Understanding the CAP Pillar II component "LEADER": a counterfactual impact analysis of the rural development measure between 2011-2015 - measuring impact on European Elections voting behavior

Group constitution: André Sá Machado Magalhães Ilharco; Hannah Wille; Melina Michaela Mazzucato

Work project carried out under the supervision of:

Advisor: Pedro Martins

Co-advisor: Montezuma Dumangane and Marzia Freo

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UNDERSTANDING THE CAP PILLAR II COMPONENT "LEADER": A COUNTERFACTUAL IMPACT ANALYSIS OF THE RURAL DEVELOPMENT MEASURE BETWEEN 2011-2015 - MEASURING IMPACT ON EUROPEAN ELECTIONS VOTING BEHAVIOR

André Sá Machado Magalhães Ilharco

Work project carried out under the supervision of:

Pedro Miguel Rodrigues da Silva Martins

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Abstract

The Common Agricultural Policy is one of the EU's largest and most important policies. LEADER, a part of the CAP located in Pillar II, is a bottom-up rural development program based on local stakeholder engagement. The effects of LEADER have been analyzed using a counterfactual impact evaluation employing the CBPS method and propensity score matching. Results are diverse, but in many cases, a significant impact of LEADER can be found. The outcome variables studied range from economic in nature to agritourism, voting behavior and demographics. Their relevance, especially in rural areas, is ever increasing and relevant for the EU's future.

Keywords: Public Policy, CAP, Territorial Development, Rural Development, Pillar 2, LEADER, Covariate Balanced Propensity Score

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List of abbreviations

ARDECO	Annual Regional Database of the European Commission
ATE	Average Treatment Effect
CAP	Common Agricultural Policy
CATS	Clearance Audit Trials System
CBPS	Covariate Balanced Propensity Score
CCR	Close-to-City Remoteness
CF	Cohesion Fund
CLLD	Community-Led Local Development
CMEF	Common Monitoring and Evaluation Framework
EAFRD	European Agricultural Fund for Rural Development
EAGF	European Agriculture Guarantee Fund
EEC	European Economic Community
EMFF	European Maritime and Fisheries Fund
ERDF	European Regional Development Fund
ESF	European Social Fund
ESIF	European Structural and Investment Funds
EU	European Union
EP	European Parliament
GDP	Gross Domestic Product
IQR	Interquartile Range
JRC	Joint Research Centre
FLAG	Fisheries Local Action Groups
GPS	Generalized Propensity Score
GVA	Gross Value Added
LAG	Local Action Group
LDS	Local Development Strategy
LEADER	Liaison Entre Actions de Développement de l'Économie Rurale
MAUP	Modifiable Areal Unit Problem
MA	Managing Authorities
MS	Member State
NACE	Nomenclature of Economic Activities
NMS	New Member State
NUTS	Nomenclature of Territorial Units for Statistics
PA	Payment Agencies
PDR	Programa de Desenvolvimento Rural 2014-2020
PPS	Purchasing Power Standard
PSM	Propensity Score Matching
Q1	First Quartile
RCT	Randomized Controlled Trial
RDP	Rural Development Program
SPS	Single Payment Scheme

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Group Part

1. Introduction

The Common Agriculture Policy (CAP) is a core focus of the workings of the European Union (EU). More than a third of the total Union's budget is allocated to the CAP, highlighting its pan-European importance. The CAP is made up of multiple policies and its focus has drastically shifted from a narrow farming and agriculture scope to a far broader array of areas, including rural development, food security, and climate change among many others. This diverse scope results in an increasingly complex policy that has become difficult to evaluate. Due to its extensive scope, however, the policy is expected to have a substantial impact on the economic, environmental as well as social aspects of farming, but also on rural development and the economic convergence of rural and urban regions.

This thesis aims to perform a counterfactual impact evaluation of the LEADER policy - a local bottom-up development process aimed at promoting interaction between several stakeholders - on economic outcomes, such as employment and GVA (gross value added). In addition to this jointly explored project scope, this research evaluates the impact of LEADER political indicators (EP elections' participation rates and pro/anti EU votes for the EP). The necessity to focus on LEADER as a highly specific measure in Pillar II arises because of the aforementioned complexity of the CAP. There is no singular policy that the CAP refers to, it is made up of many policies that drastically differ in scope and focus. Hence, it is difficult to analyze the impact of the whole CAP, as it is a summation of many small impacts. To further improve this policy, draw conclusions and learn lessons, the components need to be understood independently. Furthermore, the literature on LEADER and its impact within the CAP is scarce. The method employed for this thesis is Propensity Score Matching (Imbens 2000), amid the absence of an RCT with a proper control group. This method mimics a control group based on the assumption that the differences between the control and treatment groups are solely based

on observable characteristics before the treatment. As an extension, we employ the Covariate Balancing Propensity Score Method (CBPS) (Imai and Ratkovic 2014) to ensure proper balancing.

As previously explained, the main goal of this thesis is to understand the impact of LEADER as a singled-out part of Pillar II. Hence, we look at different outcome variables to properly understand and evaluate the importance of this feature within the CAP. The first research question that is analyzed jointly is:

Question 1: *Does LEADER have significant effects on economic outcomes such as GVA and employment?*

The economic outcomes are not by chance the most studied ones, they are potentially the most important to understand from both the perspectives of member states and the EU. Hence, this joint part receives the largest part of our attention in this thesis. Following this, we will look at other outcomes that, in our humble opinion, are also of high importance for society and the EU. Consecutively, the analysis will focus on political data. For this, the question of interest is:

Question 3: *Does LEADER have significant effects on EU Parliament elections voter turnout or on the voting shares in pro/anti EU parties?*

The findings of this collective research will be beneficial to further understanding the CAP and especially the importance that LEADER measures have for countries and NUTS3 regions. It will add to the existing base of research and enhance knowledge on this complex matter.

The thesis for this policy analysis project is jointly conducted by three students and thus made up of three individual parts with different foci, one of which is included in this document and preceded by the joint analysis. The joint analysis builds on previous work conducted by the JRC on the effectiveness of the CAP on employment and Gross Value Added (GVA) with a specific focus on the Pillar II component LEADER. This joint part first addresses the CAP and explains LEADER as well as its fund distribution, followed by an analysis of the historical

context. Furthermore, previous literature and its main findings are analyzed, focusing on the CAP's and LEADER's impact. This theoretical background is then followed by a description of the used methodology and the empirical analysis. Lastly, the results are discussed, which enables the discussion of the assumptions, potential implications, and future research. The individual analyses that follow will be equally focused on LEADER, however considering other outcome variables. We will look at voter turnout, agritourism, and demographic outcomes, respectively. All these outcomes can be related to the CAP objective of Balanced Territorial Development (Objective 3). The promotion of social inclusion and economic development, as well as local development in rural areas, are specifically mentioned as goals of Pillar II measures, which is why these outcome variables were chosen for the sake of this thesis.

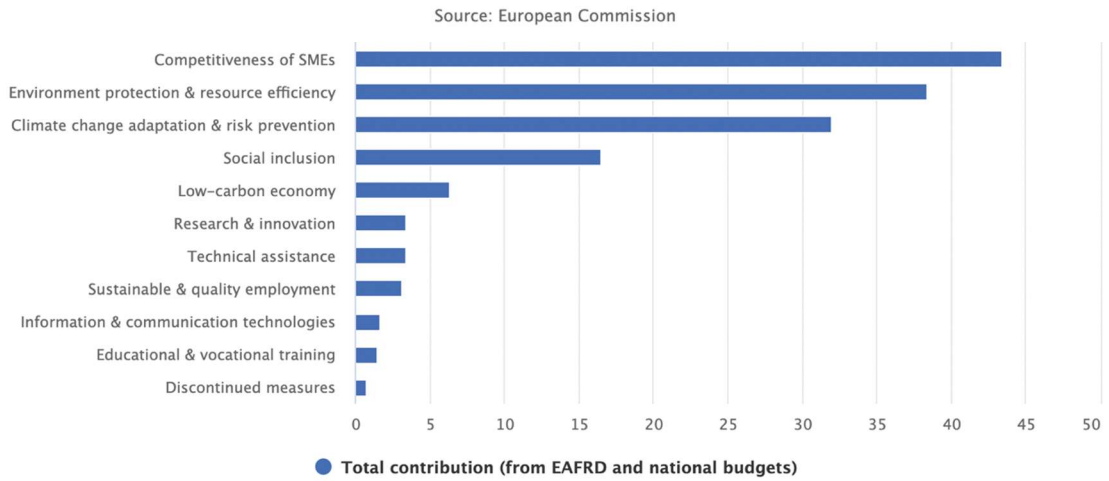
2. CAP and LEADER – Overview and History

2022 marks the 60-year anniversary of the Common Agricultural Policy, which continues to be one of the EU's key policies as indicated by its vast fund allocation – amounting to more than a third of the total Union budget (European Commission 2022b). Over the years, the CAP has evolved from merely being a support of farmers to a full-on cohesion policy with a growingly dominant focus on tackling climate change and ensuring food security. As such, it has undergone many reforms and changes, with many yet to come, especially to ensure alignment with the international climate goals set in the Paris Agreement (Heyl et al. 2021). For this goal, 40% of the CAP funds will be specifically targeting climate goals. This is a higher share than for other EU expenditures, which normally amounts to 30% (Farm Europe 2020).

The CAP is divided into two pillars. Pillar I is funded by EAGF (European Agriculture Guarantee Fund) and receives roughly 75% of the overall CAP budget. This pillar is made up of income support in the form of direct payments, which aim at minimizing overproduction by being based on the amount of land a farmer owns as opposed to production quantities. These payments can be coupled with certain types of production (e.g., sugar or cotton) and they are linked to green regulations, to have farmers comply with environmental requirements (Pe'er et al. 2020). Previous analyses of direct payments have often found them to be inefficient. Direct payments have, for example, been found to have limited power to help stabilize farmers' income (Severini, Tantari, and di Tommaso (2016) and Bojnec and Fertő (2019), and fail to act as a redistributing instrument between farmers (Allanson 2006 and Trnková and Malá 2012). In some cases, direct payments were also associated with negative effects such as high land prices, decreasing diversification of cultivated crops, land degradation or financial indebtedness of farmers (Morkunas and Labukas 2020). Further included in Pillar I is the common organization of markets. Market measures provide a framework for market support schemes aimed at stabilizing the market through disturbances, to ensure European Food Security.

Pillar II, on the other hand, is funded by the EAFRD (European Agriculture Fund for Rural Development) within the ESIF (European Structural and Investment Fund). This Pillar is co-financed by EU funds and regional or national funds. As a region-specific program, it mainly aims at the sustainable development of rural areas and is implemented through programs designed by the member states to ensure personalization and local knowledge, so-called regional development programs (RDPs). LEADER is one of these, it is a bottom-up local development approach promoting interaction between several stakeholders to design and implement tailor-made rural development plans. Its primary goal is to engage local people and organizations as actors of development, not as mere beneficiaries. The main method of achieving this is through Local Action Groups (LAGs) comprising the public, private, and civil sectors as will be further elaborated in subsequent chapters. To better understand the actions that Pillar II includes, Figure 1 represents in which the EAFRD and national budgets for rural development are depicted.

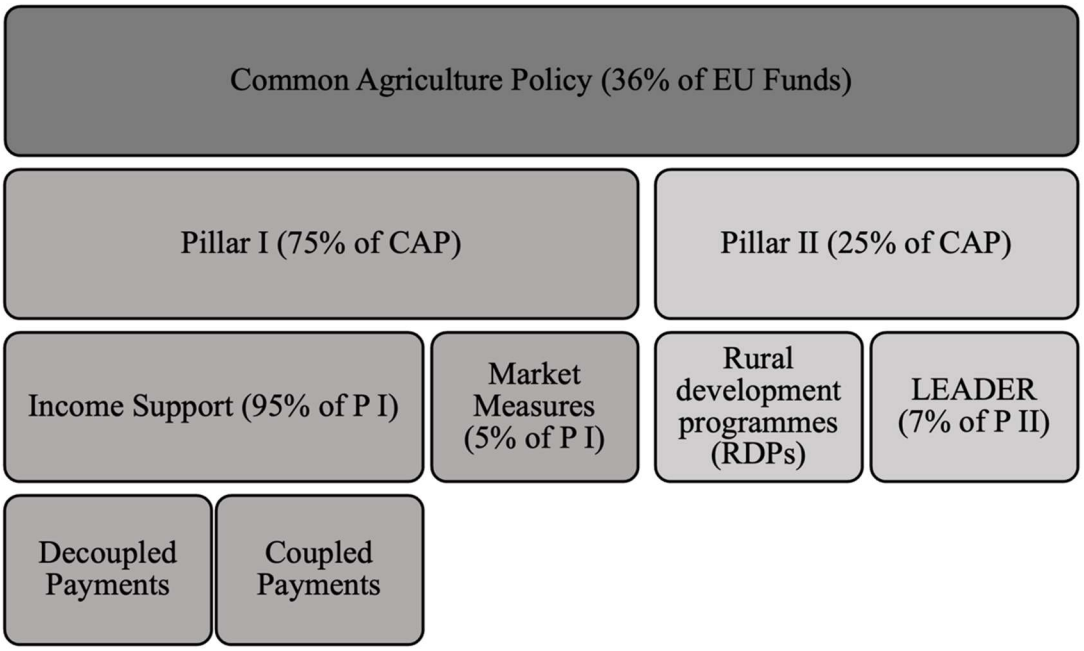
Figure 1 - Rural Development Spending 2014-2020



The management of the CAP and its funds is diverse. While 99.1% of the CAP budget are jointly managed between the Commission and the member states, only 0.9% are directly managed by the Commission, mostly related to administrative and technical support as well as promotional activities. Under the shared management, the role of countries is to set up compliant

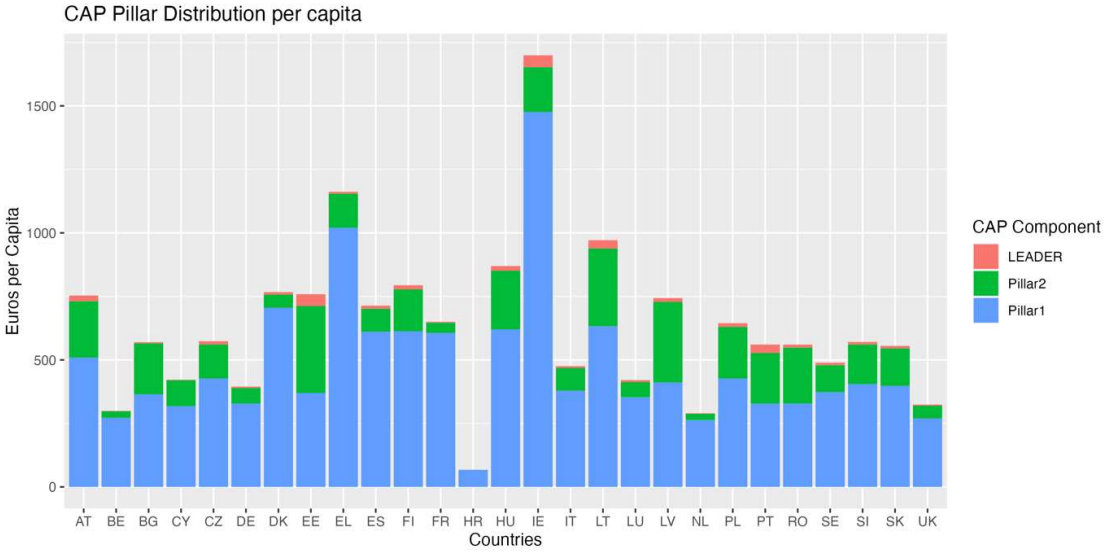
management and control systems, while the Commission holds a supervisory role. An overview of the two pillars and their structure is depicted in Figure 2.

Figure 2 - CAP Structure



To better understand the concrete magnitude of these Pillars, Figure 3 shows the two Pillars in euro per capita. LEADER, the component of interest for of this thesis, is shown separately to Pillar II in red. The data used refers to aggregated data from 2011 to 2015.

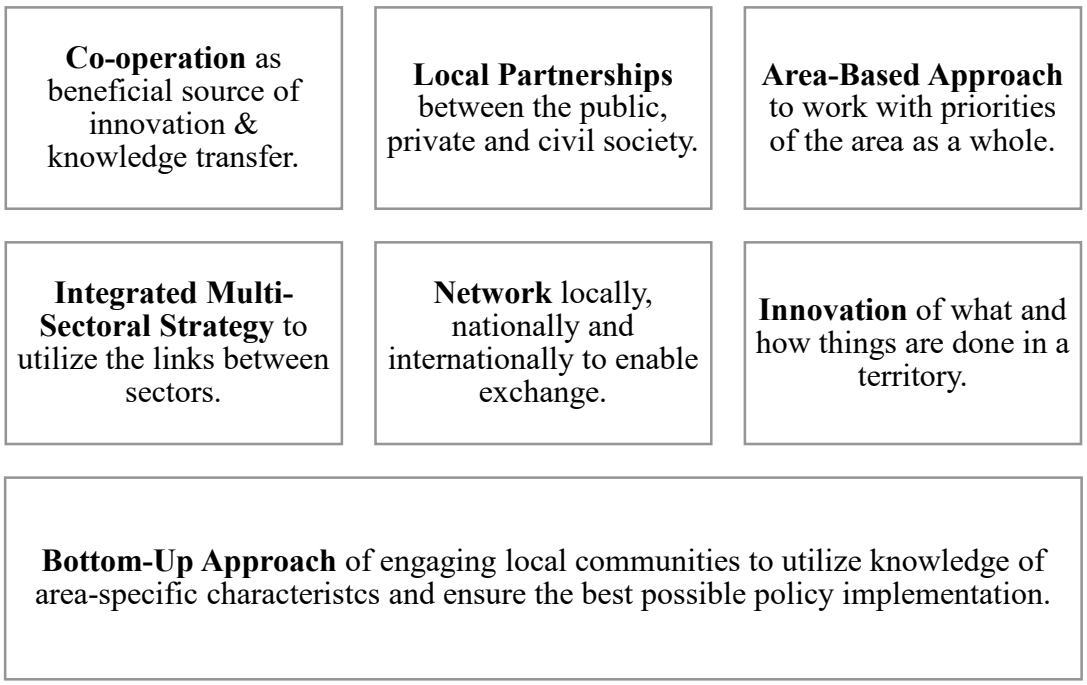
Figure 3 - CAP Pillar distribution per capita



2.1. LEADER

LEADER stands for the French acronym of *Liasison Entre Action de Développement de l'Économie Rurale* which can be translated as "links between activities for the development of the rural economy". The main aim of LEADER is to support the inclusiveness and development of EU regions (initially merely rural ones, but the scope has been enlarged to include all types) through the knowledgeable action of each region's main actors, whether they be public entities, private enterprises, or civic actors. When comparing LEADER to other kinds of EU support mechanisms, both regional and national, the approach in question has quite distinct characteristics and features: LEADER is a bottom-up and an area-based approach simultaneously. Furthermore, it is rooted in local partnerships, developed by integrated and multi-sectoral strategies and it involves a great deal of networking, innovation, and cooperation. Figure 4 gives an overview of the seven features of LEADER.

Figure 4 - LEADER features



Contrary to the classical funding selection approach, the LEADER methodology assumes that the best evaluators to assess each regions' necessities, capabilities and expectations

are their local actors. What is also different from previous funding procedures is that the concrete idea for a region's development and the project selection criteria are proposed by the beneficiaries themselves. These must be compliant with key commitments, such as innovation or green energy, for example. The communities' strategies are envisioned for and by themselves through active dialogue between its public, private, and civic entities collaboration. Social capital, fairness, democracy, transparency, and community trust are thus key ideas for LEADER's bottom-up approach.

The LEADER feature revolving around being an "area-based approach" is crucial for the community's engagement. The projects funded by LEADER are not only developed and proposed by a multi-agent consensus in each area, as the projects are targeting the development of those same areas as a whole. Unlike other types of measures, such as Pillar I initiatives, LEADER also supports each area's priorities, instead of specific actors or objectives. Each area may be subject to some Member State's specific criteria, but overall, their population must be between 10,000 and 150,000 people and their geography does not need to coincide with administrative borders. The LEADER approach, hence, is not limited by predefined boundaries, only by its own local identity, physical resources, know-how and specific set of skills, its human resources, and its internal and external relations. The required unity makes these areas consist of small, homogenous, socially, and functionally cohesive territories. Because they are focused on each area's shared vision of its own future, the strategies developed often include many synergies and "win-win" situations for their actors.

The areas' participating actors are represented through so-called LAGs (Local Action Groups). Each LAG is composed of public, private and civic actors, such as municipalities, voluntary platforms, private enterprises, agricultural cooperatives, civic associations, and groups of driven individuals, among potentially many others. The LAGs all have a legal basis that differs between countries but tendentially assume the form of a non-profit registered

organization. In order to guarantee the LAG's area-priority focus, each of the LAG's constituents must not inhibit more than 49% of the voting. This condition not only fosters dialogue, consensus, and the legitimacy of the partnership, but also furthers the construction of a local network of relations as well as a broader and jointly constructed view of the area's future.

Each LAG is responsible to design a Local Development Strategy (LDS) in a process that must involve representatives across the community as actively as possible. Public participation, hence, must be encouraged by the LAG. An LDS consists of a "coherent set of operations (…) to meet local objectives and needs, and which contributes to meeting the Union strategy for smart, sustainable and inclusive growth" (in European Network for Rural Development 2016). Each LDS must include the LAG's business plan, setting out the mechanisms and procedures through which it will operate, as well as a SWOT analysis of the development needs. This plan must also include responsibility delegation, management, and monitoring arrangements, as well as set out the application process and the project/operation selection criteria upfront. Member States shall also define criteria for the selection of community-led local development strategies (European Parliament 2013b).

The LEADER approach also seeks for LAGs to innovate in their LDSs. It seeks out pilot-nature strategies, looking to create new services and products, combine resources, create synergies and links between sectors, and involve or organize communities. Networking is also a key feature in every LEADER cycle, supported mainly by the European Network for Rural Development (ENRD) and the European LEADER Association for Rural Development (ELARD). These networks also seek to promote inter-territorial and international cooperation.

2.2. Historical context of the Common Agricultural Policy

LEADER is an EU program developed within the framework of the CAP. Although LEADER's first edition started only in 1991 (which will be further analyzed below), the CAP was already pioneered in 1962 after the signing of the Treaties of Paris (1951) and Rome (1957) in a time of

consolidation for the European Economic Community (EEC). It soon became evident that agriculture was a fundamental aspect of the European recovery after the Second World War. Agriculture became a source of political disentanglements (Milward 2000) between many EEC member states based on several failed attempts at large trade arrangements and integration of agricultural commodities. The first European Law mentioning CAP was officially declared in the Treaty of Rome (1957). Thus, although in a vague and highly underdeveloped way, a general "blueprint" (objectives and measures that might be used) of what the European Common Agricultural Policy would look like was created (Ludlow 2005). The EEC faced different challenges: low food production, low income for farmers compared to other sectors, non-harmonized farming policies among member states and lack of easy access to food, among others (European Council 2022). Therefore, the initial primary CAP objectives were to raise agricultural productivity, ensure a fairer life standard for farmers, guarantee the availability of supplies at a fair price and stabilize the agricultural markets across the EEC. From its beginning until 1992 (the time of the MacSharry reforms that will be explained in depth below), these CAP objectives were pursued by maintaining high prices for agricultural goods, namely, through the application of a protective system of guaranteed prices for the farmers' products, the application of tariffs on external products, exporting subsidies, target prices and market interventions (Lillemets, Fertő, and Viira 2022). With the onset of the CAP, food productivity and availability increased, but the EEC's farmers' income became stagnant, leading to the necessity for the first CAP reform: the Mansholt Plan of 1971. Sicco Mansholt, the European Commissioner for Agriculture between 1958 and 1972, proposed a wide-scale modernization of the agricultural sector, targeting two policies: firstly, the area of land under cultivation should be optimized; secondly, merging farms was a key objective. The Mansholt Plan was insufficient in preventing overproduction throughout the 1970s and 80s, which led to the introduction of production quotas for some agricultural commodities in 1984. Right from its beginning, the CAP represented the

largest part of the EU's total policy budget for decades, amounting to more than 50% of the EU's annual budget until 1994.

