.

In the period from 2009 to 2016, the unemployment rate reached its highest point at the beginning of President Obama's presidency, peaking at 10% towards the end of 2009 and stabilizing for a significant portion of 2010, a result of the severe economic recession in 2007. Subsequently, the unemployment rate exhibited a consistent and nearly continuous decline, reaching its lowest level at the end of his presidency, stabilizing at approximately 4.7%. This nearly continuous trend is evident in the wavelet power spectrum, which is predominantly blue across the entire spectrum. However, there is a white stripe across the sample at very low frequencies, corresponding to a 4-year cycle. The results from the wavelet power spectrum tell us that the unemployment rate during Obama's presidency did not demonstrate significant short-lived oscillations. Otherwise, we would observe warmer colors in higher frequencies. Instead, the unemployment rate evolved in cycles of 4 years, which means cycles that last four years from the peak to the trough. Observing the plot of the unemployment rate, we can see a smooth change in the cycle between 2013 and 2014. This is corroborated by Portugal and Rua (2020), studying the oscillatory behavior of the unemployment rate in the time-frequency domain. Short-lived oscillations of the unemployment rate are essentially explained by the job separation rate, mainly during recession periods. However, the unemployment rate is strongly influenced by the job-finding rate, and, more importantly, its long-term movements (at low frequencies) are mainly driven by the rate at which workers find a job. As the period studied in our essay corresponds to a period of economic recovery, this explains the results of our wavelet power spectrum.

Turning to the inflation rate, it initially experienced negative values during the early months of Obama's presidency, reaching a low -2% in July 2009. This occurrence, coupled with the escalating unemployment figures, constituted a major economic phenomenon. Subsequently, there was a sudden increase in inflation, reaching a rate of 2.8% by the end of the year. From 2012 onwards, the inflation rate stabilized, oscillating between 0% and 4%. The wavelet power spectrum indicates the presence of a predominant 4-year cycle throughout the sample, which may have faded towards the very end. However, contrary to what happened to the unemployment rate, this long cycle coexists with a shorter duration cycle observed during the first presidential mandate, with a duration of 1.5 years. The short-lived cycles in this period coincided with the intervention of the US Federal Reserve, which introduced some monetary policies to curb the effects of the economic recession.

4.4.3. Economic Perceptions

Finally, we incorporate an additional economic (subjective) variable: Consumer Sentiment. The University of Michigan's Survey Research Center conducts monthly surveys to gauge Americans' opinions on their personal and national financial and economic situations. These responses are aggregated to create a consumer sentiment index that reflects perceptions of personal financial situations, business conditions, and the national economy. Although consumer sentiment correlates with unemployment and inflation rates, it can also be influenced by other economic and non-economic trends and events.

Figure 9 (chart d) shows how, as a result of the country's economic recovery, consumer sentiment witnessed a consistent improvement throughout Obama's presidency, albeit with periodic fluctuations. It started at approximately 60 points at the onset of his presidency and concluded at around 98 points by the end of 2016. Notably, a significant downturn happened in August 2011, coinciding with the debt-ceiling crisis. The wavelet power spectrum on the right, and especially the white stripes, reveals that there are several transitory cycles of higher frequencies and a relatively permanent one that starts with a period slightly above two years but gradually changes to a longer cycle, approaching a 4-year period. Consumer sentiment is a measure of consumers' perceptions of how the economy is going. From observing chart (d) of Figure 9, it's clear that consumer sentiment is very volatile and can be explained by economic, political, and even social events that shape the consumer's perceptions. It's also evident that this volatility is more noticeable in the first part of Obama's presidency when consumers were more sensitive to news and events that could impact their wallets. The economic recession and subsequent political and economic events contributed to heightened uncertainty, resulting in a higher sensibility of American consumers' perceptions. That is why the wavelet power spectrum shows warmer colors before 2014.

4.5. Analysis

4.5.1. OLS Estimations

As a first step, we employ traditional econometric models to assess the impact of the economy on Obama's popularity. To accomplish this, we incorporated the economic variables discussed in the previous Subchapter. We start with the most common economic variables used in the literature:

unemployment and inflation. Then, we expand the model to include consumer sentiment. The models were estimated using the Ordinary Least Squares.

We first estimate a static model. Given that our variables do not exhibit a unit root,²⁶ we cannot say that it corresponds to a cointegration relation, but it still captures the idea of a long-run relation:

$$Obama\ Approval_t = \alpha + \gamma X'_{t-1} + \delta Z'_t + \varepsilon_t.$$

Second, we add dynamics to the model by including the lagged dependent variable as a regressor.

$$Obama\ Approval_t = \alpha + \beta Obama\ Approval_{t-1} + \gamma X'_{t-1} + \delta Z'_t + \varepsilon_t.$$

In the above equations, $Obama\ Approval_{t-1}$ is the lagged dependent variable, X'_{t-1} is a vector of independent economic variables, and ε_t is the error term. To address political factors (Z'_t), we incorporated two extra variables in the econometric model: a "honeymoon effect" with values 2 for the initial month, 1 for the second, and 0 thereafter, to factor in the initial popularity surge post-presidential inauguration (first and second term); and a "first term" dummy variable, to account for Obama's initial presidential mandate and for erosion of popularity. We expected both to have positive coefficients.

The results are presented in Table 9. Upon initial observation, it seems evident that the economy exerted an impact on Obama's popularity. The long-run equations, columns (1) and (2), show that both the unemployment rate and the inflation rate have strong, significant, and negative effects on the approval rating. However, the Consumer Sentiment (column 2) is completely irrelevant (p-value of 0.94).²⁷

When one considers a dynamic model able to capture the short-run dynamics, columns (3) and (4), the results change somewhat. The inflation rate is no longer significant, and the consumer sentiment becomes highly significant. Subsequently, given these results, a researcher would probably estimate an Error Correction Model combining both equations, explicitly modeling the distinction between the long-run relation and the short-run dynamics. We do not perform that analysis here, as our purpose is a different one: to illustrate the advantages of complementing the traditional regression techniques with wavelet analysis.

²⁶ Using the Augmented Dickey-Fuller test to assess the stationarity of the dependent variable, the test statistic for the approval rate is -3.295, which follows between the 1% critical values of -3.517 and the 5% critical value of -2.894.

²⁷ Some authors can argue that, to estimate a long-run relationship, unemployment and inflation should not be lagged. Including the contemporary values has minimal impact on our estimations. We kept them lagged just for consistency with columns 3 and 4.

Table 9: Obama's approval rate as a function of economic and political variables, estimated by OLS.

	(1)	(2)		(3)	(4)
L.Approval				0.878*** (0.041)	0.890*** (0.041)
L.Unemployment	-1.405*** (0.493)	-1.381** (0.599)		-0.697*** (0.159)	-0.382** (0.172)
L.Inflation	-2.311*** (0.377)	-2.309*** (0.393)		-0.044 (0.189)	0.018 (0.177)
Sentiment		0.007 (0.090)			0.083*** (0.029)
Honeymoon	6.408*** (1.160)	6.446*** (1.281)		0.368 (0.520)	0.755* (0.444)
First_Term	8.014*** (1.664)	8.049*** (1.643)		2.119*** (0.634)	2.472*** (0.645)
Constant	57.25*** (3.058)	56.53*** (10.50)		9.927*** (2.406)	0.192 (3.567)
Observations	95	95		95	95
R^2	0.466	0.466		0.914	0.921
F statistic	17.74	15.43		167.920	269.229

Note: Standard-errors between brackets. Statistical significance: * $p < .10$; ** $p < .05$; *** $p < .01$ (two-tailed tests).

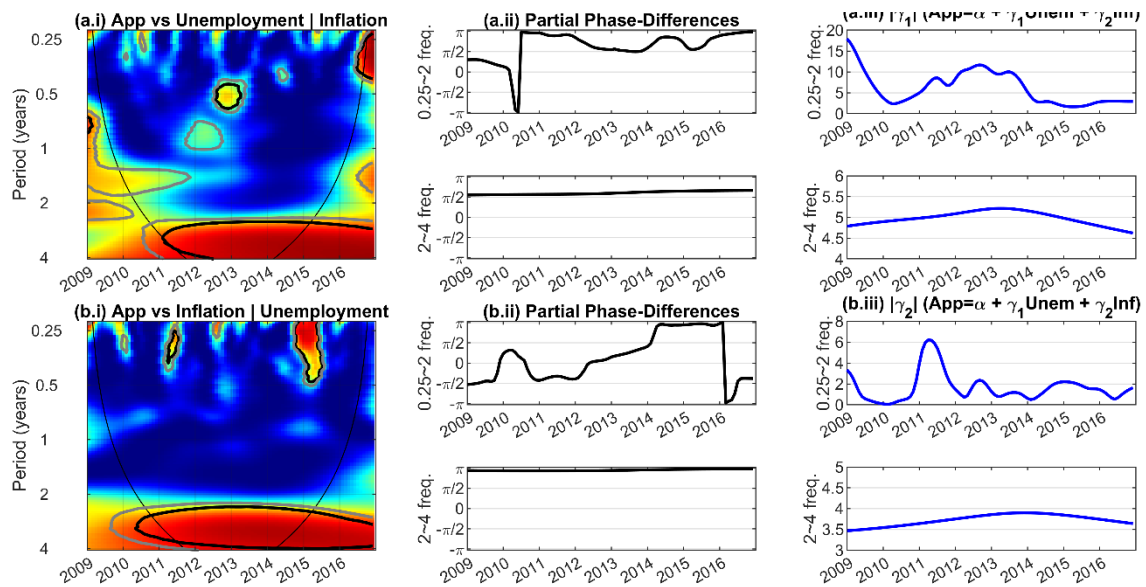
In short, Table 9 tells us that the economy exerted an impact on Obama's popularity. Clearly, the unemployment rate is relevant throughout the entire period under consideration. The inflation rate and the consumer sentiment are also relevant, but they are model dependent. It is also evident that the coefficients of our political variables are positive, as we expected. However, regarding statistical inference, the honeymoon effect is model dependent as well.

The econometric models employed in our analysis did not provide additional information regarding the specific time periods and frequencies at which the relationship between approval rating and economic variables attained statistical significance. Subsequently, we will examine how these variables interact over time and frequency using wavelet analysis.

4.5.2. Wavelet Analysis

We start with an examination of the Partial Wavelet Coherency, depicted in Figure 10. Clearly, unemployment (chart a.i) and inflation (chart b.i) rates exhibit a significant correlation with approval, particularly at low frequencies. During Obama's tenure, a co-movement between his approval rating and the state of the economy is observed for frequencies between 2 years to 4 years. This finding aligns with our previous discussion, emphasizing the substantial influence of economic factors on Obama's approval. The partial phase-differences in the middle of Figure 10 provide evidence for a negative correlation between Obama's approval rating and both the unemployment rate and the inflation rate.

Figure 10: Wavelet Analysis: Obama's Approval, Unemployment Rate, and Inflation Rate.



Note: Top: Relation between the Approval rate and the Unemployment rate after controlling for Inflation. Bottom: Relation between the Approval rate and the Inflation rate after controlling for Unemployment. Charts a.i and b.i: Partial Wavelet Coherency between the Approval rate and one economic variable after controlling for the other. Diagrams a.ii and b.ii: Partial Phase-Difference between the Approval rate and one economic variable after controlling for the other in two frequency bands. Diagrams a.iii and b.iii: Partial Wavelet Gain between the Approval rate and one economic variable after controlling for the other in two frequency bands.

Starting with the unemployment rate, we observe a substantial and statistically significant coherence during a large part of Obama's presidency, particularly within the frequency band of 2-4 years. At those frequencies, the phase-difference (diagram a.ii) consistently falls between $\pi/2$ and π , indicating

an inverse relationship between the two variables, with unemployment leading the way.²⁸ The phase-difference at higher frequencies conveys a similar message; however, given the low significance of the coherency, we refrain from attaching importance to this result. As we can see on the diagram a.iii, the estimated coefficient for the 2-4 years frequency band remains stable, hovering around 5.

