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Greek Radical Party Emergence Following its Economic Crisis

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Abstract

Greek Radical Party Emergence Following its Economic Crisis
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Following the 2008-2009 financial crisis, Greece experienced a rapid decrease in economic output as its GDP fell and its unemployment rate rose. In the backdrop, an emergence of political instability ensued, leading to an openly neo-Nazi party – the Golden Dawn – gaining numerous seats in the European Parliament following the country's 2012 election. This research explores some of the underlying effects that the economy had on political parties in the country. To achieve this, NUTS level 2 data was utilized to analyze how economic factors influenced the vote share of the Golden Dawn party throughout the nation's regions, as well as the vote share for extreme and right-winged parties. A seemingly unrelated regression (SUR) model – one of the latest techniques – was deployed to accurately measure impacts on multiparty vote share, and difference-in-difference-in-differences regressions were able to quantify the change in voting behavior from the 2009 to the 2012 national parliamentary elections. The results from this paper demonstrate that the native employment rate change had no impact on the Golden Dawn's relative vote share in the 2012 elections but did show such effects on the overall extreme parties' vote share. So, the main driving force for the Golden Dawn's success was not economic, but rather through its nationalistic proposals on immigration. An analysis on immigration effects shows that the Golden Dawn's vote share, compared to other parties, greatly benefitted in regions with high immigration populations and became more mainstream during the 2012 elections. While the immigration population yielded substantial results for the Golden Dawn, the actual level of immigration, however, in the country had no bearing. This suggests that as anti-immigrant sentiment was on the rise in Greece, the actual impact of immigration was not noticed by the population. Hopefully, the results from this research will empower the Greek government to continue support for immigration in their country without fear of political repercussion, enable moderate parties to prioritize various fiscal policies to prevent radicalization, and provide insights to Greece and similar countries on the voting behavior of their electorate.

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I. Question

Radical parties have been able to capture larger amounts of influence during particular phases of many major countries. Radicalization occurs when a large portion of voters shift to an ideology that is far outside the status quo and usually comes at the expense of moderate parties and their ideology. Many explanations exist for extremist group's emergence; though, economic crises create one condition ripe for exploitation. This has been evident in cases throughout history, whether it be the fascist revolution in 1930's Europe, the Bolshevik revolution in Russia, or even the fall of the Roman Empire. In each of these cases, the established government failed to adequately respond to the economic burdens facing citizens and voters. This paper explores this relationship, measuring the severity of the economic downturn with the gains of radical parties in a country.

Greece experienced a period of economic recession and political reform. From 2009 to 2014, while the rest of the world recovered from a global recession, Greece lagged far behind its peers. As the unemployment rate soared to nearly 20% in 2010, the Greek government struggled to repay its loans from the International Monetary Fund, European Union, and European Central Bank. As a result, the country's bonds were downgraded by credit rating agencies to that of a "junk bond," and Greece received a massive bailout. Meanwhile, fringe parties began to gain public support and win seats in major elections. A national, openly neo-Nazi political party named the Golden Dawn was consequently able to win three seats in the European Parliament during the nation's 2012 elections. In the backdrop, the economic crisis led to increasing political dissent and violent demonstrations that plagued public discourse.

Immigrants have been the target of rising hate as radical parties emerge. Particularly, nationalist parties throughout history have used xenophobia to instill fear into the native

population. Whether it be through the fear of losing one's job or the fear of an unnecessary increase in crime, some natives of each respective country have used immigrants as a scapegoat for its national condition. This has not been an exception for the Golden Dawn, which has continuously utilized anti-immigrant sentiment as a major pillar in the party's platform. All the while, this rhetoric has come to the detriment of the immigrant population.

This area piques the interest of both economists and political scientists alike. By analyzing cases such as Greece, the hope is to get a real-world understanding of the consequences of economic chaos. With widespread implications on the inflicted society as well as immigrants, this relationship becomes increasingly important to identify and quantify. The central question of this paper explores this relationship between economic situations and political radicalization. Particularly, how does the economic decline of a country impact its politics? This question can be answered using GDP, the unemployment rate, or the native employment rate change as measurements of economic wellbeing and voting results as a measurement of political change.

II. Motivation

Both the Greek economic and political systems experienced, compared to the rest of E.U. nations, one of the most difficult outcomes from the global recession, as many of its citizens plummeted into extreme hardships. The figures below illustrate such decline at the national level by plotting the GDP per capita and the change of the employment rate in Greece from 2006 to 2012.

Figure 1: GDP per capita
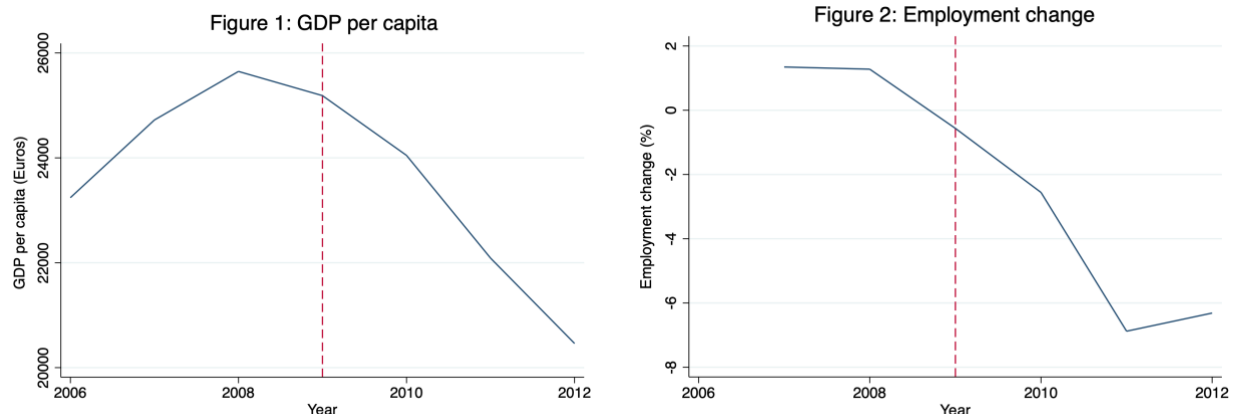
Figure 2: Employment change

Figure 1 graphs the GDP per capita of Greece, and figure 2 graphs the country's employment change from 2006 to 2012. Both demonstrate a recession beginning around 2009 and illustrate the country's difficult economic situation.

There certainly is a substantial drop in both graphs, with four consecutive quarters of the GDP losing at least 2% of its GDP from each previous year. With a stagnant population, a recession, indicated by at least two consecutive quarters of negative GDP growth, occurs around 2009 (labeled). This recession marks both the start of the difficulties for the Greek people to come, as well as a possible starting point for radicalization. Relying on radical parties in order to provide for one's family has undoubtedly been a source of hope in the past. This empirical study can help identify the potential effects of such isolated and long-lasting crises to prepare governments with potential impacts and solutions before ineradicable damage is caused.

The Greek crisis provides a distinct case that resulted in a political showdown. Thus, the Greek case can offer insight into the general mechanisms that empower radical groups. As such cases have been noted throughout history, we do not need to wonder much about what will happen the next time a recession inevitably comes. Studies such as this help to better understand why and how radical parties materialize. Numerical estimation can provide possible takeaways from inflicted regions and can measure the amount of political pressure and vulnerability when an

economic crisis hits. It has vast applications and implications for countries encountering similar economic situations and can help economists better assess recessions.

Immigration will also be heavily investigated in this study. While Greece did not experience rapid levels of immigration until 2015, it nevertheless was a substantial issue to the Greek Golden Dawn party in its 2012 electoral emergence. Far-right parties have historically blamed immigrant populations on the economic constraints of the host nation along with other social ramifications. Because immigration will be used as a control variable, we will be able to see whether immigration during economic crises leads to political instability. The potential for immigration efforts can be assisted if the results show that the economic crisis is enough alone to cause a political crisis as well. Regardless, policymakers can be guided into more sound strategies to address political unrest.

Because this study will focus largely on the economic calamity experienced by the Greek people and government, insight can also be found for the potential consequences of inadequate international banking. Financial institutions, such as the International Monetary Fund and the European Central Bank, were significant actors in the economic conditions of Greece, overseeing loan repayments and bailouts. The effect of such mismanaged loans, which were given to a country unable to pay them back, resulted in high interest rates and economic decline. The ways in which radical groups can take advantage of the shortcomings of these institutions will be interesting to observe, as these groups can create potential appeal each time they attack international institutions. This research can help steer financial institutions and lawmakers to better overall decision-making on how to approach nations with debt and substantial economic issues.

III. Literature review

The literature review will play an important role in understanding both the context and researched mechanisms at play. Literature was studied looking for events in the region, previous related research and theory, and possible research design techniques.

An analysis by Ellinas (2013) outlines the history of the rise of the far-right party since its origin and contextualizes important events. The Golden Dawn, although founded nearly 30 years ago, was inactive for the first ten years of its existence. The party first made an appearance in the European Parliament elections of 1994, when it was officially recognized as a legitimate political party; however, Golden Dawn only received about 7,000 votes, less than 0.1 percent, that year and therefore did not qualify for any seats. From 1994 until 2009, it achieved roughly the same results and fell far short of gaining representation in parliament. Because of its continuous flops in elections, small constituency, and passionate members, the Golden Dawn party became cult-like, resorting to prejudice and even violent tendencies. The party distributed anti-gay and anti-Semitic propaganda while publishing neo-Nazi posters. Additionally, party members vandalized Holocaust memorials and killed some immigrants in mass riots. Despite their large terroristic presence, however, they had almost had no political presence. However, once the established Greek government set forward austerity measures – such as tax hikes, spending cuts, reforms, and privatization – to combat its impending loan repayments and rising interest rates, the Golden Dawn seized opportunities presented by the shrinkage of the Greek economy by 18.6%. It was able to capture 9.7% of the voting electorate in the country's 2012 elections, collecting enough votes to send three of the party's members to the European Parliament.

Goodwin (2014) further contextualizes the Greek economic and political states through a European perspective. It highlights major events and outcomes of relevant political and economic

activities throughout Europe amid the recent recession. While Greece's economic situation may be distinct, its radicalization was not an isolated case; the rise of far-right political parties was rampant throughout the continent. The 2009 elections revealed possibly the first impacts of the newly arrived recession, which affected most of the globally tied economies. Radical right parties in Austria, Denmark, the Netherlands, and Hungary were able to capture at least 14% of the national vote. Similarly-minded parties in England and France also began making an aggressive appearance on to the political arena.

Understanding Greece's current social and cultural attitudes can possibly help find useful variables. Hangartner's (2019) natural experiment focuses on the impact of immigrants' and refugees' arrival to Greece on the native's views. He relies on the observation that different cities and islands of Greece experienced different levels of immigration and asylum. Using surveys that quantify the attitudes of natives in their respective cities and data that counts the number of non-natives in a particular city, a regression analysis was performed to measure the immigration's impact. Hangartner concluded that the level of negative attitudes towards immigrants is proportional to the number of immigrants in the region. This study can help my research topic for using immigration as a possible control variable in a regression analysis. It can also be valuable for determining regions for a difference-in-difference-in-differences design.

An interesting study performed by Psycharis et al. (2014) showed how various traits of regions within Greece interacted with the economic crisis. While his paper found that these traits influenced the impact of the economic crisis, he suggested possible avenues for their differences. The pre-crisis conditions for each Greek region were already varied. An implication of this idea was found that Greek regions, as well as metropolitan cities, that relied heavily on manufacturing were more vulnerable to the economic shocks of recession than were Greek islands and other

tourist-reliant regions. Another source of variation lies with the austerity measures taken by the government to combat the crisis, which, while implemented across regions, may have different implications for each city. Although this study didn't look much into these implications, it is quite relevant to the approach taken by this thesis. The Greek residents of the regions who feel the hit of the economic crisis will most likely have differing views of the resolution and role of the government that responds. The topic of this thesis will be exploring the political ramifications of economic crises and the rise of radicalization, which ultimately is an indicator of how the population wants to see change in the establishment. The economic crisis, and its levels of shocks, will be a driving force to the amount of political reform demanded by the public, the result of which is the main interest of this thesis.