It was only in the early 90s that the EU started looking at alternative measures to the traditional top-down approach in CAP policies and instruments while reducing the overall budget and moving away from unlimited guaranteed prices. During the MacSharry reforms, in 1992, the EU CAP support moved away from the markets to the farmers, introducing the direct payments that can be found in Pillar I until today. These payments are based on the area of land farmed rather than on products or quantities produced. The reforms further included obligations to protect the environment and improve food quality in order to receive support. The CAP's structure at the beginning of the twentieth century was marked by the "Agenda 2000" package of reforms, adopted by the 15 member states at the time during the 1999 Berlin Summit (European Parliament 2022). In this EU strategic document, relating to the 2004 enlargement yet to come and the growing importance of rural areas for the European project cohesion, the EEC proposed the creation of a second CAP Pillar dedicated specifically to rural development, where LEADER-type initiatives as we still find them today were included. The Agenda 2000 gradually introduced lower guaranteed prices for farmers, but also strictly defined food safety and quality, as well as included animal welfare as an important policy objective for the future of the CAP (European Commission 1999a). Finally, and especially important when having this thesis' focus on LEADER in mind, the Agenda 2000 introduced a "horizontal regulation", a modulation of direct aid. This policy mechanism allowed a member state's funding to be partially transferred from Pillar I to Pillar II to further support rural development.

Started by the process of the Agenda 2000 mid-term review, the 2003 CAP reform introduced significant changes. First, it decoupled aid from volumes produced and introduced the single payment scheme (SPS). This SPS substituted all previous CAP price supports. The SPS's logic was to allow farmers more freedom to produce what the market demands (both

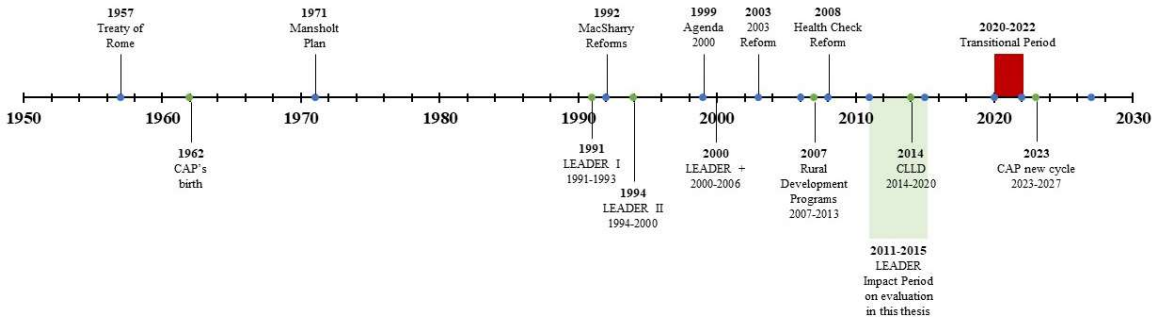
regarding EU and global markets), to guarantee farmers' income stability and simultaneously promote environmental, healthy, and economically sustainable farming. Second, cross-compliance criteria for aid attribution now included environmental and public health clauses. Third, modulation became a compulsory policy mechanism for all EU15 member states to implement (Nowicki, Hart, and van Meijl 2011) which forced member states (MS) to transfer a limited share of funding from direct payments to Pillar II to reinforce rural development with specific measures (the share would be increasing from 3% in 2005 to 5% in 2012). This reform was also motivated by wanting to respond to the criticism of "ultra-protectionism" in the EU's agricultural sector in comparison to the rest of the world, as well as to respond to the growing demand for agricultural commodities and export opportunities in the global markets. This adoption of the SPS would strengthen, for example, the EU's position in WTO agricultural trade negotiations (DG for Agriculture and Rural Development 2005). Because of the 2004 EU enlargement, the shift towards full SPS was further delayed to late 2008 / early 2009, where the CAP was re-evaluated through the big so-called *Health Check* reform.

The Health Check was launched by the Council on November 20th, 2008 and revised a long list of measures implemented through the CAP reform of 2003. It was designed to consolidate the 2003 reform goals: generalize the decoupling of direct payments, while performing a case-by-case analysis of the remaining partial coupling arrangements in place in each MS; eliminate most of the remaining production limitations and abolishment of volume control instruments; adjust the farmers' payments away from the historic base of the reference years and towards a flat payment on every hectare in the country; degressive ceilings of payments to very large farms; and progressive rates (from year to year) for modulation of direct aid. The Health Check reform defined the regulatory framework for EU agricultural policies up to 2013. Because of its importance, the focus of this thesis will lie on the post-Health Check period to fully evaluate the changes brought upon by this crucial adaptation of the CAP.

The 2013 reform defined the general blueprints for the 2014-2020 CAP period. For this period, the three objectives of the CAP regarding rural development maintained its focus on "fostering the competitiveness of agriculture" but set as clear objectives to ensure the "sustainable management of natural resources and climate action" and also to achieve "a balanced territorial development of rural economies and communities including the creation and maintenance of employment" (European Parliament 2013a).

2.3. Birth and origins of LEADER

Figure 5 - Timeline CAP and LEADER



The timeline of both the history of the CAP and the birth of LEADER is represented in Figure 5. Launched on March 15th, 1991 by the European Commission, LEADER's originating purpose was to serve as a model for rural development. The Commission wanted to implement an alternative method to its top-down approach regarding rural development and structural support that could bring rural areas closer to the goals of the European integration process. Anticipating the 1992 MacSharry Reforms (European Council 2022) that moved the CAP policies strongly from market support and unlimited guaranteed prices to a more limited-budget policy based on direct income supports, the Commission allocated a budget of 400 million euro to fund this new initiative (European Commission 1991) for the period between 1991 and 1993.

LEADER was built to establish a network of local rural development action groups enjoying a substantial degree of flexibility in the definition and implementation of each local

rural region's ideas for development. Three types of measures were defined in 1991: (i.) measures for agricultural and rural development, (ii.) measures concerning local development groups, and, finally, (iii.) measures concerning a transnational network for groups. In other words, with the LEADER initiative, the Commission wanted to test a bottom-up, multi-sectoral and highly participatory approach within the existing framework of its CAP policies, based strongly on local public-private decision-making partnerships.

The second generation of LEADER was called the *LEADER II initiative* (1994-1999). It was established to supplement and reinforce the measures started during the first phase of the program. This second stage led to a further territorial expansion of the program (from 217 to 906 LAGs (European Network for Rural Development 2019)) as well as to a significant increase of the initiative's budget: from 400 million to 1,400 million euros (European Commission 1994). The LEADER II period mainly focused on problems affecting rural areas characterized by weak economies (often those which suffered the most in the aftermath of the 1992 CAP reforms[1]) and assumed as its priorities the acquisition of the necessary skills to initiate an integrated development process (Commission of the European Communities 1994). This second period also incorporated the Commission's reactions to LEADER's first edition, making the LEADER initiative "one of the more locally appreciated elements of the Community's structural interventions" among a few others (European Commission 1993). In contrast to its predecessor, the second LEADER phase was highly decentralized, with the Commission no longer intervening directly in the selection of projects and beneficiaries. This task was delegated to the planning and decision-making partnerships, formed by regional or national entities which provided part of the financing for the totality of each member state's program.

[1] Weaker agricultural economies suffered the most in the 1992 reforms because of the end of guaranteed prices for producers (which had made overproduction a reasonable way to generate more profits). From 1992 onwards, since the EU was not paying for the overproduction, the least developed agricultural regions suffered the most.

Following LEADER II, the Commission of the European Communities launched LEADER+ for the period between 2000 and 2006. While maintaining the main structure of the previous stages, the LEADER+ initiative expanded its geographical range (from 1,375,144 km^2 to 1,577,386 km^2), including now all types of rural areas (to be limited only by the will of the MS themselves) in the initiative's reach. Whereas the previous second generation of the initiative *favored* programs focused on innovation, LEADER+ declared innovation as a *requirement*. The Commission also pointed out in its communication to the Member States on April 14th, 2000 that the renewed LEADER+ program would require adjustments to socioeconomic structures, considering challenges from the then brand-new awareness of environmental concerns, closer integration of the world economy and the rapid spread and use of new technologies (Commission of the European Communities 2000). Differently from the "skills" priority in LEADER II, LEADER+ highlighted as its primary action the funding of strategies with a pilot nature and horizontal partnerships in its support for an integrated territorial rural development. The period of LEADER+ was also an important period for the EU as an international organization, namely because of 2004 when the EU had the biggest enlargement in its history. Ten countries (Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovakia and Slovenia) entered the Union, many of them post-soviet republics still with a highly centralized political culture, which was a crucial consideration for the CAP.

The fourth cycle of the LEADER program took place between the years of 2007 and 2013. This time, LEADER became a mandatory component of all national/regional rural development programs, with a varying minimum budget allocation between 2,5%, for the 2004's new member states and 5%, for the old member states (Council of the European Union 2005). The 2007-2013 period was also when LEADER extended its policy scope to fisheries policy, including over 300 Fisheries Local Action Groups (FLAGs) in 21 Member States.

From 2014 up to 2020, by decision of the European Parliament and the European Council, (European Parliament 2013b), the LEADER approach was integrated into the EU policy map as a Community-Led Local Development (CLLD) (European Network for Rural Development 2019). LEADER became the CLLD initiative connected to the EAFRD (with the mandatory application within this fund's framework and with its focus on rural areas). Since then, other ESIF funds (further explained in the next section) became open to support local development strategies (and if needed simultaneously with other EU funds) which pursued each fund's local development goals, while following the LEADER approach.

2.4. How does LEADER work in practice?

Due to the COVID-19 pandemic and as a result of negotiations between the three EU institutions that started in November 2020, the implementation of the legislative proposals for the CAP period of 2021-2027 (presented in 2018) that predicted a CAP reform in 2020 was suspended in June 2021. Transitional regulations were then implemented for the period of 2021-2022 (European Parliament 2020). This way, the 2014-2020 CAP framework was further applied to the period between 2021-2022, until the application of the new legal framework, starting in January 2023. As of now, it takes a long time until the funds reach each LAG. First, the European Parliament and the European Councill define the priorities for each CAP cycle, in which LEADER is included. After that, each MS designs a national CAP strategic plan in accordance with the EU's defined priorities, scheming the funding for income support, rural development (LEADER and CLLD), and market measures. For the LEADER approaches under the EAFDR, EU regulation requires the existence of Managing Authorities (MA) and Payment Agencies (PA) which are defined for and by each MS, together with their powers and functions (within a mandatory framework). Other structures have been created, such as National Rural Networks, LEADER coordination groups, among others, but their existence is not mandatory and depends solely on the will of each MS. The only mandatory components remain MAs and PAs.

Each LAG must be formed by a collective of agents of a community. The method in which a LAG is brought formally into existence is to be defined by each MS. After the involvement of potentially interested local actors, each LAG group may start the consultation and development of their LDS. The LDS must include a description of the LAG's management and monitoring system as well as demonstrate the capacity of the LAGs to implement its strategy. Member states ensure that each LAG has either selected one partner within the group to be the administrative and financial representative of the LAG or that the group has a legally constituted common structure (able to represent the LAG). Each LAG must show its organic and functional structure in its statues and strategy. The LAG's existence and function are subject to the MS's recognition (through their MAs), yet the LAGs have significant freedom to define their governance structures and member constitutions (as openly as possible). Furthermore, each LDS must explain the proposed selection criteria (both the required projects' goals and the LAG's decision-making process, such as consensus, simple majority or other) as well as the occurrence of the project selection (from publicity and opening calls to the eventual project application submission). When developed, each LAG must present its LDS to the MA of the MS which will define the respective roles of the LAGs and the authorities responsible for the implementation of the programs and the tasks relating to the strategy (European Parliament 2013b).

Portugal's last CAP strategic plan (Presidência do Conselho de Ministros 2014) envisioned the EAFDR fund application through three operational structures: PDR 2020 (for the continental part of Portugal); PRORURAL+ (for the Autonomous Region of the Azores); and PRODERAM 2020 (for the Autonomous Region of Madeira). The MA created for the 2014-2020 period was called *Comissão Interministerial de Coordenação*. *DLBC Rural Alto Oeste* (commonly known as *Associação Leader Oeste*) is a Portuguese LAG created in 1994 that is nowadays inserted in the PDR 2020 framework. It is constituted by 79 public, private, and civic

entities such as municipalities, parish councils, solidarity NPOs, agricultural associations, educational institutions and commercial, business, or industrial entities.

It has been responsible for some open calls such as *10.2.1.6-Renovação de Aldeias* (2021). One of the most recent opened calls by *DLBC Rural Alto Oeste* (May 2022) was for investments in agricultural exploration (Associação Leader Oeste 2022a). For this call, a technical guidance note was published (Associação Leader Oeste 2022b) detailing which types of project promotors were admitted, the type of actions to be supported, as well as the documents required for the application.

2.5. LEADER's fund distribution

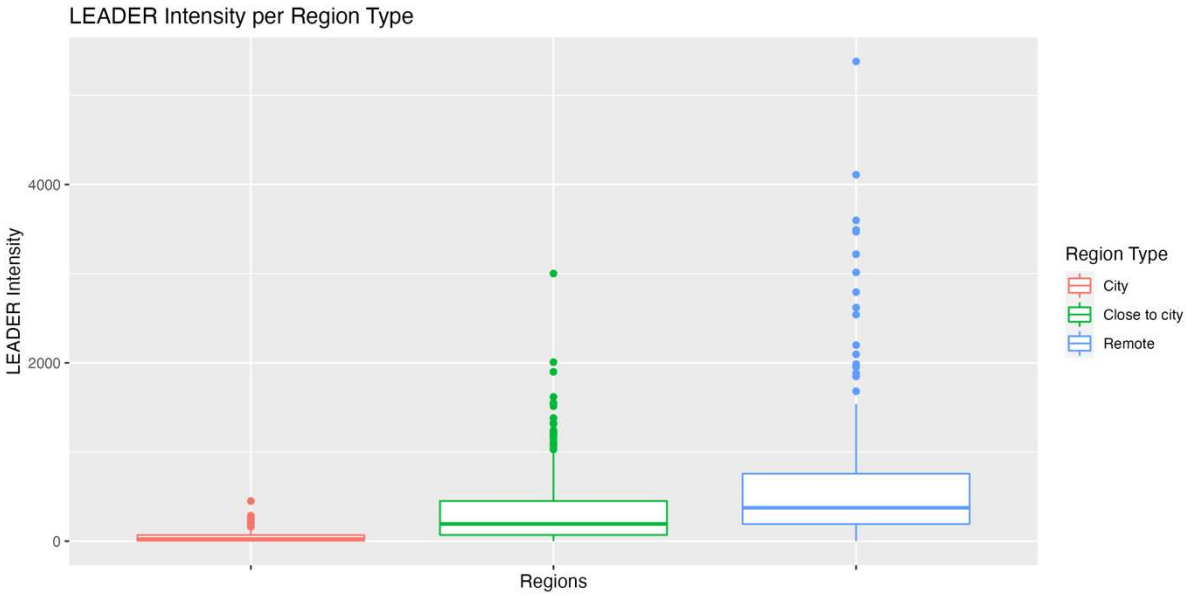
EARFD is one of the five funds included under the framework of the European Structural Investment Funds (ESIF). ESIF supports economic development, and its purpose is to invest in job creation and a sustainable and healthy European economy and environment. Beyond the European Agricultural Fund for Rural Development (EAFRD) which is the main responsible fund for LEADER, four other funds are part of ESIF: the European Regional Development Fund (ERDF), European social funds (ESF), the Cohesion Fund (CF), the European Maritime and Fisheries Fund (EMFF; contrary to the other ESIF funds, the EMFF is open to the LEADER approach since the 2007-2013 period). The ESIF has 5 areas of focus: research and innovation, digital technologies, supporting a low-carbon economy, sustainable management of natural resources, and small businesses. The focus of the EAFRD is to finance RDPs, such as LEADER. The EU28 countries manage the fund by imposing partnership agreements; thus each country sets a commitment on how the fund will be used during a certain period (European Commission 2019; European Commission n.d.).

In 2005, the EU decided that at least 5% of the EAFRD's total contribution should be dedicated exclusively to its fourth axis: LEADER. This share was reduced for the EU's recent MS (Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia,

and Slovakia). This set of countries was allowed a smaller mandatory reserve for LEADER, amounting to 2.5%. After Bulgaria and Romania's entrance in the EU in January 2007, both countries were also included in this 2.5% regime for the period between 2010-2013. From 2013 onwards, all countries were subject to the 5% rule, meaning that 5% of the total EAFRD contribution to RDPs shall be reserved for LEADER, except for the case of Croatia (which entered the EU in that same year), for which the 2.5% was still applicable.

LEADER usage is not equally distributed for rural and urban areas. As the core focus of Pillar II (and with that LEADER) lies on rural development, it is logical to assume that rural areas use LEADER more intensely than urban areas. Figure 6 below shows this quite clearly: the LEADER intensity is higher in rural remote areas than in urban areas. To further deepen the understanding of the fund distribution across the EU, we looked at these regions per country and found that this is generally observable for all countries included in the analysis: Rural remote areas spend higher amounts of LEADER than urban areas. For a deeper understanding of this idea, please refer to Appendix Figures 1 to 5.

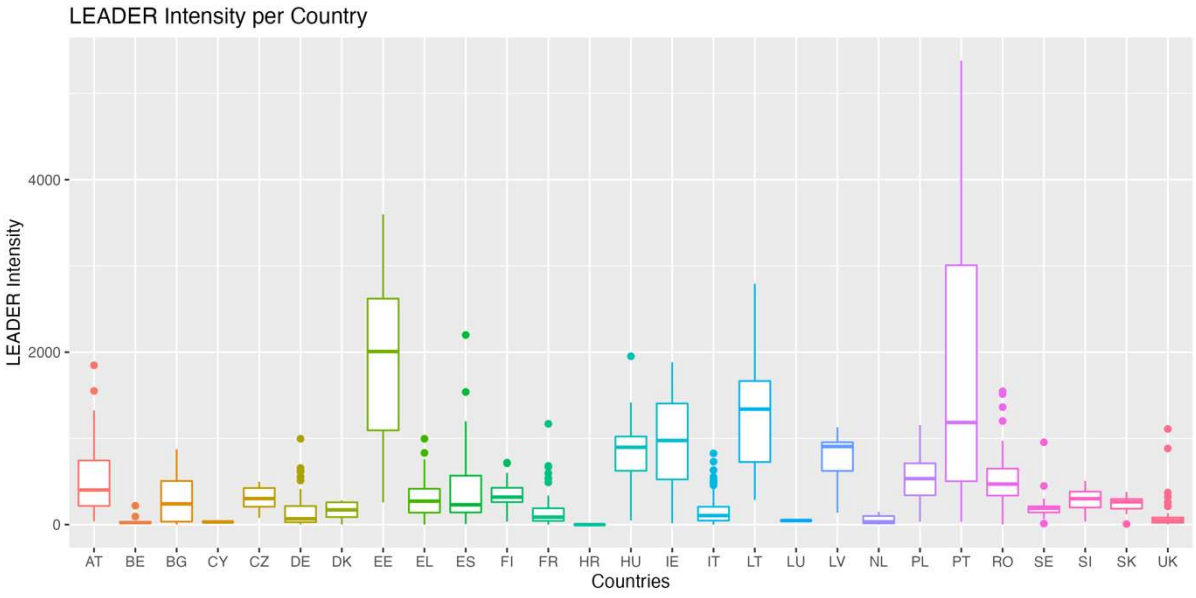
Figure 6 - LEADER intensity per Region Type*



** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

The crucial observation to be made here is that in comparison to remote areas, cities and urban areas receive much less LEADER and the intensity of usage amounts to almost 0 in a large proportion of these types of regions. What can also be observed when analyzing the LEADER fund distributions is that the intensities significantly vary from country to country. In the Figure 7, this variation becomes quite apparent. While some countries like Belgium, Luxemburg or the Netherlands barely use LEADER, others such as Estonia, Lithuania and Portugal show high intensities. This is true not only for the mean, but especially also for outliers in some regions that are significantly higher than in other countries.

Figure 7 - LEADER Intensity per country*

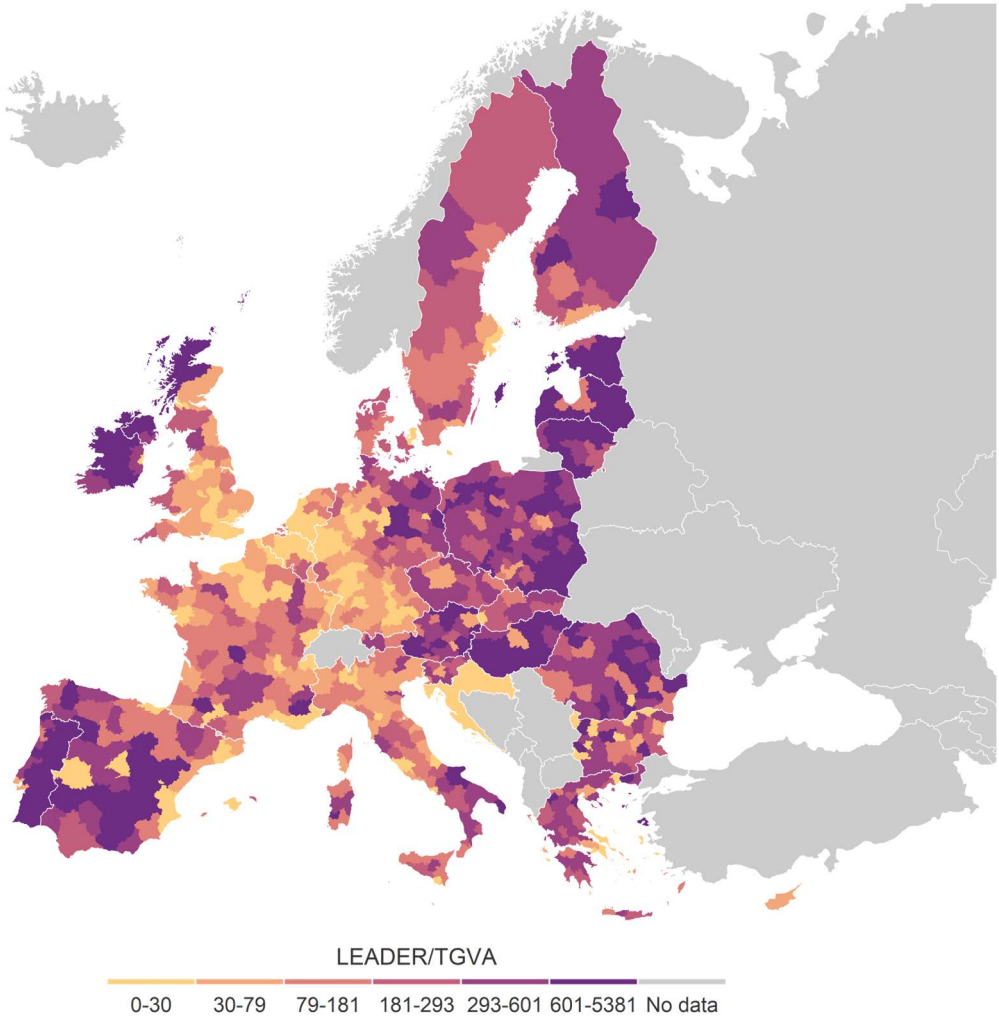


** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

To better visualize the distribution of LEADER, Figure 8 shows a heatmap based on LEADER intensities across NUTS3 regions. It clearly indicates that Eastern Europe countries collect higher amounts of LEADER intensity compared to Western European countries (with the exception of Portugal, Spain and Ireland). This phenomenon is assumed to be explained by the level of development across countries, considering that LEADER aims at enhancing rural development. Furthermore, the Scandinavian countries also seem to receive a higher amount of

LEADER fund intensity. Appendices 9-11 confirm the high intensity of LEADER funds in remote areas, contrary to cities that receive a very small LEADER fund intensity. Differently from the spatial LEADER fund distribution, the Pillar I funds (Appendix 13) are more concentrated in Western European countries, thus not in Eastern Europa. Furthermore, the spatial distribution of Pillar II (Appendix 14) does not differ significantly from the LEADER fund distribution, except the central regions of France seem to receive a strong amount of Pillar II, but their LEADER intensity is modest. Appendix 12 includes the heatmap for the total CAP intensity per NUTS3 region. Especially the Finland and Sweden seem to receive a high amount of LEADER intensity compared to a rather low amount of total CAP funds when compared with all of Europe.