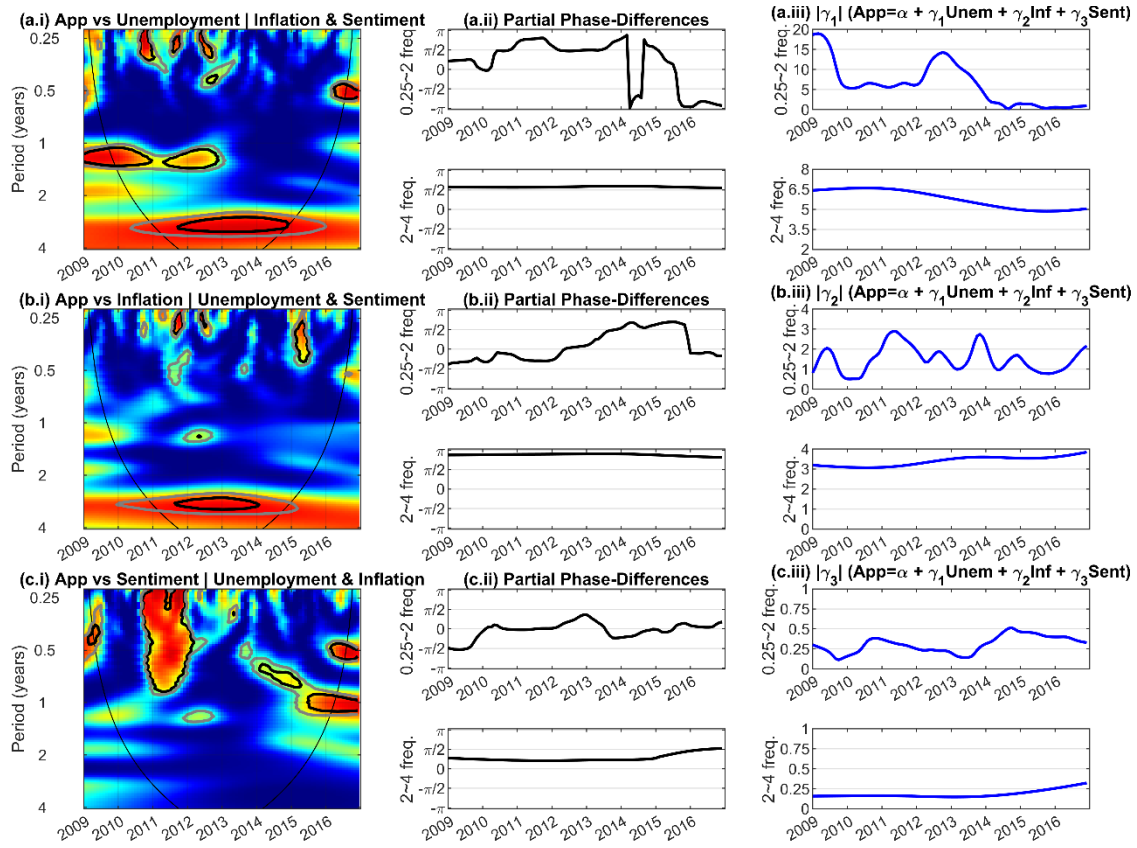
Regarding the inflation rate (depicted in chart b.i), we observe a similar frequency band of significant coherence (2-4 years), which persists throughout almost the entirety of Obama's presidency. Within this frequency band, the partial phase-difference closely approximates to π (or $-\pi$), indicating a negative correlation between the inflation rate and the approval rate. Like the relationship observed between the unemployment rate and the approval rate, the inflation rate leads the approval rate. Instead, simultaneous increases (decreases) in the inflation rate coincide with corresponding decreases (increases) in the approval rate. The estimated coefficient for this frequency band fluctuates between 3.5 and 4. It is noteworthy that at higher frequencies, there is a small island of high coherency between 2015 and 2016. For that period, the phase-difference indicates a negative relationship with inflation leading again.

In Figure 11, we add consumer sentiment to the analysis. Our results regarding inflation and unemployment do not change substantively when we use consumer sentiment as a control variable. The most important regions of high coherency occur at lower frequencies, and the phase-differences and estimated coefficients are similar. Visually, the most important change is about the area of the high coherency regions, which is now smaller. But that is to be expected, given the correlation between consumer sentiment and the economic variables.

A notable finding emerges when one looks at the partial coherency between the approval rate and the consumer sentiment in Chart C of Figure 11, which helps to make sense of the OLS results in the previous Subchapter. Consumer sentiment is significant at high coherencies for very specific periods. That is particularly obvious between 2011 and 2012. After 2014, and at high frequencies, although not as high, it becomes significant again. This suggests that the state of the economy is of greater importance in the medium to long term, while the consumer sentiment captures more immediate effects. In contrast to the relationship established with unemployment and inflation, the connection between consumer sentiment and approval rating appears to be less stable.

²⁸ See Figure 7.

Figure 11: Wavelet Analysis: Obama's Approval, Unemployment Rate, Inflation Rate, and Consumer Sentiment.



Note: Top: Relation between the Approval rate and the Unemployment rate after controlling for Inflation rate and Consumer Sentiment. Middle: Relation between the Approval rate and the Inflation rate after controlling for Unemployment rate and Consumer Sentiment. Bottom: Relation between the Approval rate and the Consumer Sentiment after controlling for Unemployment and Inflation rates. Charts a.i, b.i and c.i: Partial Wavelet Coherency between the Approval rate and one economic variable after controlling for the others. Diagrams a.ii, b.ii and c.ii: Partial Phase-Difference between the Approval rate and one economic variable after controlling for the others in two frequency bands. Diagrams a.iii, b.iii and c.iii: Partial Wavelet Gain between the Approval rate and one economic variable after controlling for the others in two frequency bands.

Analyzing the diagram c.ii (primarily for higher frequencies, which exhibit statistical significance), we find that between 2011 and 2012, the phase-difference is nearly zero, suggesting a co-movement between the approval rate and consumer sentiment. Subsequently, after 2014, the phase-difference falls between $-\pi/2$ and 0, implying that during this period, consumer sentiment leads changes in the approval rating. Furthermore, when examining the estimated coefficient, we observe the same pattern of instability. The estimated coefficient between 2011 and 2012 is lower than the coefficient observed between 2014 and 2016.

The wavelet approach sheds, therefore, light on the OLS results. The long-run relation found in the static equation (in which the consumer sentiment's coefficient was not statistically significant) corresponds to the results that we found for lower frequencies using wavelets. The short-run relation that we found for the consumer sentiment in the dynamical equation corresponds to the result we found at high frequencies.

Note, however, that the wavelet results also tell us that the relation between the consumer sentiment and the approval rate is not stable, suggesting that it was particularly strong between 2011 and 2012. In fact, if one reestimates Model 4 of Table 9 after removing the observations between the end of 2011 and 2012, the coefficient is no longer significant at 5%, and it is only marginally significant at 10% (p-value of 0.095). This is the type of information that is almost immediate to obtain with the continuous wavelet transform, which would be hard to obtain with the more traditional techniques.

4.6. Conclusion

One of the cornerstones of the literature on government approval is the idea that the state of the economy affects people's judgment of politicians (Lewis-Beck and Stegmaier, 2013). However, the estimation of the impact of the economy on political popularity has not yielded consistent statistical stability. As a result, several studies have presented divergent findings. This study seeks to contribute to the understanding of this issue by exploring a novel econometric tool. Wavelet analysis allows us to explore nuances that traditional econometric analysis does not. As a complement, wavelet tools can contribute to overcoming some estimation problems, circumventing stationarity and nonlinear issues, and adding new layers of information, allowing the study of the dynamics between two or more variables in the time-frequency domain. In particular, to the extent that the relationship between the economy and political popularity is dynamic and may evolve over time, wavelet analysis is appropriate to distinguish long-term and stable relationships from transient and unstable ones. Moreover, using the wavelet gain in the time-frequency domain (Aguiar-Conraria *et al.*, 2023), we can even estimate coefficients of multivariate wavelet analysis, an application that has so far remained unexplored in Political Science.

In this study, we illustrate this methodological approach to the complex relationship between the economy and the popularity of politicians by examining the approval function for President Barack Obama in a period spanning from January 2009 to December 2016, a period marked by considerable economic instability and uncertainty. Using a traditional econometric approach, we find a negative impact of unemployment and inflation rates in long-run models, while consumer sentiment is only statistically

significant when we run dynamic models that capture short-run behavior. Subsequently, we complement these results by running the wavelets tools described in Chapter 4.2. The partial wavelet analysis confirms these results and reinforces the idea that the relationship between economic variables and approval rating is negative and dynamic. The unemployment and inflation rates exhibit a long-term relation with Obama's approval rating, which is evident throughout his presidency and at lower frequencies. However, the wavelet analysis adds another layer of relevant information. We know that unemployment and inflation have a long-run impact on popularity, but with the phase-difference diagrams, we also know that the time of impact is different. Although both the unemployment and inflation rates lead the approval rate, the synchronization is different. The partial phase-difference diagrams show that the approval rate reacted more quickly to unemployment rate movements than it did to movements of the inflation rate.

Furthermore, our analysis also reveals a positive and synchronized co-movement between consumer sentiment and Obama's approval rating, particularly during the period spanning 2011 and 2012 and at higher frequencies. This transient and unstable relationship between consumer sentiment and Obama's approval is not delivered by the traditional econometric models. Moreover, the result for consumer sentiment coincides with significant events such as the United States debt-ceiling crisis and the subsequent Federal Government Shutdown, which are responsible for a significant increase in consumers' worriedness.

In conclusion, wavelet analysis is useful for complementing econometric analysis in social sciences, particularly in political science. While traditional econometric tools are important in analyzing and quantifying relationships within a set of variables, they do not allow a time-frequency analysis as the wavelet approach does.

5. Political Connections in Portugal

5.1. Introduction

Political connections represent an omnipresent aspect of governance and economic systems (Faccio, 2006). At their core, these connections highlight the complex network of relationships between individuals, businesses, and governmental entities, wielding significant influence over resource allocation, policy formulation, and the overall socio-economic landscape.²⁹ Within the domain of political economy, the study of political connections emerges as a crucial point for understanding the dynamics of power, wealth distribution, and institutional behavior.

Within the debate on political connections, there is evidence that this relationship between politics and business has a pervasive impact on economic outcomes (Schoenherr, 2019; Khwaja and Mian, 2005). Regardless of the political regime or the country's economic and social development, the ability to forge alliances with political elites can confer substantial advantages to firms, ranging from preferential access to public procurement or financial credit, regulatory exemptions to enhanced market influence, and protection from competition. It also confers substantial advantages to politicians, such as an increase in political influence and electoral success (Bertrand *et al.*, 2018). Such connections are often associated with rent-seeking behavior, whereby individuals or entities seek to extract economic rents through leveraging their political affiliations. Moreover, the opacity surrounding these relationships can undermine transparency, accountability, and the rule of law, fostering environments conducive to corruption and cronyism (Ramalho, 2007; Shleifer and Vishny, 1994).

Political connections are not exclusive to developing countries. Even in developed countries with low levels of perceived corruption, the linkage between firms and politicians is a reality (Amore and Bennedsen, 2013). Portugal is no exception, and it is easy to find former politicians as members of the board of directors. Moreover, in a set of surveys conducted by the European Union to businesspeople

²⁹ The literature has also found connections between politicians and other social groups, such as religious leaders (Troncone and Valli, 2024).

from all over Europe, most of the Portuguese businesspeople surveyed consistently confirmed that having political connections is the only way to succeed in business (European Commission, 2014, 2015, 2024a). As the literature highlights, this harmful impact on firms and, overall, the country's economy creates an incentive to study the Portuguese case. Therefore, this Chapter studies the existence and effects of political connections in Portugal. We aim to analyze the characteristics that distinguish connected firms from non-connected firms and whether political connections affect these firms financially. For that purpose, we construct a new database using a sample of publicly traded Portuguese companies. This new database encompasses three types of data: 1) data on the members of the board of directors of the Portuguese publicly traded firms between 2002 and 2022; 2) data on all Presidents of the Republic, members of the government, and members of the parliament since 1974; and, finally, 3) annually data with financial and corporate information between 2002 and 2022.

Our findings highlight that firm size, measured by total assets, emerges as a significant factor influencing the presence and the number of politicians on corporate boards. Furthermore, firms in regulated sectors and headquartered in the Lisbon Metropolitan Area show a higher probability of political linkages. We also take into consideration the political ideology, identifying whether the boards are right or left-wing. The results suggest that size explains the predominance of right-wing politically connected members, whereas left-wing connections are more likely in firms headquartered in the Lisbon region. Furthermore, our regression analysis examines the impact of political connections on various financial and market performance indicators. The results indicate that political connections do not significantly influence these financial and market performance measures. This conclusion is robust for different computations of our political connection variable.

The main contribution of this Chapter is to enhance a fair debate about the complex relationship between business and politics in Portugal. This relationship has endured since the XIX century and continues to influence society and firms today (Costa *et al.*, 2010). It is important to understand its existence and societal corporate impacts. Literature has identified potential problems originating from the existence of this kind of relationship, and surveys conducted by the European Union demonstrate it. Portuguese businesspeople have considered political connections as a vehicle that enhances corruption and can hamper business competition (European Commission, 2024a). Therefore, as the literature has highlighted the negative impact of corruption on economic growth (Gründler and Potrafke, 2019), it seems crucial to deepen the study of the existence of political connections in Portuguese firms and to analyze whether they are associated with rent activities and corruption.