The underlying methodology of this paper is closely related to that of Frey and Weck's study (1983). They focus on Germany's economic crisis during the Great Recession, where fascist parties were able to capture large chunks of the voting electorate. Their study analyzed German regional data in an attempt to measure the impact of economic strain on the public. They used variables similar to those being explored in this paper, namely the unemployment rate and percentage of vote share captured. This analysis of a panel, time-series dataset greatly corresponds with that which will be looked at in this paper. A distinguishing feature is its lack of control variables in the analysis. This study of Greece during its economic crisis hopes to include some other variable or variables, such as immigration, to better report the statistical evidence of economic condition on radicalization. Nevertheless, this analysis by Frey and Weck will provide many insights into the designs and methods of this paper.

Lastly, an investigation into Greece's economic crisis and its consequent radicalization was explored in Tubadji and Nijkamp's (2019) paper∗. Their paper analyzes some of the principles that will be examined in this paper but differs in a few key ways. It largely focuses on the 'Dogville Effect,' which looks into how cultural, as well as economic shocks, impact radicalization. While this provides useful insights, our research hopes to center primarily on economic and immigration shocks and uses cultural data as control variables. We focus less on how culture – a variable that is difficult if not impossible for government actors to regulate – led to radicalization, opting for the economic and immigration indicators that radical parties themselves often point to. Additionally, this paper uses data dating back from 1993, while ours hovers over the particular years that were involved in the current economic crisis. This will enable us to get a better sense of the parties that emerged from this decline, a few of which were not formed or were extremely small until 2007. Nevertheless, Tubadji and Nijkamp's paper provides a solid foundation from which this paper hopes to expand, and empirical differences will be discussed further in the coming sections.

IV. Data

a.) Overview

Quantifying the relationship between economic decline and the rise in radical parties can be approached using empirical data from the start and end times of the economic crisis. It will be necessary to identify our variables, instilling proper operationalization to improve internal and external validity. These selected variables must be able to capture the desired relationships in a

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∗ This paper is highly critical of the analysis performed in Tubadji and Nijkamp's research. See section IV subsection g and appendix section c subsection iv for comparisons and discussion.

quantifiable way required for analysis. The independent and dependent variables, thus, must be carefully considered. Potential databases and other sources will be sought out and investigated for proper designs, ensuring that it contains usable and applicable data for this study. Other economic indicators will be included as controls. Definitions, sources, and summary statistics of variables used throughout this paper can be found in table 7, located in the appendix.

b.) Regions and sources

In order to analyze the impact of economic shocks on the levels of radicalization, regions within Greece will be utilized. The rationale is intuitive; some regions experienced momentous changes in their economic output during the time of the recession, while others were less affected in this period. Through these regional economic differences, the country's voting behavior and its driving force can be reported.

Additionally, it is important to consider the sources of regional data. Often, datasets from different sources, particularly with regional data, may be challenging to merge in a consistent way. Social scientists have faced this problem before and, luckily, have created a standardized method to report regional data. It uses a system called the Nomenclature of Territorial Units for Statistics, or NUTS. Therefore, any data-collector who wishes can opt-in to this universal method of reporting, which we will see in the following section. The NUTS system uses three levels to break down each region, with each defined region getting smaller as the level increases. For example, the E.U. NUTS level 1 contains 104 regions, and it contains 1,345 regions at level 3. This paper will be analyzing Greece at NUTS level 2, which contains 13 regions.

The reason for selected NUTS level 2 is two-fold. NUTS level 2 is optimal for analyzing government relations in that region. It is described as the best unit "for the application of regional policies" (*Eurostat*). This is crucial for inspecting a possible path to radicalization. NUTS level 3

disperses regions in a way that deflates such analysis. Regions in NUTS level 2, on the other hand, ensure that smaller regions with similar attitudes will not be conflated. Moreover, NUTS level 2 contains a plethora of data recorded that is unavailable within the NUTS level 3 dataset. This enables new and relevant control variables that have not been included in previous research to be properly incorporated into this project.

Many variables can be found in the *Eurostat* dataset, which compiles economic and social factors by region within a country. For this paper, only the Greek regions contained in the dataset will be observed, so the dataset will be cleaned of all other country regional data. Election data can be found using the *European Election Database*. It contains a comprehensive list of regional votes in percentages and the absolute number, as well as total electorate and turnout. Lastly, data from *ParlGov* includes analyses performed to quantify ideological scores. These scores measure the degree of a party's ideology, with 0 being the most left ideology and 10 being the most right ideology. The database collected data from throughout the world, including all those in the E.U. The dataset best fits one of a panel dataset, where multiple variables of each region are measured throughout numerous periods of time. Using such databases, these variables can be captured over the desired period, which is necessary for the methods of this research to be explained in the next section.

c.) Independent variable: GDP vs. Native employment rate

The independent variable of this study is important to identify. Economic conditions could be operationalized using a variety of economic indicators. Some potential indicators include a country's GDP growth, real wage growth, and the rate of employment. GDP growth could be a great variable to measure a region's economic condition. This indicator has been used in many previous pieces of academic research. Additionally, GDP is typically the most recorded and public

data. The figures below depict some of the differences between each region's economic condition. The figures look at both the region's GDP and employment rate from 2006 to 2012. (Note that not every region was included in these graphs for visual purposes.)
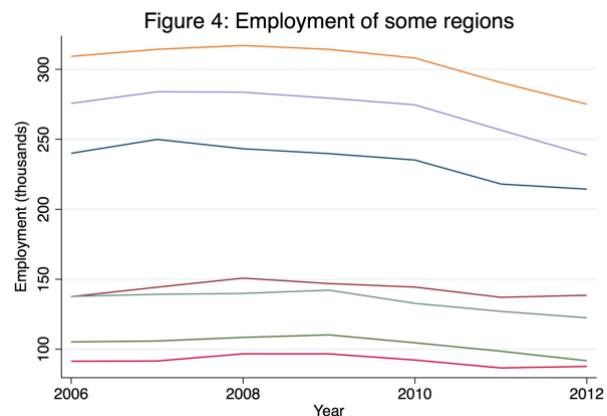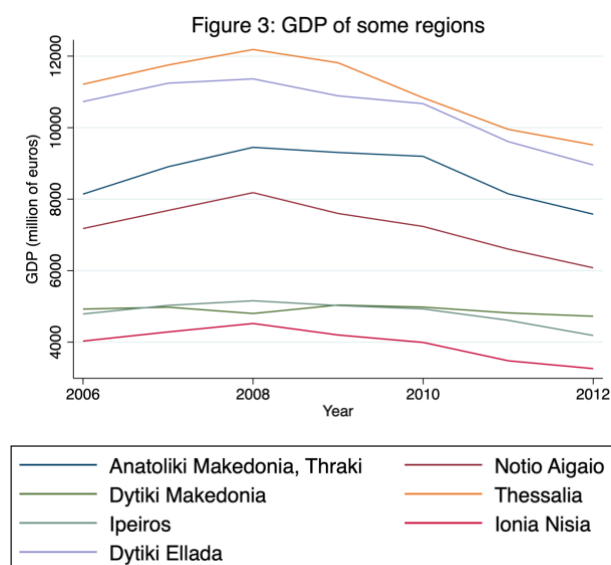

Figure 3 graphs the GDP of some Greek regions at NUTS level 2, and figure 4 graphs the regions' employment from 2006 to 2012. These two indicators are common independent variables in economic papers. The figures illustrate similar trends amongst regions with some notable exceptions.

Two observations can be made from these figures. First, we can see that many of the regions experienced similar shocks. Because they all move relatively in the same direction, the homogeneous nature of these Greek regions can be exploited for this analysis. Differences in economic output can successfully measure the degree to which radicalization may occur. Second, although nearly every region is experiencing a decline, there appears to be at least two that have shown some recovery from 2011 to 2012, particularly in figure 4. Figure 3 also contains two regions that report stable economic conditions, with GDPs remaining steady and dipping only through a couple of time periods. It may be of interest to see how these regions reacted to any positive change in the economy.

While this classic indicator can be utilized in this research, it fails to capture the distinct impacts of the Greek people. For example, while GDP may increase in a particular country, this variable alone assumes all people are reaping the benefits of this gain and neglects that large populations may be overall unaffected. This would create a misguided model for predicting the state of the economy on the overall population. For their modern research, economists have been searching for a variable to better implicate the attitudes of the people as a result of this economic change.

For this research, the native employment rate may be more impactful on the population and, thus, have more direct implications on a voter's preferences. One of its advantages is that it is more directly tied to the lives of the Greek people. As this measurement decreases, it is apparent that more of the country's citizens will face the difficulties of unemployment. Particularly in times of austerity measures during the 2012 elections, the people facing unemployment have received even fewer resources from the government. As a result of this unemployment – distinctly measuring that of possible voters –, the people may turn to parties outside of those of the establishment. It should be noted that both GDP and employment are pro-cyclical, so they should, in theory, be moving together in the same direction during economic shocks.

It is for those reasons that the native employment rate is the main independent variable in this research. Remember, this research focuses particularly on the conditions that led to radicalization within Greece. As immigration concerns have been a pillar of extreme parties, we must account for the wellbeing of the native population. Often, immigrants are used as a scapegoat, being blamed for issues such as taking natives' jobs. The native employment rate will better capture these attitudes over indicators like GDP or even the basic employment rate, especially once

we take controls such as immigration levels into account, which is described in the following sections.

d.) Dependent variable

Once this method for determining the level of the economic decline has been structured, there must be a way to operationalize the levels of radicalization. One approach is to look at the change of influence for radical parties. The obvious unit to use for measuring influence is the share of the national vote that was captured by a radical party. This national vote will be broken down by regions. Then, the change of power, whether it be through the proportion of parliamentary seats or proportion of the election vote share, could be quantified before and after the year of the economic downturn.

Because of this fact, the proportion of votes for each party will be our primary dependent variable. The European Election Database captures our dependent variable. The database records the election results from all EU countries for national and European parliamentary elections. Regional, as well as national, election data is easily available for all EU nations. Additional data on election outcomes is provided by the Greek Ministry of Interior, a national department overseeing election results and publications, amongst many other responsibilities. It includes nationwide and EU Parliamentary elections for numerous election years, including the 2012 election where the Golden Dawn party was able to capture three seats. The dataset reports the number of votes cast for each party and the number of seats received. These aggregated figures can be broken down by electoral district. Table 1 provides an overview of the 2012 European Parliament elections in Greece, broken down by region. Not every party was included in this table, but the Golden Dawn (a far-right party), Syriza (a far-left party), and New Democracy (a moderate, established party), represent potentially key players for this analysis.

Table 1: 2012 Greek European Parliament election results

Region	Votes for Golden Dawn (%)	Votes for Syriza (%)	Votes for New Democracy (%)
Anatoliki Makedonia, Thraki	5.39	12.58	24.09
Attiki	7.92	21.02	13.15
Dytiki Ellada	7.21	18.07	21.03
Dytiki Makedonia	6.02	13.42	25.96
Ionia Nisia	6.93	18.15	19.66
Ipeiros	4.81	17.57	25.00
Kentriki Makedonia	7.22	13.64	21.48
Kriti	3.09	15.81	10.10
Notio Aigaio	6.21	13.6	18.09
Peloponnisos	9.60	13.42	28.33
Sterea Ellada	7.83	17.32	18.38
Thessalia	6.06	14.68	22.91
Voreio Aigaio	4.62	13.52	19.80
Greece (national results)	6.97	16.78	18.85

Table 1 provides the vote share of some parties received in the 2012 Greek parliamentary elections, broken down by NUTS level 2 regions. It shows adequate variation amongst regions.

For all political parties represented in the table, we can see there is good variation throughout each region. This will be necessary to analyze how the economic conditions of each respective region may contribute to this variation.

e.) Party selection

Now, we must question which parties should be included in this analysis. In 2009, there were twenty-four parties that qualified to be on the ballot, and in 2012, there were thirty-two parties that qualified. For this research, parties were simplified to meet two sets of criteria. First, they must have had a presence in both the 2009 and the 2012 Greek parliamentary elections. This criterium makes sense as the purpose of the research is to examine how radicalization emerged

during the onset of this economic crisis. The second quality was to have a healthy amount of both moderate and extreme parties. These two types of parties will be useful to analyze not only how radicalization influenced the rise of extreme parties, but also how moderate parties were impacted. Emerging and established parties may also provide additional insights if observed. It can help answer whether ideology was the sole reason for citizens to cast their vote accordingly, or whether they were rebelling against an established party.