Figure 8 - Heatmap LEADER intensity per NUTS3 region*



** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

3. Previous research on the effects of CAP and LEADER on economic outcomes

The goal of every analysis of the CAP as a whole or any of its components is assumed to be the effectiveness of this large and important policy. As a core policy of the EU, it naturally costs a lot of money for the union, which is why evaluation and fundamental understanding are crucial. Furthermore, it is crucial to accurately measure the effects to ensure a reduction of the rural-urban gap, which remains to be a key goal of the CAP. As of now, however, it seems to be relatively hard to fully understand the CAP and its impacts. There have been many studies to shed light on the general effects of the CAP, but to the best of our knowledge, no previous counterfactual impact evaluation of this form has been conducted to understand the specific impact of LEADER on a multitude of outcome variables. Even though the CAP is one of the longest-standing, most important, and without doubt a highly complex EU policy, little research has in general been conducted on its socioeconomic impact, for example on population, generational change, employment, and civil participation, among other topics.

There have been, however, many studies on the CAP's impact on economic performance. Previous research has, for example, proven a connection between various CAP measures and the increase of regional output (see for example Psaltopoulos, Balamou, and Thomson 2006, Loizou et al. 2014 or Bednaříková 2015). Analyzing the extensive literature review performed by Lillemets, Fertő, and Viira (2022), it can be seen that many studies do report an overall positive impact of the CAP on economic output. However, when analyzing on a case-by-case basis the studies which report a positive impact of CAP on economic output, one can see that the identified impacts are neither strictly linear nor always positive across regions or time periods – Compare, for example, the analyses from Psaltopoulos, Balamou, and Thomson (2006) for Greece during the period of 1988-1998, or of Loizou et al. (2014) for the Greek region of Dytiki Makedonia between the years of 2007-2013 and of Bednaříková (2015) for the case of a region in the Czech Republic, during the same time period. One can see that

the CAP's impact on regional economic output in Greece varied between 0.01% and 1% between regions for the 1988-1998 time period; and for the time between 2007 and 2013, the CAP's impact on a Greek region was estimated to amount to 0.32%, compared to a Czech region between 0.09% and 0.39%. The same last two studies also indicate different values for the CAP's impact on regional income and employment rates. A study (Michalek 2012) using PSM-DID impact analysis presented the effects of the Slovakian RDP program SAPARD on farm profits and other economic indicators: the farms supported by the SAPARD program (between 2003-2005) presented lower growth rates in their total profits per company as compared to the non-supported groups. For further relevant and successful effects of the CAP, we can look to Italy, where some studies reported a positive impact of Pillar II measures on the GDP (Gross Domestic Product) (Felici et al. (2008) or Salvioni et al. (2011)). In connection to the GVA, which is a core component of this thesis as well, recent studies on the impact of RDPs in Latvia (Ozoliņš, Vēveris, and Benga 2015) for the period between 2008-2012 showed a positive impact of RDP Axis 3 measures on the GVA. Castaño, Blanco, and Martinez (2019) also studied the effects of RDPs in Scotland, Ireland and Portugal for the 2007-2013 period and have shown its positive impact on the countries' GVA (associated with measures related to Axis 1, in the case of Portugal, and also to Axis 2, for Scotland and Ireland) with estimated impacts ranging from 1536M€ (Portugal) to 2800M£ (Scotland) for the period of the study. The CAP has been also connected to the diversification of rural economic activities, namely the growth of tourism in CAP supported areas. This relation has been analyzed in Italy (Galluzzo et al. (2017b) or Giaccio et al. (2018) and in Romania (Galluzzo 2021).

Regarding employment, the CAP overall seems to have positive effects, as studied by Loizou et al. (2019) in Greece or Juvancic et al. (2005) in Slovenia. Specifically, direct payments are often connected to an increase in employment. This can be seen, for example in Poland from 2004 through 2008 (Zawalinska and Katarzyna 2009) or in Portugal (Martinho 2015). Quite on

the contrary, however, direct payments have been negatively correlated with employment in Italy, according to Mantino (2017). What can be seen by these rather ambiguous previous findings is that further research is important and that effects may not be entirely homogeneous or robust across regions, countries and methodologies.

There is not much research regarding the effects of CAP on the rural population. In theory, income support should be a clear incentive for people to stay in rural areas and develop agricultural activities. As Daugbjerg et al. (2005) report, even though indirect support mechanisms may not be visible as an incentive, at least direct aid payments do inform farmers about the extent to which they are subsidized. May et al. (2019) also report that payments to young farmers positively affect their willingness to stay on their farms. However, studies have also reported contrasting conclusions. Lasanta and Marín-Yaseli (2007) posit that although CAP support did help farmers in the central Pyrenees to maintain their agricultural activities, these supports (combined with regional funds, with a total value of 170 million euros for the period between 1986-2001) had a negative correlation with indicators like the number of inhabitants, farms, and employees in the primary and secondary sectors. No significant results were found also for cases of CAP rural development programs analyzed in Poland and the Czech Republic (Stolbova and Niewęgłowska 2007), Romania (Galluzzo and Nicola 2018), and Hungary (Bakucs, Ferto, and Benedek 2019). Concerning generational effects, CAP measures have been reported to increase the share of young farmers and decrease the share of old ones in Poland (Rogoźnicki et al. 2018). More specifically, Pillar 2 measures were connected to an increase in the transfers of land to young farmers in Italy (Bournaris, Moulogianni, and Manos 2014).

The impact of CAP on rural development has been evaluated through several indicators or indexes (composed of multiple indicators). One analysis on the effect of Rural Development Programs on rural development used a set of 17 and 21 indicators, respectively, and reported positive effects of an RDP in Poland but negative effects in Slovakia.

These ambiguous findings are assumed to be partly explained by the similarly ambiguous nature of subsidies on regional agriculture. This results from the different potential use cases of subsidies: On the one hand, subsidies could be used to finance activities that are less productive (in order, for example, to simply capture high subsidies (Martinho 2015), or the incentive to optimize costs might be diminished, which can be characterized as inefficient resource usage. On the other hand, the money gained could help farmers to overcome budget constraints, which could mitigate risks of all kinds and lead to investment in more productive activities. This is especially true for decoupled payments (meaning payments that are not only paid out for a certain type of resource that is fostered through agricultural activity, for example, cotton) because they increase flexibility and local decision-making. It should also be mentioned that payments, especially those focused on rural development as a whole and not restricted to agriculture, such as LEADER, could also lead to a loss of agricultural employment, value-added or productivity because people leave for other newly established jobs in their areas (such as tourism, which is why this is a key component of our analysis).

Apart from the aforementioned studies, there has also been research on LEADER specifically, for example by Tirado Ballesteros and Hernández Hernández (2016). This recent study evaluated literature regarding LEADER's impact on tourism and highlighted the importance of including initiatives with the distinction between local private agents and foreign investors in the composition of the LAGs in the evaluation of LEADER, as well as of collecting sufficient data in order to perform *ex-ante* evaluations capable of applying quasi-experimental statistical methods with measures to be applied before and after the evaluation. Another case study with a qualitative approach to LEADER's impact on Austria and Ireland found that LEADER still lacks the reach it could have due to oftentimes rigid coordination structures and hierarchical mindsets in the administration throughout the whole policy process, as well as centralized control and audit mechanisms (Dax et al. 2013). A study on the LEADER

implementation in Poland underlined the positive effect LEADER has had since its onset with the exponential growth of the Polish third sector, even though its institutional character remains (Furmankiewicz, Janc, and Macken-Walsh 2016). On the LEADER structure itself, this study posits that the active involvement of the third sector in the LAG composition has a positive impact on the LAG's engagement with local habitants while composing local development strategies (which lies at the core of LEADER's objectives).

4. Methodological approach: GPS and CBPS Matching

To understand the causal effects of LEADER measures, a counterfactual impact analysis is conducted. This approach was chosen to address the concern of selection bias, which is common in policies like these and one of the biggest drawbacks of previously conducted studies on the CAP and its effectiveness. This is since the implementation mix of the many available CAP measures is region-specific and based on pre-treatment characteristics such as employment, development goals, or output. Especially for Pillar II measures such as LEADER, whose intensity is strongly determined by such socio-economic regional factors, it can be said that treatment is strictly not random; hence there is no randomized controlled trial (RCT) that ensures a given probability of (random) treatment assignment. Randomization of treatment is the cornerstone of analyses that employ comparisons between treatment and control groups and compares average treatment effects (ATEs) between the two, which is impossible here. It would be straightforward to analyze the NUTS3 regions like this, if the treatment allocation were random, as the CAP is blind to borders and hence all regions in theory have the same likelihood of receiving treatment. As has been established before, however, the intensity with which regions receive funds from either Pillar I or Pillar II, and especially for LEADER, is highly diverse and based on observable pre-treatment characteristics. This means that the outcomes of regions endogenously determine the funds used. Hence, what we are faced with is an observational setting that is reliant upon the assumption of unconfoundedness, meaning that

there are differences between the LEADER treatment, $T_i \in T = \{0, 1\}$ in region i , can be fully explained by differences in the pre-treatment variables vector X_i, the covariates. Chapter 5.3 and the supporting code file give more information on how the covariates have been found and which variables were chosen.

The conditional probability of receiving the binary treatment given the pre-treatment variables is defined as the generalized propensity score , $r(T, X_i)$. This propensity score is estimated and bounded away from 0 and 1, $0 < Pr(T = 1 \mid X_i = x) < 1$. We employ the General Propensity Score (GPS) method by Imbens (2000), which estimates the impact of LEADER on various outcomes under the unconfoundedness assumption of no unobservable pre-treatment differences that influence the above-mentioned choice of implementation-mix made by the regions, as well as the outcomes we analyze. The propensity score is an estimation, this generates potential problems since a slight misspecification of the propensity score can lead to large bias in the analysis and hence can significantly taint results. Mostly, the search for an appropriate propensity score is an iterative procedure in which the covariate balance is checked, and model changes are implemented. To avoid this propensity score tautology, we further employ the CBPS as introduced by Imai and Ratkovic (2014). This method uses propensity scores in a way to maximize the covariate balance and the predicted treatment assignment, meaning that the propensity scores are estimated in such a way that both the covariate balance and the treatment assignment prediction are maximized. This is done by setting conditions that imply a covariate balancing propensity score, while not excluding the standard estimation procedure (i.e., making sure the estimated propensity score predicts the treatment well by maximizing the log-likelihood function). The covariate balancing property is implemented by using inverse propensity score weighting:

$$\mathbb{E}\left\{\frac{T_i \tilde{X}_i}{\pi_\beta(X_i)} - \frac{(1 - T_i)\tilde{X}_i}{1 - \pi_\beta(X_i)}\right\} = 0$$

Where $\tilde{X}_i = f(X_i)$ is the dimensional vector-valued measurable formula of the defined covariates X_i and $\pi_\beta(X_i)$ is a parametric propensity score model, with β as a dimensional column vector of unknown parameters. This property must hold for any model, and thus this implies that even when the model might be misspecified, the covariate balance will still hold. Imai and Ratkovic (2014) empirically test the CBPS methodology and find that it indeed improves the poor performance of propensity score models by estimating the probability of receiving the treatment in a different way. Regarding the matching procedure, the nearest neighbor algorithm is used. This matching method goes through the optimal matches and selects the closest option to match each time. A restriction in the number of times a control region can be matched with a treated region, namely 20 times, is built into the analysis. The balancing will be perceived as successful if the majority of standardized mean differences of the matched data is below 0.1 and the remaining differences below the 0.25 threshold. Afterwards, the ATEs are derived by running Weighted Least Squares Regressions. Those weights represent how heavily used a control region is, since this highly differs among regions.

5. Empirical Analysis

5.1. Data

The European Commission's science and knowledge service, the Joint Research Centre (JRC) provided the dataset that was worked with throughout this thesis. The dataset has been used for previous JRC research conducted by Dumangane and Freo (2022). The aim of this preceding work was to analyze the effectiveness of CAP, its diverse policies, their impact, and how to improve the mix of policies. The authors looked at GVA and employment as outcome variables of interest and found that all forms of CAP diminish job loss and the declining trend of GVA in the agricultural sector. Furthermore, all the measures analyzed seemed to support overall employment. Especially interesting were the findings relating to rural development. The authors found significant positive impacts on economic outcomes and in rural areas they found a

specifically positive effect on jobs. Furthermore, the convergence of the rural to the overall economy seemed to be positively influenced. Differing from research conducted by Dumangane and Freo (2022), this thesis solely focuses on the singular treatment variable of LEADER as it aims to deepen the understanding of the CAP's rural development aspect, which is implemented through Pillar II.

Just like Dumangane and Freo (2022), this thesis works with a regional classification that aggregates some of the original NUTS3 regions, such that the sample is a more homogenous territorial representation of the EU28 countries. By aggregating certain NUTS3 regions, this classification addresses the risk of the so-called *modifiable area unit problem* (MAUP) that arises based on borders for geographical areas being set according to historical reasons or administrative rules as opposed to being flexible to organic changes and economically coherent regions (Dark and Bram 2007). MAUP occurs when making use of spatially aggregated data and can significantly impact the results of a statistical hypothesis (Wong 2009). The aggregation was applied for regions in Belgium, The Netherlands, the United Kingdom and Germany, resulting in a dataset containing 796 reclassified regions instead of 1332 NUTS3 regions.

The timeframe of the analysis spans relates to LEADER from 2011 to 2015 and investigates outcomes until 2018. During this so-called *post Health-Check period* (see chapter 2.2 for details), direct payments in Pillar I have been decoupled and, for the sake of this thesis more importantly, Pillar II expenditures have been increased, which is why the period is suitable to analyze related effects. Hence, the period of 2011-2015 presents a reform-based perspective to assess the effectiveness of LEADER after the Health-Check reform. The treatment variable (LEADER intensity) refers to aggregated data from these policy years 2011 to 2015, to enable an analysis over the whole policy period. The LEADER intensity is measured as a ratio to the average total GVA in purchasing power standard (PPS). The choice for a ratio to the average

total GVA instead of the average *agricultural* GVA is made because of LEADER's extensive contribution to rural development beyond the agricultural sector.

Furthermore, the dataset enables a policy outcome analysis based on the post-policy years. These are 2016, 2017 and 2018. The outcome variables, hence, are computed as growth rates comparing the beginning of the policy period (2011) with the post-policy years (2016, 2017, and 2018). The growth rate calculated from 2011 to 2016 is used to measure immediate effect, whereas growth rates between 2011 and 2017 or 2018 provide information on potential lagged results. Additionally, these work as a robustness checks. This joint analysis focuses on the economic outcomes GVA and employment, both considered as growth rates from 2011 to 2016, 2017 and 2018, respectively. The GVA in PPS as is used in this analysis is part of the CMEF (Common Monitoring and Evaluation Framework) as one of the key impact indicators for RDPs in Pillar II, which is why it is deemed suitable for this analysis. Both growth rates for agricultural and total GVA are being investigated, likewise this research looks at total and agricultural employment growth rates.

The sources for datasets as reported by the JRC are fourfold: The treatment stems from the European Commission's Clearance Audit Trial System (CATS); the socio-economic variables included in the analyses are from the Annual Regional Database of the European Commission (ARDECO) and Eurostat; and lastly the region-specific indicators relating to remoteness and land-use are from CORINE Land Cover and ESPON.

5.2. Binary treatment design

As previously mentioned, the data used in this analysis is of a nature that does not include a randomized control trial experimental setting in which treatment and control group are easily identifiable. To mimic a proper treatment and control group, we decided to split the observations we have in two groups based on their LEADER intensity, indicating whether they received no LEADER funds ($T_i = 0$) or whether they did ($T_i = 1$). The cutoff was not established strictly

at zero LEADER funds, as only 33 regions would have been in the artificial control group when applying this cut-off. As is known from the descriptive analysis, these regions are mostly urban. Furthermore, it can be seen that many regions barely receive LEADER funds, even if more than zero, still negligible amounts. Hence, the cut-off for this analysis was based on the first quartile of the LEADER intensity. This amounts to a value of 52.13 in LEADER intensity and leads to almost 200 observations in the control group, which highlights again that many regions barely receive LEADER. To give a feeling for the range of the variable, it can be said that the largest values captured range up until more than 5,000 in LEADER intensity. The median amounts to 190 and the mean to 350, which is why the chosen cutoff at the first quartile (Q1) with lower Q1 ($T_i = 0, N = 198$) and larger than Q1 ($T_i = 1, N = 598$) is justified. Appendix 15 gives an overview of the thresholds and number of regions per control and treatment group.

5.3. Outcome Variables, Controls and Pre-treatment Covariates

As explained in the methodology approach (chapter 4), the control variables are of high importance to satisfy the unconfoundedness assumption. To understand the pre-policy differences (the year 2010) that determine both the possible outcome effects (GVA & employment) and the probability of being treated (LEADER intensity), three categories of control variables are included.

The first category is related to descriptive regional factors and includes *population density* (assuming a higher degree of rurality in less populated areas and hence higher LEADER intensity with lower GDP per capita outcomes); *closeness to city* (directly analyzing the degree of rurality with the three categories city, close to city and remote); and *new EU membership of the state* (making a distinction between old and new member states for states who joined the Union during a time at which direct payment schemes to farmers had features that were not reproduced).

The second category relates to the local economic structure of the regions, including the *share of agricultural gross value added* (to understand the importance of the agricultural sector in the regions); and the *labor productivity in the agricultural sector* (to understand efficiency and potential applications of the LEADER funds in the regions).

The third category of covariates relates to the economic success of the regions and includes the *gross domestic product* (per capita in purchase power standard), as well as lagged pre-treatment outcome variables to understand the pre-policy situation of the respective regions, which include the *agricultural GVA growth rate* as well as the *total employment growth rate* from 2009 to 2010.

To add checks on robustness, all covariates that are neither dummies nor lagged pre-treatment outcomes have been included as squares in an additional analysis. As the balancing results were comparably worse, however, these are not included in the final analysis and the results presented below[2]. Lastly, controls for Pillar I and Pillar II (sans LEADER) intensity have been included where appropriate. Please refer to the supporting code file for the analysis of all covariates and their effects on both the binary treatment (LEADER intensity) and outcomes (GVA, employment) as identified by employing a regression analysis.

6. Results

6.1. Pre-matching Differences

Before diving into the propensity score matching, we performed difference in means t-test analyses for our outcome variables of interest comparing the treated and untreated regions at the cut-off previously established. Table 1 gives an overview of the results for each outcome variable per period of interest. The growth rate of the total GVA is on average higher in treated regions, however only the growth from 2011 to 2018 is significant (+2% growth rate). When

[2] Please refer to the code that is attached to this thesis should you be interested in looking at the results for included squared covariates. They can be found under CBPS Fit 2 and all related matching algorithms.

focusing on the agricultural sector, however, the growth rate of the specific agricultural GVA is lower in treated regions than in non-treated regions, with no significance in the results. When investigating employment, it can be said that on average, treated regions have a lower growth rate than non-treated. For two of these employment growth rates, the results are significant: 2011 to 2017 (-1.2% growth rate) and 2011 to 2018 (-1.7% growth rate). For the agricultural sector, the opposite direction of results was found: Treated regions have a higher growth rate of agricultural employment than non-treated regions, however with no significance. These findings may vary in magnitude between the years, but the general direction is coherent, which is a reasonable check. These findings are also in line with some general trends that can be studied between urban and rural regions: while rural regions often grow more based on larger potential, the growth of employment is slower than in urban regions. Interestingly, the average growth of agricultural employment is negative in both treated and untreated regions. The observed loss of agricultural jobs has been discussed at length in literature. What is important for our purpose is that treated regions experience fewer losses than untreated regions when it comes to agricultural employment. This is in line with LEADER's objectives and goals, which leads to the assumption of at least a certain success of this measure based on these simple average treatment effect comparisons. The same analysis as is found in the text above and the table below has been performed for the pre-treatment covariates used and can be found in Appendix 16.

Table 1 - Differences in Means t-test pre matching

Variable	Treatment Group	Control Group	Difference	P-value	
Total GVA 2011 - 2016	0.113	0.107	0.006	0.45	
	0.005	*0.006*			
Total GVA 2011 - 2017	0.149	0.134	0.015	0.08	
	0.005	*0.006*			
Total GVA 2011 - 2018	0.188	0.168	**0.020**	**0.04**	*
	0.006	*0.007*			
Agricultural GVA 2011 - 2016	0.047	0.054	-0.006	0.74	
	0.009	*0.018*			
Agricultural GVA 2011 - 2017	0.060	0.104	-0.044	0.06	
	0.010	*0.021*			
Agricultural GVA 2011 - 2018	0.079	0.118	-0.040	0.17	
	0.013	*0.026*			
Total Employment 2011 - 2016	0.006	0.016	-0.010	0.07	
	0.003	*0.004*			
Total Employment 2011 - 2017	0.020	0.032	**-0.012**	**0.03**	*
	0.003	*0.005*			
Total Employment 2011 - 2018	0.029	0.046	**-0.017**	**0.01**	*
	0.004	*0.005*			
Agricultural Employment 2011 - 2016	-0.062	-0.080	0.018	0.19	
	0.006	*0.012*			
Agricultural Employment 2011 - 2017	-0.061	-0.071	0.010	0.51	
	0.006	*0.013*			
Agricultural Employment 2011 - 2018	-0.072	-0.040	-0.032	0.45	
	0.007	*0.041*			

(standard errors in italics, significance levels 0 “***”, 0,001 “**”, 0,01 “*”, 0,05 “.”)

6.2. CBPS and Matching Results

6.2.1. Propensity Score Estimation and Common Support

When determining the propensity score, the CBPS method solely aims at balancing the covariates. Hence, the estimates are not to be interpreted as they would in the normal GPS matching process. Nevertheless, the results might be interesting, which is why they are presented in the Table 2. What can be concluded from literature findings, descriptive statistics and previous analyses (see supporting code file) is that the direction of influence of the variables investigated is nevertheless supported by this analysis. It seems, for example, that the further away from a city one goes, the higher the probability of receiving LEADER. Furthermore, it seems that being a new member state reduces the amount of LEADER received, which is surprising. The contribution of agriculture to the GVA also seems to influence LEADER, but it is interesting that the higher this share is, the lower is the likelihood of treatment, which would

be an interesting point for further studies as it seems counterintuitive. Higher agricultural labor productivity also seems to reduce the likelihood of receiving high amounts of LEADER, which at first sight might seem odd as well, but which could potentially be explained by the higher necessity for unproductive regions with higher potential to receive more LEADER shares and use them to increase exactly this lack of productivity. GDP seems to have a negligibly small effect. While these are not proven by this CBPS analysis, the coefficients might serve as nice indication of these influences as studied before.