The chapter is structured as follows. Chapter 5.2 presents a brief review of the literature on political connections, and Chapter 5.3 contextualizes the Portuguese political scenario since the XIX century together with its direct or indirect participation on business. Concerning the empirical part, Chapter 5.4 describes the data collected and how the dataset was constructed, Chapter 4.5 discusses the empirical strategy and the hypothesis formulated, and Chapter 4.6 presents the results. Finally, Chapter 4.7 concludes.

5.2. Literature Review

Connections between politicians and firms are a global phenomenon, not confined to poor or developing countries, nor limited to less transparent or autocratic regimes (Faccio, 2006; Faccio, 2010). This is evidenced by the presence of politicians in important positions within both national and multinational companies and shareholders or corporate board members with familial or social ties to politically motivated individuals. Moreover, directors of companies with no political background may run for political office or receive appointments to public offices.

When analyzing political connectedness, it is important to consider the institutional and business framework of each country. Certain nations are more susceptible to such connections, which vary in nature and intensity. Generally, countries with a higher incidence of political-business entanglement tend to exhibit greater corruption, impose restrictions on foreign investment abroad by their citizens, and have more transparent systems (Faccio, 2006).³⁰ Anecdotal evidence suggests a greater prevalence of politically connected firms in developing countries, where corruption levels are high and institutions are weak. Nevertheless, such connections are also found in developed countries with strong institutions and low levels of corruption (Amore and Bennedsen, 2013).

The relationship between business and politics is an old story. Firms try to influence political outcomes to gain, for instance, competitive advantages, while politicians support firms for private or electoral gains. Ferguson and Voth (2008) assessed the value of German companies associated with the National Socialist Party (Nazi Party) following Hitler's appointment as chancellor. They found that firms that supported the German dictator politically and financially enjoyed higher stock returns, regardless of their industry. Similarly, Fascist Italy also granted high rents to certain firms (Faccio and McConnell, 2023), with the fall of the regime causing these firms to underperformance compared to their peers,

³⁰ Transparent systems allow an easy identification of the existing political connections. Transparency can also promote some tolerance regarding connections because any misconduct "is more likely to be punished."

indicating a misallocation of economic resources to less efficient firms. In pre-World War II Japan, publicly traded companies that established political connections after the 1928 and 1930 general elections saw their market values increase (Okazaki and Sawada, 2017). In Indonesia, Fisman (2001) observed that companies linked to Suharto's regime suffered negative returns when faced with adverse news about his health.

These findings highlight the dependency of many firms on political regimes, suggesting that politically connected firms, whose boards are sometimes led by the head of state's relatives (e.g., Fisman, 2001), are often favored by the regimes. Politically connected firms and the political regimes themselves value political stability as it facilitates the exchange of rents and political support (Choi and Thum, 2009). Acemoglu *et al.* (2017) studied the impact of Egypt's Arab Spring on firms connected to the ruling political faction, finding that the surge in street protests negatively affected the stock market valuations of connected firms, whereas those linked to rival political groups were unaffected.

The literature identifies two main groups of political connections. The first group refers to the closeness between politicians and corporate directors, wherein companies set close relationships with political authorities through family ties (Fisman, 2001; Ramalho, 2007), personal friendship (Coulomb and Sangnier, 2014), engagements with key policymakers (Brown and Huang, 2020; Acemoglu *et al.*, 2016), or by participating in shared common social networks (Schoenherr, 2019; Child *et al.*, 2021). The second group of connections emerges through the appointment or election of politicians to corporate boards or, conversely, the appointment or election of corporate directors or shareholders to political or public offices (Agrawal and Knoeber, 2001; Lehrer, 2018; Faccio, 2006; Hao *et al.*, 2020). Additionally, there is also an amalgamation group combining the two previous groups. Some board members have previously served politicians as advisers or bureaucrats (Bertrand *et al.*, 2018).

The reasons for the existence of connections between politicians and firms are a subject that has long been scrutinized. Empirical studies have identified several reasons for these relationships, including corruption (Ramalho, 2007), rent-seeking (Shleifer and Vishny, 1994; Faccio and Zingales, 2022), lobbying (Blau *et al.*, 2013), and patronage (Moon and Schoenherr, 2022). However, empirical research has not yet consistently identified the causes of connectedness. Differences in countries' institutional and business frameworks, along with differing methods for identifying and classifying connections, have led to a diversity of findings. Nonetheless, it is clear that such relationships often entail a *quid pro quo* dynamic characterized by reciprocal exchanges and benefits (Claessens *et al.*, 2008; Faccio and Hsu, 2017; Sukhtankar, 2012; Hao *et al.*, 2020). In some cases, pinpointing the reciprocity in these relationships is challenging (Bertrand *et al.*, 2018).

Many of these connections are linked to corrupt practices, which occur mainly in developing countries (Harstad and Svensson, 2011). However, the institutional framework varies by country, and what is illegal in one country may be institutionalized in another (e.g., lobbying). Companies choose their boards of directors and managers strategically, and electing or appointing a politician is a calculated decision. Establishing friendships and holding regular meetings with politicians can also be crucial to circumvent bureaucratic hurdles. For instance, Agrawal and Knoeber (2001) found that outside directors, particularly those with political backgrounds, are common in companies with direct or indirect links to the public sector - firms that sell goods to the state, depend on external trade, and deal with regulation.³¹ Companies dependent on regulation appear to have more connections (Akcigit *et al.*, 2023; Boubakri *et al.*, 2008) and use regulations to block competitors or substitute industries (Stigler, 1971). Moreover, such connections facilitate procurement contracts (Schoenherr, 2019). In some developing countries with high levels of perceived corruption, firms may bribe public officials to secure permissions or services when a rent-maximizing public official is involved (Svensson, 2003). Harvesting some political influence can increase the firms' bargaining power and reduce the number of bribe payments (Desai and Olofsgard, 2011).

Why do politicians engage in connections with companies? There are personal and political motivations, some of which are related to the political business cycle (Nordhaus, 1975). Politicians can leverage their influence to enhance their electoral prospects. In France, Bertrand *et al.* (2018) found that mayors in more contested areas or possessing significant political influence are favored with job creation by connected firms as elections draw near. Sukhtankar (2012) analyzed the fluctuations in the price of sugar cane, an important crop in the Indian state of Maharashtra, and found that they are influenced by election cycles. Politically connected sugar mills decreased the prices paid to farmers around election years while maintaining productivity levels, channeling the funds not disbursed to farmers into campaign contributions. Should these chairpersons win the election, farmers later receive above-average prices for their sugar cane. In Portugal, Martins (2020) found that there is an increase in hiring by state-owned firms during election months, suggesting a pattern of cronyism, particularly after a change in the party in office.

The impact of political connections on corporate finance is well-documented, with the nature of these connections playing an important role. Most empirical studies suggest that politically connected firms underperform, are more leveraged, employ more workers, and are less innovative (Akcigit *et al.*,

³¹ Agrawal and Knoeber (2001) identify two types of outside directors: one is related to former politicians, and the other is related to people with a law background. Companies that are under environmental regulation appoint lawyer-directors more frequently.

2023; Bertrand *et al.*, 2018; Faccio, 2010). Using a panel of countries, Faccio (2010) found significant differences between connected and non-connected firms. The former typically exhibit poor performance, lower market-to-book ratios, and larger market shares. Moreover, politically connected firms are indebted and tend to pay lower taxes,³² with these differences becoming more pronounced in more corrupt countries. Desai and Olofsgard (2011) corroborated these findings by using data from the World Bank's Enterprise Surveys. Their results indicate that politically influential firms invest less, have shorter investment horizons, engage in fewer R&D activities, are less productive, and produce less.³³ Using a set of Italian firms, Akcigit *et al.* (2023) find that political connections have a negative effect on innovation and productivity. However, it is worth noting that in certain cases, politicians with relevant expertise can bring added value to firms, leading to better performance than their non-connected counterparts. For example, the appointment of former politicians to Spanish-listed companies has been associated with positive impacts on firm value, with the magnitude of the impact depending on the company's shareholder structure (Pérez *et al.*, 2015). Sometimes, there is contradictory empirical evidence regarding some financial outcomes. This is studied by Keefe (2019), who states that the institutional context is key to understanding why different mechanisms impact the relationship between political connections and financial variables differently.

Companies rely on access to the credit market to finance their corporate activities. However, the literature has identified situations where banking decisions are not solely based on rational criteria and rather assume political preferences, particularly when banks are state-owned (Dinç, 2005; Sapienza, 2004). Politically connected firms often benefit from easier access to credit, as they may be required to provide less collateral for loans than their non-connected peers, and they have a higher likelihood of being bailed out in cases of financial distress (Faccio *et al.*, 2006; Desai and Olofsgard, 2011). For instance, research in Pakistan by Khwaja and Mian (2005) indicates that public banks tend to lend more to politically connected firms, even though these firms exhibit higher default rates. This pattern of preferential treatment is more pronounced with an increase in the political strength of the firms, measured by the electoral outcomes, and it diminishes with higher electoral participation, which suggests greater political accountability.

Financial crises can place considerable pressure on politically connected firms. During the Asian financial crisis, Malaysian politically connected companies experienced more severe difficulties than those

³² Desai and Olofsgard (2011) found a different result for tax payments. Connected firms found themselves under closer scrutiny, so they must fulfill their tax obligations. However, they are compensated by explicit tax exemptions.

³³ For a set of Slovenian companies (private and public), Domadenik *et al.* (2016) found similar results on productivity.

without such connections. Jonhson and Mitton (2003) found similar results using stock returns as the dependent variable and controlling for corporate performance. One possible explanation for this difference might be the expectation that the government would reduce favorable treatment during crises. Nevertheless, publicly traded firms with political ties may still find themselves at an advantage during turbulent times if they anticipate benefiting from their political connections. This was evident during the 2007 Financial Crisis in the USA, where Acemoglu *et al.* (2016) found that financial firms with pre-existing ties to Timothy Geithner, the newly appointed US Treasury Secretary, experienced positive abnormal returns upon his announcement. In line with this, Faccio *et al.* (2006) concluded that politically connected firms are more likely to receive favorable treatment in corporate bailouts and that this tendency increases when the country is under financial assistance from the IMF or World Bank.

5.3. The Portuguese Case

The European Union has conducted surveys about business attitudes towards corruption since 2014, with seven surveys already completed. In these surveys, Portugal consistently ranks poorly regarding the impact of political connections on business success. Businesspeople are asked if, in the country, the only way to succeed in business is to have political connections. In 2013, 76% of Portuguese businesspeople interviewed agreed with this statement, marking Portugal with the highest percentage among surveyed countries (European Commission, 2014). Two years later, the percentage decreased to 66%, but Portugal still ranked among the worst countries on this issue (European Commission, 2015). By 2024, the percentage of those who “agree” had dropped to 65%, although Portugal continues to hold the top position in this regard (European Commission, 2024a).

In the context of Portugal, the interaction between politicians and businesspeople can be traced back to the 19th century and is well documented by Costa *et al.* (2010). Following the Portuguese Civil War (1828-1834) and the advent of the constitutional (liberal) monarchy, certain aristocratic families increased their wealth by investing in markets protected by the government. In some cases, the Portuguese government itself granted these families monopolies over specific industrial sectors, such as tobacco and soap. Therefore, the liberal monarchy regime played a pivotal role in the emergence of a new “bourgeoisie” class and a novel form of capital accumulation, which relied on a belated and modest industrialization in the second half of the 19th century.

During the “Estado Novo” regime (1933-1974),³⁴ certain families increased or consolidated their wealth and power, helped by government legislation (state corporatism) and investments in specific industries or infrastructure projects (Fernandes, 2018). The government also protected trade between mainland Portugal and its colonies by imposing tariffs on foreign products (Costa *et al.*, 2010). This policy of national protectionism sheltered some important national companies against international competition because they had lower levels of productivity and charged higher prices.

Following the coup d’état of April 1974 that reintroduced democracy in Portugal, an interim government undertook the nationalization of many financial institutions, as well as several companies in the oil transformation, industry, and transportation sectors. However, after Portugal’s accession to the European Economic Community in 1986, a wave of privatizations and re-privatizations started. This process intensified in the late 1990s and prolonged into the early 2000s. Interestingly, this phenomenon mirrored developments in other developed countries (Boubakri *et al.*, 2008).