Taking into account this set of criteria, five parties were selected for analysis; these selected parties are Pasok, Syriza, KKE, New Democracy, and, of course, the Golden Dawn. These parties represent more than 20% of total parties of the 2009 election, and they aggregated nearly 90% of the total vote share in the 2009 elections and more than 65% of the total vote share in the 2012 elections. While these five parties lost some aggregate vote share amongst them, we should nevertheless be able to see the changes in voting behavior in the sample of emerging parties. Figure 5 plots the ideological scores of the five parties selected for this analysis. The ideological score was recorded though the *ParlGov* database, which provides information on parties and elections for thirty-seven democracies, including Greece.

Figure 5: Distribution of ideological score by party

Parties depicted from left to right with ideological scores: KKE (1.25), Syriza (2.89), Pasok (4.50), New Democracy (6.74), Golden Dawn (8.80).

Figure 5∗ shows the diverse ideology of the selected parties. Parties with an ideological score closer to 0 are very left in terms of ideology, and those closer to 10 are very right. This figure also depicts, with red dashed lines, the cut-offs for extreme and moderate parties. Parties that are extreme lie in ideological score from 0 to 3 and from 7 to 10, an absolute distance of two from the most moderate score of 5. So, while some of our analysis focuses solely on the rise of right extremism, we incorporate left extreme in order to contrast from the impacts of moderate parties. Parties labeled moderate, thus, fall between ideological scores of 3 and 7. While this cutoff point may seem arbitrary (especially as some parties are close to these thresholds), it is consistent with the respective extreme and moderate's individual platforms and their belief in supporting or abandoning the current status quo.

From figure 5, we can see that the selected parties are scattered across the ideological range. KKE, Syriza, and the Golden Dawn all fall outside our moderate range, defining them as our extreme parties in question. Pasok and New Democracy, which lie inside our moderate range, are our moderate parties. With this mix, we hope to see how both extreme and moderate parties are impacted by the economic crisis experienced in the country.

It is also useful to note whether these parties are established or emerging, for the reason described above. Pasok, New Democracy, and KKE will all be considered part of the established parties. These three parties alone were able to secure almost 85% of the vote share in the 2009 elections. Meanwhile, Syriza and the Golden Dawn will be considered part of the emerging parties. While they were only able to capture about 5% of the vote share in the 2009 election, they received

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∗All images used for the creation of figure 5 are intended to fall under public domain and/or fair use protections, and have been given the following recognition-
KKE image source: Κομμουνιστικό Κόμμα Ελλάδας - Ιστοχώρος του, Public Domain, Wikimedia Commons
Syriza image source: SYRIZA, CC by 3.0, http://www.syriza.gr/banner.gif, party name was removed from image
Pasok image source: Unknown author, Public Domain, http://www.pasok.gr, Wikimedia Commons
New Democracy image source: New Democracy, Public Domain, https://nd.gr, Wikimedia Commons
Golden Dawn image source: Stlemur, Public Domain, Wikimedia Commons

over 25% of the vote share in the 2012 election. Note that an interesting party in question is KKE, as it is the only party in our selection that is labeled as both extreme and established. With this party, it will be seen whether voters were really voting against the established parties, or whether the voters were radicalized to vote for extreme parties regardless of whether they were part of the established government.

f.) Control variables

A possible control variable of interest is immigration. As Hangartner's (2019) study found, immigration greatly impacts the attitudes of citizens of the host nation; however, Hangartner specifically looked at 2015-2016 to establish his findings. This period experienced massive, unprecedented immigration flows as a multitude of problems escalated throughout the Middle East. The time period of this paper – exploring the economic crisis of 2008 and subsequent 2012 elections – experiences relatively small, normal, and stable levels of immigration. An analysis of this time can better capture typical voter responses to immigration while isolating economic impacts. Adding the immigration population and net changes as a control variable can better help understand its overall economic impacts. It may also demonstrate whether immigration is a contributing factor or whether it is a misperception on the electorate. This can also be seen by adding the immigrant employment rate and its change as a control.

The total population of a region will also serve as a control variable. The total population will also be utilized for finding the proportions of numerous other variables as a denominator (for example, immigration proportion can be found by dividing the immigration population by the total population). Because regions span differing population levels, this control will assist in isolating the effects of economic decline on radicalization. It has been recorded in many counties that large cities tend to vote one way, while rural areas will vote for others. Ultimately, these conflicting

places to live creates a particular culture that must be controlled for. Another cultural variable, the pro and anti-monarchy rate will be discussed in the following subsection.

Lastly, several other control variables will be considered. These include educational attainment, size of electorate, turnout, and other economic factors such as household income, employee compensation, and average working hours. A collinearity problem with our main independent variable, the native employment rate change, may prove for these variables to be unusable for various methods. Nevertheless, looking at these potential control variable's change over time may provide additional insights, as well as allow for comparisons to ensure a functional independent variable.

g.) Data from the literature review

As discussed in the literature review, Tubadji and Nijkamp's (2019) paper also covers some of the questions this paper hopes to answer further. Thus, the results from this study will be compared to those of theirs. In order to achieve this, data from their study was incorporated in our dataset for separate analyses. One of their core pieces of data is from their economic shock, the adjusted budget deficit. This is much different from our independent variable, but it is also found in the Eurostat regional database. It is the percentage change between actual and previously predicted budget deficits based on extrapolation GDP for the region, as defined by the Eurostat regional database. Their instrumental variable, the pro and anti-monarchy rate, is also included in our dataset. This variable measures the percent votes of those who voted for and against, respectively, to remain under the control of Greece's monarchy in the country's 1974 national referendum. While these variables were included in order to compare their effects with our own, there is much suspicion about their functionality in this and the authors' own study. The adjusted budget deficit is made to inspect the austerity measure undertaken by the Greek government during

their financial crisis, but this may have a problem with the time precedence criterion needed for causality. The instrumental variable, which is designed to help overcome this causality issue, dates back almost forty years before the extreme parties emerged for electoral gains.

V. Methodology

A difference-in-difference-in-differences design will be used to determine the impact of Greece's economic shocks on the regional radicalization. For this to be accomplished, Greece will be broken down into intranational regions. This makes sense, as regions within Greece felt differing levels of economic decline. The logic holds that this differing economic strain will impact voters' political preferences in a similar magnitude, with a negative correlation. The more economic shock (in this paper, a decrease in native employment) inflicted on a population, the more vote share captured by a radical party such as the Golden Dawn. This is consistent with rational choice theory. Voters will make the calculus to decide whether to vote, and those who are most impacted by the economic conditions – and most likely to fall into radicalization – will view economic policies greatly and vote accordingly.

Causality for internally valid designs must be proven. This is probably the hardest thing to show in an empirical research paper such as this because it cannot be shown numerically. Instead, for causality to be observed, a clear picture must be demonstrated that a specified independent variable has an effect on the desired dependent variable. Generally, three criteria must be met to properly establish causation: association, time precedence, and non-spuriousness. The related literature in this category is extensive and only lightly brushed upon in the literature review section. This literature, as well as some observations, can help make the case for causality.

The association of economic crisis and political instability is clear. It will rely on the observation that an "increasingly hopeless economic situation [leads] to a rise in the number of protest voters who, as an expression of their anger and discontent, typically give their votes to radical and antiestablishment parties" (Tóth 138). Here, the welfare of the economy influences the likelihood of voting for the establishment party. This explanation can help also eliminate reverse causality, which will also be addressed in time precedence and non-spuriousness analysis. A typical way to numerically demonstrate an associative principle between the two variables is to view its correlation. Throughout this paper, we will be able to see how well the various regressions fit the actual data. For example, the results captured in table 4 (in section VI subsection c) have an r-squared value of 0.7837, suggesting high levels of correlation.

Time precedence must also be observed. The methodology of this paper will be looking at the vote share of a national election in 2012, which occurred in the period of economic decline. It is the result of this economic hardship that leads to an increasing number of voters to cast their votes in favor of a radical party. When the economic situations for citizens reach a certain point, the voter will weigh this burden over many other issues. Radical parties, who will often find a convenient blame and thus convenient solution to economic strain, will be particularly appealing to these increasing populations experiencing individual financial problems.

The last criterion to demonstrate, non-spuriousness, is also troublesome to prove in an empirical paper. A spurious relationship exists when the two variables at question are "falsely" related and actually caused by some third extraneous variable. For this paper, we need to show the relationship between economic conditions and political stability are truly related and not a result of something else. For this reason, controls will be considered, such as immigration levels, to better estimate the significance of the relationship. If variables such as immigration levels are controlled,

and economic decline still produces a statistically significant coefficient with the vote share of a radical party, a better picture is shown in support of the casual relationship.

This method requires a difference-in-difference-in-differences and regression approach. The set-up for the equation would be as followed: the independent variable will be the economic condition as measured by the region's native employment rate change, the dependent variable will be the power of the extreme party as vote share captured, possible economic and immigration factors will be control variables, dummy variables will be generated for determining if the country is experiencing an economic crisis and if a party is extreme, and interaction terms will be created between the dummy variables and the independent and control variables. Additionally, with the statistical software package, various delays can be inquired in case the effect isn't immediate. Control variables in this regression design may be important, and multiple regressions will be performed and compared. Outcomes vary, and possible implications can be made, given the results of the data.

While OLS is an appealing technique, it has several flaws that make interpretation difficult. Katz and King (1999) first proposed a new model to account for some internal validity problems that OLS exhibits when explaining and predicting electoral outcomes in multiparty democracies. One of the issues is that OLS assumes that the respective dependent variable is unbounded; however, in practicality, the results of a party's vote share must lie between 0 and 1, rather than anywhere on the real number line. Additionally, OLS treats the vote share of each respective party as independent of each other; but in this case, they are not independent because as one party increases its vote share, some other party will lose this portion, resulting in net sums equal to one. These problems make OLS potentially problematic for producing an accurate account of the effects of economic decline on the vote share for each party.

Rather than an OLS approach*, I employ a more sophisticated method outlined in Tomz's (2002) work. It is a variation of Zellner's (1962) seemingly unrelated regression (or SUR model) that rests on the feasible generalized least squares (FGLS). The model calculates "each party's share of the vote, relative to that of a reference party" (Tomz 68). This approach removes the errors of OLS; that is, the dependent variable is no longer bound between 0 and 1, nor are the relative vote shares dependent on each other (of course, with the exclusion of the reference party). In order to replicate this model, the percentage of votes received by the Golden Dawn, Syriza, New Democracy, and Pasok were divided, respectively, by the votes received by KKE. This operation was performed for each of the results of the NUTS level 2 regions.

KKE was chosen as the reference party for several reasons. First, it is one of the three major and established parties in Greece. Because of this, using KKE as a reference party will allow ample comparisons to be made between emerging and established parties, as well as between moderate and extreme parties. Second, compared to the other parties in this sample, its vote share is less volatile. Because of its relative stability between the 2009 and 2012 elections, the results will not be skewed to reflect changes in the reference party's vote share.

With this methodology, I should be able to estimate the impact of economic decline on political radicalization. The results will be quantified, with a decrease of 1% native employment rate change causing some amount increase in the percentage of vote captured by an extreme party or parties relative to that of the rest of the sample, mainly moderate parties. Hopefully, the statistical significance will show that the economy is a driving force in political extremism. This methodology also helps to improve its external validity, as it could be replicated and involves

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* Although OLS will not be used in this analysis, it has been incorporated into a number of past and contemporary papers involving electoral outcomes and predictions. See the appendix (subsection c) for a full discussion on OLS and its results.

universal variables that can be observed across many countries. While the particular results may be unique to Greece, there can be countries that behave in similar, transferrable ways. This is a relatively recent event and analyzes economic impacts in an era of globalization.

There may be many approaches to analyze the desired relationship, but difference-in-difference-in-differences using a reference party is optimal for this research. Not only will it enable quantifications for the independent and control variables, but the numerous interaction terms will also allow for comparisons between the Golden Dawn against the other parties. By including the year interactive terms as well, the results will show the differences that have occurred from the 2009 to the 2012 elections. This will give a comprehensive view of whether radicalization occurred and what its driving factors are. Additionally, this method will find comparisons without removing any observations from the regression.