Table 2 - CBPS results

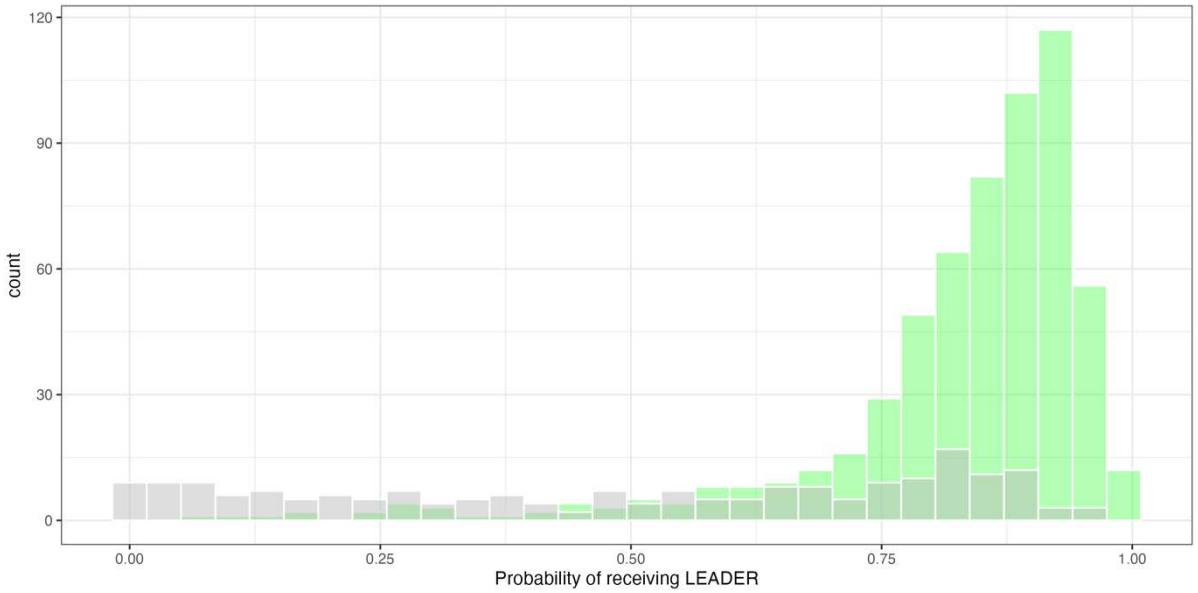
Variable	Estimate *Standard Error*	P-Value	
(Intercept)	3.37 *0.00*	0.000	***
Population Density	0.00 *0.19*	0.994	
Close to City	1.33 *0.00*	0.000	***
Remote	1.46 *0.00*	0.000	***
New Member State	-1.05 *0.00*	0.000	***
Share of Agriculture in GVA	-2.84 *0.00*	0.000	***
Agricultural Labor Productivity	-0.65 *0.00*	0.000	***
GDP per capita	0.00 *0.06*	0.999	
Lagged Agri GVA growth rate pre policy	3.50 *0.00*	0.000	***
Lagged Total Emplyoment growth rate pre policy	12.10 *0.000*	0.000	***

(standard errors in italics, significance levels 0 “***”, 0,001 “**”, 0,01 “*”, 0,05 “.”)

Apart from balancing covariates, another key component of the CBPS analysis is finding the region of common support to understand which observations must be dropped from the analysis. The common support requirement rules out the perfect predictability phenomenon. The overlapped histograms (Figure 9) impressively show the broad area of common support. Many

non-treated areas (grey) have a high probability of receiving LEADER, which is why the overlap with the treated areas (green) is quite large – hence the matching algorithm will look for similar propensity scores with different treatment statuses within this region of common support. The larger it is, the better the analysis.

Figure 9 - Common Support*



**green bars representing treated regions, grey bars control regions*

6.2.2. Matching Results

In total, 709 out of the 796 regions are being matched. Due to the large area of common support as depicted above, not many regions had to be discarded in the process. The matching is done by making use of 111 of the 198 control regions. An overview of the reuses in the matching process is shown in Table 3. The control regions were often paired multiple times, which was the case for 74 regions, with 12 of those control regions being paired with the allowed maximum of 20 treated regions. Without the upper boundary of 20 reuses, some control regions would have been used up to 58 times, which is why this threshold was applied.

Table 3 - Control group reuses in the matching process

Reuses	1	2	3	4	5	6	7	8	9	10	11	13	17	18	20
Occurances	37	16	12	5	9	3	3	4	2	4	1	1	1	1	12

When analyzing the balance of the matched data, we first look at the maximum standardized mean difference, a variable frequently used to measure a distance between two groups of the mean (i.e., the mean differences divided by their respective standard deviations). Table 4 represents the standard mean difference for each pre-treatment covariate. It can be seen that out of eleven variables, seven show a maximum standard mean difference below 0.1, showing a successful balancing of the means and covariates variances. The remaining four differences that are above 0.1 are all below 0.25, which is the approximate highest level acceptable (Imbens and Rubin 2015).

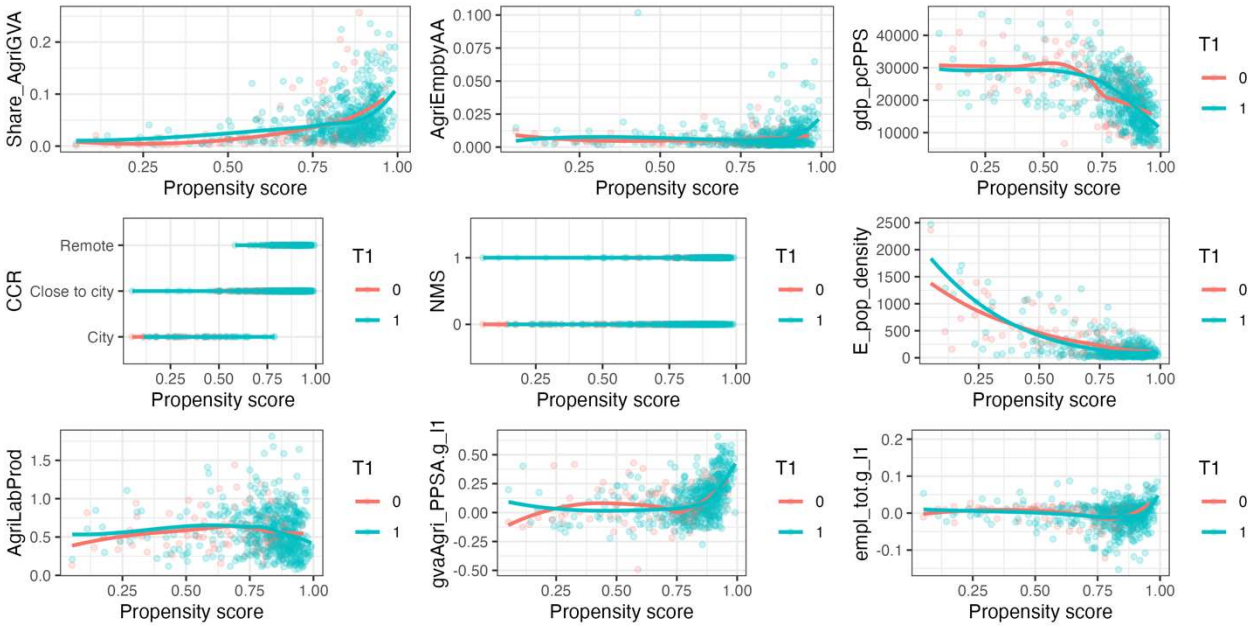
Table 4 - Balance for matched data

Variable	Treatment Group Means	Control Group Means	Std. Mean Difference
Distance	0.8273	0.8227	0.0322
Population Density	143.6738	187.9897	-0.1954
City	0.0569	0.0452	0.0505
Close to City	0.6538	0.7695	-0.2355
Remote	0.2893	0.1890	0.2213
New Member State	0.3211	0.3161	0.0107
Share of Agriculture in GVA	0.0502	0.0554	-0.1301
Agricultural Labor Productivity	0.5572	0.5817	-0.0899
GDP per capita	20075.6759	20372.8182	-0.0404
Lagged Agri GVA growth rate pre policy	0.1238	0.1274	-0.0218
Lagged Total Employment growth rate pre policy	-0.0049	-0.0025	-0.0743

As a visual representation of the quality of matching and the balance of covariates, Figure 10 represents the propensity score distribution for each covariate per treatment group.

The closer the means of both groups (red and blue lines), the better the matching for the respective value of the propensity score.

Figure 10 - Propensity Score Distribution



For the share of agricultural GVA, especially in the lower PS values, the means are very similar. Around 0.5, the curves deviate slightly, before re-joining in higher values. For Agricultural Employment, the curves are similar. For the GDP per capita, there again is a slight parting in the middle of the values – which seems quite intuitive when considering that low propensity scores indicate low likelihood of treatment and high ones a high likelihood – this, per definition, makes the middle values the hardest to match and thus allocate. At the top of the GDP curve, there is another slight parting but all in all, the matching seems to be well balanced and properly executed. The CCR panel with the distinction between cities, close to city and remote areas shows again what we already saw in the descriptive analysis: urban areas receive very little LEADER and also have a very small likelihood to. Regarding EU membership, it can be said that almost all untreated areas are in old member states, which also does not come as a big surprise. In terms of population density, the curves are parting at the lower values, but are

similar in higher values. When looking at agricultural labor productivity, the middle values are very well balances with slight deviations at the top and bottom of the curve. For the lagged agricultural GVA, balancing is the worst in comparison: the curves are quite different at almost all values of the propensity scores. The lagged variable for total employment shows good balancing again.

6.3. Average Treatment Effects post matching

Table 5 represents the average treatment estimates for the binary treatment in the entire sample. The ATEs represented in column two are obtained by running weighted least squared regression with two additional variables to enhance efficiency: Pillar I intensity (ratio of aggregated Pillar I funds over agricultural GVA) and Pillar II intensity (from which the LEADER intensity is excluded). Weights are given to every region through the matching algorithm. Some control regions are matched with more than one treated region as indicated in Table 3; consequently these regions receive higher weights. By adding controls, only the pure treatment effect of LEADER should be measured, and the effects of other policies within Pillar I or II should be eliminated. It is feasible to argue that both Pillar I and II would influence the outcome variables, nevertheless this effect lies outside the interests of this thesis. As the Pearson correlation between both intensities is negligible (0.052), both intensities are added. By implementing the control, we ensure that the ATE solely captures the impact of our binary treatment.

The first three rows of Table 5 indicate that treated regions experienced a significant increase in their total GVA growth rate for the three time periods compared to the control regions. For treated regions, the aggregated total GVA growth rate over five years (2011-2016) is found to be 3.2 percentage points higher than in control regions. Additionally, the ATEs get larger when enlarging the time period of the outcome variable, meaning that outcomes get more important with time – a crucial finding. Thus, the LEADER program does influence regions, as it stimulates a larger growth total GVA growth rate over different periods.

Contrary to the total GVA growth rate, the LEADER treatment seems to not have a significant influence on the agricultural GVA growth rate for any investigated time period. This finding strengthens the hypothesis that the LEADER policy extends its influence beyond agriculture as a broad rural development program. Moreover, LEADER is a multi-stakeholder initiative, meaning that different non-agricultural players are also influenced.

Similarly, for the results on employment, LEADER has a significant impact on the total employment growth rates, although this effect does not hold for the agricultural employment growth rates. Results shown in row seven of Table 5 indicate that treated regions experienced a 2.6 percentage point higher growth in total employment compared to control regions for the 2011-2016 time period. These ATEs hold and even get slightly larger for the longer time spans investigated, since row nine indicates an ATE of 0.025, implying that the increase in employment growth rates increased is 2.5 percentage points larger in treated regions compared to control regions. As discussed before, LEADER had no significant effect on the growth rates of agricultural employment. This once more highlights the fact that LEADER is a broad rural development program and has an influence on the total local economy variables in a region, rather than merely stimulating growth in the agricultural sectors of regions. When comparing these findings to the difference in means t-test results discussed in chapter 6.1, no surprising differences appear. Just like the ATE, the differences in the means t-test solely indicate significant differences between control and treatment groups for total employment and total GVA growth rates. An important remark should be added, namely the R-squared of the weighted least squared regressions predicting the ATEs never exceeds 5%. Thus, our treatment only explains a small proportion of the variance of the assessed outcome variables. Nevertheless, it can be said that significant effects of LEADER are picked up, while a lot of variation across regions is not explained, most likely because there are a lot of random factors across regions.

Table 5 - Average treatment effects via weighted least squared regressions

Variable	Estimate *Standard Error*	P-Value	
Total GVA 2011 - 2016	0.032	0.004	**
	0.011		
Total GVA 2011 - 2017	0.037	0.004	**
	0.013		
Total GVA 2011 - 2018	0.041	0.007	**
	0.015		
Agricultural GVA 2011 - 2016	0.028	0.223	
	0.023		
Agricultural GVA 2011 - 2017	0.006	0.832	
	0.026		
Agricultural GVA 2011 - 2018	0.009	0.766	
	0.033		
Total Employment 2011 - 2016	0.023	0.000	***
	0.007		
Total Employment 2011 - 2017	0.023	0.002	**
	0.007		
Total Employment 2011 - 2018	0.025	0.004	**
	0.009		
Agricultural Employment 2011 - 2016	0.026	0.104	
	0.016		
Agricultural Employment 2011 - 2017	0.013	0.419	
	0.163		
Agricultural Employment 2011 - 2018	0.003	0.882	
	0.023		

*(*standard errors in italics*, significance levels 0 "***", 0,001 "**", 0,01 "*", 0,05 ".")*

7. Discussion and Conclusion

7.1. Conclusion

Throughout the past decades, the CAP shifted from being a solely agricultural policy to a policy with a broad economic and socioeconomic scope. LEADER, a rural development program, situated within the second Pillar of the CAP, contributes to this change. LEADER does this by making use of innovative strategies that contain seven specific features. Especially the LAGs play a crucial role to ensure that the bottom-up approach is executed efficiently and effectively. Characterization of the LEADER fund spatial distribution indicates two main points. First, Eastern European countries collect a higher intensity of LEADER than Western European countries. Second, remote and rural NUTS3 regions attain more LEADER than urban regions. Making use of a binary treatment relating to the amount of LEADER intensity used, the potential effect of this policy on a set of outcome variables (total GVA, agricultural GVA, total employment, and agricultural employment) are assessed for 796 aggregated NUTS3 regions. To avoid selection bias and construct a well-balanced dataset, the CBPS method is employed, consequently regressions report the ATEs. The results as described in Chapter 6 confirm that LEADER is much more than a policy aimed at agriculture: its influence on the total outcome values (total employment and total GVA) is higher than for the agricultural sector (agricultural employment and agricultural GVA), leading to the assumption that LEADER is, indeed, a rural development program, and as such highly important. The research question can thus be answered with "Yes – LEADER does have significant impacts on economic outcome variables".

7.2. Limitations and Recommendations for future research

For future research, we firstly recommend including more pre-treatment covariates in the analysis. This thesis analyzed the usage of covariates based on regressions to see the impact both on treatment and actual outcomes, assuming the same for potential outcomes. This limits our analysis, thus we recommend a re-evaluation in a second step. To do so, we propose adding

two more variables (lagged total GVA and agricultural employment growth-rates measured pre-policy) used by the JRC in previous research (Dumangane and Freo 2022). Additionally, also including a new category of pre-treatment covariates, namely lagged outcome variables adjusted by country averages could increase the statistical correctness of the model.

Second, we recommend to re-do the analysis with Pillar I and the remainder of Pillar II (sans LEADER) as pre-treatment covariates as well. The given dataset did not allow us to do so, since data on Pillar I and II in the years before treatment were not included. For now, Pillar I and the remainder of Pillar II intensities measured between 2011-2015 have solely been included as an efficiency measure in the weighted regression that determines the average treatment effects. Nonetheless, their inclusion in the previous step could yield valuable insights. The statistical model used assumes that LEADER is neither correlated with Pillar I nor the rest of Pillar II. This is the core of a tough question on the policy mix implementation that the JRC aims at understanding. In the future, it might be desirable to also investigate the correlations of Pillar I and Pillar II on LEADER, given the estimated propensity scores.

Third, we believe it to be valuable to repeat the analysis performed in this thesis with a caliper approach to ensure the closeness of matches within a certain radius. It would be interesting to see how or if the results change.

Fourth, it might be worth trying to drop the urban regions and treat them as outliers. Excluding them from the analysis would indicate whether the results still hold for a constructed control group that is closer in nature to the treatment. Especially since these regions are mostly receiving none or only very little LEADER funds, it could be a good procedure to check the robustness of current findings. Moreover, a strict binary treatment is conducted, which implies the LEADER intensity regions close to the threshold received might be very small. Nevertheless, based on this difference in LEADER intensity, these regions are assigned to a control or treatment group, which has a severe impact on the statistical analysis.

Fifth, it might be interesting to re-evaluate the model and search for more explanations to enlarge the R-squared of the final post-matching regression, to see what else influences these outcome variables. We believe this might be a tough job, as many influences are most likely the time, political situations and general economic trends, but controlling for such variables and understanding the real influence of LEADER itself without distortion might be worth further research.

André Sá Machado Magalhães Ilharco

8. Impact on Politics

Since its beginning, LEADER was developed to bring close rural communities into the process of European integration. The top-down approach has both an efficiency-economic goal, as well as a second social goal (integration). With its first edition three years after the fall of the Berlin Wall and one year before the fall of the USSR, LEADER was conceived by the idea that society can self-organize itself and understand its needs, in opposition with a top-down centralized system for the economy. This idea was also taking shape within the EU institutions at the time and resulted in the MacSharry Reforms for the CAP, one year later. In the turning of the century, the idea of a strong and cooperative civil society was started to be seen as a *sine qua non* condition for stable liberal democracies (Fukuyama 2001) and as necessary to prevent a centralized globalization process (Dahrendorf 1996). But it is important to understand whether this belief is indeed correct. Does LEADER motivate people to participate in EP elections? Do regions with higher LEADER funds vote more and more towards pro EU parties?

8.1. Literature Review

Economical determinants of voters' electoral choices have been previously researched and proved important. Which economic determinant will influence the most varies from country to country (M. S. Lewis-Beck and Stegmaier 2000). Recent research has proven that increased expenditures and subsidies, tax cuts, or higher wages in the public sector motivate the voter to support the government incumbent (Cerda and Vergara 2008) (Elinder and Mikael 2010). Other studies have indicated also that economic variables play a crucial role in the retrospective assessment the voter does when deciding his/her vote direction (Bischoff and Siemers 2013) (C. Lewis-Beck and Martini 2020). Regarding the determinants for the EP elections outcomes, (Mattila 2003) reports that voters in countries which benefit from the EU subsidies vote more actively than voters in the countries that pay these subsidies. Other factors like compulsory

voting and weekend voting were also find important to determine voter turnout rates. (Stockemer 2011) reports that turnout rates are positively influenced by the level of support for EU-membership and that voters who see the EU as a good thing have a higher likelihood of voting in EP elections. (Schäfer and Debus 2017) report that the proximity and identification of the national voter to the national parties (namely, regarding socio-economic left-right conflict and the European integration policy dimension) matter for the EP elections participation rates: namely that larger distances to the closest party (on the two topics described above) should increase the probability of abstaining in European elections.

Rodríguez-Pose and Dijkstra (2020) report that Cohesion Policy investment is linked to a lower anti-EU voting. The authors of this study report that EU Cohesion Policy has the reduced the anti-EU and anti-system forces growth in long-term declining areas, affected by low levels of education and by lack of decent job opportunities. EU funds are here perceived as a tool against the increase of social and political exclusion. (Hartnett and Gard-Murray 2018) studied the connection between EU transfers and the regional support of the EU in the case of Poland. The authors report that EU funds might be fueling anti-EU feelings and propose as possible explanations: 1) burdensome and time consuming conditions for financial-aid; 2) the possibility that farmers may be feeling they are losing their traditional way of life; 3) the different stages of access to funds in the past between new and older MS (this is specific to the Polish case, studied by the authors, as Poland joined the EU only in 2004). Also, studies based on survey data reported that the increase in the regional per capita EU transfers by 1.000€ over the 2000-2014 period reduces the share of Eurosceptic individuals by about 8 percentage points and voters' support for anti-EU parties by 10 percentage points (Borin, Macchi, and Mancini 2018). Another study reported similar results, namely that poor regions and middle-income regions have significantly higher probabilities of Eurosceptic voting (Schraff 2019). It must be underlined the possible difference between taking conclusions from electoral data and from

survey data. (Hogh and Larsen 2016) also posit an interesting point, especially when considering the nature of LEADER, its publicity, and its partnership-mobilizing model. The authors presented a one-day EU politics course to first-time voters in Denmark, before the 2014 EP elections. Using a quasi-experimental design, the authors found that individuals who participated in this course were more knowledgeable about and more likely to vote in the upcoming EP election. That is, the degree of knowledge in EU politics and action may be a positive way to increase voter turnout in EP elections that are already considered as "second-order" (Angelucci, de Sio, and Paparo 2020).

8.2. Data, Variables and Methodology

8.2.1. Data

The first part of the data used for this analysis is the same one used for the common part, namely the dataset provided by JRC with the LEADER data. For the political part of the analysis, the data used to assess the impact of LEADER between 2011-2015 on the EP elections and voting behavior will be the results of the 2009, 2014 and 2019 EP Elections by NUTS3 regions (taken from the *Harvard Dataverse*). New datasets were produced from this one, classifying each observation by a country, a NUTS3 region code and name, a year (2009, 2014, 2019), a political party running for the European Parliament, the EP group each national party adhered to (when applicable), the main party (in order to create links between solo party runs and colligations in different years), the party name in native language, the party's English name, a Pro/Against EU variable (see Appendix 17 for each EP Group classification), a Pro/Against EU Dummy variable (=1, Pro EU; =0, Against EU), the total electorate number of the corresponding NUTS3 region, its total number of votes, total number of valid votes and the total number of each party votes. There are two main groups of datasets: the one with every party running for each region for each election; the second with each region general results for each election:

Table 6 - Primary datasets with # of observations

Dataset	# of observations
Parties running in 2009	11003
Parties running in 2014	12704
Parties running in 2019	12649
Participation Rates per Region 2009	1094
Participation Rates per Region 2014	1113
Participation Rates per Region 2019	1113

Other variables where further computed and included in the dataset namely the *Participation Rates* (Total Vote/Electorate), *Party Share* (Party Votes / Valid Votes), Invalid Votes Share (Invalid Votes / Total Votes), *Pro EU Voting Share* (the sum of all the Pro EU votes in each region for each election), and *Against EU Voting Share* (the sum of all the Against EU votes in each region for each election).