Companies operating in regulated sectors, such as financial institutions, electricity production and distribution, oil refining, and telecommunications, underwent privatization or re-privatization. These highly regulated sectors were dominated by monopolist companies operating in a non-tradable environment (Domadenik *et al.*, 2016). Some of these companies listed on the Portuguese stock market were acquired by domestic and foreign companies and often merged with other private companies, especially in the financial sector. The interesting thing about this process is the resurgence of influential business families that had wielded significant power during the Estado Novo regime. Therefore, the persistence of a small elite of businesspeople, at times forming family dynasties and exerting control over the most prominent Portuguese companies, can be traced back to the 19th century (Costa *et al.*, 2010).

Portugal is a semi-presidential regime established since the promulgation of the current constitution in 1976. The head of state is the President of the Republic, elected by universal and direct suffrage and term limited by two consecutive five-year-terms. The president is responsible for nominating the prime minister, the head of the executive branch. The nomination for a four-year term is subjected to the results from the parliamentary election, in which political parties dispute the 230 parliamentary seats available. The Socialist Party (PS), a center-left party, and the Democratic Social Party (PSD), a center-right party, have been the only two winners of the parliamentary elections since 1976 (Table A.2,

³⁴ In 1926, a coup d’état overthrew the Portuguese government, ending the First Republic after sixteen years of political, economic, and social instability (1910-1926). The coup ended up in a military dictatorship. In 1932, António de Oliveira Salazar, the Minister of Finance at that time, with considerable prestige within the military coup, was nominated as Prime Minister, leading the formulation of a new constitution promulgated in 1933. The new constitution implemented a new regime, “Estado Novo,” which imposed a far-right wing, ultraconservative, authoritarian, and corporatist state.

appendix). Together with two right-wing parties, the People's Party (CDS-PP) and the Monarchic Popular Party (PPM), they have been responsible for all constitutional governments.³⁵

5.4. Data

The literature offers several indicators of political influence within firms. In this Chapter, we aim to assess such influence by identifying former politicians on the boards of directors of firms (Faccio, 2006; Agrawal and Knoeber, 2001). Given the scant availability of structured data on political connections in Portugal, we have assembled a new dataset by merging data from three distinct datasets that we constructed.

Firstly, we constructed one dataset by collecting the names of all board members from Portuguese publicly traded companies since 2002. We focused on the Euronext Lisbon stock exchange, overseen by the Portuguese Securities Market Commission ("*Comissão do Mercado de Valores Imobiliários*" - CMVM). Companies are required to submit all financial and governance reports and disclosures to the CMVM, which are publicly available on its website. We removed companies with fewer than two years of data from our dataset. Therefore, our unbalanced panel encompasses data on 59 publicly traded companies from 2002 to 2022.³⁶ Table A.3 in the appendix provides the list of these companies and their respective years of data coverage.³⁷

The second dataset was built up by collecting the names of all politicians since the 1974 coup d'état until March 2022. The list of politicians includes all Presidents of the Republic, all members of interim and constitutional governments (including Prime Ministers, Vice Prime Ministers, Ministers, and State Secretaries), as well as the Presidents and members of Parliament, including the members of the Constitutional Assembly from 1975 to 1976. In total, there are 3,413 politicians, of which approximately 65% are related to the two main Portuguese parties: the Socialist Party and the Social Democratic Party.³⁸ All information was collected from the National Electoral Commission ("*Comissão Nacional de Eleições*") and the official webpages of the Presidency and Assembly of the Republic. For certain specific cases, information was supplemented by national media outlets.

³⁵ These two right-wing parties have only appeared in governments supported by a center-right-wing coalition. The Social Democratic Party has always been the most voted party among the three.

³⁶ We also removed sports clubs from our dataset.

³⁷ All companies were headquartered in Portugal, except for EDP Renováveis, S.A.

³⁸ Some politicians are members of a specific party or are independent but appointed by that party to a public position. They can also be elected as an independent member of the parliament, though belonging to a party list.

By merging these two datasets, we identified 100 politicians, of which only four are women. To minimize the risk of mismatches, we used various merging strategies and confirmed potential connections using diverse sources, such as online newspapers or directors' CVs. Overall, we found 144 instances of politicians holding company directorships. Situations where a director assumed a position in a company before their political career are not considered connections.

Finally, we collected data on firms' financial situation. Following Faccio (2010), we collected data on Total Assets (thousands of euros) (*Assets*), Market Capitalization (thousands of euros) (*MCap*), Returns on Equity (%) (*ROE*), Total Debt over Market Capitalization (*Leverage*), Book-to-Market, Market Share, Productivity, and Annual Stock Returns (*Returns*).³⁹ Market Share is calculated as the proportion of each company's market capitalization relative to the total market capitalization of all companies in the same industry by year. Finally, Productivity is computed by applying a standard Cobb-Douglas production function, where we regressed the natural logarithm of revenues (output) against the natural logarithms of total assets (capital) and employees (labor), using OLS estimates. We then used the estimated residuals as a measure of multifactor productivity. Industry sectors were identified using the Industry Classification Benchmark (*ICB*). All data was obtained from the Thomson Reuters database.

Within the literature on political connections, the topic of privatization is particularly pertinent (Boubakri *et al.*, 2008). A significant number of post-privatized firms maintain their political connections, and there is a positive correlation with the level of residual state ownership. Therefore, we constructed two additional variables: a dummy variable coded as one for all publicly traded Portuguese companies that underwent privatization or re-privatization (*Privatized*),⁴⁰ and another dummy variable coded as one for year/company combinations in which the government held an ownership or shareholder position, including minority stakes (*State Ownership*). To account for political ideology, temporal changes in political connections, and their geographical distribution, we incorporated additional controls. Dummy variables were constructed for prime ministers (*Durao&Santana*, *Socrates*, and *PCoelho*), for right-wing governments (*Right*), and for the period during and following the financial intervention and bailout by the Troika group (*Troika*).⁴¹ The 2011 Portuguese Debt Crisis and subsequent intervention by the Troika had a positive impact on transparency, media scrutiny, and regulation of publicly traded companies.

³⁹ All monetized variables were deflated using the Consumer Price Index (CPI), with 2012 as the base year. The CPI data was sourced by INE.

⁴⁰ These firms were government-owned firms.

⁴¹ Following the Global Financial Crisis in 2007 and the beginning of the European Debt Crisis, Prime Minister José Sócrates called for financial support in April 2011. A few days later, a group of negotiators from the European Central Bank, the European Commission, and the International Monetary Fund, known as the *Troika*, went to Lisbon to negotiate a bailout package. In this package, Portugal committed to equilibrating the public finances, reducing the debt, and privatizing some public companies in exchange for financial aid.

Additionally, the Troika mandated the privatization of several companies, reducing the government's presence in various economic sectors. Therefore, the variable *Troika* is coded as one for the period after 2011 and zero otherwise. For geographic localization, we collected the headquarters address of each publicly traded company and created a dummy variable (*Lisbon*), which equals one if the headquarter is in a municipality of the Lisbon Metropolitan Area and zero otherwise. To control for sector fixed effects, we also created dummies for the following sectors: Consumer staples, energy, financial, health care, industrials, real estate, technology, telecommunications, and utilities. Finally, we created a dummy variable (*Regulated*) coded one for firms in sectors subject to regulatory oversight: energy, financials, telecommunications, and utilities.

Table 10 presents the descriptive statistics of the above-mentioned variables.⁴² To avoid outliers, we excluded the 0.5th and 99.5th percentiles from *Total Assets*, *ROE*, *Leverage*, *Book-to-Market*, and *Returns*. Regarding corporate finance, the average company has total assets valued at approximately 5,700 million euros despite a considerably high standard deviation. Furthermore, the average company exhibits a return on equity close to 5.6% and a market capitalization near 1,400 million euros. Additionally, Table 11 reports differences in the means of these corporate variables between politically connected firms and non-connected. Regarding firm size, measured by the total assets or the market capitalization, both in logarithms, connected firms are significantly larger. Moreover, connected firms are also more profitable, have relatively higher productivity levels, and are less leveraged. Table 11 also shows that market share is higher for connected firms, but there is no statistical difference in returns between these two groups. Finally, book-to-market is lower for the connected firms, suggesting that these firms are overvalued by investors.

⁴² Moreover, Table A.4 shows the correlations between all variables described and used in the empirical analysis.

Table 10: Descriptive statistics.

	Observations	Mean	Std-Dev	Min	Max
Board (N)	907	9.49	5.62	2.00	31.00
Connection	907	0.42	0.49	0.00	1.00
Connection Right	907	0.22	0.42	0.00	1.00
Connection Left	907	0.09	0.28	0.00	1.00
Connection (N)	907	0.85	1.40	0.00	9.00
Total Assets	899	6016451.56	15400121.37	2826.98	94466240.00
Market Cap	902	1469821.35	3041676.12	0.00	20006490.00
ROE	841	5.59	23.40	-171.50	86.54
Leverage	897	3.38	6.03	0.00	54.16
Book to Market	893	1.46	3.34	-18.46	36.50
Market Share	902	23.61	29.06	0.00	100.00
Productivity	762	-0.00	0.70	-2.82	1.97
Returns	886	4.12	44.84	-77.06	299.27
Privatized	907	0.21	0.41	0.00	1.00
State Ownership	907	0.09	0.29	0.00	1.00
Right	907	0.34	0.47	0.00	1.00
Lisbon	907	0.63	0.48	0.00	1.00
Troika	907	0.51	0.50	0.00	1.00
Regulated	907	0.28	0.45	0.00	1.00
Basic Materials	907	0.13	0.34	0.00	1.00
Consumer Discretionary	907	0.18	0.38	0.00	1.00
Consumer Staples	907	0.07	0.25	0.00	1.00
Energy	907	0.02	0.14	0.00	1.00
Financials	907	0.09	0.29	0.00	1.00
Health Care	907	0.02	0.14	0.00	1.00
Industrials	907	0.24	0.43	0.00	1.00
Real Estate	907	0.02	0.12	0.00	1.00
Technology	907	0.07	0.25	0.00	1.00
Telecommunications	907	0.11	0.31	0.00	1.00
Utilities	907	0.06	0.23	0.00	1.00

On average, boards of directors consist of 9.5 members, with a range from 2 to 31 members (Table 10). Moreover, the average number of connections per board is 0.85, with some boards having up to 9 politically connected members (*Connection (N)*). Figure 12 illustrates the evolution of the average number of connections from 2002 to 2022. There was an upward trend from 2002 to 2011, with the average number of politically connected members per board increasing from 0.69 in 2002 to 1.07 in 2011. Subsequently, after 2011, there was a significant decrease in the average number of politically connected members, plummeting to 0.31. This decline was spurred by a reduction in politically connected members

within boards despite no parallel reduction in board size. Figure 1313 highlights this declining trend, particularly evident from around 2006 onward and notably pronounced from 2016 onwards.

Table 11: T-test on the differences in the means of financial indicators between politically connected and non-connected firms.

	Connected	Non-Connected	Diff
Log TA	14.76	12.61	2.15***
Market Cap	13.48	11.06	2.42***
Roe	7.10	4.41	2.69*
Leverage	2.94	3.71	-0.78*
Market Share	33.13	16.59	16.54***
Returns	3.24	4.78	-1.54
Productivity	0.06	-0.06	0.12**
Book to Market	1.07	1.76	-0.69***

Note: Statistical significance: *** $p < .01$; ** $p < .05$; * $p < .1$.

Figure 12: Average number of board members politically connected by year (2002-2022).