VI. Results

a.) General observations

The methods outlined above allow for a comprehensive analysis of economic conditions on the rate of radicalization. Our hypothesis is that as economic conditions decline, the rate of radicalization will increase. Furthermore, as these conditions decrease, moderates in the state will decrease in number. To put in terms of our desired variables, as the native employment decreases, the vote share of extreme parties will increase and that of moderate parties will decrease. These values will be relative to the vote share captured by the KKE. Established and emerging parties may also be impacted, but there is no observable relationship until we perform some analysis.

To start, let's see the results of the 2009 and 2012 national parliamentary elections in Greece. These are the principal elections that take place during the time of the economic recession

experienced in Greece. Table 2 provides an overview of these results by parties that were selected for analysis. It also shows the party identification, as defined in the previous sections.

Table 2: Greek European Parliament election results from the 2009 and 2012 elections

Party	Party type/ideology	Votes received in 2009 election	Votes received in 2012 election	Net gain/loss
Golden Dawn	Radical right, emerging	19,636	440,894	421,258
New Democracy	Moderate right, established	2,295,967	1,192,054	-1,103,913
Syriza	Radical left, emerging	315,627	1,061,265	745,638
Pasok	Moderate left, established	3,012,373	833,529	-2,178,844
KKE	Radical left, established	517,154	536,072	18,918

Table 2 provides the national results from the 2009 and 2012 Greek parliamentary elections. It also shows the gains and losses for moderate and extreme parties. Although Syriza gained the most absolute votes, the Golden Dawn gained the largest proportion of votes compared to the previous election.

Several observations can be made from table 2. The most prominent is that all radical parties gained votes from the 2009 to 2012 elections, regardless of whether their ideology leaned left or right. While it is apparent that these gained large amounts of votes, there is no certainty yet that it was a result of regions' economic decline. Moderate parties, however, experienced major losses in the 2012 election. We can clearly see the shift that occurred in these years. A noteworthy observation comes from the KKE party. Although the major established parties lost votes as the emerging parties gained them, KKE – another established party, but the only radical one – remained relatively stable, in fact gaining a small number of votes. This suggests that voters did not necessarily rebel against the established parties of the government, but rather rejected moderate ideology.

Now that there is a baseline understanding of the electoral outcomes, we can try to make some generalized observations of these outcomes while incorporated economic conditions. The most straightforward means to view the economic recession on electoral outcomes is to inspect correlations for the various parties. Figure 6 provides such an overview, comparing the vote share received in the 2012 election by each respective party with the employment change from the previous year.

Figure 6: Vote share of party against employment rate change in the 2012 election
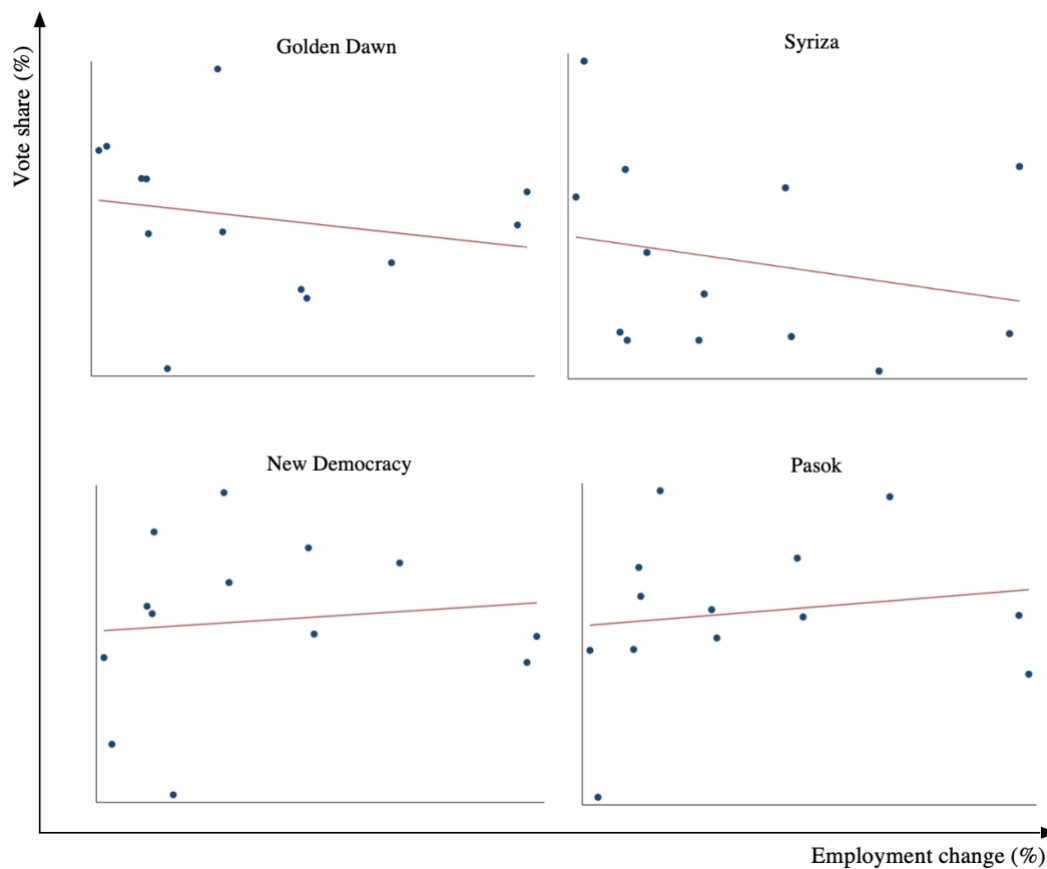

Figure 6 plots the regional employment rate change against the vote share for each respective party. The regression line for each plot shows that moderate parties perform better as the employment change increases, and extreme parties perform better as the employment change decreases.

A clear pattern emerges from this figure. In the 2012 elections, regions that reported a higher level of employment change from the previous year had a higher vote share for parties with a moderate ideology, that is for the New Democracy and Pasok. Meanwhile, regions with a lower amount of employment change yielded a higher vote share for parties with an extreme ideology. This is consistent with our main expectation and hypothesis that radical parties are able to flourish in areas experiencing worse economic conditions.

The difference-in-difference-in-differences approach in the following subsections will quantify some of these observations, as well as provide levels of statistical significance. Immigration and other controls were also explored to better estimate these effects, including the impact of immigration levels. I divide the results into three different cases: one analyzing just the impacts for the Golden Dawn, one for the impact of the extreme parties, and one for the impact of the right-winged parties. These cases should allow for a comprehensive analysis of the voting behavior of Greek citizens.

b.) Golden Dawn only

The first case looks at only how the Golden Dawn (GD) vote share relative to the KKE was impacted by both economic and immigration factors. This was accomplished by running a difference-in-difference-in-differences regression from the following equation, equation 1.

$$Votes = \beta_1 shock_{econ} + \beta_2 immigration_{change} + \beta_3 immigration_{proportion} + \delta_0 Year_{dummy} + \delta_1 GD_{dummy} + \delta_2 Year * GD + \sum_{k=1}^{3} \gamma_k Year * x_{i,k} + \sum_{k=4}^{6} \gamma_k GD * x_{i,k} + \sum_{k=7}^{9} \gamma_k Year * GD * x_{i,k} + \beta_0 + e$$

Equation 1 includes two dummy variables. The year dummy is equal to 1 when the year is 2012 and is equal to 0 when the year is 2009. The GD dummy is equal to 1 when the party is Golden Dawn and is equal to 0 when any other party. This will be replicated in the other two regressions

as well, with the extreme dummy (subsection c) equal to 1 when the party is extreme and with the right dummy (subsection d) equal to 1 when the party is right-winged. Table 3 below records the results of the regression utilizing equation 1.

Table 3: Influence of native employment rate and immigration on relative GD vote share

Variable	Coefficient (robust standard error)	t-value	95% confidence interval
Native employment change	– 85.0756* (51.0748)	– 1.67	[–225.2208, 65.7193]
Immigrant change	3.4277 (3.1241)	1.10	[–2.7808, 9.6361]
Immigrant population	– 62.1182** (28.2850)	– 2.20	[–118.3288, –5.9077]
Year dummy	– 338.4537* (173.5509)	– 1.95	[–683.3496, 6.4421]
GD dummy	– 554.1342*** (165.6577)	– 3.35	[–883.3440, –224.9244]
Year x GD interactive	388.5704** (175.3205)	2.22	[40.1578, 736.9831]
Year x Native employment change interactive	82.2915 (51.1810)	1.61	[–19.4199, 184.0030]
Year x Immigrant change interactive	– 3.3883 (3.5345)	– 0.96	[–10.4123, 3.6357]
Year x Immigrant population interactive	57.3709* (29.1584)	1.97	[–0.5752, 115.3170]
GD x Native employment change interactive	84.5953 (51.0756)	1.66	[–16.9067, 186.0973]
GD x Immigrant change interactive	-3.4040 (3.1241)	– 1.09	[–9.6126, 2.8045]
GD x Immigrant population interactive	61.8666** (28.2859)	2.19	[5.6545, 118.0788]
Year x GD x Native employment change interactive	-83.7901 (51.2071)	– 1.64	[–185.5534, 17.9733]
Year x GD x Immigrant change interactive	2.9348 (3.6420)	0.81	[–4.3028, 10.1725]
Year x GD x Immigrant population interactive	– 54.7342* (29.4213)	– 1.86	[-113.2028, 3.7345]
Constant	557.7408*** (165.6545)	3.51	[228.5373, 886.9443]

Table 3 records the results of the difference-in-difference-in-differences regression set up by equation 1. Standard deviations are shown in parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

The results from the previous table provide several interesting insights into the voting behavior of the Golden Dawn voter. In this regression, the main observations come from the various interactive variable deployed.

The year and Golden Dawn interactive term shows the overall success that the Golden Dawn had from the 2009 to 2012 elections. As seen in table 2 in the previous subsection, the Golden Dawn had gained much support in 2012 and was, thus, able to capture representation in the parliament. This value is particularly helpful when comparing it to the simple party (GD) dummy variable as well. We can see that the overall effect of the Golden Dawn greatly increased between this period. The results here indicate the large gains that the Golden Dawn in comparison to the other three parties in the sample.

It is also shown that the immigrant population had a significant effect on the relative vote share received by the Golden Dawn. In 2009, for every increase of 1% of the immigrant proportion in a population, the relative vote share of the Golden Dawn would increase by about 62%. This number is in comparison to the other three parties' relative vote share. This result is to be expected for the Golden Dawn, as the party incorporated anti-immigrant proposals into its platform. It is also consistent with the findings in Hangartner's study (2019). The policies that the Golden Dawn enshrined may have been felt more in regions that could actually see the impact of the immigrant population. Communities that had not witnessed much immigrant presence, on the other hand, were less likely to connect to the Golden Dawn's messaging.

For the 2012 election, however, the impact of the immigrant population greatly decreased the vote share received by the Golden Dawn. This can be noted in the interaction variable's coefficient between the year, the Golden Dawn, and the immigration proportion. Because the KKE remained relatively stable throughout this time span, the impacts here are substantial. The reason

for this decrease can be explained as followed. The party became much more mainstream during the years leading up to the 2012 election. As a consequence of this emergence, the immigration population became less conceptualized by just the regions which experienced immigration first-hand, and the Golden Dawn was able to attract voters outside their usual demographic. This widely supports the idea of general radicalization within the Greek population.

Another observation comes not from what is significant, but in fact, from the opposite. Non-significant coefficients indicate that the variable of interest has no measurable impact on the relative vote share received from the Golden Dawn. Among these non-effects are the native employment rate and the immigration change. This finding is inconsistent with the main hypothesis that a negative employment rate change will increase the relative vote share of this extreme party. In the following subsection, all extreme parties in this sample are accounted for, and the finding may differ across these parties. For the Golden Dawn, however, their voters were clearly more concerned about the various immigration policies that it proposed. Nevertheless, this provides a different insight than some previous studies. The level of immigration, additionally, showed no significant impact on the Golden Dawn's relative vote share. This is fascinating, especially when considering that the immigrant proportion was greatly impactful. Even though a region was experiencing a higher level of immigration, xenophobia that the Golden Dawn promulgate may be exaggerated. So, while the messaging of this radical party may have led to an effect on regions with higher populations of immigrants, we can see that the actual levels of immigration had no such bearing.

c.) Extreme parties

The previous subsection explored relationships between several variables and their effects (or non-effects) on the relative vote share of the Golden Dawn. Now, the attention turns to these variables' impacts on extreme parties. This combines the two extreme parties of the Golden Dawn and of Syriza (remember that KKE, another extreme party, is being used as the reference party for the SUR method).