8.2.2. Outcome variables

Later on the investigation, other datasets/variables (all included in the *supporting code files*) were produced in order to obtain the outcome variables. The outcome variables used in the analysis to answer Q3 are: *PRGrowth1*[3], *PRGrowth2*, *ProEUGrowth1*, *ProEUGrowth2*, *AgainstEUGrowth1*, *AgainstEUGrowth2*. The variables type 1 regard the growth between the 2009-2019 period; variables type 2, 2014-2019. A table with the definition of each variable can be found in Appendix 18. The two periods (2009-2019 and 2014-2019) are used because the LEADER data used for the study respects the gap between 2011 and 2015. This way, 2009 is a clear pretreatment moment, making the 2009-2019 period the most suited. However, even though this analysis' methodology is reliant on the assumption of unconfoundedness, it was also used the 2014-2019 period to check the conclusion taken from the 2009-2019 period and make it more robust. Due to the Brexit process started in 2015 with the *European Union Referendum*

[3] *PRGrowth* as Participation Rates Growth for a certain period.

Act 2015 and consequent polarization of the UK's society, the UK's EP elections results were not considered for this analysis.

8.2.3. Methodology

For this part of the thesis, the binary treatment used in the common part was recreated by creating a new threshold for LEADER intensity[4] (52.56) due to the different dataset that resulted from the merging process between the initial LEADER dataset (JRC's) and the one with the 2009, 2014, and 2019 EP elections results (more information on subchapter 8.4.2.). This threshold means that all the regions (LEADER intensity > 52.56) are considered as treated (T=1), and all the other regions (LEADER intensity < 52.56) are considered as a control (T=0). The definition of this threshold as it is explained in the common part is due to the lack of randomness in the decision process of attribution of the LEADER funds, being the threshold computed from the covariates here assumed as the determinants for the treatment's allocation.

8.3. Descriptive Statistics

8.3.1. Participation Rates 2009-2019

The growths of the participation rates for the two time periods are two of the outcome variables. The mean Participation Rates were of 43.16% (2009), 43.54% (2014) and of 53.23% (2019). In order to further evaluate the impact of LEADER on Participation Rates of each election (for summary statistics of each years' EP elections by country, please see Appendix 19).

The intuition behind this part of the analysis is that the presence LEADER initiatives (that require the involvement of all the community) should increase the EU citizens interest and awareness of the EU's action. This intuition was further enlarged, and it was tested the link between LEADER intensities and participation rates for EP elections in each NUTS3 region. As it can be seen in Appendices 20 and 21, in the 2014 and 2019 EP elections, higher LEADER

[4] As in the common part, the expression "LEADER intensity" is here synonym of LEADER Total Funds 2011-2015 / Total GVA 2011-2015.

intensity regions tend to have lower participation rates. This makes sense if one remembers that Rural Zones are the ones which present the lower levels of Participation in EP elections (see Appendices 22, 23 and 24) while at the same time higher values for LEADER intensity. One hypothesis to explain this is that the same reasons that may require higher LEADER investments in some regions also justify the lack of the regional interest in EP elections. Finally, it is here highlighted both the higher intercept and slope of the regression line of 2019 (Int. = -0.5343; LEADER reg. Estimator = -6.752×10^{-5}; p-value = 4.64×10^{-14}) then 2014 (Int. = -0.4705; LEADER reg. Estimator = -8.302×10^{-5}; p-value = 1.63×10^{-13}) which may indicate some medium to long term effects of LEADER on EP elections Participation rates.

On the Participation Rates within each country, there are some points worth mentioning (please see boxplots with the three elections Participation Rates by country in Appendices 25, 26 and 27). First, the high Participation rates both of countries where voting is compulsory (Belgium and Luxembourg) and of smaller countries (Malta), which was mentioned in the literature review of this part. Contrasting with these examples are Slovakia and Czechia. Second, the persistent presence in the three elections of lower outliers in France, as well as of some countries' long IQR, namely Denmark, Spain, Greece, and Italy. Some factors that may justify this IQR might be both different levels of proximity of each region electorate to the parties running for the elections (which can be also regional parties, take the example of *Lega Nord*, in Italy, which elected 29 MEPs in 2019) or different levels of access to EP and political information between a country's regions.

As we can see from the graph in Appendix 29 and in line with what we saw when comparing the 2014 and 2019 Participation Rates with the LEADER intensities, higher LEADER intensity regions seem to be correlated with higher Participation Rate Growth between 2014 and 2019. To further test this relation, we regressed the *PRGrowth2* (2014-2019

period) with the variable of LEADER Intensity. The results were significant (Int. = 0.06382; LEADER reg. Estimator = 0.000015551; p-value = 0.0155).

8.3.2. Voting Direction regarding the EU

While screening the participation levels, we also tried to analyze the voting direction in the three elections regarding the voters' feelings towards the EU. In this sense, it was decided to classify most of the votes into Pro EU and Against EU. The criteria utilized to classify the positions of the different national parties was their chosen EP group in each election and their position towards the EU. Coherence between the EP groups among the years was also taken into account (mainly the movement from the 2009 *Non-Inscrits* to the 2014 EFDD and further ID). National parties that didn't make it to win any seat among the three EP elections were not considered to this account. Appendix 30 presents the summary statistics of the growth of Pro and Against EU Voting Shares from 2009-2019 and 2014-2019.

It can be seen in the graphs in Appendices 31 and 32 the apparent relation between zones with higher LEADER intensity (2011-2015) and higher Pro EU Share of Votes Growth both between 2009-2019 and 2014-2019. We can observe more dispersion for the graph with longest period (2009-2019), but also notice a positive correlation with LEADER intensity and the growth of pro EU voting within the two time periods. When regressing the Pro EU Growth Variables with the variable of LEADER Intensity, we get a significant (***) result for the Pro EU Votes growth between 2009 and 2019[5] and significant (***) one for the period of 2014-2019[6]. After that, we also regressed the Against EU Growth Variables with the variable of LEADER Intensity. A significant (***) result was found for the Against EU Votes growth between 2009 and 2019[7] and a significant (***) one for the period of 2014-2019[8].

[5] With a regression estimator value of 0.0001108 and Adjusted $R^2 = 0.08006$.
[6] Regression estimator value of 0.000048118 and Adjusted $R^2 = 0.04124$.
[7] Regression estimator value of -0.0001061 and Adjusted $R^2 = 0.09478$.
[8] Regression estimator value of -0.000077295 and Adjusted $R^2 = 0.09623$.

8.4. Results

8.4.1. Difference in Means: Outcome Variables (before matching)

Table 7 - Difference in means of the outcome variables between the treatment and control groups

Variable	Control Mean	Treatment Mean	Mean Difs	p-value	
PRGrowth1	0.016 *0.008*	0.071 *0.005*	-0.055	0,000	***
PRGrowth2	0.028 *0.005*	0.079 *0.004*	-0.051	0,000	***
ProEUGrowth1	-0.222 *0.011*	-0.100 *0.009*	-0.121	0,000	***
ProEUGrowth2	-0.105 *0.009*	-0.034 *0.005*	-0.071	0,000	***
AgainstEUGrowth1	0.202 *0.013*	0.106 *0.008*	0.096	0,000	***
AgainstEUGrowth2	0.141 *0.009*	0.049 *0.006*	0.092	0,000	***

Before the matching, it can be seen that all the outcome variables show significant different means in the treatment group (the regions of T=1, LEADER Intensity above 52.56). For the treatment group (0.079), the variation between participation rates between 2014 and 2019 is greater (and positive) than for the control group (0.028). The same happens between 2009-2019. This tendency is further confirmed with the significant difference in the mean variations in the Pro EU votes between the 2009 and 2019 elections between the treatment group (-0.100) and the control group (-0.222). The same happens when considering the 2014-2019 period, in which the overall negative variation in the Pro EU votes is significantly less in the treatment group (-0.034) than it is in the control (-0.105). Finally, in line with these preliminary differences, it can be seen by the means of both groups that the share of votes in parties against the EU (both from 2009-2014 and 2014-2019) increased. However, one can also see a significant difference (***) in the 2009-2019 means of this share between the treatment

group (0.106) with a lower increase when comparing with the control group's mean (0.202). The same tendency happens between 2014-2019.

8.4.2. Matching Results

The matching process used in this approach is very similar to the one used in the common part of this thesis and assumed the same covariates. In order to evaluate the treatment effects on the outcome variables here studied (Participation Rates Growth 2009-2019 and 2014-2019; Pro Eu and Against EU Growth Rates 2009-2019 and 2014-2019), a new dataset had to be produced from the JRC's original (*dYX_CAP_1115*; 798 observations), which computed 796 observations (*PRtotal*). Thus, out of 796 regions, 706 were matched. For the matching process, it was used the "nearest neighbor 1-to-1" matching, with replacement with a restriction of 20 reuses.

Table 8 - Matching Results Resume

Sample Sizes:		
	Control	Treated
All	199	597
Matched (ESS)	47.67	597
Matched	109	597
Unmatched	90	0
Discarded	0	0

Table 9 - Number of Reuses occurrences in the matching process

Reuses	1	2	3	4	5	6	7	8	9	10	12	15	16	20
Occurrences	34	13	11	16	7	4	3	1	1	2	1	1	1	14

8.4.3. Post-Match: Average Treatment Effects for Political Variables

After computing the ATE for the outcome variables, previous insights that started to be visible in the Difference in Means before matching start to get more light shed on.

Table 10 - ATEs Weighted Least Squared Regressions on the outcome variables

Variable	Estimator *Std. Error*	t value	Pr(>|t|)		Adjusted R-squared
2009-2019 EU Elections Participation Growth *[PRGrowth1]*	**0.08368** *0.01558*	5.37	**1.17E-07**	***	0.04877
2014-2019 EU Elections Participation Growth *[PRGrowth2]*	**0.070833** *0.011102*	6.38	**3.79E-10**	***	0.06815
2009-2019 EU Elections Pro EU Voting Share Growth *[PROEUGrowth1]*	**0.07461** *0.02864*	2.605	**0.00944**	**	0.01054
2014-2019 EU Elections Pro EU Voting Share Growth *[PROEUGrowth2]*	**0.05667** *0.01621*	3.496	**0.00051**	***	0.02025
2009-2019 EU Elections Against EU Voting Share Growth *[AgainstEUGrowth1]*	-0.04896 *0.02544*	-1.924	0.0549		0.004952
2014-2019 EU Elections Against EU Voting Share Growth *[AgainstEUGrowth2]*	**-0.08463** *0.01745*	-4.85	**1.62E-06**	***	0.03982

There was a positive influence of the treatment variable (*P2_LEADER_TGVA*; LEADER intensity) both on the 2009-2019 and 2014-2019 EP elections participation growth. The same tendency was also confirmed with significance (***) for the two time periods when controlling for Pillar 1 and all the other Pillar 2 funds. One can also see that LEADER had a positive impact in the Pro EU share of votes in the two periods, while having a significant negative impact in the Against EU share of votes between 2014-2019. When controlling for Pillar 1 and 2 (without LEADER) funds, results were significant for the growth of Pro EU share of votes between 2009-2019 (*) and 2014-2019 (**). When controlling for the same variables, although LEADER intensity showed a negative regression estimator for the 2009-2019 period, it had low level of significance (0.165). Contrary, the same computations were made with the same

controls for the Against EU votes growth between 2014-2019 and a negative correlation was found (0.07633) with a high level of significance (***)[9].

8.5. Discussion and Conclusion

The present analysis pretended to evaluate the impact of LEADER on EP elections participation rates, as well as its impact on the feelings of Europeans towards the EU (manifested in their political choice in the ballots). As we analyzed above, we can answer positively to Q3: LEADER (2011-2015) had a positive and significant effect both in the EP electoral act participation rates and in the increasing of Pro EU voting shares. This report's conclusions serve to further endorse the idea that the involvement of the regional and local communities with the EU proceedings and integration process will act as a force to strengthen communities' and individuals' interests and commitment with the EU (both through participation and political identification). Relating to previous findings in the literature that associated all the EU funds for agriculture (Pillar 1 and 2 combined) to the growth of Euroscepticism (Hartnett and Gard-Murray 2018), the findings of this analysis seem to suggest that LEADER may be a more appreciated model for EU agricultural funding for more Eurosceptic regions. In the same line as (Borin, Macchi, and Mancini 2018) and (Rodríguez-Pose and Dijkstra 2020) on EU transfers and Cohesion Policy investments respectively, this report also supports the power of LEADER to limit the share of Eurosceptical individuals (or at least reduce its growth) in a community. It must be highlighted that even if the results computed are positive and significant their explanatory power is low (low R^2), which limits the utilization of LEADER as a major tool to increase EP elections. For further policy making however, the core insight remains on the positive political consequences of inviting local communities (as happens in LEADER) to participate in the formulation and implementation of EU's actions that reach and affect them. Subsidiarity matters.

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[9] p-value = 3.3×10^{-6} and Adjusted $R^2 = 0.1763$.

There are also some limitations in my approach that I would like to mention and some future research. First, my data regarding the EP electoral outcomes consider two situations that might reduce the estimation of LEADER impact on Participation Rates and (in the second situation) the Pro/Anti EU voting. First, I included in my sample countries with compulsory voting, namely Belgium and Luxembourg. Compulsory voting limits the revelation of LEADER impact both on Participation Rates and on the voters' choice as their decision is not motivated my any other thing rather than the law and its enforcement. Second, this analysis is only considering the Pro/Anti EU voting shares of the national parties that elected MEP during the three EP elections of 2009, 2014 and 2019. This means that the voting intentions that did not elected MEPs are not being considered in the analysis. The national threshold to elect a MEP vary between EU countries and some of them do not even have one, so there might be some disproportionality between each country's sample of Pro/Anti EU voting equilibrium. Also, some EP elections determinants found in the literature may be control variables to consider, for example a dummy variable the weekend voting. For future research, it may be interesting to make an analysis of any EU funds impact on EP elections that comprises the different results for countries with and without compulsory voting countries. Also, to make an analysis regarding the totality of votes, rather than only the votes that elected MEPs. For further insights, it is also an interesting point to relate the analysis with national elections. These may serve either as a control and outcome variables.

9. Joint Conclusion

This thesis evaluated the effects of LEADER on four distinct categories of outcome variables: (i.) economic; relating to GVA and employment, both for the total economy and the agricultural sector; (ii.) political outcomes, relating to EP election participation and voting direction; (iii.) economic outcomes of agritourism firms, relating to sales, cost of employees, number of employees and total assets; and (iv.) demographic outcomes, relating to migration, young- and old-dependency. In conclusion, it can be said that LEADER has shown some significant impacts on the different outcome variables discussed. An important finding of this thesis is also that there are large observable differences between regions that do and do not receive high amounts of LEADER, which can be seen as a great opportunity for LEADER to have strong, lasting, and meaningful impacts. What has to be considered is that many of the effects found are especially relevant and strong in the short term. Being a planning tool, it is clear that LEADER requires thorough implementation. Maybe then in the medium term, impacts will be seen more strongly and directly. Hence, future research might be able to shed more light on the effects and influences that LEADER can have on regions. From a policy perspective, research in this field is crucial to understand how to better the CAP as a whole, and LEADER as a specific component. The implications discussed in this thesis are relevant for policymakers in all countries and regions of the EU, as it has been shown that rural development and the involvement of the member states and their communities in EU actions, especially the ones more detached from the European integration process, are crucial components of a bright European future.

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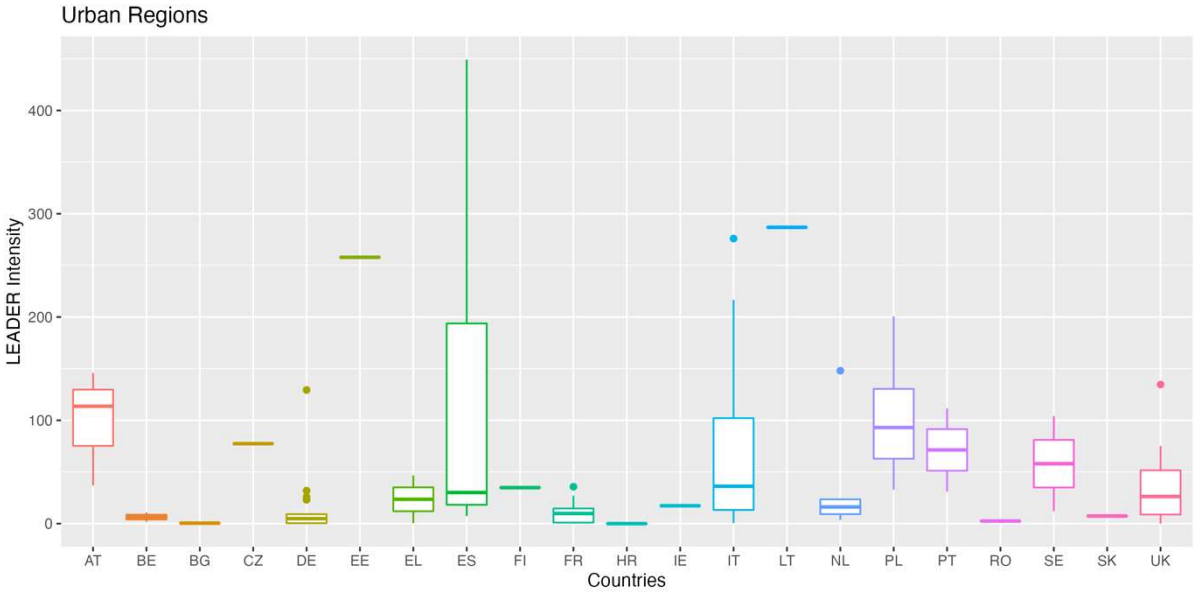
10. Appendix

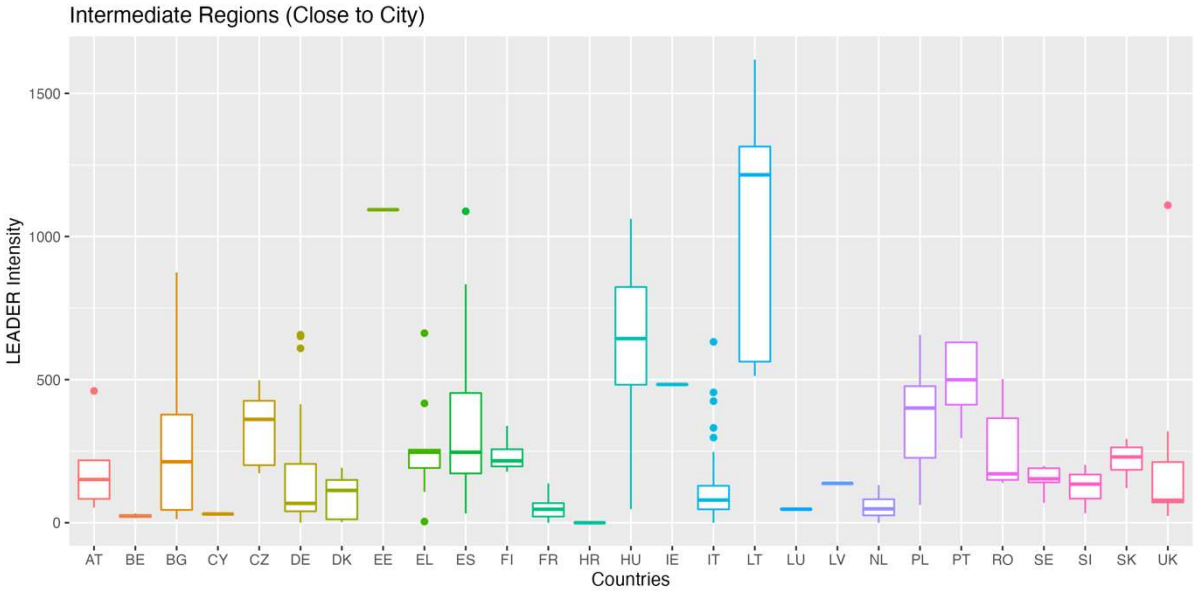
10.1. Appendix Group Part

Appendix 1 - LEADER intensity for Urban NUTS 3 Regions per country*



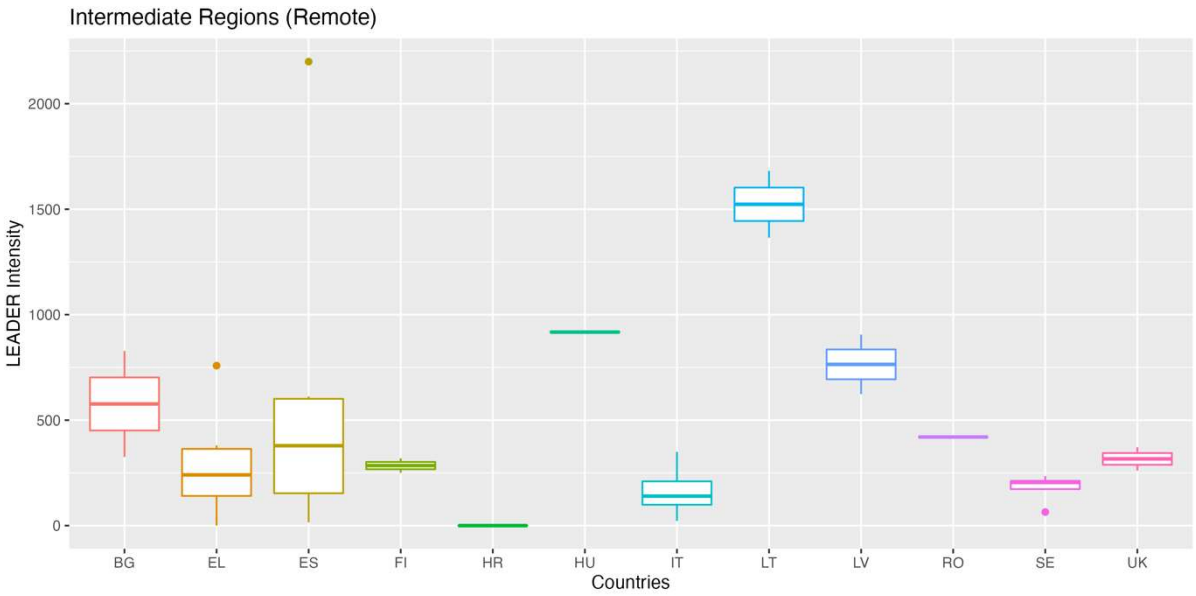
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 2 - LEADER intensity for Intermediate NUTS 3 Regions (Close to City) per country*



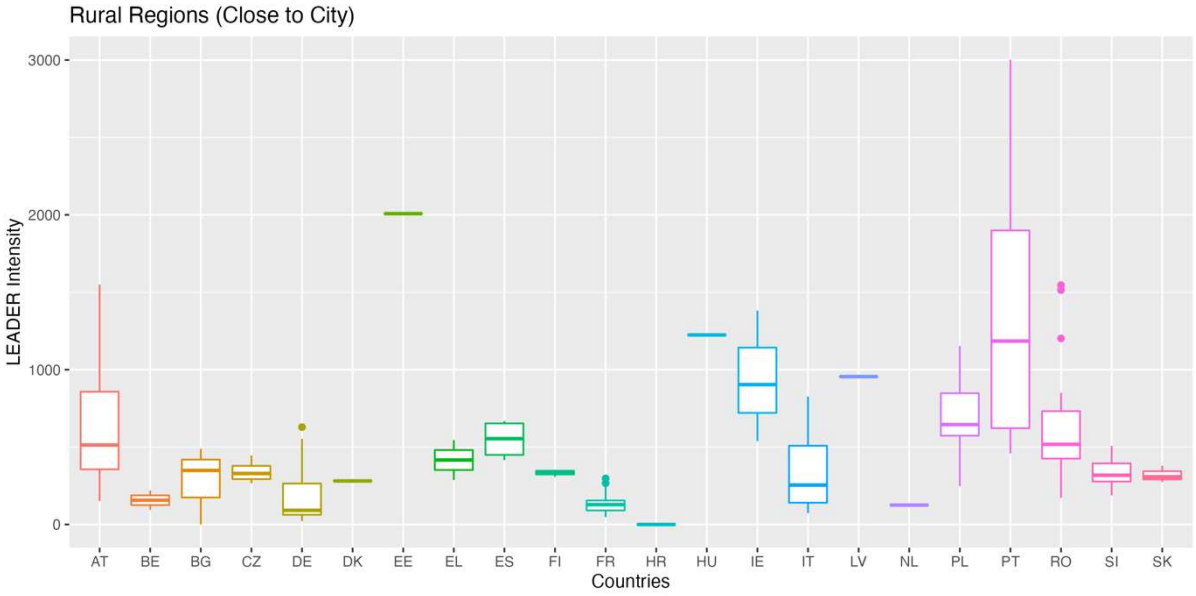
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 3 - LEADER Intensity for Intermediate NUTS 3 Regions (Remote) per country*