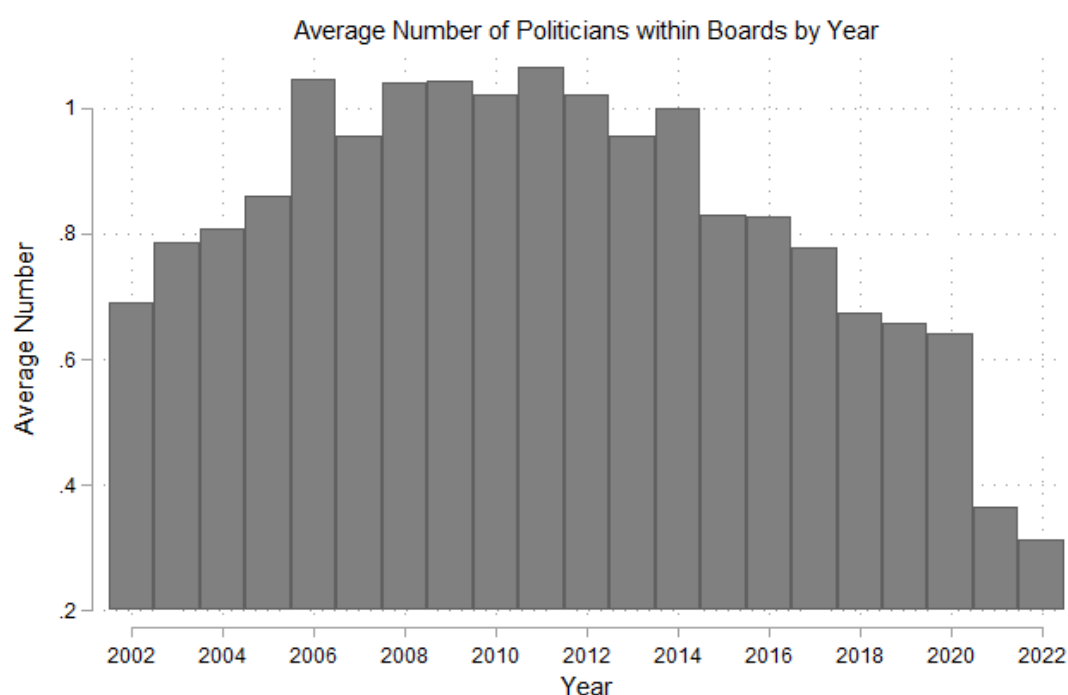
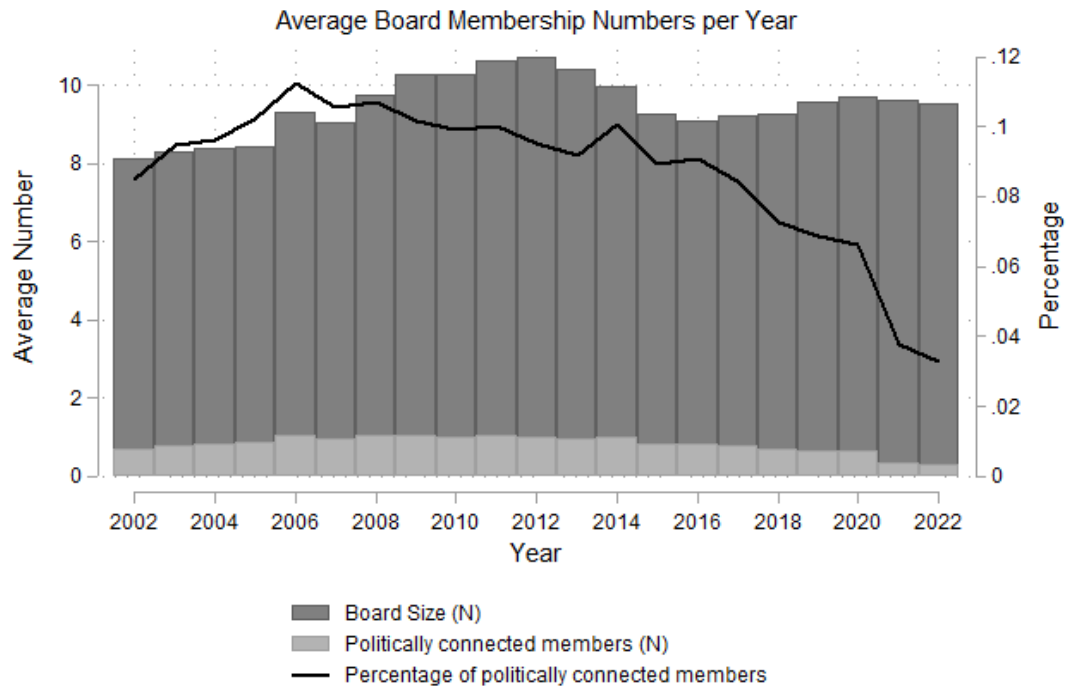


Figure 13: Average number of board members, average number of board members politically connected, and percentage of board members politically connected by year (2002-2022).

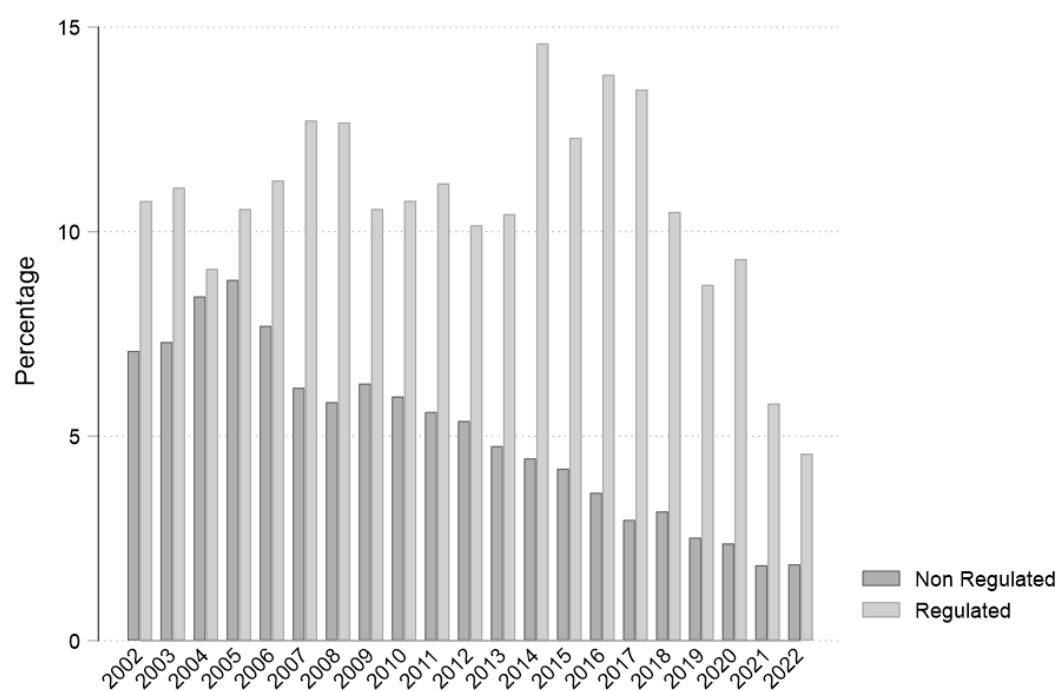


Certain industrial sectors, especially those involving non-tradable goods (Domadenik *et al.*, 2016) and regulated industries (Boubakri *et al.*, 2008), seem to be more prone to political connections. Table 1212 shows that companies within the Energy, Utilities, Financials, and Telecommunication sectors typically have boards of directors with more than ten members and a higher proportion of former politicians. Utilities have the highest average of politically connected members (3.14), and approximately 16.2% of Utility board members are former politicians, in contrast to 7% across all sectors. Doing an analysis between non-regulated and regulated sectors, Figure 14 shows that in all years, the regulated sector highlights higher percentages of politically connected members than the non-regulated sector. Moreover, the percentage of politically connected members from the non-regulated sector has exhibited a declining trend since 2005, overlapping the declining trend observed in Figure 13. However, the percentage from the regulated sector maintained above 10% until 2019, when it started to decrease. In 2022, the percentage of politically connected members from the regulated sector was less than 5%.

Table 12: Average number of board members and political connections by industry.

Industry	Average number of board members	Political Connections	
		Average number	(%)
Basic Materials	7.20	0.26	3.34
Consumer Discretionary	6.63	0.70	8.92
Consumer Staples	7.88	0.38	3.99
Energy	18.53	2.88	15.39
Financials	14.20	1.76	10.97
Health Care	7.37	0.07	0.44
Industrials	7.67	0.48	4.55
Real Estate	3.57	0.00	0.00
Technology	8.15	0.46	5.67
Telecommunications	10.73	0.83	7.46
Utilities	17.40	3.14	16.18
Overall	9.94	0.99	6.99

Figure 14: Percentage of politically connected members on boards in regulated and non-regulated firms by year.



5.5. Empirical Strategy

In this Subchapter, we describe the empirical methodology used to examine the relationship between political connections and Portuguese publicly traded firms, as discussed in the introduction. Our approach aims to analyze how a set of characteristics, such as firm size, localization, industry, and regulation, influence the likelihood of a firm having politically connected board members. Additionally, we assess the impact of political connections on key financial indicators.

5.5.1. Firm Characteristics and Political Connections

To study the characteristics that could distinguish firms with and without political connections, we employ probit regression models to estimate the likelihood of a firm being politically connected. The dependent variable is a dummy variable that equals one if a firm's board has at least one former minister, state secretary, or member of parliament as a director in a given year and zero otherwise (see variable *Connection* in Table 10). This variable identifies the presence of political links within the board of each company and year.

Probit models are particularly suited for this kind of analysis, as they allow us to model the probability of an event occurring while accounting for the fact that the dependent variable is binary. In this particular case, the probit model assumes that the relationship between the covariates (firm size, localization, industry, etc.) and the probability of being politically connected is nonlinear and follows a normal distribution. The general model to be estimated can be represented by the equation (1):

$$Y_{i,t} = \beta_0 + \gamma \cdot \mathbf{X}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}, \quad (1)$$

where $Y_{i,t}$ is the dependent variable, which is our dummy variable that captures the presence of political connections for each Portuguese publicly traded firm in year t . $\mathbf{X}_{i,t}$ is a vector of firm's characteristic, λ_t represents time-fixed effects and μ_i industry fixed-effects.⁴³ β_0 is a constant, γ a vector of parameters, and $\varepsilon_{i,t}$ the error term. As for the firm's characteristics, we included the logarithm of total assets to measure the firm's size, a dummy variable to control for the existence of a past privatization or re-

⁴³ Estimating nonlinear models like Probit with individual fixed effects can lead to a phenomenon known as the incidental parameters problem when T is not sufficiently large. To avoid this issue, we used industry-fixed effects instead. For robustness, we also estimated logit models with industry-fixed effects, and the results were similar.

privatization process or if the firm has a public stake, and a dummy variable that identifies those firms that have headquarters in the Lisbon region. Furthermore, we also included dummy variables for each Portuguese government and a dummy for firms operating in regulated industries.

The literature has identified the characteristics that allow the identification of politically connected firms. As explained in Chapter 5.2, size, privatization or state presence, localization, or regulation are important variables to study political connectedness. Therefore, we anticipate that larger firms or firms that are privatized or have a public stake have a higher probability of being politically connected. Moreover, firms whose headquarters are in the Lisbon region, close to the political decision-making center, are expected to have more former politicians on their boards. Finally, firms from regulated sectors (energy, financials, telecommunications, and utilities) may exhibit more politically connected boards because of the possibility of influencing the decisions regarding industry regulation.

5.5.2. Impact on Corporate Variables

The next step is to determine whether the presence of politically connected board members influences key financial outcomes such as profitability, leverage, and market share. Here, we explore the methodology used to examine the effect of political connections on the financial performance of Portuguese publicly traded firms. We run ordinary least squares (OLS) models to assess the relationship between political connections and financial variables while controlling for the firm's characteristics. Therefore, our main independent variable of interest is the dummy variable *Connection*. Thus, the estimated equation is the following:

$$Y_{i,t} = \beta_0 + \beta_1 \cdot Connection + \gamma \cdot X_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}, \quad (2)$$

where $Y_{i,t}$ is a vector of dependent variables, and $X_{i,t}$ a vector of firm's characteristics. The variable *Connection* is the most important independent variable and, therefore, if statistically significant, the estimate β_1 for each model captures differences in firms' financial performance depending on the existence of political connections. To control for firm's characteristics, we included its size and localization. β_0 is a constant, γ a vector of parameters, and $\varepsilon_{i,t}$ the error term. Finally, λ_t represents time-fixed effects and μ_i industry fixed-effects.

As dependent variables, we chose a set of financial variables commonly used in the literature: returns on equity (ROE), leverage, book-to-market, market share, productivity, and stock returns. Based

on the literature, we expect that political connections may have a mixed impact on these financial outcomes. Previous studies (Faccio, 2010; Desai and Olofsgard, 2011) suggest that politically connected firms often underperform in terms of profitability (ROE) and productivity due to inefficiencies arising from rent-seeking behavior and resource misallocation. Moreover, these firms may be more leveraged, relying on easier access to credit (Bussolo *et al.*, 2022). On the other hand, political connections could lead to higher market shares or higher book-to-market (Faccio, 2010). Finally, these firms are also expected to enjoy higher stock returns. However, the literature also highlights that these firms suffer more from political cycles and economic decline, and the results can be mixed.

5.6. Results

Table 13 presents the marginal effects of the models estimated by Probit regression models. These models aim to estimate the probability of a firm being politically connected while controlling for various firm's characteristics. In Model 1, the probability of a firm having political connections increases with its size, measured by the natural logarithm of total assets. Specifically, the marginal effect of a one percent increase in total assets on the conditional probability of having at least one politician is 0.14 percentage points. The presence of the state on the shareholder structure of the firm also has a positive marginal effect on the probability of being connected, with a coefficient of 0.196.