The regression for this case was replicated using a similar model found in equation 1. Dummy variables were changed from capturing only the differences in the Golden Dawn to differences in extreme parties. Respective interaction variables were similarly changed to reflect this new dummy variable. Table 4 records the results of the new difference-in-difference-in-differences regression.

Table 4: Influence of native employment rate and immigration on relative extreme vote share

Variable	Coefficient (robust standard error)	t-value	95% confidence interval
Native employment change	– 123.7952*** (38.5371)	– 3.21	[–200.3796, –47.2108]
Immigrant change	5.0246** (1.9098)	2.63	[1.2293, 8.8200]
Immigrant population	– 91.5481*** (23.5471)	– 3.89	[–138.3430, –44.7532]
Year dummy	– 539.9724*** (161.7618)	– 3.34	[–861.4399, –218.5048]
Extreme dummy	– 775.5966*** (148.2045)	– 5.23	[–1,070.1220, –481.0713]
Year x Extreme interactive	597.3225*** (168.9457)	3.54	[261.5785, 933.0665]
Year x Native employment change interactive	121.8436*** (38.8097)	3.14	[44.7174, 198.9699]
Year x Immigrant change interactive	– 4.5448 (2.9269)	– 1.55	[–10.3615, 1.2719]
Year x Immigrant population interactive	80.7224*** (25.3000)	3.19	[30.4440, 131.0008]
Extreme x Native employment change interactive	119.7368*** (39.0026)	3.07	[42.2274, 197.2463]
Extreme x Immigrant change interactive	– 4.8960** (1.9376)	– 2.53	[–8.7466, –1.0455]
Extreme x Immigrant population interactive	89.7930*** (23.9290)	3.75	[42.2391, 137.3468]
Year x Extreme x Native employment change interactive	– 120.9993*** (39.4301)	– 3.07	[–199.3582, –42.6403]
Year x Extreme x Immigrant change interactive	3.7805 (3.4516)	1.10	[–3.0788, 10.6398]
Year x Extreme x Immigrant population interactive	– 74.0701*** (26.6449)	– 2.78	[–127.0212, –21.1190]
Constant	807.0056*** (146.9806)	5.49	[514.9125, 1,099.0990]

Table 4 records the results of the difference-in-difference-in-differences regression set up by equation 1, but views extreme parties instead of simply Golden Dawn. Robust standard errors are shown in parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

The results of this regression differ considerably from that of the previous one. First, unlike the prior model, there is a well-defined economic impact on the extreme parties' relative share. Looking at the interactive variable between the year, the extreme dummy, and native employment change, we can see that as the native employment change decreases, extreme parties have gained some vote share. Compared to the moderate parties in this sample, they gained roughly an additional 121% in relative vote share for every one percent decrease in the native employment rate change. This is consistent with the main hypothesis, as it shows that extreme parties performed better in regions that were greatly impacted by the economic crisis. It makes sense for the relationship to be in this direction. As the economic hardships hit the Greek population, those who felt the brunt of it will be more likely to vote for voices arguing against the norm and who propose radical solutions to their economic problems. Ultimately, this supports that voters were radicalized by the economic conditions they were experiencing and at the expense of moderate parties.

A similarity persisted, however, between the two models. Immigration populations still yielded significant results for the extreme parties. The relationship was nearly the same when comparing it with the results found in table 6, and the directions of the effects were equivalent. As such, increases in the immigration population led to increases in the relative vote share of extreme parties in the 2009 election, and its impacts decreased during the 2012 election. The rationale behind this was explained in the above subsection. It is noteworthy, however, that the effects of nearly every variable were much larger in this regression. This could be explained in the fact that Syriza was added to the dummy and interaction variables' effects. By adding Syriza, the vote shares and their subsequent changes between 2009 and 2012 are much larger than simply looking at the Golden Dawn. As a result, we can expect (and do see) that the impacts of these variables are much larger than the previous model.

The non-effect on the immigration change also existed in the results in table 4. It was explained in the previous subsection that this discrepancy between immigration levels and immigration population proportions may be a result of the extreme parties' messaging. While parties such as the Golden Dawn were able to successfully persuade regions with high populations of an immigrant party, the actual levels of immigration experiences in the region had no impact on their relative vote share.

d.) Right-wing parties

So far, it has been shown that there were significant impacts between the Golden Dawn's relative vote share and several variables, as well as the relationship between these variables and the pooled extremist parties' relative vote share. These radical parties, however, operate on both sides of the ideological spectrum. While this indicates how voters rebelled against the moderate parties, it does not show whether they preferred the far-right or far-left parties.

Now, the attention turns to these variables' impacts on right-winged parties. This combines the two extreme parties of the Golden Dawn and of the New Democracy. The regression for this case was replicated using a similar model found in equation 1. Dummy variables were changed from capturing only the differences in the Golden Dawn to differences in the right parties. Respective interaction variables were similarly changed to reflect this new dummy variable. Table 5 records the results of the new difference-in-difference-in-differences regression.

Table 5: Influence of native employment rate and immigration on relative right-wing vote share

Variable	Coefficient (robust standard error)	t-value	95% confidence interval
Native employment change	– 79.7508 (73.2002)	– 1.09	[–225.2208, 65.7193]
Immigrant change	3.2930 (4.5325)	0.73	[–5.7144, 12.3003]
Immigrant population	– 51.23657 (39.5837)	– 1.29	[–129.9008, 27.4277]
Year dummy	– 295.9548 (235.7433)	– 1.26	[–764.4451, 172.5355]
Right dummy	– 79.5776 (293.4211)	– 0.27	[–662.6903, 503.5351]
Year x Right interactive	109.2873 (308.3964)	0.35	[–503.5857, 722.1603]
Year x Native employment change interactive	76.2616 (73.2716)	1.04	[–69.3503, 221.8735]
Year x Immigrant change interactive	– 4.2329 (4.7659)	–0.89	[–13.7041, 5.2384]
Year x Immigrant population interactive	51.5337 (40.2172)	1.28	[–28.3897, 131.4570]
Right x Native employment change interactive	31.6479 (91.7677)	0.34	[–150.7210, 214.0169]
Right x Immigrant change interactive	– 1.4326 (5.6575)	– 0.25	[–12.6757, 9.8105]
Right x Immigrant population interactive	9.1700 (50.9929)	0.18	[–92.1678, 110.5077]
Year x Right x Native employment change interactive	– 29.8352 (91.9846)	– 0.32	[–212.6352, 152.9648]
Year x Right x Immigrant change interactive	3.1566 (6.6103)	0.48	[–9.9801, 16.2933]
Year x Right x Immigrant population interactive	– 15.6926 (52.5695)	– 0.30	[–120.1634, 88.7782]
Constant	458.9961** (229.8740)	2.00	[2.1698, 915.8223]

Table 5 records the results of the difference-in-difference-in-differences regression set up by equation 1, but views right-winged parties instead of simply Golden Dawn. Robust standard errors are shown in parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

The results from table 5 may seem unsatisfying as almost no expected factors influenced the relative vote share of right-winged parties. In fact, the only coefficient reporting significance came from the constant, which tells us little to nothing about the desired relationships. It does, however, show that right-winged parties fared no better than left-winged ones. When looking at the results from the previous section (which analyzes the effects for extreme parties), we see that extreme parties had such effects, but this has not been shown for only right-winged ones.

One source of such outcome stems from the inclusion of the New Democracy. This party, while right-leaning, is relatively moderate and well established as the second-largest political party following the 2009 elections. While it may have become the most powerful one after the 2012 elections, it was not because it rose to this stature, but rather, it didn't lose as many votes as Pasok. Because it still lost a significant amount of vote share, it may offset any gains received by the Golden Dawn during this period of economic crisis. Additionally, because it was established, we may be seeing the opposite effects of what was expected for the Golden Dawn, which also offset each other. Nevertheless, the results here show that being a right-winged party had not drawn additional support from the Greek electorate.

VII. Implications

a.) Fixed effects analysis

The results from the previous section underlie applicable implications. Policy decisions, economic impacts, and political expectations can all be inferred from this research, and they will be explored in detail in the following subsection.

With the methodology and results from table 4, we can see that economic conditions in this environment led to a significant impact on the vote share for both radical parties. While this is

useful for predicting and expecting political outcomes, it does not necessarily inform observers about specifically vulnerable communities that are susceptible to radicalization. To achieve this, a fixed effects model, utilizing the components of regressions already ran, will be able to show differences amongst every region. Three parties were analyzed for this model: the Golden Dawn, an emerging far-right party; Syriza, an emerging far-left party; and the New Democracy, an established moderate party. Table 6 displays the results of such analysis.

Table 6: Fixed effects of regions on vote share

Variable/Region	For Golden Dawn	For Syriza	For New Democracy
Native employment change	− 0.6876***	− 1.3193***	1.5066***
Constant	1.2368	5.0657	33.6652***
Kentriki Makedonia	− 1.2834	− 3.5646	4.2158
Dytiki Makedonia	− 1.6425	− 3.5636	7.7650
Thessalia	− 0.5216	− 0.5537	1.6120
Ipeiros	− 1.5652	0.5513	3.6743
Ionia Nisia	1.5029	4.5467	− 5.5850
Dytiki Ellada	− 1.3341	− 1.7263	1.2913
Sterea Ellada	− 3.5744	− 6.8979*	6.8982
Peloponnisos	− 0.02880	− 3.7571	9.1003
Attiki	− 1.0937	1.1279	− 4.2767
Voreio Aigaio	0.8043	3.1412	− 7.1980
Notio Aigaio	1.4145	2.3448	− 6.8703
Kriti	− 4.0504*	− 3.6788	− 5.8432
Prob > F (for each regression)	0.0002***	0.0307**	0.0044***

Table 6 records the results of a fixed effects regression. The prob>f shows significance for each regression.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

The results from table 6 show which regions were particularly susceptible to the respective parties. Values next to the region represent the change of the constant, or starting value, for each respective party. So those with a negative value were much less likely to support that party. It would require a much larger change in the native employment rate to reach such significant impacts. Meanwhile, regions containing a positive number were more likely to support that party and did not require as large of an economic impact to continue their support. With this, we can see the few regions that were initially inclined to support the Golden Dawn and, thus, more susceptible to radicalization. When looking at Syriza, there is a similar trend, especially as some of these reasons overlap with their support of the Golden Dawn.

b.) Discussion of general implications

The research outlined several implications that can be inferred from our results. First, there are significant economic effects on the vote share that parties must account for. While this was not the case for just Golden Dawn, it had such impacts on the overall outcome of extreme parties. In order to avoid the rise of extremism, nations must become more aware of the harmful influences in their respective societies. In this case, the native employment rate was a cause of concern. The government should be especially vigilant in combating economic crises and should not undervalue the potential of extreme parties. These parties were able to thrive in particular regions, as can be seen in table 6 above. Being aware of such issues and hotspots allows the government to properly prioritize affairs. Providing relief in these specific regions could prevent further radicalization and stunt the efforts of extreme parties. Additionally, the controlling government needs to be able to adjust its policies to adapt to the needs of the people. Finding alternative ways to appeal to voters

is crucial for maintaining stability, allowing the government to hold on to authority without itself becoming radicalized.

The effects also suggest the country could be experiencing proliferating polarization. Because the extreme parties garnered significant effects while right-winged parties did not experience such results, it is clear that the population has nonuniformly shifted from moderate parties to extreme ones on both ends of the ideological spectrum. This implication can be used to describe the state of the Greek electorate, divided and diverting away from the middle ideology. This polarization comes at the expense of moderate parties, that is the New Democracy and Pasok, as they struggle to shift their platform to the ends of the spectrum. Along with the parties, the moderate ideology is also lost amongst rising polarization, which shows how radicalization occurs throughout the population.