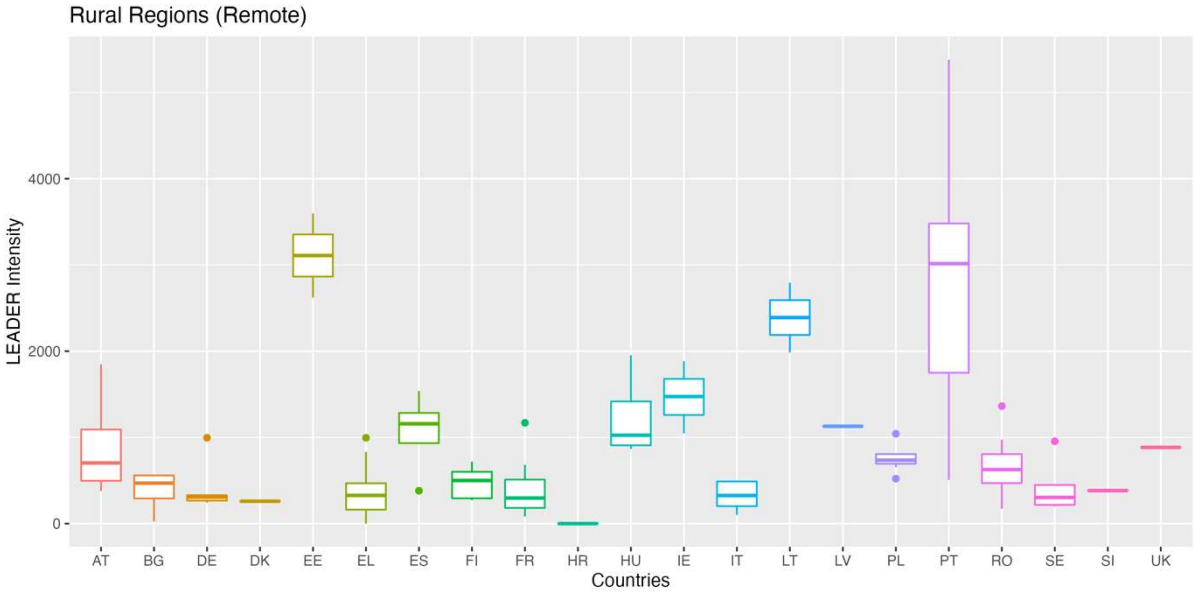
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 4 - LEADER Intensity for Rural NUTS 3 Regions (Close to City) per country



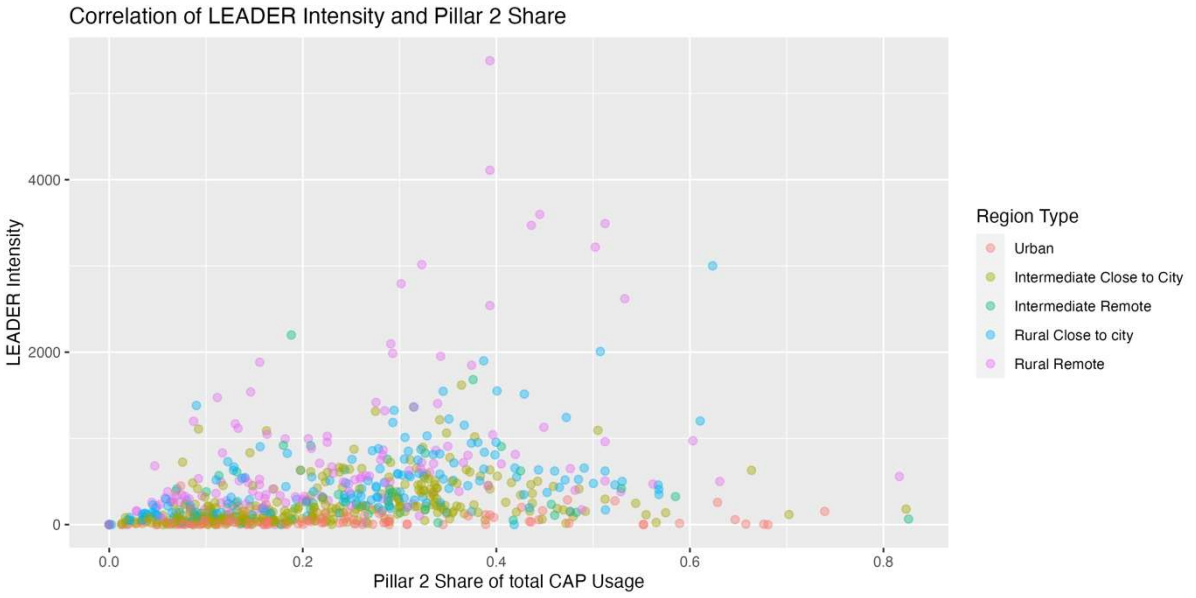
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 5 - LEADER Intensity for Rural NUTS 3 Regions (Remote) per country



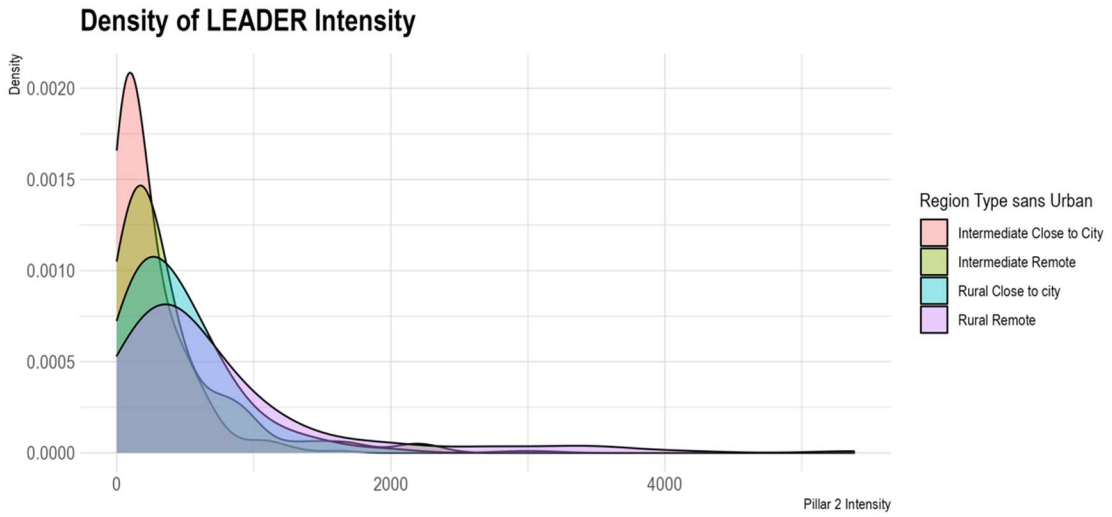
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 6 - Correlation Analysis between LEADER Intensity and Pillar II Share of Total CAP*



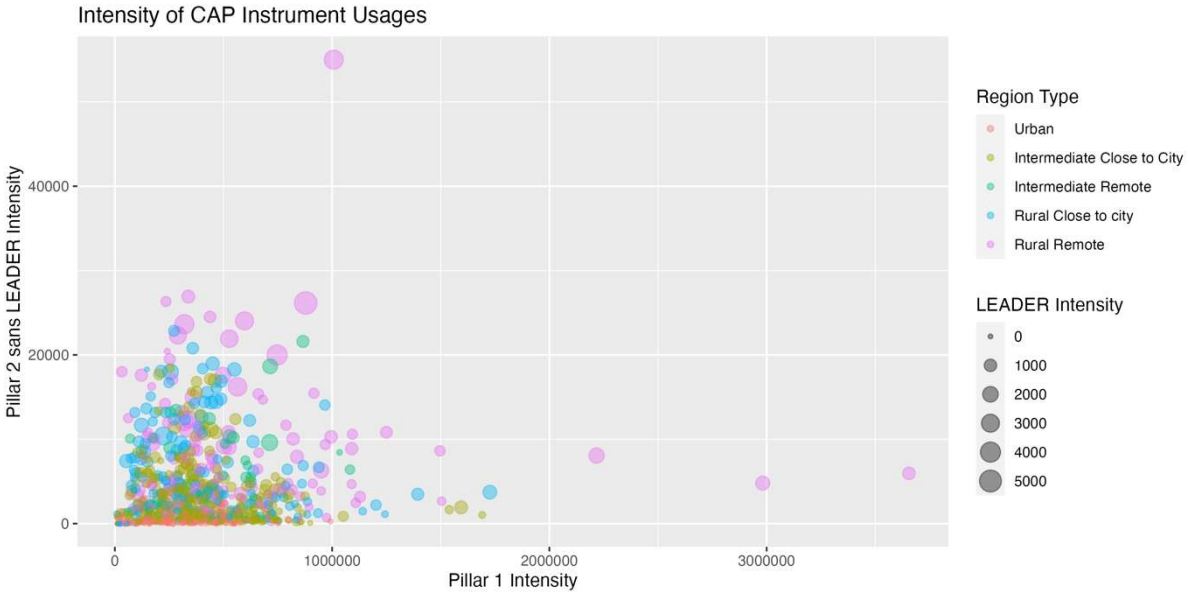
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 7 - Density Analysis of LEADER Intensity per Region Type



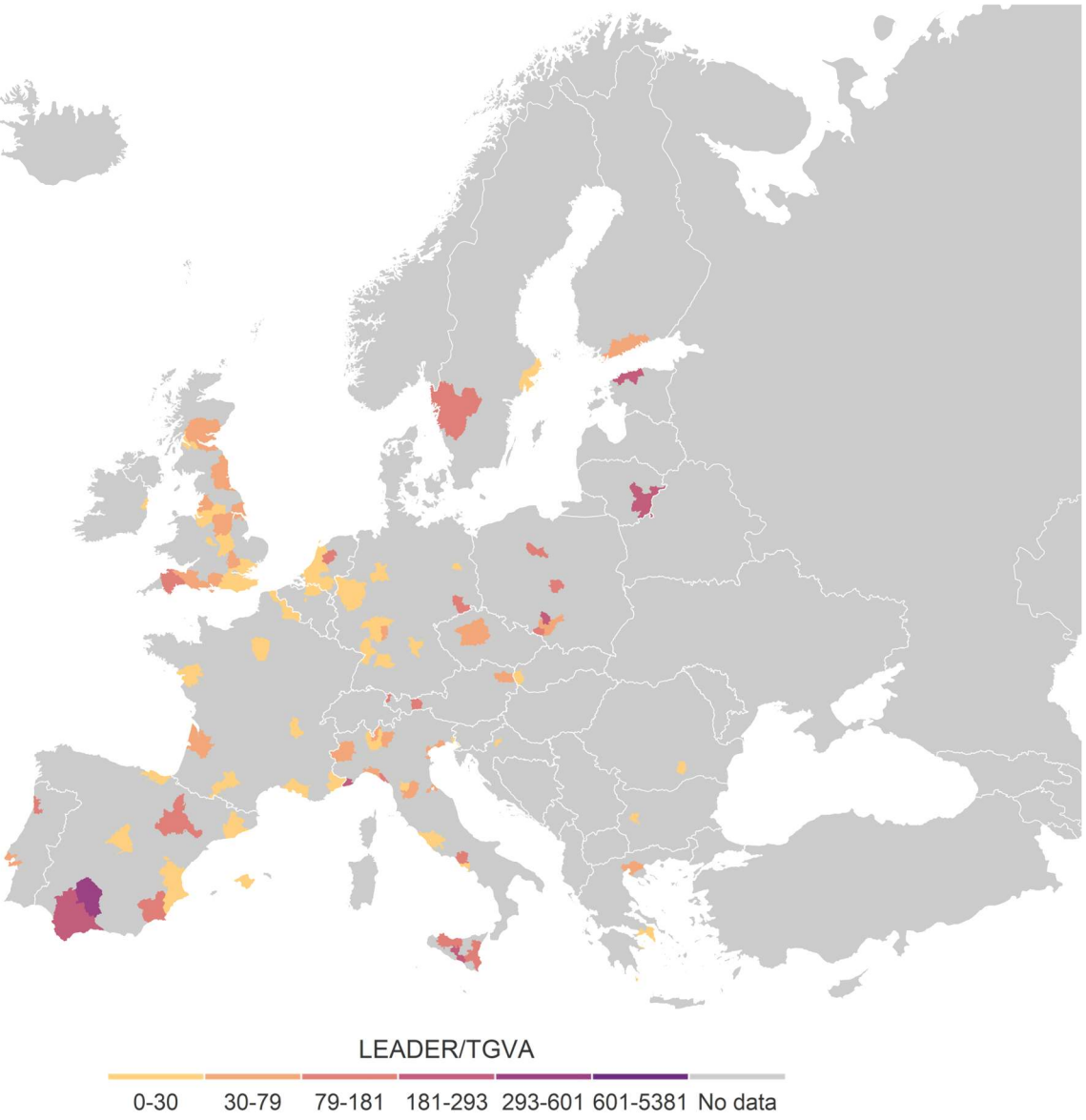
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy (Note: omitted category "Urban" due to high distortion based on extremely high density at 0)*

Appendix 8 - CAP Instrument Analysis with LEADER intensity as bubble size



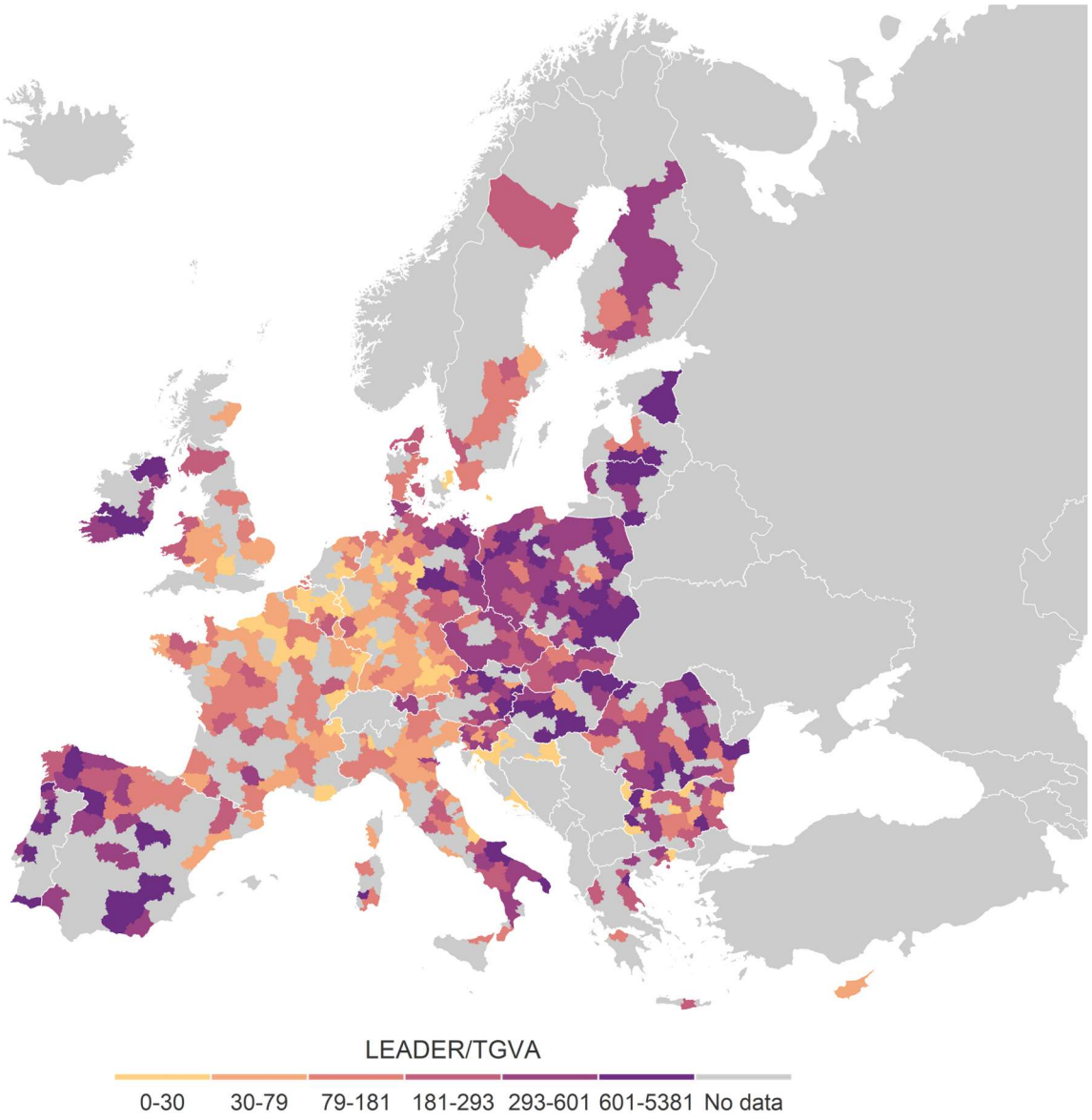
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 9 - Heatmap: LEADER intensity for cities*



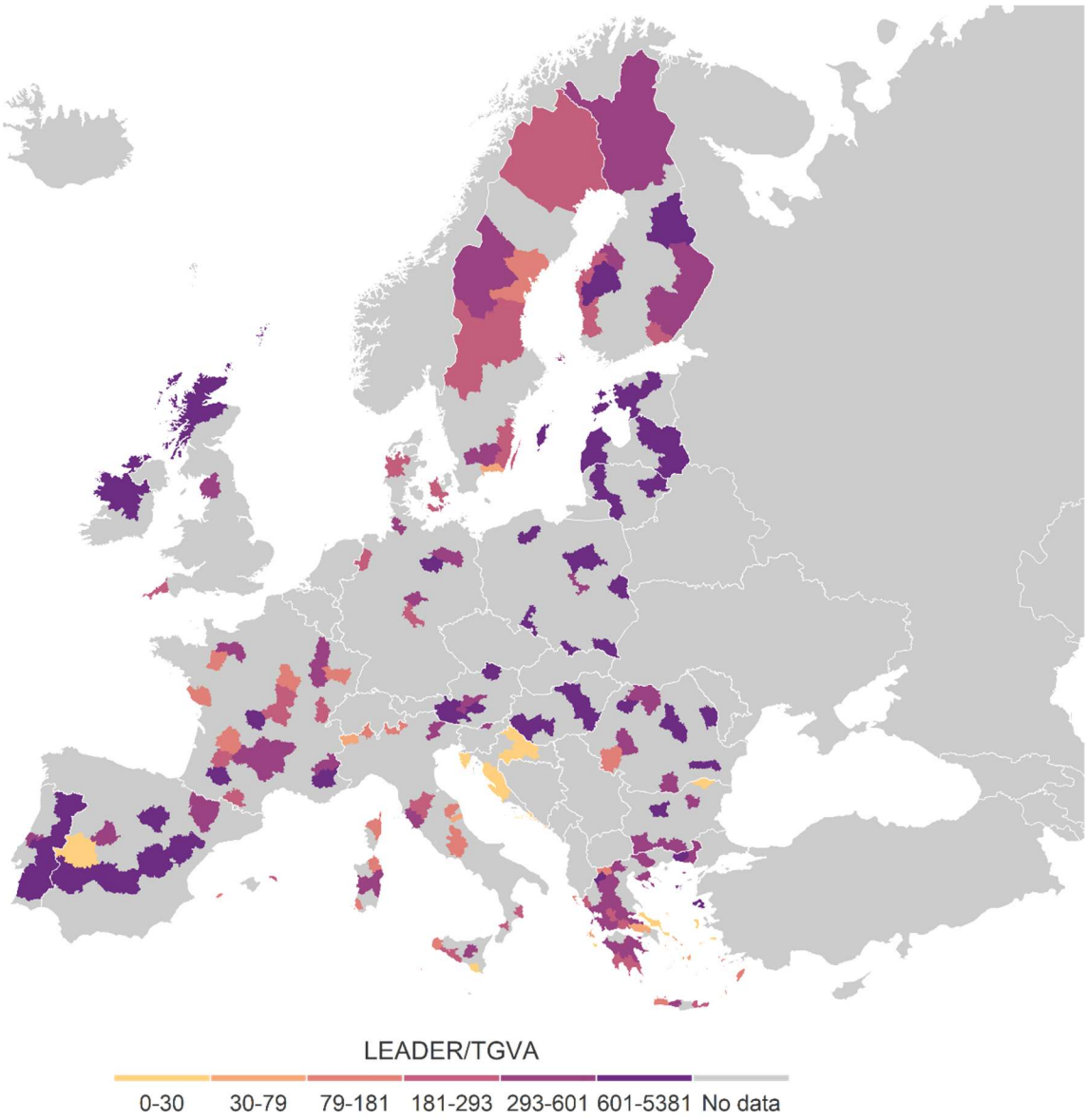
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 10 - Heatmap: LEADER intensity for regions close to cities*



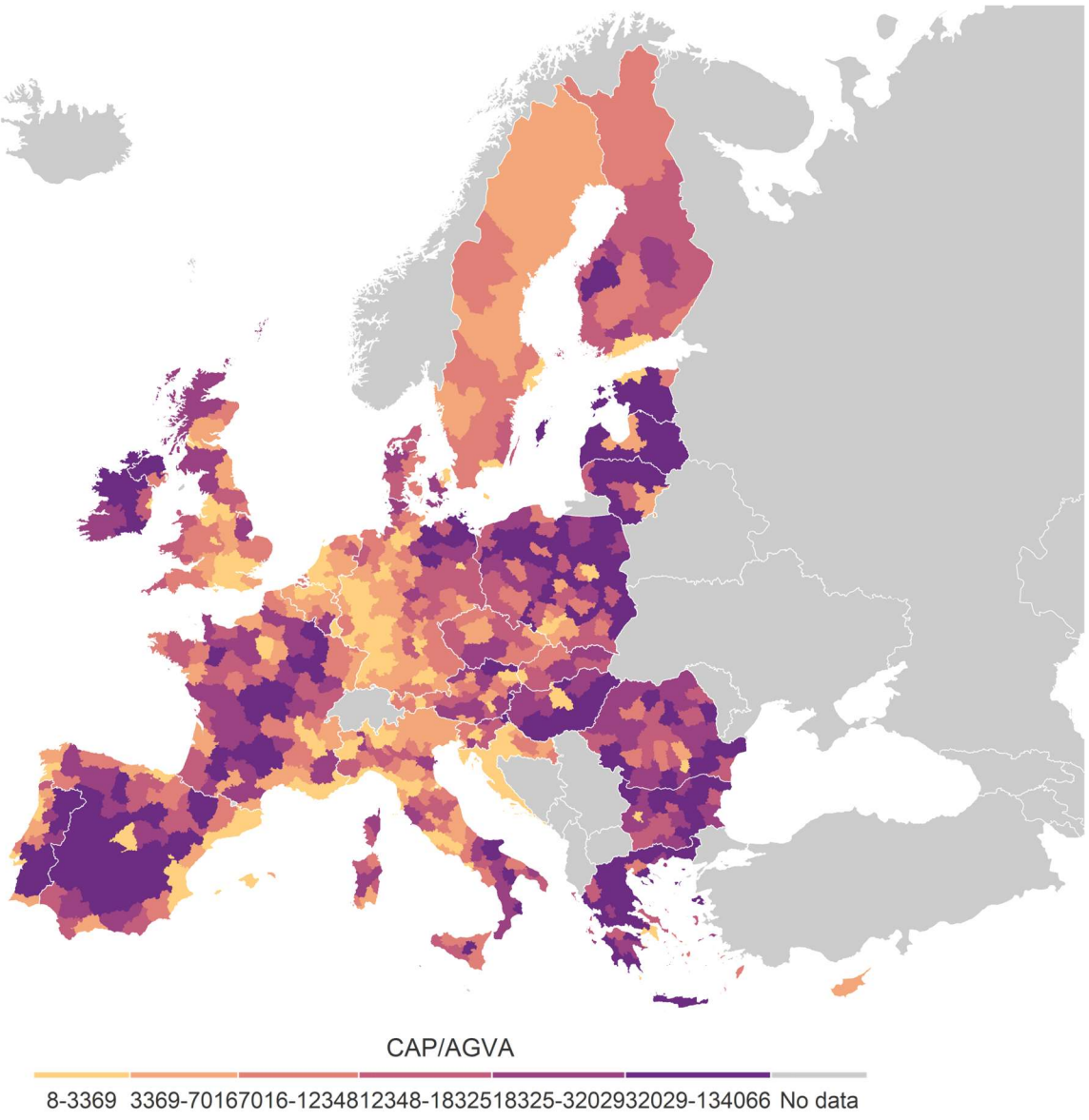
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 11 - Heatmap: LEADER intensity for remote regions