In Model 2, we replaced the variable *State Ownership* with the variable *Privatized*. It is noteworthy that almost all firms that were privatized or reprivatized went through several privatization phases, which means that privatized firms had the state as shareholders during these periods. Additionally, some firms continue to have the state as a shareholder. Thus, the variable *Privatized* serves as an alternative proxy to control for the state's presence and the potential influence on the firm boards. The coefficient is almost the same in magnitude and statistically significant, slightly stronger than the *State Ownership*'s.

Geographic proximity to the political decision center was also considered. Portugal is considerably centralized around its capital, Lisbon, where all political institutions and regulators' headquarters are located.⁴⁴ Model 3 introduces a variable to control for the localization of the firm's headquarters (*Lisbon*). The coefficient is positively signed and statistically significant, as we expected. Therefore, firms headquartered near the political decision-making center have a higher likelihood of political connections, with a marginal effect of 0.193. Firms' size continues to be an important characteristic, whereas the *State*

⁴⁴ The exception is the Portuguese Health Regulatory Authority (*ERS*), located in Oporto. There were some attempts to move the National Authority of Medicines and Health Products (*Infarmed*) to Oporto and the Portuguese Constitutional Court to Coimbra, but unsuccessfully.

Ownership coefficient turns out to be statistically not significant. As a robustness check, we also regressed Model 3 with the variable *Privatized* instead of *State Ownership* (not shown in the Table), and the results were similar. Thus, the Lisbon localization seems to be a better predictor of the probability of a firm having members of the board politically connected. This result is corroborated by the fact that only one privatized firm was headquartered outside of the Lisbon Metropolitan Region. Therefore, the variable *Lisbon* is also likely to capture the effect of the presence of the state as a shareholder. Consequently, the variables controlling for the presence of the State on firms' ownership were dropped in the following models of Table 13.

To avoid losing a considerable number of degrees of freedom, year-fixed effects were replaced with three dummy variables (column 4), each signaling the tenure of a prime minister, ranging from Durão Barroso/Santana Lopes to Passos Coelho (see Table A.2 in appendix).⁴⁵ This adjustment yielded consistent findings for firm size and localization. The prime ministers' coefficients are all positive and statistically significant, exhibiting a decreasing trend over time. This suggests that the probability of a firm having politically connected directors decreased over time, confirming the trend observed in Figure 13. Additionally, in Model 5, we replaced the variables for prime ministers with a dummy variable that captures the troika period. As expected, the coefficient is negative and statistically significant.⁴⁶

Regarding the industry, columns 1 to 6 present the estimated coefficients for each sector.⁴⁷ Results indicate that companies from the sectors of Consumer Discretionary, Technology, Telecommunications, and Utilities are more likely to have boards with political connections. As some industries are subjected to market regulation, in Model 6, instead of using industry-fixed effects, we used a variable that captures the dependency of a specific industry on regulatory procedures (*Regulated*). There is evidence that being a firm in a regulated sector increases the probability of having a political connection, as indicated by a marginal effect of 0.199, which is statistically significant.

Overall, size, headquarters' localization, and being in a regulated sector are characteristics that augment the probability of political linkages. These results are consistent with the existing literature, as evidenced by Faccio (2010) and Boubakri *et al.* (2008). We also tried the logarithmic transformation of

⁴⁵ The base scenario is the governments of PS from 2016 to 2022. We did not create two separate dummy variables for Durão Barroso and Santana Lopes since Santana's government had a short duration, lasting less than a year, and was from the same party as its predecessor.

⁴⁶ We also run a model substituting the dummy variable *Troika* with a categorical variable, where the period before 2011 is coded as 1, the period between 2011 and 2014 is coded as 2, and the period after 2014 is coded as 3. Considering the period pre-troika as the base category, the result shows that the probability of having political connections is only statistically lower after 2014. Results are available upon request.

⁴⁷ The Energy and the Real Estate sectors have only one company. Therefore, their coefficients do not appear in Table 13.

market capitalization as an alternative to the size of the firm. The results didn't change, but the *Troika* variable is no longer statistically significant.⁴⁸

Table 13: Probit estimations results for the existence of political connections in Portuguese publicly traded companies.

	(1)	(2)	(3)	(4)	(5)	(6)
	Connection					
Log(Total Assets)	0.144 ^{***} (0.024)	0.127 ^{***} (0.025)	0.138 ^{***} (0.021)	0.137 ^{***} (0.020)	0.137 ^{***} (0.020)	0.104 ^{***} (0.017)
State Ownership	0.196 ^{***} (0.098)		0.143 (0.117)			
Privatized		0.218 ^{**} (0.088)				
Lisbon			0.193 ^{**} (0.079)	0.204 ^{***} (0.078)	0.209 ^{***} (0.077)	0.233 ^{***} (0.079)
Durao&Santana				0.164 ^{**} (0.066)		
Socrates				0.117 ^{**} (0.055)		
PCoelho				0.087 [*] (0.048)		
Troika					-0.096 ^{**} (0.045)	
Regulated						0.199 ^{**} (0.083)
Consumer Discretionary	0.330 ^{**} (0.134)	0.347 ^{***} (0.130)	0.334 ^{**} (0.132)	0.305 ^{**} (0.124)	0.305 ^{**} (0.124)	
Consumer Staples	-0.042 (0.165)	0.008 (0.168)	-0.029 (0.149)	-0.061 (0.141)	-0.060 (0.141)	
Financials	0.174 (0.124)	0.215 [*] (0.125)	0.164 (0.120)	0.140 (0.117)	0.145 (0.118)	
Health Care	0.025 (0.108)	0.061 (0.103)	-0.021 (0.117)	-0.050 (0.109)	-0.055 (0.112)	
Industrials	-0.002 (0.101)	-0.001 (0.097)	0.042 (0.123)	0.018 (0.117)	0.021 (0.117)	
Technology	0.414 ^{***} (0.125)	0.424 ^{***} (0.121)	0.340 ^{**} (0.135)	0.306 ^{**} (0.130)	0.305 ^{**} (0.130)	
Telecommunications	0.362 ^{***} (0.111)	0.334 ^{***} (0.096)	0.340 ^{***} (0.118)	0.321 ^{***} (0.117)	0.318 ^{***} (0.116)	
Utilities	0.280 [*] (0.157)	0.262 [*] (0.136)	0.304 ^{**} (0.124)	0.286 ^{**} (0.133)	0.280 ^{**} (0.131)	
Observations	868	868	868	868	868	899
Log-Likelihood	-367.107	-356.273	-342.951	-350.258	-353.869	-400.512
Pseudo-R2	0.378	0.396	0.419	0.407	0.401	0.346
Year FEs	Yes	Yes	Yes	No	No	Yes

Note: All coefficients are average marginal values. Standard-deviations clustered by firms are between brackets. Statistical significance: ***p<.01; **p<.05; *p<.1.

⁴⁸ The results are available upon request.

The previous analysis aimed to identify the variables that influence the likelihood of a firm having political connections. As an extension, we also studied the factors that account for the number of former politicians on the boards of Portuguese publicly traded companies. To do so, we used Poisson regression models, the results of which are presented in Table 14. These models followed the structure of models from Equation 1. However, the dependent variable is now a count variable, identifying the number of politically connected board members per company and year. To control for the size of the board, we added a variable that denotes the total number of directors for each board (*N Board*), also by company and year.

In all models of Table 14, the size of the company, measured by the natural logarithm of total assets, is a statistically significant factor explaining the number of politicians on boards. However, the variables for state ownership in the shareholder structure (*State Ownership*), past privatization or re-privatization (*Privatized*), and the localization of the company's headquarters in a municipality of the Lisbon Metropolitan Area (*Lisbon*) are not statistically significant (except for the model of column 6 where *Lisbon* is marginally statistically significant). Moreover, the results also indicate that the number of politically connected directors in a board tends to decrease over time. Finally, when controlling for board size, the state regulation in certain sectors does not explain differences in the number of politicians on the boards. Nonetheless, firms in sectors like Energy, Telecommunications, and Utilities have relatively more politicians on board. Furthermore, the Consumer Discretionary and Technology sectors also have positive coefficients, whereas the Real Estate sector is the only sector with negative ones.

From the analysis of the data in Chapter 5.4 and the results of Table 13, we conclude that political connections in publicly traded firms, measured by the presence of politically connected people on the board, have been decreasing. We further investigated this conclusion by considering the ideology of the Portuguese government. Therefore, we created a dummy variable (*Right*), which is coded one if the national government is led by a right-wing party or coalition (see Table A.2 in the appendix) and zero otherwise. We reran Model 4 from Table 13, substituting the dummies for the governments with the variable *Right*. Model 1 from Table 15 suggests that the probability of a firm having at least one politically connected member is higher when the national government is ideologically right-wing. Therefore, the probability of a firm being politically connected is, on average, 0.056 percentage points higher when the Portuguese government is right-wing. Once again, the size and localization are also important in explaining the existence of political connections.

Table 14: Poisson estimations results for the number of politicians on boards of Portuguese publicly traded companies.

	(1)	(2)	(3)	(4)	(5)	(6)
	Connection (N)					
Log(Total Assets)	0.426*** (0.121)	0.439*** (0.121)	0.454*** (0.116)	0.437*** (0.110)	0.432*** (0.108)	0.271*** (0.074)
State Ownership	0.251* (0.152)		0.148 (0.197)			
Privatized		-0.040 (0.316)				
Lisbon			0.426 (0.356)	0.439 (0.349)	0.445 (0.348)	0.530 (0.322)
Durao&Santana				0.314* (0.171)		
Socrates				0.347*** (0.134)		
PCoelho				0.299** (0.118)		
Troika					-0.198 (0.123)	
Regulated						0.123 (0.333)
Board (N)	0.050*** (0.018)	0.050** (0.024)	0.034 (0.027)	0.037 (0.027)	0.040 (0.026)	0.051* (0.028)
Consumer Discretionary	1.758*** (0.635)	1.698*** (0.639)	1.814*** (0.609)	1.768*** (0.606)	1.774*** (0.605)	
Consumer Staples	0.339 (0.839)	0.251 (0.851)	0.391 (0.735)	0.369 (0.731)	0.375 (0.728)	
Energy	0.852** (0.384)	1.055*** (0.378)	0.942** (0.413)	1.054*** (0.379)	1.042*** (0.377)	
Financials	-0.030 (0.543)	-0.151 (0.607)	0.212 (0.580)	0.206 (0.602)	0.216 (0.598)	
Health Care	-0.636 (0.706)	-0.655 (0.715)	-0.716 (0.709)	-0.698 (0.765)	-0.729 (0.780)	
Industrials	0.687 (0.484)	0.622 (0.473)	0.807* (0.489)	0.783 (0.481)	0.799* (0.479)	
Real Estate	-13.141*** (1.124)	-12.420*** (1.125)	-13.269*** (1.120)	-13.214*** (1.117)	-13.170*** (1.118)	
Technology	1.501** (0.603)	1.455** (0.613)	1.459** (0.591)	1.389** (0.593)	1.389** (0.594)	
Telecommunications	0.717* (0.386)	0.769* (0.396)	0.830** (0.419)	0.850** (0.420)	0.853** (0.415)	
Utilities	0.832* (0.430)	0.861* (0.441)	0.966** (0.457)	1.002** (0.448)	0.986** (0.444)	
Constant	-7.796*** (1.789)	-7.864*** (1.799)	-8.422*** (1.777)	-8.400*** (1.661)	-8.034*** (1.655)	-5.205*** (1.067)
Observations	899	899	899	899	899	899
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard-deviations between brackets and clustered by firm. Statistical significance: ***p<.01; **p<.05; *p<.1.

In addition, we also analyzed the political background of each politically connected member. Those who were nominated for a right-wing government (see Table A.2 in the Appendix), as a minister or state secretary, or were elected as a member of the parliament in a right-wing party list are considered as right-wing leaned or are connected to right-wing people. Therefore, we constructed a dummy variable (*Connection Right*), which is coded one if a firm has right-wing politically connected members that outnumber the left-wing counterparts, with zero otherwise. Model 2 uses this new dummy variable as the dependent variable, and the results show that size explains the existence of boards where right-wing politically connected members outweigh. The variables *Lisbon* and *Right* turn out to be statistically not significant. In Model 3, we did the same exercise for the case where a firm has a relatively higher number of left-wing politically connected members (*Connection Left*). Now, the size of the firm turns out to be statistically not significant, whereas the probability of left-wing politically connected members outweigh is higher if the firm's headquarter is in the Lisbon Metropolitan Area. Moreover, the government ideology seems to be less important than size or localization in explaining why boards choose more right-wing or left-wing politically connected members. Lastly, we took the sample of firms ideologically leaned and constructed a dependent variable that is equal to one if the firm is right-wing leaned and zero if it is left-wing leaned. The results of Model 4 indicate that the size of the firm is important to distinguish between these two groups of firms. The probability of being right-wing increases with the increase in total assets.