Furthermore, this research does not show the impacts stemming from the incumbent. We should expect that as a consequence of a failing economy, voters would reject the party that was currently running the show. While this certainly proved the case (as Pasok lost its position as the most powerful party), the New Democracy – the main opposition party to the incumbent – also performed poorly in the election, counter to this belief. So, the compelling mechanism at play is not only a revolt of the incumbent party, but also its underlying ideology. The electorate is rebelling against all moderate parties and not just against the incumbent. This may be the reason for the stability and small gains of the KKE, another established party and "incumbent," but with an extreme ideology. When given an alternative to the principal incumbent, voters will prefer a party (whether established or emerging) with a radical agenda over one that is moderate. The economic and some immigrant proportions show the factors that played a major role in this type of radicalization.

Immigration was also heavily explored in this study. It is important to distinguish the differences between the immigrant population and immigration levels. Although the immigration population did have effects on the vote share, it was found that the levels of immigration had no significance on the rise of radical parties in Greece. This expands on the conclusions of Hangartner's research (2019). So, while Greek voters did express worry about the impacts of the immigrant population, it may have been falsely attributed to them as the actual immigration levels did not appear to influence the vote share. Even though radical parties push for anti-immigrant and nationalistic measures, this was not observed to be the reason for their success in the 2012 elections. Hopefully, this will enable moderate parties in power to continue endeavors to help immigrants in their country without fear of political repercussions. This is an imperative finding in this study, as immigrants are widely used as a scapegoat even though they are commonly the most vulnerable in the population. The blame that immigrants endure for a number of social issues, particularly that of the rise of extremism, is actually at the fault of markets. And Greek citizens voted accordingly, not because radical parties were spewing anti-immigrant rhetoric but in spite of it.

The outcomes from this research may also have vast insights on the upcoming struggles facing much of the world. With the recent COVID-19 outbreak, which has been declared a pandemic by the World Health Organization, global and national economies have been severely stunted. This pandemic may usher in a new and unknown era of economic hardships as businesses will be forced to close or shut down and employees being furloughed or dismissed. This study showed that while underlying economic conditions did not lead to a rise of the far-right party Golden Dawn, it did have influence over the general vote share of all extreme parties. As a result of this new potential economic crises arising from COVID-19, the current Greek government and

its subsequent key political parties may be able to make predictions on their own vote share and better prepare for any election brought forward in the coming years.

VIII. Shortcomings and future research

The main dependent variable used in this research was the vote share of extreme parties, used to approximate levels of political radicalization. Another option besides elections could be to look at polls, which would potentially offer a benefit not seen in election outcomes. Whereas elections are infrequent and perhaps unreflective of interim change, polls are taken regularly and can allow for more time-dimensional analysis that aligns with the panel data found in the *Eurostat* dataset. Of course, polling data is both difficult to gather at the Greek regional level and is often not made available to the public for further inspection. Also, other independent variables can be explored that may have better or additional insights into the economic conditions of the Greek people.

The regions used in this study were acquired at NUTS level 2, and the reasons for why were explained in the data section (section IV). Future research, however, can expand on this by using regions at NUTS level 3. Particularly as more data is released, this could provide additional insights not recorded in this study. It should be noted that this study was researched and compared to a previous study that did incorporate NUTS level 3. There were only differences in regressions that incorporated our own immigrant controls. It would be useful to also compare this previous study with that of immigrant data with the NUTS level 3 regions.

It could be challenging to prove causality. Causality could be difficult to implement as radical parties could affect the overall economy, rather than what was shown throughout this paper. The three criteria to establish a causal relationship will need to be better built. An instrumental

variable could be included in the regression to make it more accurate. While this study takes measures to foster external validity, this area can be further explored. Multiple treatment interference is a major threat to such validity. Greece certainly has a distinct history and culture that may impact the economy and politics in its own way. Greece may be a unique case, as its economy reached near depression levels, but chances are that certain characteristics of the country can be seen in other examples.

A supplementary literature review can also be utilized to help with a number of areas. More readings related to causality between the economy and political outcomes will help better make a case for causality in general. This would help resolve the problem described in the paragraph above. More literature to better understand Greece's incident will be needed. This could be expanded to particular countries of interest to learn more about their current state, including its dominating parties and immigration fluctuation.

Lastly, this research was able to utilize Greece, as it was experiencing mass economic declines and the emergence of radical parties. While this may be an extreme case, the rise of far-right parties is not unique to Greece. Further research can expand upon the results found in this study to include different or multiple countries. Other countries may have differing effects, and it could prove that the results of this study only apply to Greece.

IX. Conclusion

A government's success can be determined by many considerations, one being how – or whether – it redeems or improves the economic status of its country. The Greek government, in this case, unequivocally failed to satisfy its citizens in these areas, as it was unable or unwilling to enact effective policies that would have relieved the nation of its latest recession. In the midst of

such economic calamity, extreme parties were able to gain eminence and vast popularity from the public's support, as their proposals undoubtedly contrasted from those of the established government. These parties pose hazards, albeit possibly to different degrees, to the welfare and overall stability of the modern-day Greek society.

One conclusion is clear, though: the complete breakdown of the economy and Greece's consequent financial crisis are what ultimately allowed radical political parties to blossom in the 2012 elections and endanger both Greek democracy and the status quo. We were able to see the gains that a negative economic environment had for extreme parties at the expense of moderate and well-established ones. We were also able to see that immigrant levels, which radical parties often demonize, actually had no impact on radicalization. Regions that were particularly vulnerable to radicalization were also observed. Hopefully, with this knowledge, parties, financial institutions, and surrounding governments who make up international and regional bodies will be better able to prepare, assess, and prioritize various policies to stem the spread of radicalization in Greece.

X. Appendix

a.) Definitions, sources, and summary statistics of variables

Table 7: Definitions, sources, and summary statistics of variables used in analysis

Model component	Variable name	Stata name	Source	Def.	Obs.	Mean	Standard deviation	Min.	Max.
Economic development	Native employment	emp_nat	Eurostat regional dataset	Number of native Greeks employed, in thousands of persons	130	289.59	343.33	63.4	1502.9
	Native employment change	emp_nat _chg	Generated	Percent change of native Greeks employed from previous year	130	-4.283	4.166	-14.167	1.803
	GDP	gdp	Quality of Government regional dataset	GDP by region, in millions of euros	130	16489.9	26455.9	2678.2	116001.
	GDP change	gdp_chg	Generated	Percent change of GDP from previous year	130	-4.88	3.27	-9.20	4.94
	Employment	emp	Eurostat regional dataset	Number of persons employed by region, in thousands of persons	130	343.62	432.86	68.43	1184.92
	Employment change	emp_chg	Generated	Percent change of persons employed from previous year	130	-2.73	3.17	-7.99	1.69
Radicalization and voting	Vote share	votes_p	European Election Database	Percent of total received by regions	130	15.76	14.09	0.12	58.77
	Vote share	votes_n	European Election Database	Number of votes received by region	130	78650.6	114820.3	256	788670
	Vote change	votes _chg	Generated	Percent change of vote share from previous election	65	504.92	977.21	-77.98	3271.96
	Relative vote share	votes_p_ rel_kke	Generated	Percent vote share of respective party divided by vote share of KKE by region	104	262.05	282.92	1.510	1277.6

	Relative vote share	votes_p_rel_nd	Generated	Percent vote share of respective party divided by vote share of KKE by region	104	50.871	47.642	0.428	224.48
	Ideology	ideo	ParlGov	Party ideological score, with 0 as most left and 10 as most right ideology	130	4.84	2.70	1.253	8.8
	Turnout	turnout_p	European Election Database	Percent of votes received by region	130	65.147	7.320	48.58	77.21
	Electorate	electorate	European Election Database	Number in electorate by region	130	764723.	692247.1	239236	2834044
Control variables	Total population	pop_n	Eurostat regional dataset	Population by region, in thousands of persons	130	722.15	859.22	166.5	3460.6
	Total population change	pop_chg	Generated	Percentage change of population from previous year	130	0.178	0.787	-1.10	2.45
	Immigrant population	pop_for	Eurostat regional database	Population of immigrants by region, in thousands of persons	130	48.77	89.59	5.70	368.10
	Immigrant population change	pop_for_chg	Generated	Percentage change of Greek citizen population from previous year	130	11.02	22.56	-25.89	82.77
	Immigrant population proportion	pop_for_prop	Generated	Percent population of immigrants divided by total poplulation	130	5.256	2.351	2.361	10.637
	Primary education	edu_prim	Eurostat regional database	Percentage of population who completed only a primary education or less	130	43.23	7.15	22.5	55.1
Lag variables	Previous year native employment change	yr1_emp_nat_chg	Generated	Previous year percentage change of native Greeks employed from previous year	130	-2.788	4.462	-9.446	6.533

	Previous year GDP change	yr1_gdp _chg	Generated	Previous year percentage change of native Greeks employed from previous year	130	-2.2911	6.5363	-12.852	6.5048
	Previous year immigrant population change	yr1_pop _for_chg	Generated	Previous year percentage change of Greek immigrant population from previous year	130	-1.5632	24.8159	-98.233	31.8182
	Previous year immigrant employment change	yr1_emp _for_chg	Generated	Previous year percentage change of Greek immigrants employed from previous year	130	-1.0436	21.5379	-38.554	37.7049
Dummy variables	Extreme party	extreme	Generated	Equal to 1 when party is extreme and 0 when moderate	130	0.60	0.49	0	1
	Right party	right	Generated	Equal to 1 when party is right and 0 when left	130	0.40	0.49	0	1
	2012 year	yr12	Generated	Equal to 1 when year is 2012 and equal to 0 when other year	130	0.50	0.51	0	1
Interaction variables	Year x Golden Dawn	time_gd	Generated	Interaction term between dummies above	104	0.125	0.332	0	1
	Year x Extreme	time_ex	Generated	Interaction term between dummies above	104	0.25	0.435	0	1
	Year x Right	time_rt	Generated	Interaction term between dummies above	104	0.25	0.435	0	1
	Year x Native employment rate change	time_emp	Generated	Interaction term between dummies above	104	-3.349	4.624	-14.167	1.803
	Year x Immigrant proportion	time_ imm_prop	Generated	Interaction term between dummies above	104	2.445	2.876	0	1

Year x Immigrant change	time_imm_chg	Generated	Interaction term between dummies above	104	-1.942	6.728	-25.888	11.765
Golden Dawn x Native employment rate change	gd_emp	Generated	Interaction term between dummies above	104	-1.071	2.797	-14.167	1.803
Golden Dawn x Immigrant proportion	gd_imm_prop	Generated	Interaction term between dummies above	104	1.314	2.571	0	10.637
Golden Dawn x Immigrant change	gd_imm_chg	Generated	Interaction term between dummies above	104	2.754	12.266	-25.888	82.787
Extreme x Native employment rate change	ex_emp	Generated	Interaction term between dummies above	104	-2.142	3.650	-14.167	1.803
Extreme x Immigrant proportion	ex_imm_prop	Generated	Interaction term between dummies above	104	2.628	3.120	0	10.637
Extreme x Immigrant change	ex_imm_chg	Generated	Interaction term between dummies above	104	5.508	16.899	-25.888	82.787
Right x Native employment rate change	rt_emp	Generated	Interaction term between dummies above	104	-2.142	3.650	-14.167	1.803
Right x Immigrant proportion	rt_imm_prop	Generated	Interaction term between dummies above	104	2.628	3.120	0	10.637
Right x Immigrant change	rt_imm_chg	Generated	Interaction term between dummies above	104	5.508	16.899	-25.888	82.787
Year x Golden Dawn x Native employment rate change	time_gd_emp	Generated	Interaction term between dummies above	104	-0.837	2.733	-14.167	1.803
Year x Golden Dawn x Immigrant proportion	time_gd_imm_prop	Generated	Interaction term between dummies above	104	0.611	1.789	0	9.945
Year x Golden Dawn x Immigrant change	time_gd_imm_chg	Generated	Interaction term between dummies above	104	-0.486	3.469	-25.888	11.765
Year x Extreme x Native employment rate change	time_ex_emp	Generated	Interaction term between dummies above	104	-1.675	3.677	-14.167	1.803