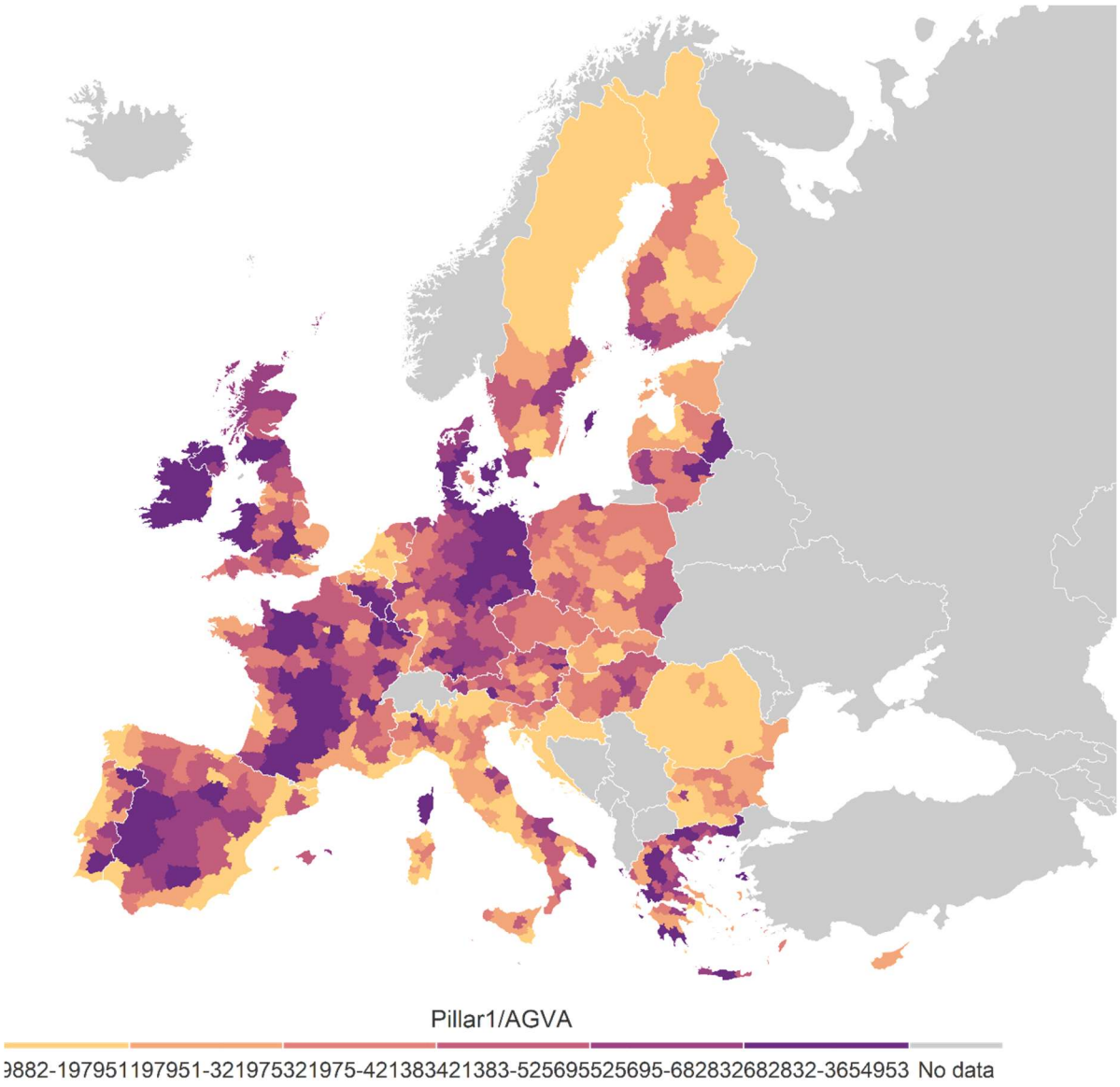
** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 12 - Heatmap: CAP intensity for all NUTS3 regions*



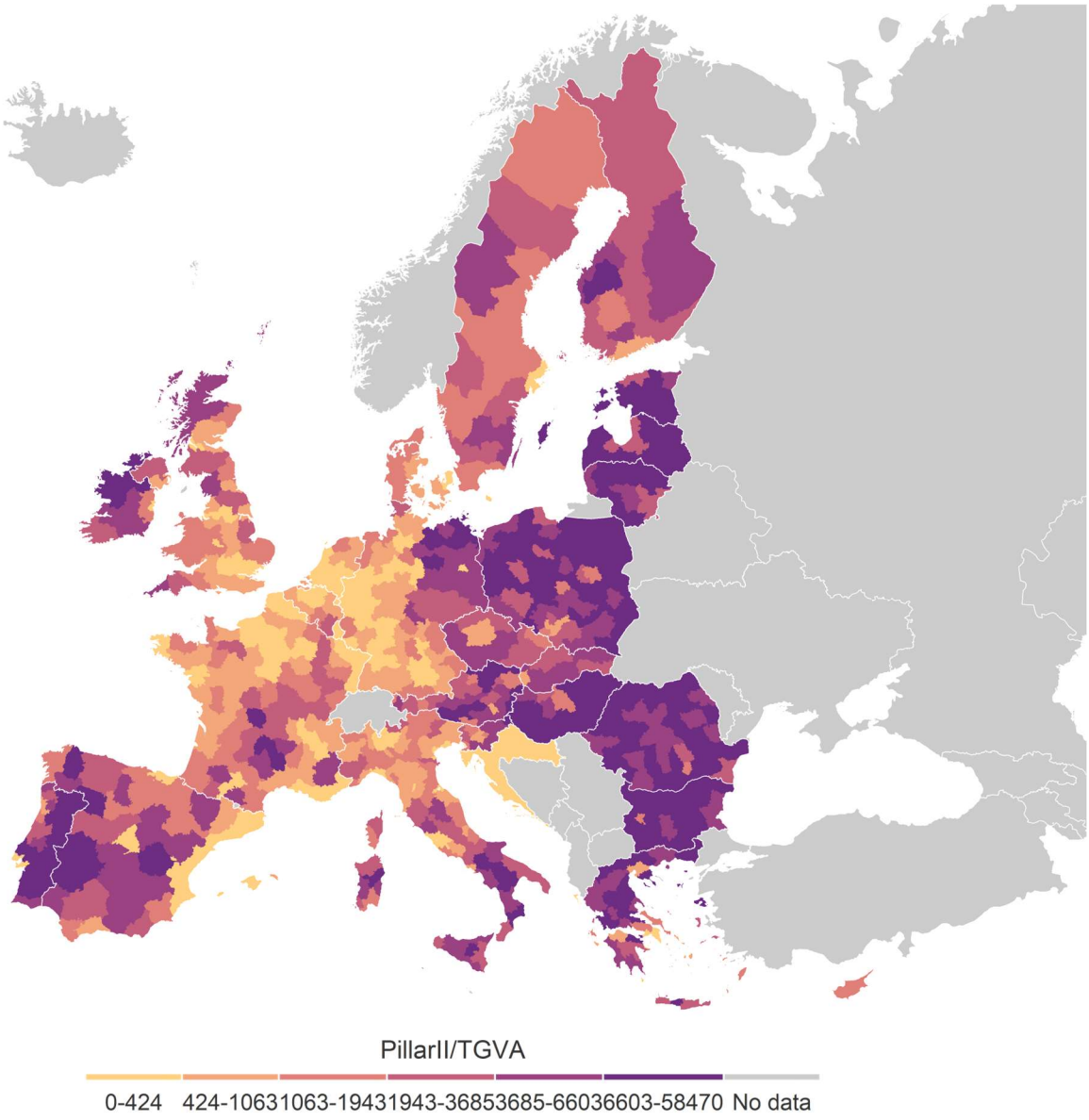
** LEADER intensity measured as total LEADER spendings divided by the sum of agricultural GVA of three years pre policy*

Appendix 13 - Heatmap: Pillar I intensity for all NUTS3 regions*



** LEADER intensity measured as total LEADER spendings divided by the sum of agricultural GVA of three years pre policy*

Appendix 14 - Heatmap: Pillar II intensity for all NUTS3 regions*



** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 15 - Characterization binary treatment

Dataset	Threshold (LEADER/TGVA)	N	
		Treated	Control
796 NUTS3 regions	0	33	736
796 NUTS3 regions	52.13	198	598

** LEADER intensity measured as total LEADER spendings divided by the sum of total GVA of three years pre policy*

Appendix 16 - Covariates Difference in Means pre matching*

Pre-treatment covariate	Treatment Group	Control Group	Difference	P-value	
Population Density	144	770	**-627**	**0.00**	***
	9.275	*95.201*			
Share Agricultural GVA	0.050	0.025	**0.026**	**0.00**	***
	0.002	*0.003*			
Agricultural Labor Productivity	0.557	0.546	0.011	0.62	
	0.011	*0.019*			
GDP per capita	20075	27438	**-7363**	**0.00**	***
	302	*735*			
Lagged Agri GVA growth rate pre policy	0.124	0.059	**0.065**	**0.00**	***
	0.007	*0.011*			
Lagged Total Emplyoment growth rate pre policy	-0.005	-0.003	-0.002	0.35	
	0.001	*0.002*			

*** (*standard errors in italics, significance levels 0 "***", 0,001 "**", 0,01 "*", 0,05 "."), *(standard errors in italics)*

10.2. Appendix André Sá Machado Magalhães Ilharco

Appendix 17 - Each elections EP Group classification towards Pro/Against the EU[10]

Year	EU Parliament Group	Position Towards the EU
2019	EPP	Pro
	EPP & ECR	Pro
	EPP & S&D	Pro
	GREENS/EFA	Pro
	RenewEurope	Pro
	S&D	Pro
	ECR	Pro
		Against
	NI	Pro
		Against
	GUE/NGL	Against
	GUE/NGL & Greens/EFA	Against
	ID	Against
2014	ALDE	Pro
	ALDE/EPP	Pro
	EPP	Pro
	Greens/EFA	Pro
	S&D	Pro
	S&D/ALDE	Pro
	ECR	Pro
		Against
	EFDD	Against
	ENF	Against
	GUE/NGL	Against
	GUE/NGL & Greens/EFA	Against
	NI	Against
2009	ALDE	Pro
	ALDE/EPP	Pro
	ECR	Pro
	EPP	Pro
	Greens/EFA	Pro
	NI	Pro
	S&D	Pro
	NI	Against
	EFD	Against
	GUE/NGL	Against
	GUE/NGL & Greens/EFA	Against

[10] Due to some grey areas in the national parties' identification with the EP Groups, a natural phenomenon to the political realm, some national parties were included in traditionally Pro EU EP Group (like the ECR) in the EP Group classification but got a "Against" classification in their position towards the EU due to their public position on the matter. That's the case, for example of the German *AfD* in 2014, or the Greek Youth Solution, in 2019. Also, some *Non-Inscrits* parties, both due to their considerable results (in a specific election or from one election to the other), and self-proclaimed position towards or against the EU, got autonomously classified either "Pro" or "Against" the EU. That is the case of the *Rassemblement National*, in France, 2014; *Lega Nord*, in Italy 2014; *5-Star Movement* in Italy 2019; *Jobbik*, in Hungary 2019, among a few others.

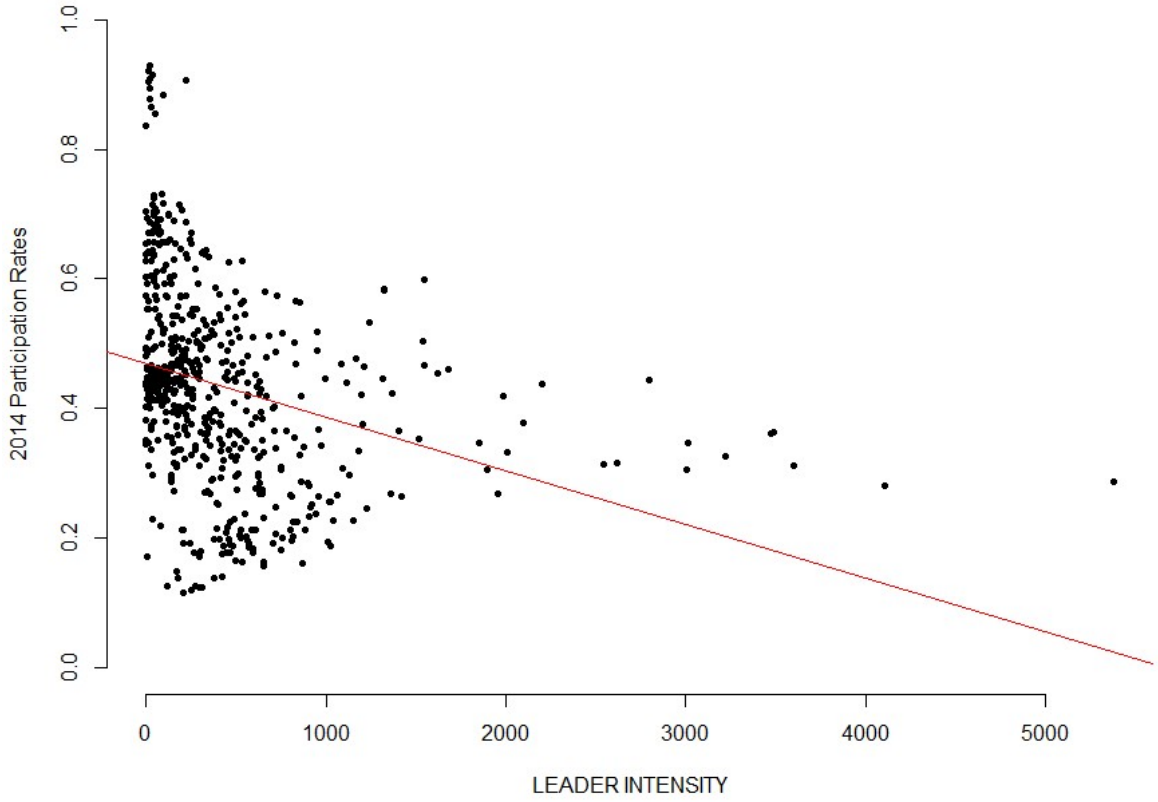
Appendix 18 - Outcome Variables

Outcome Variables	Definition	Abbreviation
2009-2019 EP Elections Participation Growth	The difference of the total participation rate (the division of the total valid votes for the total electorate) of the 2019 EP elections by the total participation rates of the 2009 EP elections for each region of the dataset.	*PRGrowth1*
2014-2019 EP Elections Participation Growth	The difference of the total participation rate (the division of the total valid votes for the total electorate) of the 2019 EP elections by the total participation rates of the 2014 EP elections for each region of the dataset.	*PRGrowth2*
2009-2019 EP Elections Pro EU Voting Share Growth	The difference of the sum of all the Pro EU parties shares in each region in 2019 and the sum of all the Pro EU parties share in each region in 2009 for each region of the dataset. The Pro EU parties considered for this variable are the Pro EU national parties which elected MEPs that were later integrated in a Pro EU political group in the EP.	*ProEUGrowth1*
2014-2019 EP Elections Pro EU Voting Share Growth	The difference of the sum of all the Pro EU parties shares in each region in 2019 and the sum of all the Pro EU parties share in each region in 2014 for each region of the dataset. The Pro EU parties considered for this variable are the Pro EU national parties which elected MEPs that were later integrated in a Pro EU political group in the EP.	*ProEUGrowth2*
2009-2019 EP Elections Against EU Voting Share Growth	The difference of the sum of all the Against EU parties share in each region in 2019 and the sum of all the Against EU parties share in each region in 2009 for each region of the dataset. The Against EU parties considered for this variable are the Against EU national parties which elected MEPs that were later integrated in a Anti EU political group in the EP.	*AgainstEUGrowth1*
2014-2019 EP Elections Against EU Voting Share Growth	The difference of the sum of all the Against EU parties share in each region in 2019 and the sum of all the Against EU parties share in each region in 2009 for each region of the dataset. The Against EU parties considered for this variable are the Against EU national parties which elected MEPs that were later integrated in a Anti EU political group in the EP.	*AgainstEUGrowth2*

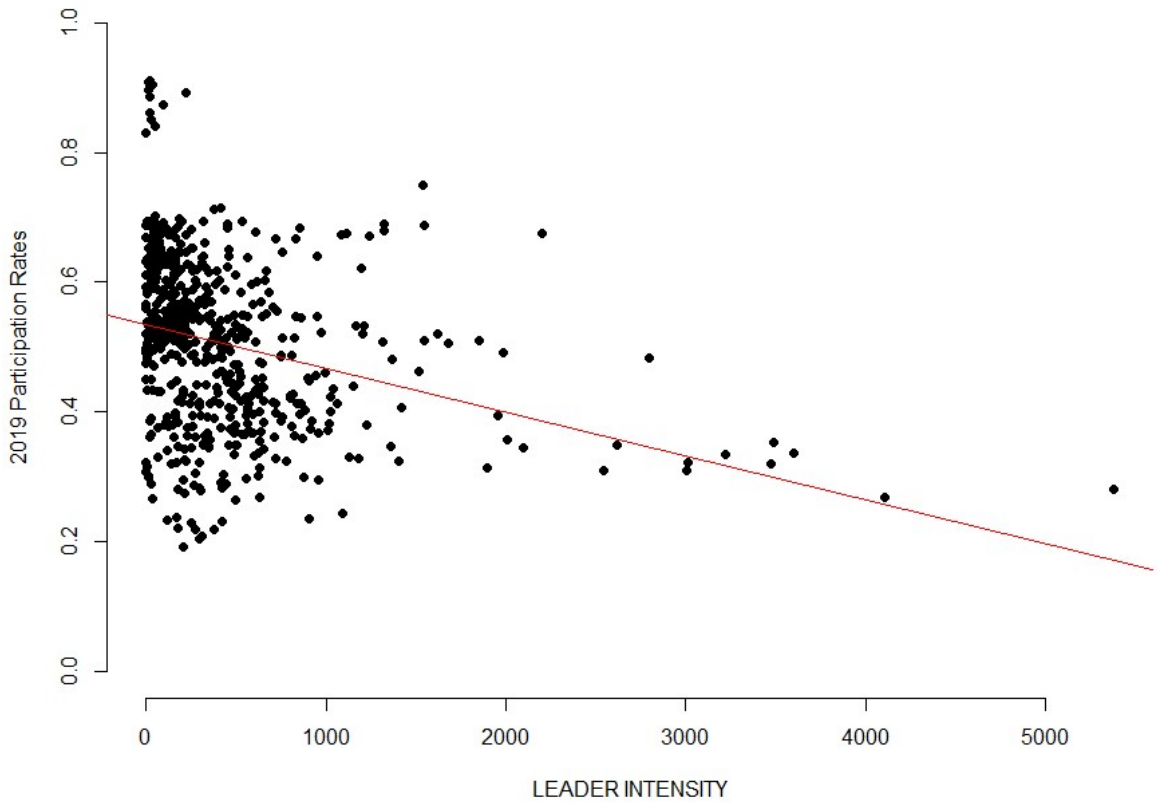
Appendix 19 - Summary Statistics of each year (2009,2014 and 2019) EP Elections by country

EP Elections Participation Rates									
Country	**2009**			**2014**			**2019**		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
Austria	29,32%	42,76%	58,21%	29,87%	44,96%	59,92%	47,31%	58,87%	69,43%
Belgium	86,44%	90,41%	93,72%	83,53%	89,43%	92,83%	82,90%	88,32%	91,08%
Bulgaria	32,90%	41,55%	1	29,74%	36,43%	43,26%	26,60%	33,21%	41,78%
Croatia	x	x	x	20,60%	25,05%	28,65%	26,46%	32,44%	1
Cyprus	59,40%	59,40%	59,40%	43,97%	43,97%	43,97%	44,99%	44,99%	44,99%
Czech Republic	21,75%	27,71%	35,73%	13,81%	17,77%	25,82%	22,04%	28,27%	38,31%
Denmark	54,04%	59,46%	65,26%	50,21%	56,36%	62,20%	61,72%	66,05%	71,31%
Estonia	36,56%	42,14%	52,52%	30,69%	33,95%	42,88%	24,32%	34,24%	42,57%
Finland	30,49%	36,32%	44,61%	32,02%	36,93%	46,64%	32,87%	37,85%	47,23%
France	11,07%	39,74%	51,29%	9,26%	42,38%	52,91%	13,41%	49,58%	59,21%
Germany	24,42%	43,73%	69,61%	26,35%	47,18%	66,86%	47,62%	60,59%	74,38%
Greece	36,95%	52,88%	71,10%	37,60%	56,51%	67,56%	39,86%	57,70%	79,18%
Hungary	30,93%	37,40%	87,19%	23,82%	27,47%	38,83%	36,55%	42,12%	52,51%
Ireland	50,79%	57,55%	63,43%	43,74%	51,50%	55,60%	42,90%	48,86%	53,35%
Italy	36,37%	66,03%	80,26%	34,58%	58,35%	73,16%	31,95%	55,70%	70,21%
Latvia	48,08%	52,10%	59,61%	23,35%	29,14%	35,49%	23,57%	32,13%	39,55%
Lithuania	18,21%	20,16%	24,67%	41,94%	45,65%	52,10%	48,15%	51,53%	56,48%
Luxembourg	90,76%	90,76%	90,76%	85,55%	85,55%	85,55%	84,10%	84,10%	84,10%
Malta	78,79%	78,79%	78,79%	74,80%	74,80%	74,80%	72,66%	72,66%	72,66%
Netherlands	30,55%	36,47%	43,84%	32,12%	37,46%	42,75%	34,60%	41,64%	49,67%
Poland	16,39%	23,22%	44,03%	15,67%	22,71%	40,15%	34,22%	44,27%	64,52%
Portugal	21,70%	35,81%	41,19%	19,74%	33,11%	37,93%	18,71%	32,89%	39,06%
Romania	16,32%	29,52%	49,41%	25,24%	33,13%	46,62%	34,80%	48,59%	64,26%
Slovakia	17,33%	19,68%	23,08%	11,63%	13,08%	17,15%	19,26%	22,78%	31,56%
Slovenia	28,36%	28,36%	28,36%	24,53%	24,53%	24,53%	28,89%	28,89%	28,89%
Spain	31,65%	45,76%	57,39%	25,93%	43,17%	51,84%	49,99%	62,08%	74,99%
Sweden	37,76%	43,72%	51,10%	43,92%	49,13%	56,66%	49,82%	53,75%	59,39%