Table 15 also shows different patterns of political connections between industrial sectors.⁴⁹ Results from Model 1 convey that the Consumer Discretionary, Technology, Telecommunications, and Utilities sectors are prone to have political connections. However, firms in the Technological and Telecommunication sectors tend to have more right-wing leaning boards (Models 2 and 4), whereas firms in the Energy sector prefer left-wing boards (Model 3). In addition, Model 4 reinforces that boards in the Telecommunication sector are more likely to have right-wing politically connected members, while boards in the Energy sector have more left-wing politically connected members.⁵⁰

⁴⁹ The real estate sector has only one company and no political connections. Therefore, to avoid perfect collinearity, it was removed from the estimations in Table 15.

⁵⁰ For curiosity, the process of privatization of the Portuguese energy sector was initiated by a left-wing government in the 90's.

Table 15: Probit estimations results for political connections in Portuguese publicly traded companies.

	(1) Connection	(2) Connection Right	(3) Connection Left	(4) Right vs Left
Log(Total Assets)	0.138*** (0.021)	0.093*** (0.033)	0.012 (0.009)	0.126** (0.050)
Lisbon	0.210*** (0.077)	0.089 (0.067)	0.104** (0.047)	-0.156 (0.148)
Right	0.056** (0.025)	0.005 (0.030)	0.006 (0.020)	-0.019 (0.057)
Consumer Discretionary	0.303** (0.127)	0.165 (0.156)	-0.038 (0.057)	0.146 (0.265)
Consumer Staples	-0.061 (0.145)	-0.009 (0.093)	0.070 (0.101)	-0.128 (0.187)
Energy		-0.068 (0.062)	0.278*** (0.090)	-0.362** (0.183)
Financials	0.151 (0.123)	0.043 (0.122)	0.061 (0.114)	-0.277 (0.233)
Health Care	-0.091 (0.115)	0.029 (0.091)		
Industrials	0.022 (0.121)	0.029 (0.074)	-0.008 (0.059)	-0.004 (0.204)
Technology	0.303** (0.133)	0.251* (0.129)	0.144 (0.180)	0.211 (0.233)
Observations	868	885	867	290
Log-Likelihood	-358.785	-357.336	-216.221	-155.086
Pseudo-R2	0.392	0.246	0.190	0.183
Year FEs	No	No	No	No

Note: All coefficients are average marginal values. Standard-deviations clustered by firms are between brackets. Statistical significance: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

5.6.1. The Effect of Political Connections on Firms' Financial Variables

The impact of political connections on companies' financial situation is supported by the empirical literature (Faccio, 2010; Desai and Olofsgard, 2011). Companies employ political connections as a strategy to obtain advantages over competitors. However, this strategy turns out to be consequential to these firms in terms of financial indicators. Thus, in this Subchapter, we aim to assess the impact of political connectedness on some financial, economic, and market variables.

Table 16 presents the results of our regressions. As dependent variables, we used the Returns on Equity (ROE), Leverage, Book-to-Market, Market Share, Productivity, and Stock Returns. To infer the impact of political connections, we used the dummy variable that is coded as one if the firm has at least one member who held a political position, zero otherwise. As variables of control, we used the firms' size (log of total assets) and the headquarters' localization (*Lisbon*). We also used dummies for years and

industrial sector. The results indicate that none of these financial or market variables can be explained by the existence of political connections. As an alternative, we also tried to use the percentage of members politically connected, but the results rendered the same.

The models estimated also show that larger firms have higher market share, as expected, and lower productivity. Moreover, firms located in the Lisbon region tend to be more leveraged, to have higher market share, and lower stock returns.

Table 16: OLS estimations results for the impact of political connections on corporate variables of Portuguese publicly traded companies.

	(1) ROE	(2) Leverage	(3) Book to Market	(4) Market Share	(5) Productivity	(6) Returns
Connection	2.154 (2.692)	-1.244 (0.838)	-0.541 (0.589)	0.595 (4.079)	0.218 (0.134)	0.887 (2.921)
Log(Total Assets)	1.511 (0.911)	0.233 (0.255)	0.074 (0.227)	8.102*** (1.289)	-0.067* (0.036)	0.031 (0.928)
Lisbon	-4.412 (2.942)	1.926* (1.027)	0.138 (0.615)	7.253* (3.735)	-0.022 (0.132)	-10.993*** (2.507)
Consumer Discretionary	-5.496 (6.033)	1.160 (1.997)	0.767 (1.243)	4.755 (5.781)	-0.966*** (0.303)	-7.965* (4.685)
Consumer Staples	2.796 (5.406)	-2.187 (1.496)	-0.826 (0.678)	7.917 (12.548)	-0.337* (0.138)	0.055 (6.132)
Energy	-0.592 (5.201)	-3.592** (1.749)	-1.105 (0.832)	57.642*** (7.526)	1.183*** (0.177)	9.253* (4.492)
Financials	-6.006 (6.288)	3.749 (2.450)	-0.297 (0.848)	-8.887 (8.710)	-1.318*** (0.264)	-7.755 (5.561)
Health Care	-0.355 (6.015)	-1.265 (1.801)	-0.040 (1.075)	77.535*** (6.281)	-0.869*** (0.146)	-9.666 (14.481)
Industrials	-4.973 (5.685)	1.902 (1.576)	-0.429 (0.905)	-5.071 (5.958)	-0.819*** (0.144)	-5.074 (4.581)
Real Estate	8.743 (5.392)	-2.524* (1.494)	2.378*** (0.841)	98.171*** (6.093)	-1.735*** (0.166)	6.000 (4.286)
Technology	-1.435 (6.064)	-0.093 (2.582)	2.236 (1.694)	26.585* (15.375)	-0.952*** (0.247)	-8.863* (4.822)
Telecommunications	-2.542 (5.350)	-1.914 (1.490)	-0.843 (0.784)	3.304 (7.226)	-0.642*** (0.199)	-10.810** (5.019)
Utilities	-5.009 (5.927)	-2.216 (1.716)	-0.696 (0.900)	-2.915 (13.932)	-0.201 (0.232)	-2.032 (4.649)
Constant	-15.259 (14.434)	-2.213 (3.346)	0.505 (2.726)	-95.760*** (15.599)	1.548*** (0.504)	5.310 (17.000)
Observations	833	890	886	894	762	881
R ²	0.093	0.146	0.105	0.644	0.481	0.267
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard-deviations clustered by firms are between brackets. Statistical significance: ***p<.01; **p<.05; *p<.1.

5.7. Conclusion

In conclusion, this study delved into the existence and impact of political connections in Portuguese publicly traded companies. By analyzing the composition of boards of directors and their former political positions, we aimed to uncover the characteristics that distinguish connected and non-connected firms and how political connections might influence a firm's financial outcomes. Our analysis spanned two decades, focusing on firms listed on the Euronext Lisbon stock exchange. This research contributes to the broader understanding of the interaction between politics and business, shedding light on the prevalence and implications of political ties within corporate governance in Portugal.

To conduct this analysis, we constructed three new primary datasets. The first dataset comprised the names of all board members from Portuguese publicly traded companies since 2002. The second dataset included the names of all politicians who held office since the 1974 coup d'état until March 2022. This list encompassed presidents of the republic, members of interim and constitutional governments, and members of Parliament. Additionally, we gathered extensive data on firms' financial conditions, including variables such as Total Assets, Market Capitalization, Returns on Equity, Leverage, Book-to-Market, Market Share, and Productivity. These datasets enabled a thorough examination of the potential influence of political connections on firm performance.

Our findings reveal several key insights. First, larger firms, firms in regulated sectors, and firms headquartered in the Lisbon Metropolitan Area show a higher probability of political linkages. However, the number of politically connected directors tends to decrease over time, and differences in that number are not significantly influenced by state regulation in the sector. Interestingly, while government ideology plays a role, firm size, and headquarters' location are more critical determinants of political connections. Boards with a predominance of right-wing politically connected members are typically larger, whereas left-wing politically connected members are more prevalent in firms headquartered in the Lisbon Metropolitan Area. Notably, our regression analysis indicates that political connections do not significantly impact key financial and market performance indicators. Thus, while political connections exist in Portuguese publicly traded firms, although they have lost strength over time, they do not appear to confer a significant financial advantage or disadvantage. This last result aligns with Keefe (2019), highlighting that heterogeneous institutional contexts and specific mechanisms may explain the inconsistent results found in the literature. Moreover, this Chapter looks at political connections between publicly traded firms, overseen by the stock market regulator and under scrutiny by the media, with "high-profile political connections." For Akcigit *et*

al. (2023), the links with local politicians “[...] are much more pervasive and can have broader consequences for the overall economy.”

This Chapter provides valuable insights into the relationship between politics and firms, particularly in the context of a developed country like Portugal. However, several limitations should be acknowledged. First, our dataset is restricted to publicly traded companies, which may not fully capture the dynamics of political connections in privately held firms. Moreover, the Portuguese stock market consists of a relatively small number of companies when compared to other European stock markets. Second, our measure of political connections is based on the explicit presence of former politicians on boards, potentially ignoring other forms of political influence that may also play a significant role and that have been discussed in the literature. For future research, expanding the dataset to include a broader range of firms and additional years could provide a more comprehensive picture of political connections in Portugal. Furthermore, exploring other channels through which political influence operates could deepen our understanding of how these ties impact firms’ performance.

6. Conclusion

This dissertation delves into some topics studied in the field of Political Economy. The first three essays discuss and present potential solutions for the unstable and sometimes contradictory impact of the economy on political popularity. The last essay analyzes political connections, a topic studied by different economic branches, including the political economy.

Chapter 2 presents a methodological alternative that uses different economic measures. The studies of popularity functions use accurate economic data to measure the impact of the economy on popularity. This essay distinguishes between the “objective” and “mediate” economies. The “objective” economy is the data that reflects the true developments of economic growth, whereas the “mediate” economy reflects the economic information available to the public by the media. We expect voters to use the economic information portrayed by the media rather than the most accurate economic information. The essay also introduces projected economic growth for the current and the following year, which is information made public by the media.

The essay reveals that projections for GDP growth, rather than actual or retrospective economic performance, are the strongest predictor of prime ministerial approval in Portugal, using quarterly data from 2001 to 2018. This finding emphasizes that voters rely on mediated economic information, particularly regarding future expectations when assessing government performance. The limitations of this study include its focus on Portugal, suggesting a need for cross-national research to confirm the applicability of these findings. Additionally, future research should examine individual-level data to understand better how economic forecasts and media framing shape public perceptions and political judgments. This could enhance forecasting models in the political economy by incorporating real-time projections, potentially improving the accuracy of election forecasts.

Chapter 3 presents another methodological alternative by considering a specific political system: the semi-presidentialism. It investigates whether the dynamics observed in other semi-presidential contexts—where cohabitation often shifts economic accountability between executive leaders—apply in Portugal, where the president is the head of state and the prime-minister is the head of the executive

branch. Therefore, it assesses whether the relationship between both political entities, under cohabitation or unified government, changes the responsibility for economic development. Additionally, it seeks to identify potential asymmetries in how economic evaluations affect prime ministers versus presidents.

The essay finds that in Portugal's semi-presidential system, between 1986 and 2018, prime ministers, not presidents, are primarily held accountable for economic performance, whether under cohabitation or unified government. A notable exception arises during conflictual cohabitations in second presidential terms, where presidential opposition seems to blur economic accountability, making public approval for both leaders less sensitive to economic conditions. We also observe an asymmetry: economic downturns impact prime ministerial approval more than presidential, reflecting differing partisan expectations. This insight into Portugal's V-P dynamics suggests that in similar semi-presidential systems, economic accountability may similarly vary across leaders, especially under cohabitation conflicts. Future research should explore these patterns in comparable political contexts.

Chapter 4 aims to discuss a potential solution for the unstable results of the impact of the economy on popularity by utilizing a new set of tools. This essay explores how wavelet analysis can help political economic researchers circumvent some traditional econometric limitations. By applying multivariate wavelet analysis, which allows a time-frequency domain analysis, this essay seeks to capture both stable long-term patterns and transient fluctuations in political approval. To do so, we focused on Barack Obama's presidency, the last two-term US president (2009-2017), which was associated with the economic recovery after the 2009 Great Depression.