	Year x Extreme x Immigrant proportion	time_ex_ imm_prop	Generated	Interaction term between dummies above	104	1.223	2.376	0	9.945
	Year x Extreme x Immigrant change	time_ex_ imm_chg	Generated	Interaction term between dummies above	104	-0.971	4.857	-25.888	11.765
	Year x Right x Native employment rate change	time_rt_ emp	Generated	Interaction term between dummies above	104	-1.675	3.677	-14.167	1.803
	Year x Right x Immigrant proportion	time_rt_ imm_prop	Generated	Interaction term between dummies above	104	1.223	2.376	0	9.945
	Year x Right x Immigrant change	time_rt_ imm_chg	Generated	Interaction term between dummies above	104	-0.971	4.857	-25.888	11.765
Previous research variables	Economic shock	tn_shock	Tubadji-Nijkamp dataset	Adjusted budget deficit, as defined by Eurostat	130	-6.85	5.37	-12.2	-1.5
	Culture	tn_anti monarchy	Tubadji-Nijkamp dataset	Percentage of voters who opposed monarchy in 1974 referendum	130	67.25	8.70	53.46	90.77

b.) Other regression results

Table 8: Results including lag variables

Variable	Case 1. Golden Dawn only	Case 2. Extreme parties	Case 3. Right-winged parties
Lag native employment change	– 13.6956 (22.4160)	–17.1353 (25.01873)	–9.04771 (6.1634)
Lag immigrant change	0.9497 (1.3899)	1.8774 (1.1681)	2.02831 (2.6973)
Lag immigrant population	– 24.7984 (27.6659)	–39.8550* (23.5326)	–13.4943 (28.5673)
Year dummy	–323.5429* (167.6857)	–518.521*** (164.896)	–155.8633 (235.4208)
Case dummy	– 541.841*** (139.888)	–795.862*** (124.886)	–81.8240 (250.7804)
Year x Case interactive	354.5745** (169.8583)	571.8772*** (184.256)	110.6646 (279.1674)
Year x Lag native employment change interactive	13.7672 (23.06308)	18.9832 (26.02394)	12.5328 (10.1716)
Year x Lag immigrant change interactive	– 0.03032 (2.6247)	–0.2569 (3.2906)	2.3888 (2.1627)
Year x Lag immigrant population interactive	21.1630 (28.8168)	28.6589 (25.5860)	7.9115 (30.7259)
Case x Lag native employment change interactive	18.3536 (22.2288)	15.8873 (25.1418)	–4.04897 (22.2913)
Case x Lag immigrant change interactive	-0.1806 (0.3600)	–1.8677 (1.1923)	0.7157 (2.2415)
Case x Lag immigrant population interactive	20.2209 (26.06862)	40.4001* (23.8016)	–10.1189 (46.6178)
Year x Case x Lag native employment change interactive	– 19.7759 (23.1685)	–19.9879 (26.6721)	3.7060 (24.2573)
Year x Case x Lag immigrant change interactive	– 0.7534 (2.6810)	0.12473 (3.7296)	–0.01285 (4.3580)
Year x Case x Lag immigrant population interactive	– 12.9180 (27.6216)	–21.6280 (27.2843)	1.2500 (48.2006)
Constant	565.0661*** (145.9328)	826.0157*** (123.758)	411.6277** (184.9333)

Table 8 records the results of the difference-in-difference-in-differences regression set up by equation 1 but includes lags (t–1). Standard errors are shown in parentheses. "Case" for some of the interaction and dummy variables in the variable column refers to the corresponding case dummy at the top of columns 2-4 (i.e. GD, extreme, and right).

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

Table 8 above shows the result of a similar regression run in equation 1 and table 3 but includes lag variables. The coefficients recorded in table 8 show a lack of significance found in its counterpart. A valuable insight from these results indicates that voters are short-sighted and do not take into account past conditions to make their decisions. Rather, the conditions that they were currently in is a better predictor and had more impacts on parties' vote share.

c.) OLS discussion and regressions

OLS was also utilized as another method to analyze the desired relationships. While this method has several issues (as discussed in section V), it can be used as a way to compare this study to other ones, particularly the work of Frey and Weck (1983). This method is also similar to that explored in Tabadji and Nijkamp's (2019) study and can incorporate their data into our own analysis for comparisons. The results of this subsection also reinforce the findings of the methods in the primary methodology, particularly the effects (and non-effect) of the variables and the direction of their relationship. Nothing in this subsection shall be construed as the main finding or methodology of this research.

i.) Simple OLS regressions

First, we analyze the basic components of our research. As discussed in the previous sections, our independent variable of native employment rate change is expected to have direct results on our dependent variable of the number of votes captured by extreme parties. Equations 2.1 and 2.2 show how our basic regression will be set up (remember that extreme parties have a dummy variable equal to 1, while moderate parties are equal to 0).

$$Votes_{t,extreme=1} = \beta_1 native\_employment\_change_{it} + \beta_0 + e_t, \quad (2.1)^*$$

$$Votes_{t,extreme=0} = \beta_1 native\_employment\_change_{it} + \beta_0 + e_t, \quad (2.2)$$

While these simple set of equations will be expanded in the following subsection, this will provide a foundation for our research. Notice how the terms β_1 and β_0 will quantify not only the amount of vote share based on the native employment change, but they will also illustrate the differences experienced by extreme and moderate parties. Table 9 provides the results of this basic regression, highlighting these coefficients as well as the level of significance.

Table 9: Influence of native employment rate on radicalization, simple OLS regression results

Party type	Variable	Coefficient (standard error)	t-value	95% confidence interval
Extreme	Native employment change	-0.4554^{***} (0.1318)	-3.46	$[-0.7179, -0.1929]$
	Constant	5.0534^{***} (0.7860)	6.43	[3.4880, 6.6188]
Moderate	Native employment change	1.5799^{***} (0.3764)	4.20	[0.8239, 2.3359]
	Constant	35.6729^{***} (2.2447)	15.89	[31.1644, 40.1814]

Table 9 records the results of the simple OLS regression set up by equations 2.1 and 2.2. Standard errors are reported in the parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

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* Equations 2.1 and 2.2 can be combined into one using a dummy variable for extremism, as depicted below. For purposes of this analysis, this equation has been separated to run separate regressions and better determine independent significance of variables. This is also the case for equations 3.1 and 3.2 to come.

$$Votes_t = \beta_0 + \beta_1 native\_employment\_change_t + \beta_2 extreme + \beta_3 native\_employment\_change_t * extreme + e_t$$

The results of table 9 show clear levels of statistical significance for the independent variable as well as for the constant. These results for our coefficients can be inserted into equations 2.1 and 2.2, creating equations 2.3 and 2.4 below.

$$\widehat{Votes}_{t,extreme=1} = -0.4554 \; native\_employment\_change_{it} + 5.0534 , \quad (2.3)$$

$$\widehat{Votes}_{t,extreme=0} = 1.5799 \; native\_employment\_change_{it} + 35.6729 , \quad (2.4)$$

These equations demonstrate several concepts, which hopefully will be supported throughout this analysis section. First, we can see that our expectations and hypotheses are met. Specifically, in equation 2.3, as the native employment rate change decreases from one year to the next by 1% (a negative change), the expected vote share of extreme parties increases by approximately 0.46%. While this may seem small, consider that the Greek regions experienced an average decrease of 4.2%, resulting in an increase of nearly 2% for each extreme party. This is noticeably substantial for parties that are mostly emerging, particularly in cases where tremendous employment change can result in vote share increases of as much as 7%. These increases of vote share for extreme parties, of course, come at a cost, particularly for parties with a moderate ideology. Equation 2.4 shows that as the native employment rate change decreases from by the same 1%, the expected vote share of moderate parties decreases by approximately 1.58% for each moderate party.

Second, we see significant differences between the two β_0 values of the equations. The starting point of moderate parties is much higher than that of extreme parties. This makes sense as most of the extreme parties are emerging, and the moderate parties are well established, which can be noted in table 2. Pasok and the New Democracy have had considerably higher turnout in the 2009 elections, a trend expected to continue in the 2012 election. The three extreme parties,

meanwhile, had a much lower showing in the 2009 elections. Emerging parties, thus, have much to gain, and moderate parties have a lot to lose.

Third, comparing the two β_1 values of the equations, we can see significant differences, especially as the confidence intervals do not overlap. The absolute values of the coefficients show that economic declines impact moderate parties' vote share more than it helps extreme parties. This can be a result of the voters' dislike of the moderate, and controlling, parties handling of the crisis. While they are quick to take votes away from these major parties, it does necessarily mean they are selecting one of the extreme parties here, as there a plethora of other minor extreme and moderate parties who lack the organizing capabilities of an established party to consolidate.

ii.) OLS regression with immigration controls

Now that there is a foundation for our regressions, we can run one that analyzes another one of our crucial relationships. The results in the previous subsection show a significant causal relationship between the change of the native employment rate on the vote share for both extreme and moderate parties. This next analysis expands upon such findings, taking into account immigration data. As described in previous sections, immigration plays an important role in many elections; extreme parties, like the Golden Dawn, made it a poignant aspect of their platforms and campaigns leading up to the 2012 elections in Greece. The question still lies ahead on whether actual immigration levels play a role in the decision-making process of Greek voters.

To achieve this, equations 2.1 and 2.2 are expanded to include immigration data. Equations 3.1 and 3.2 construct such regression.

$$Votes_{t,extreme=1} = \beta_1 native\_employment\_change_t + \sum_{k=2}^{5} \beta_k control_t + \beta_0 + e_{it}, \quad (3.1)$$

$$Votes_{t,extreme=0} = \beta_1 native\_employment\_change_t + \sum_{k=2}^{5} \beta_k control_t + \beta_0 + e_t, \quad (3.2)$$

The major difference between this set of equations and the set previously provided includes the summation of controls used. Four controls have been utilized: immigrant employment change, total population, immigrant population, and immigrant population change. These indicators will be able to reveal much insight into its effects on the expected vote share for both extreme and moderate parties. While the quantity of each coefficient will be important to note, its significance may also be telling. Table 10 provides the results of this regression.

Table 10: OLS influence of native employment rate on radicalization, with immigration

Party type	Variable	Coefficient (standard error)	t-value	95% confidence interval
Extreme	Native employment change	− 0.2651* (0.1419)	− 1.87	[− 0.5481, 0.01778]
	Immigrant employment change	− 0.07659 (0.05770)	− 1.33	[− 0.1916, 0.03844]
	Immigrant population change	− 0.024856 (0.05779)	− 0.43	[− 0.1401, 0.09035]
	Immigrant population	0.04066* (0.02216)	1.83	[− 0.003521, 0.08484]
	Total population	− 0.004269* (0.002350)	− 1.82	[− 0.008954, 0.0004158]
	Constant	7.5391*** (1.0863)	6.94	[5.3736, 9.7046]
Moderate	Native employment change	0.8304** (0.3366)	2.47	[0.1528, 1.5079]
	Immigrant employment change	0.3291** (0.1369)	2.40	[0.05365, 0.6046]
	Immigrant population change	0.03326 (0.1371)	0.24	[− 0.2426, 0.3092]
	Immigrant population	− 0.1169** (0.05256)	− 2.22	[− 0.2227, − 0.01112]
	Total population	0.01256** (0.005574)	2.25	[0.001346, 0.02378]
	Constant	27.4481*** (2.5763)	10.65	[22.2623, 32.6340]

Table 10 records the results of the OLS regression with immigration controls set up by equations 3.1 and 3.2. Standard errors are reported in the parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

The results from table 10 provide new insights into how economic conditions affect political radicalization. First, compared to the previous simple regression, the impact of the native employment rate change on vote share has nearly halved for both extreme and moderate parties. This may be a more accurate effect than before, precisely because other controls were accounted, which also report statistical significance. Nonetheless, the direction of these effects is the same, even with these control variables being accounted for. The constant for the set of equations has similarly decreased, although not by the same rate as the independent variable. Again, similar to the previous simple regression, the main finding – that moderate parties start with a much larger base value than extreme parties – holds in these results.

Additionally, immigrant employment change in this regression has a significant effect on the vote share for moderate parties but not for extreme parties. The insight here provides that regions with better economic conditions all around (i.e., conditions that benefit native as well as immigrant employment) may spill over to the advantage of moderate parties. Regions with greater economic decline in immigrant employment, however, had no statistical effect on extreme parties. This demonstrates the ability of radical parties to capitalize on natives who experience economic hardships, while paying little to no attention on those of immigrant groups.

Furthermore, the total population, as well as the immigrant population (in thousands of persons), impacted the vote share in both equations 3.1 and 3.2. This can be interpreted as a possible cultural effect of the electorate. Many accounts detail that cities and other areas with large concentrations of persons may share traits that make them less susceptible to radicalization, and that is evident in this sample as well. In the results recorded in table 10, moderate parties benefit from a region with a larger population (as the total population coefficient is positive), as they gain 0.012% in their vote share for every thousand person residing in that region. On the other side,

extreme parties receive a fewer share of votes – 0.0043% less for every thousand person – as the total population of a region increases. The effect of the immigrant population, however, had the opposite effects of the total population control. This may also be measuring a cultural aspect of regions, where those that are exposed to larger populations of immigrants grow potential resentment leading to radicalization.

As mentioned earlier in this paper, this possible cultural control of the immigrant population may not be painting a complete picture of radicalization. Even though a region has a larger immigrant population, fears of greater immigration that extreme parties promulgate may be exaggerated. This can be seen in the effects of immigrant population change. Because the results from this variable are statistically insignificant, the flow of immigrants into a region had no apparent impact on the number of votes a party received. So, while the messaging of radical parties may have led to an effect on regions with higher populations of immigrants, we can see that the actual levels of immigration (i.e., immigrant population change) had no such bearing.

iii.) OLS regression including lag variables

In addition to the regressions above, it may be relevant to view the economic performance from the previous year. Elections span over multiple years, and the conditions leading up to them may play a critical role in the decisions of voters. It could also be the case, however, that it is the current situation that is most impactful. Regardless, lag variables were included to cover these possibilities. Regressions were run in a way similar to those discussed in the above two subsections. Tables 11 records the results of a simple regression with lag variables.

Table 11: Results from basic OLS regression including lag variables

Party type	Variable	Coefficient (standard error)	t-value	95% confidence interval
Extreme	Previous year native employment change	− 0.45719*** (0.1215)	− 3.76	[− 0.6992, − 0.2152]
	Constant	5.7293*** (0.6376)	8.99	[4.4594, 6.9992]
Moderate	Previous year native employment change	1.5539*** (0.3445)	4.51	[0.8619, 2.2459]
	Constant	33.2381*** (1.8078)	18.39	[29.6071, 36.8691]

Table 11 records the results of the simple OLS regression set up by equations 2.1 and 2.2 but includes lags (t–1). Standard errors are recorded in the parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

The simple regression, with results in table 11, shows remarkably similar and consistent results to its current economic counterpart. It reiterates that as regions experience more economic decline, extreme parties benefit in vote share at the expense of moderate parties. The quantity and direction of such effects are nearly the same, with the exact quantities of the previous being captured in the confidence interval. The results here can be explained for a couple of reasons. It could be that the economic trend has continued for each region. Although the average change for the lag employment rate variable was greater than that of the election year change (which can be found in table 7), if all regions were moving at the same or similar rates, we would not be able to tell if

voters have been considering previous economic states. It could also be explained that voters had

considered previous conditions and still voted in a manner consistent with current conditions.

Table 12 records the results of the regression with lag and control variables.

Table 12: Results from OLS regression with immigration controls including lag variables

Party type	Variable	Coefficient (standard error)	t-value	95% confidence interval
Extreme	Previous year native employment change	− 0.3151** (0.1267)	− 2.49	[− 0.5677, − 0.06254]
	Previous year immigrant employment change	− 0.1137*** (0.03074)	− 3.70	[− 0.1750, − 0.05246]
	Previous year immigrant population change	0.01158 (0.02524)	0.46	[− 0.03874, 0.06189]
	Immigrant population	0.03414 (0.02102)	1.62	[− 0.007769, 0.07604]
	Total population	− 0.0029778 (0.002209)	− 1.35	[− 0.007381, 0.001426]
	Constant	6.5105*** (0.8220)	7.92	[4.8718, 8.1492]
Moderate	Previous year native employment change	0.9474*** (0.2839)	3.34	[0.3759, 1.5189]
	Previous year immigrant employment change	0.4298*** (0.06889)	6.24	[0.2911, 0.5684]
	Previous year immigrant population change	− 0.07163 (0.05656)	− 1.27	[− 0.1855, 0.04222]
	Immigrant population	− 0.08551* (0.04711)	− 1.82	[− 0.1803, 0.009309]
	Total population	0.007063 (0.004950)	1.43	[− 0.002901, 0.01703]
	Constant	30.9534*** (1.8420)	16.80	[27.2456, 34.6611]

Table 12 records the results of the OLS regression set up by equations 3.1 and 3.2 but includes lags (t–1). Standard errors are reported in the parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

The regression with lag and immigrant control variables is also similar but with some distinct differences. There is a greater discrepancy in the quantity of effects; however, the confidence intervals do overlap, making them statistically equivalent. Reasons for similarities in this regard were explored in the previous paragraph. Additionally, while immigrant employment change for election years were insignificant for extreme party vote share, it was statistically significant when including the lag variables. This suggests that there may be some factor for the overall economic condition of the previous year that is weighed by voters. Lastly, the total population control is statistically insignificant in the lag regression, even though it was significant in the prior regression, indicating that this cultural variable was pushed aside by voters who placed more weight on their economic factors. It is important to note that even with these differences, the immigrant population change, or immigration levels, had no impact on the vote share for either moderate or extreme parties.

iv.) Comparing previous research results

Thus far, we have been able to see the impacts of economic conditions and immigrant controls on political radicalization using our own independent research, variables, and sources. While this provides new insights for extremism in Greece, there has been another paper that has made similar estimations using differing methods and key variables, which were discussed in detail in the literature review section (Tubadji and Nijkamp). To compare results and inspect variables, some of their data was inserted into our dataset. Table 13 records the results of both simple and controlled regressions.

Table 13: Results from OLS regression using previous research controls

Party type	Variable	Simple: Coefficient (standard error)	Controls: Coefficient (standard deviation)
Extreme	Adjusted deficit	– 0.6033*** (0.08596)	– 0.5835*** (0.1076)
	Anti-monarchy	0.01898 (0.05541)	– 0.001706 (0.05782)
	Constant	1.5948 (3.7256)	3.2707 (3.7355)
	Immigrant population change		– 0.01027 (0.02089)
	Immigrant population		0.01891 (0.01781)
	Total population		– 0.001326 (0.001854)
Moderate	Adjusted deficit	2.1003*** (0.1628)	1.9916*** (0.2197)
	Anti-monarchy	– 0.1434 (0.1662)	– 0.08891 (0.1813)
	Constant	52.9397*** (10.3281)	48.3435*** (11.7950)
	Immigrant population change		0.04511 (0.06902)
	Immigrant population		– 0.03548 (0.02653)
	Total population		0.001963 (0.002641)

Table 13 records the results of both the simple and complex OLS regression using previous authors' independent and instrumental variables. Standard errors are reported in the parentheses.

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

There are several discrepancies between their results and the results ran in our regression utilizing their data. Those simple quantities found in table 13 (which are nearly the same when compared to the author's own calculations) are statistically equivalent to the simple regression performed when using the native employment rate change, which is found in table 9. The complex model, which incorporates a combination of our and their variables, however, calculates a higher effect than that found in our results in table 10.

Furthermore, an important variable used in the previous research paper, the instrumental variable of anti-monarchy proportion as a result from the Greek 1974 national referendum, showed insignificant effect when used in our regressions. There has been much skepticism in using this as a proper instrumental variable, especially as it has appeared insignificant in a few OLS regressions run by the authors in their own paper. The results from this election occurred nearly forty years prior to the elections where the party of focus, the Golden Dawn, successfully gained seats in the European Parliament. Much can change in the population, culture, and other unexplainable features of a region during this large time gap. Particularly in our results, we can see that this potential instrumental variable is not useful for the understanding of the research goal.

v.) Marginal predictions

With the results from table 10, we can make some predictions on electoral outcomes. Equations 3.1 and 3.2 were used to create figure 7. In order to see marginal native employment change, the mean values of all variables, except for native employment change and vote share, were filled in the gaps of those equations. Now, we can see how differing native employment changes impact the predicted vote share for moderate and extreme parties.
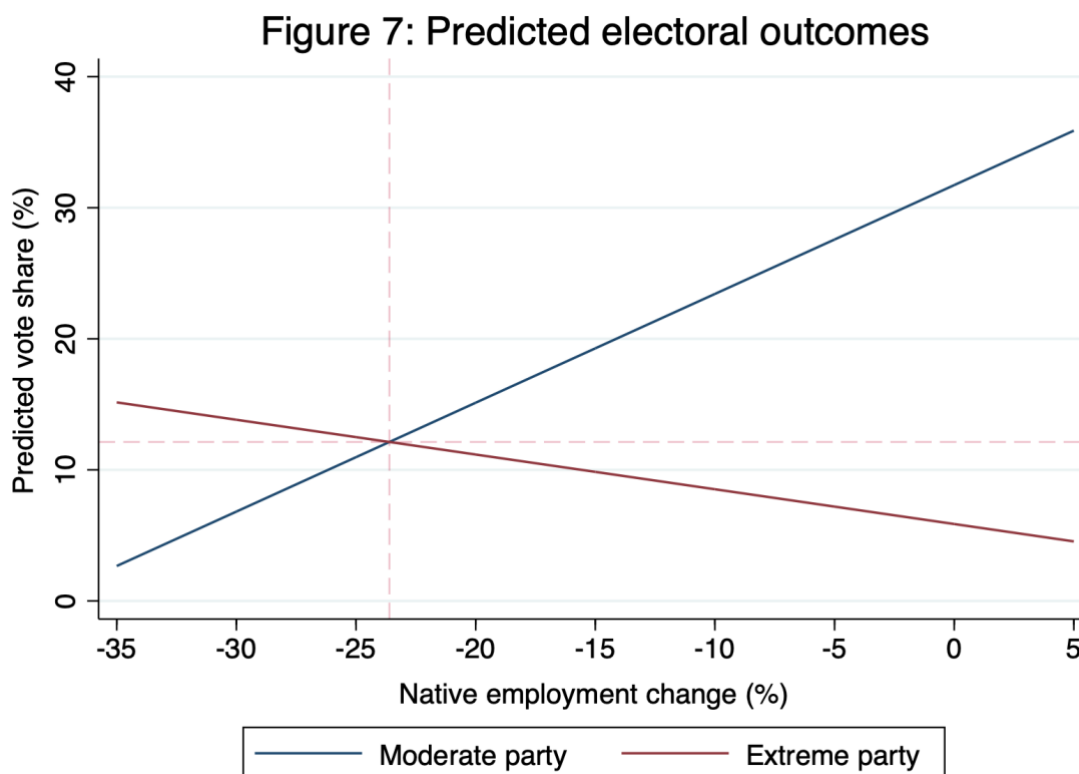
Figure 7 depicts the predicted values of the regression ran in equations 3.1 and 3.2 with the results on table 10. The native employment change varies to produce such predicted values. It shows an intercept at about 24% native employment rate change for when extreme parties are predicted to gain a greater vote share than moderate parties.

Figure 7 provides a visual representation of some of the conclusions made previously. Moderate parties do well during times of economic prosperity and poorly during times of economic decline, while extreme parties operate with the reverse effects. Moderate and established parties also have the luxury of starting at a much higher intercept in their vote share (when looking at 0% employment change). The graph shows a tipping point, or threshold, where extreme parties would be able to capture a larger percentage of the vote share than moderate parties. The intercept between the two lines is marked by the vertical and horizontal dashed lines. Hovering at an employment decline of 24% from the previous year, extreme parties would be expected to take over major faucets of the government through elections.

It may seem far-fetched or unlikely to reach such levels, as this economic performance is near if not surpassing Great Depression levels. It is important to remember, however, that in recent history, extreme parties have been able to rise to power during similar conditions. Most noteworthy is the rise of the Nazi party in Germany during the 1930s, where unemployment rose to over 52% (Frey and Weck). History, unfortunately, has repeated many times, and thus, the openly neo-Nazi party Golden Dawn must be treated as another serious threat to democracy. While this level was not reached in Greece, the approximation for a more modern case should help better assess expectations in the future.

XI. References

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