The results show a heterogeneous relationship between economic variables and Obama's approval rating. Traditional models reveal that unemployment and inflation have a long-term negative effect on Obama's approval, with consumer sentiment affecting approval only in short-run dynamic models. The wavelet analysis confirms these findings, adding detail by showing that unemployment influences approval ratings more quickly than inflation despite both leading approval rate changes over the long run. Additionally, wavelet analysis reveals a positive, yet transient, connection between consumer sentiment and approval in 2011-2012, corresponding to the first Obama debt-ceiling crisis event. While wavelet analysis offers valuable insights into the timing and frequency of these relationships, future research could extend this method to examine other political contexts in the political economy and political science fields.

Finally, Chapter 5 aims to investigate the political connections in publicly traded Portuguese companies by examining the political backgrounds of board members and their potential influence on firm performance. Focusing on public trade firms listed on the Euronext Lisbon stock exchange over the

period 2002-2022, we constructed three unique datasets detailing board members, Portuguese politicians, and firms' financial outcomes. Our objective is to provide insights into the characteristics of firms that have political connections and how political ties may influence financial outcomes.

Our findings reveal that larger firms, those based in Lisbon, and those in regulated sectors are more likely to have political connections, though these connections have weakened over time and have a limited impact on key financial outcomes. Right-leaning politically connected members are more common on larger boards while left-leaning connections are more prevalent in firms headquartered in Lisbon. Importantly, political connections do not appear to significantly impact financial performance. Limitations of this study include the narrow focus on publicly traded firms and the specific measurement of political connections, which may miss other forms of political influence. Future research could expand this analysis to include privately held firms and alternative political influence channels to build a more comprehensive understanding of political ties in corporate performance and in the overall economy.

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Appendix

Table A1: Correlations between economic indicators.

	GDP Vintage Growth	GDP First Values Growth	GDP Real-Time Growth	OECD Forecast Current	OECD Forecast Next
GDP Vintage Growth	1.000				
GDP First Values Growth	0.976	1.000			
GDP Real-Time Growth	0.652	0.682	1.000		
OECD Forecast Current	0.704	0.681	0.831	1.000	
OECD Forecast Next	0.564	0.510	0.589	0.832	1.000

Table A2: Parliamentary elections, winners, and government formation.

Parliamentary Election	Winning party or coalition	Cabinet	Form of Government	Ideology	Prime Minister
1976	PS	I	PS, minority	Left	Mário Soares
		II	PS + CDS-PP	-	Mário Soares
		III	Presidential Initiative	-	Nobre da Costa
		IV	Presidential Initiative	-	Mota Pinto
		V	Presidential Initiative	-	Maria de Lurdes Pintasilgo
1979	AD	VI	PPD/PSD + CDS-PP + PPM	Right	Sá Carneiro
1980	AD	VI	PPD/PSD + CDS-PP + PPM	Right	Sá Carneiro
		VII	PPD/PSD + CDS-PP + PPM	Right	Pinto Balsemão
		VIII	PPD/PSD + CDS-PP + PPM	Right	Pinto Balsemão
1983	PS	IX	PS + PPD/PSD	Central Bloc	Mário Soares
1985	PPD/PSD	X	PPD/PSD, minority	Right	Cavaco Silva
1987	PPD/PSD	XI	PPD/PSD	Right	Cavaco Silva
1991	PPD/PSD	XII	PPD/PSD	Right	Cavaco Silva
1995	PS	XIII	PS, minority	Left	António Guterres
1999	PS	XIV	PS, minority	Left	António Guterres
2002	PPD/PSD	XV	PPD/PSD + CDS-PP	Right	Durão Barroso
		XVI	PPD/PSD + CDS-PP	Right	Santana Lopes
2005	PS	XVII	PS	Left	José Sócrates
2009	PS	XVIII	PS, minority	Left	José Sócrates
2011	PPD/PSD	XIX	PPD/PSD + CDS-PP	Right	Pedro Passos Coelho
2015	PPD/PSD + CDS-PP	XX	PPD/PSD + CDS-PP, minority	Right	Pedro Passos Coelho
		XXI	PS, minority	Left	António Costa
2019	PS	XXII	PS, minority	Left	António Costa
2022	PS	XXIII	PS	Left	António Costa

Note: Source: National Electoral Commission (CNE) and the Portuguese Government's website. Central Bloc is a coalition between the most voted parties from different ideological sides. AD is a right-wing coalition composed of PPD/PSD, CDS-PP and PPM.

Table A3: List of companies and years of data.

Company	Years of Observations	Industry
ALTRI, SGPS, S.A.	18 (2005 - 2022)	Basic Materials
Banco Comercial Português, S.A.	21 (2002 - 2022)	Financials
Banco Espírito Santo, SA	12 (2002 - 2013)	Financials
Banco BPI, S.A.	17 (2002 - 2018)	Financials
BRISA - Autoestradas de Portugal, S.A.	11 (2002 - 2012)	Industrials
CIN - Corporação Industrial do Norte, S.A.	4 (2002 - 2005)	Industrials
CTT Correios de Portugal, S.A.	10 (2013 - 2022)	Industrials
CIMPOR - Cimentos de Portugal, SGPS, S.A.	15 (2002 - 2016)	Industrials
CIPAN - Companhia Industrial Produtora de Antibióticos, S.A.	9 (2007 - 2017)	Health Care
Companhia Industrial de Resinas Sintéticas, CIRES, S.A.	7 (2002 - 2008)	Basic Materials
COFINA, SGPS, S.A.	21 (2002 - 2022)	Consumer Discretionary
COMPTA - Equipamentos e Serviços de Informática, S.A.	17 (2002 - 2018)	Telecommunications
CONDURIL - Engenharia, S.A.	19 (2002 - 2022)	Industrials
COPAM - Companhia Portuguesa de Amidos, S.A.	5 (2002 - 2021)	Consumer Staples
CORTICEIRA AMORIM, SGPS, S.A.	21 (2002 - 2022)	Industrials
EDP - Energias de Portugal, S.A.	21 (2002 - 2022)	Utilities
EDP Renováveis, S.A.	15 (2008 - 2022)	Utilities
ESTORIL - SOL, S.A.	21 (2002 - 2022)	Consumer Discretionary
FARMINVESTE, SGPS, S.A.	4 (2018 - 2022)	Health Care
Finibanco Holding, SGPS, S.A.	8 (2002 - 2009)	Financials
FISIPE - Fibras Sintéticas de Portugal, S.A.	10 (2002 - 2011)	Basic Materials
GALP ENERGIA, SGPS, S.A.	17 (2006 - 2022)	Energy
GLINTT GLOBAL INTELLIGENT TECHNOLOGIES SA	21 (2002 - 2022)	Technology
IMOBILIARIA CONSTRUTORA GRÃO - PARA, SA	21 (2002 - 2022)	Consumer Discretionary
IBERSOL, SGPS, S.A.	21 (2002 - 2022)	Consumer Discretionary
IMPRESA SGPS SA	21 (2002 - 2022)	Consumer Discretionary
INAPA - INVESTIMENTOS, PARTICIPAÇÕES E GESTÃO, S.A.	21 (2002 - 2022)	Basic Materials
JERONIMO MARTINS SGPS SA	21 (2002 - 2022)	Consumer Staples
LISGRAFICA - IMPRESSAO DE ARTES GRAFICAS	21 (2002 - 2022)	Industrials
LITHO FORMAS PORTUGUESA SA	10 (2002 - 2020)	Industrials
Luz Saúde, S.A.	5 (2014 - 2018)	Health Care
MARTIFER SGPS, S.A.	16 (2007 - 2022)	Industrials
GRUPO MEDIA CAPITAL SGPS S.A	19 (2004 - 2022)	Telecommunications
Caixa Económica Montepio Geral, S.A.	4 (2014 - 2017)	Financials
Mota-Engil, SGPS, S.A.	21 (2002 - 2022)	Industrials
NOS, SGPS, S.A.	21 (2002 - 2022)	Telecommunications
The Navigator Company, S.A.	21 (2002 - 2022)	Basic Materials
NOVABASE, SGPS, SA	21 (2002 - 2022)	Technology
Sociedade Comercial Orey Antunes, S.A.	17 (2002 - 2018)	Financials
Papelaria Fernandes - Indústria e Comércio, SA	7 (2002 - 2008)	Basic Materials
PHAROL, SGPS, S.A.	21 (2002 - 2022)	Telecommunications
REN - Redes Energéticas Nacionais, SGPS, S.A.	16 (2007 - 2022)	Utilities
RAIZE - SERVIÇOS DE GESTÃO, S.A.	5 (2018 - 2022)	Financials
RAMADA INVESTIMENTOS E INDUSTRIA SA	15 (2008 - 2022)	Basic Materials
REDITUS - Gestora de Participações Sociais, S.A.	20 (2002 - 2021)	Technology

SAG GEST - Soluções Automóvel Globais, SGPS, S.A.	17 (2002 - 2018)	Consumer Discretionary
SDC - INVESTIMENTOS, S.A.	15 (2002 - 2016)	Industrials
SEMAPA - Sociedade de Investimento e Gestão, SGPS, S.A.	21 (2002 - 2022)	Basic Materials
SONAE CAPITAL, SGPS, S.A.	13 (2008 - 2020)	Industrials
SONAECOM SGPS SA	21 (2002 - 2022)	Telecommunications
SONAE INDUSTRIA, SGPS, S.A.	16 (2005 - 2020)	Industrials
SONAE, SGSP, S.A.	21 (2002 - 2022)	Consumer Staples
SONAGI, SGPS, S.A.	14 (2005 - 2018)	Real Estate
SUMOL+COMPAL, S.A.	16 (2002 - 2017)	Consumer Staples
TOYOTA CAETANO PORTUGAL SA	21 (2002 - 2022)	Consumer Discretionary
TEIXEIRA DUARTE - ENGENHARIA E CONSTRUÇÕES, S.A.	8 (2002 - 2009)	Industrials
TEIXEIRA DUARTE, S.A.	11 (2010 - 2020)	Industrials
Tertir - Terminais de Portugal, SA	5 (2002 - 2006)	Industrials
VAA - Vista Alegre Atlantis, SGPS, S.A.	19 (2002 - 2020)	Consumer Discretionary

Table A4: Matrix of correlations. Own calculations.

	Board (N)	Connec tion	Connec tion Right	Connec tion Left	Connec tion (N)	Total Assets	Market Cap	ROE	Leverag e	Book to Market	Market Share	Product ivity	Returns	Privatiz ed	State Owners hip	Right	Lisbon	Troika	Regulat ed
Board (N)	1.000																		
Connection	0.587	1.000																	
Connection Right	0.420	0.625	1.000																
Connection Left	0.109	0.362	-0.167	1.000															
Connection (N)	0.691	0.703	0.494	0.247	1.000														
Total Assets	0.682	0.369	0.384	0.009	0.508	1.000													
Market Cap	0.629	0.416	0.232	0.239	0.581	0.492	1.000												
ROE	0.122	0.057	0.032	0.073	0.057	0.044	0.178	1.000											
Leverage	-0.018	-0.064	-0.044	-0.001	0.038	0.144	-0.142	-0.288	1.000										
Book to Market	-0.128	-0.102	-0.056	-0.035	-0.095	-0.041	-0.125	-0.100	0.288	1.000									
Market Share	0.413	0.282	0.214	0.128	0.337	0.324	0.560	0.192	-0.217	-0.100	1.000								
Productivity	0.085	0.085	-0.001	0.076	0.090	-0.215	0.224	0.100	-0.214	-0.155	0.125	1.000							
Returns	-0.011	-0.017	0.013	0.010	0.008	-0.008	0.095	0.196	-0.228	-0.075	0.052	0.025	1.000						
Privatized	0.509	0.377	0.268	0.125	0.365	0.217	0.448	0.083	-0.060	-0.049	0.319	0.290	-0.050	1.000					
State Ownership	0.253	0.240	0.079	0.244	0.290	0.061	0.361	0.044	-0.011	0.024	0.238	0.379	-0.014	0.627	1.000				
Right	-0.018	0.040	0.003	0.005	0.014	0.011	-0.063	-0.132	0.017	0.010	-0.042	0.000	0.107	-0.002	0.005	1.000			
Lisbon	0.048	0.194	0.073	0.164	0.118	-0.099	0.092	-0.069	0.021	0.030	0.201	0.135	-0.110	0.364	0.207	0.022	1.000		
Troika	0.035	-0.095	-0.032	-0.036	-0.064	-0.005	-0.010	0.007	0.121	0.128	0.064	0.000	0.058	-0.010	-0.133	0.125	-0.039	1.000	
Regulated	0.549	0.413	0.352	0.128	0.427	0.496	0.451	0.044	-0.049	-0.134	0.179	0.008	-0.029	0.332	0.253	-0.016	0.093	0.016	1.000