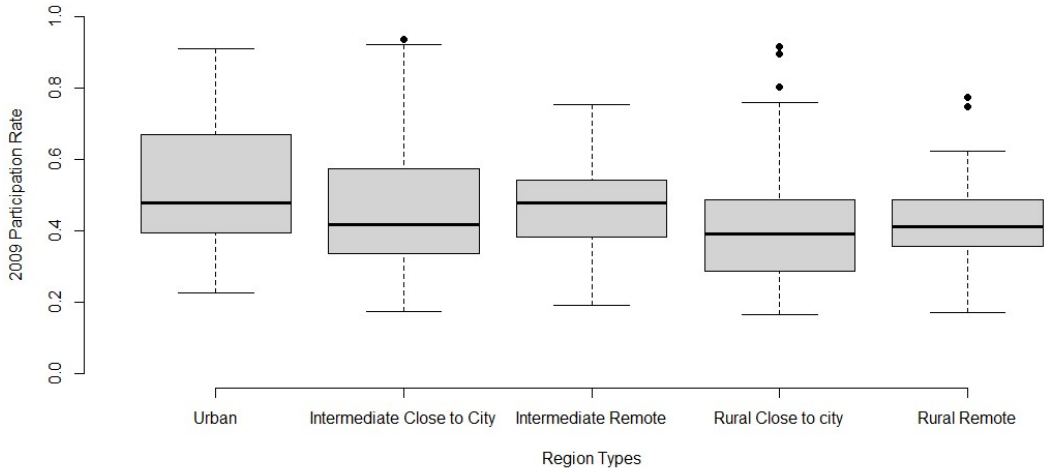
Appendix 20 - 2014 EP Elections Participation Rates in each region by LEADER intensity



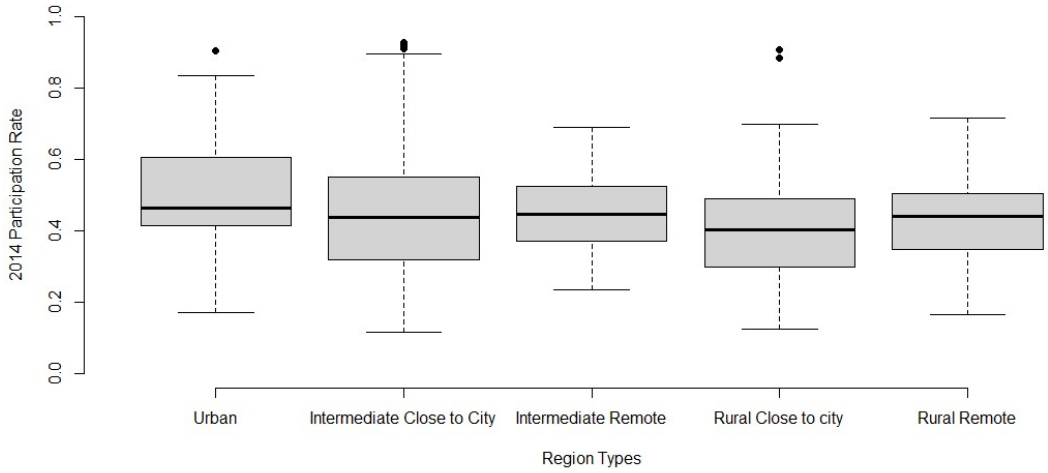
Appendix 21 - 2019 EP Elections Participation Rates in each region by LEADER intensity



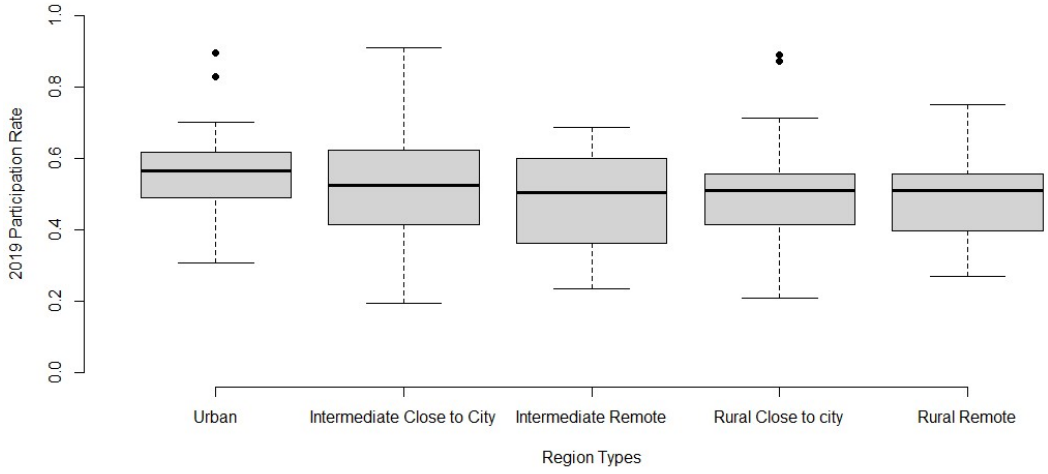
Appendix 22 - Participation Rates in 2009 EP elections by type of region



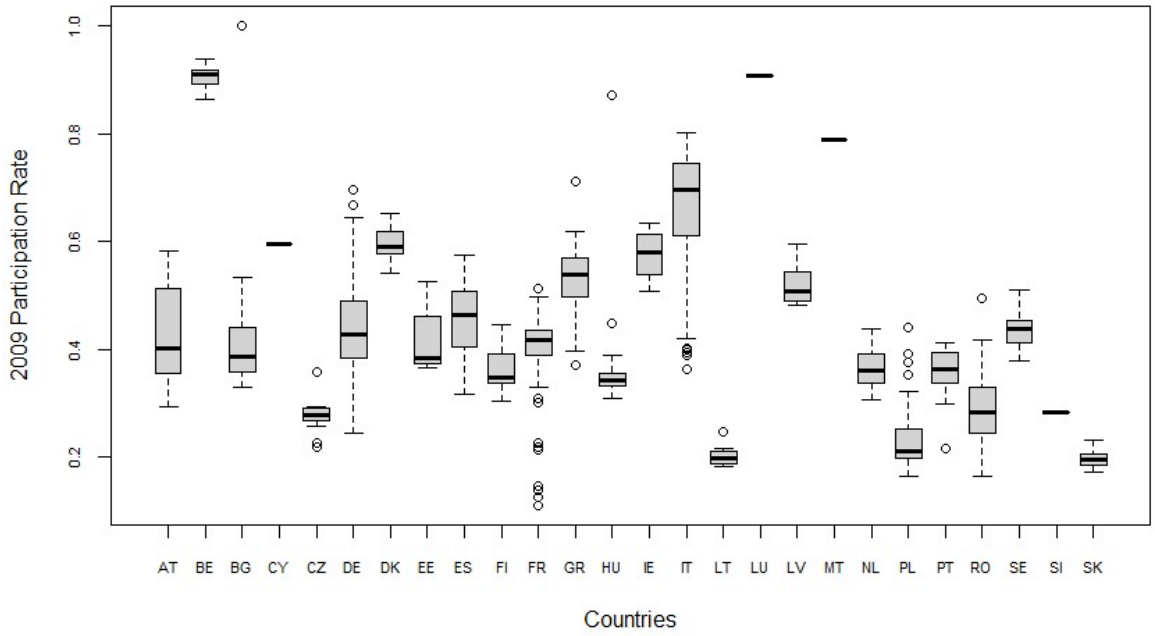
Appendix 23 - Participation Rates in 2014 EP elections by type of region



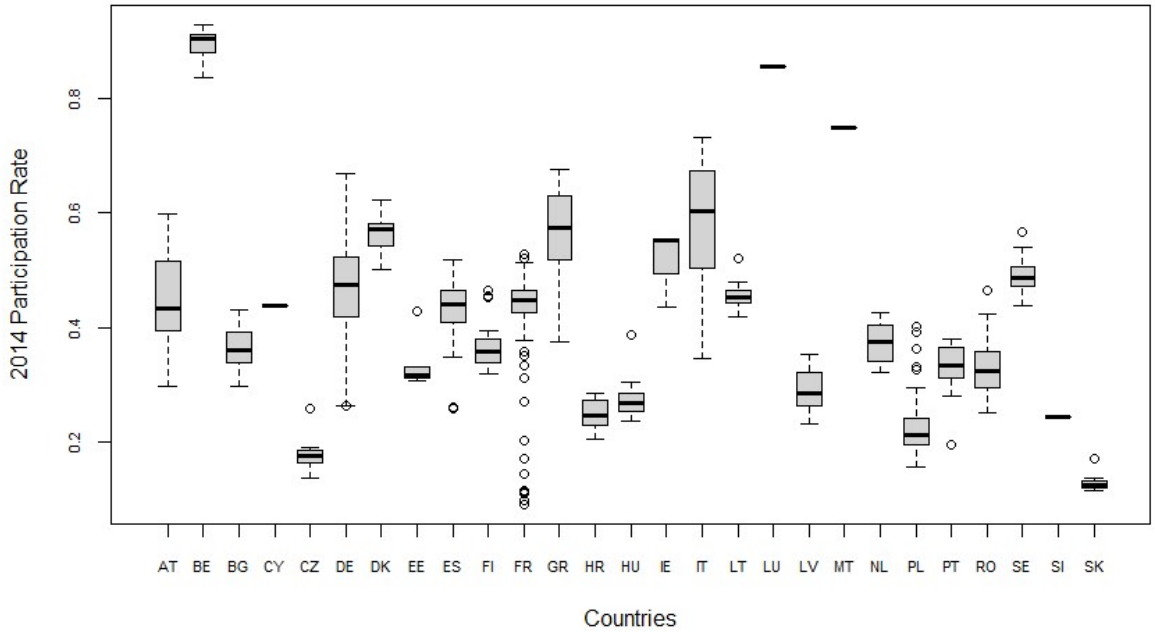
Appendix 24 - Participation Rates in 2019 EP elections by type of region



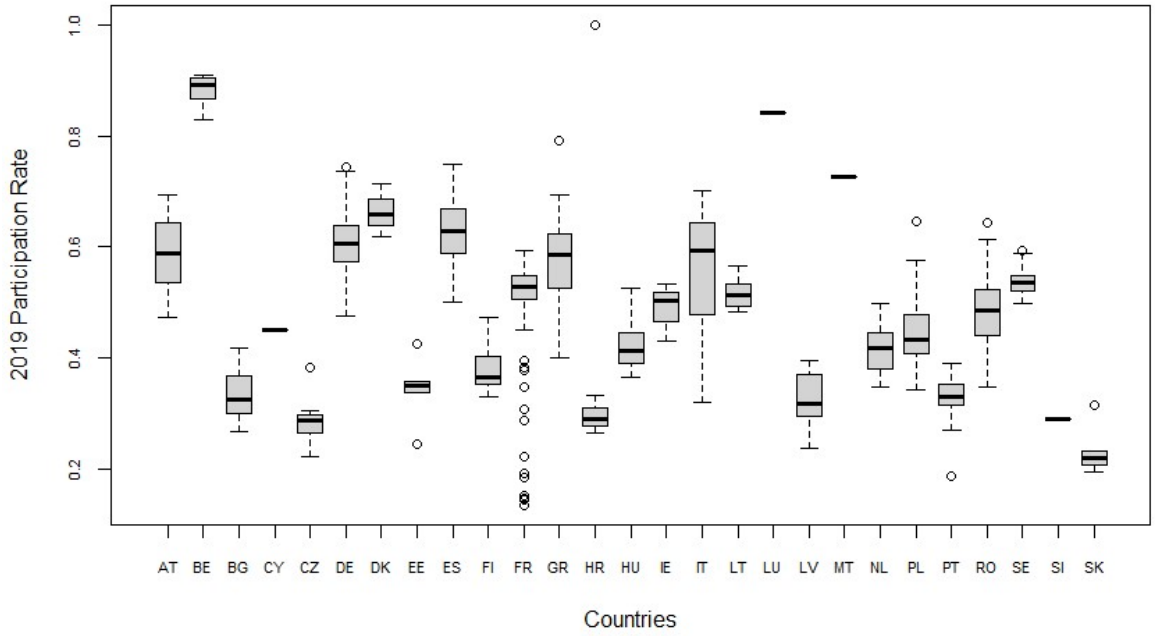
Appendix 25 - Boxplot with the 2009 EP elections Participation Rates by country



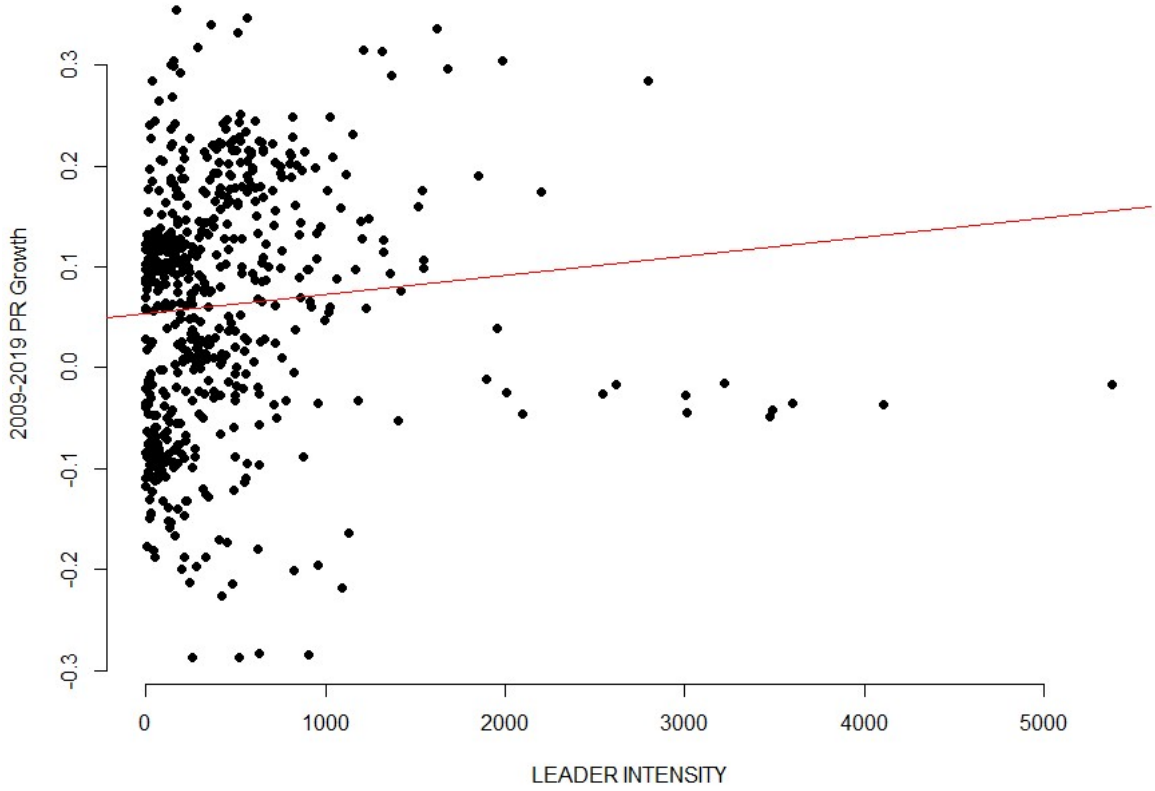
Appendix 26 - Boxplot with the 2014 EP elections Participation Rates by country



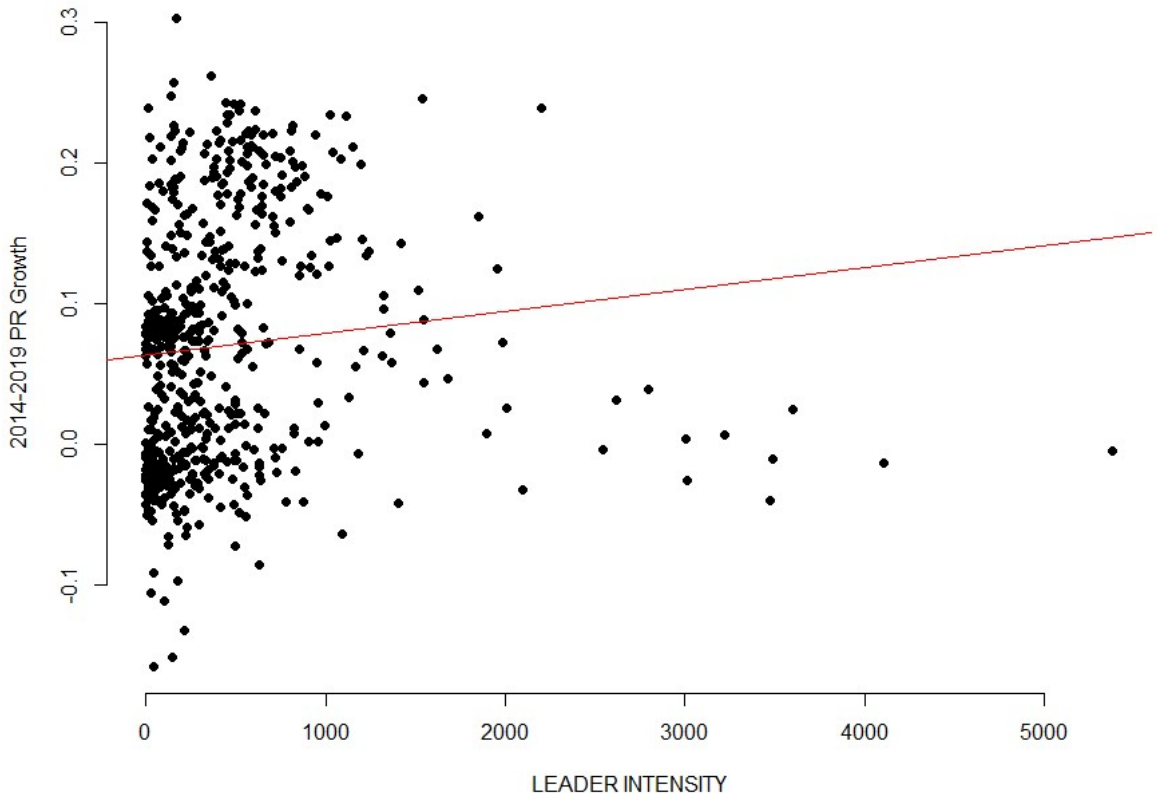
Appendix 27 - Boxplot with the 2019 EP elections Participation Rates by country



Appendix 28 - 2009-2019 EP elections Participation Rates Growths in each region by LEADER intensity



Appendix 29 - 2014-2019 EP elections Participation Rates Growths in each region by LEADER intensity

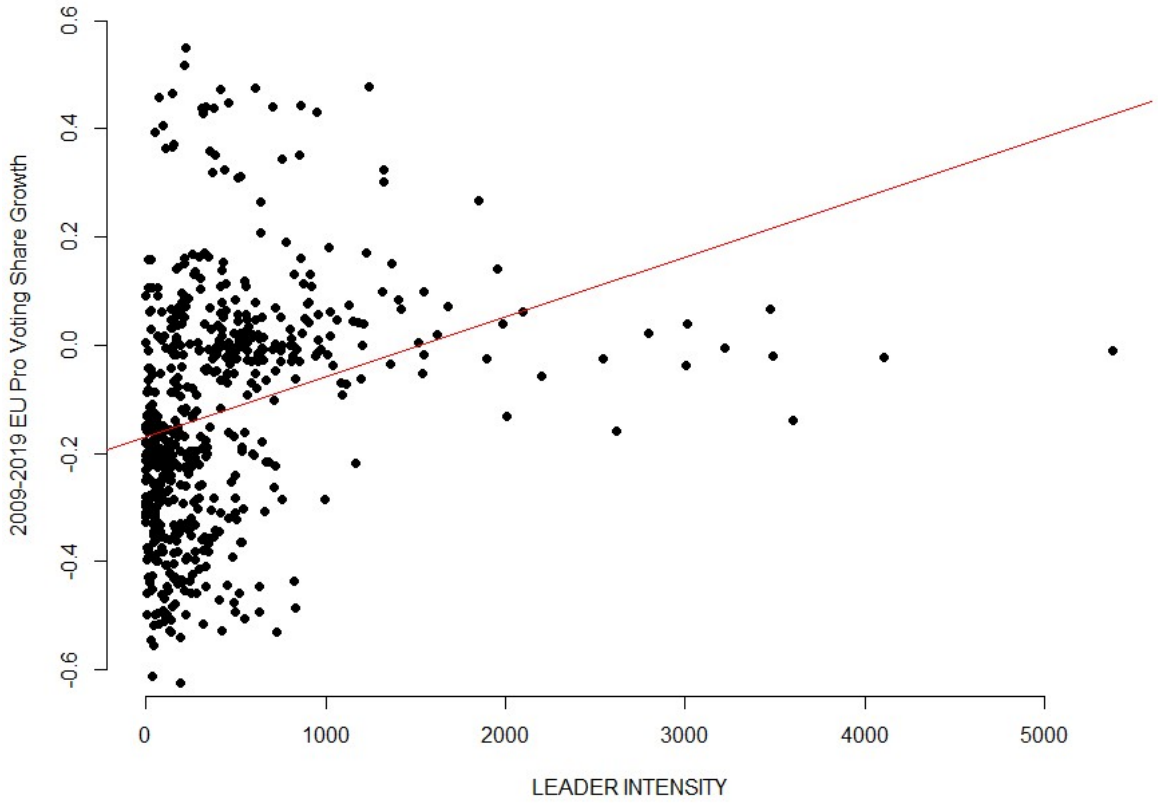


Appendix 30 - Summary Statistics of the Pro/Against EU voting share growth for the two periods considered (2009-2019 and 2014-2019) by country

Country	Pro EU Votes Growth in European Elections 2009-2019						Against EU Growth in European Elections 2009-2019					
	2009-2019			2014-2019			2009-2019			2014-2019		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
Austria	9,96%	38,93%	54,87%	2,30%	6,68%	10,02%	-0,92%	5,79%	16,98%	-5,98%	-2,01%	2,80%
Belgium	-15,75%	-10,78%	-4,12%	-17,39%	-9,26%	-2,43%	5,96%	10,56%	17,28%	7,72%	14,89%	18,80%
Bulgaria	-1,40%	10,92%	20,90%	-9,90%	-4,05%	0,71%	-21,16%	-11,89%	-4,12%	0	0	0
Cyprus	-4,39%	-4,39%	-4,39%	-2,87%	-2,87%	-2,87%	-7,41%	-7,41%	-7,41%	0,52%	0,52%	0,52%
Czech Republic	3,58%	12,40%	20,91%	4,50%	10,03%	15,36%	-1,44%	1,06%	4,48%	-3,89%	0,30%	4,03%
Denmark	-20,39%	-15,28%	-12,09%	-19,66%	-14,78%	-11,09%	-3,40%	-2,02%	-0,52%	-4,49%	-2,79%	-2,12%
Estonia	-15,97%	-13,16%	-9,25%	-22,59%	-18,75%	-16,74%	5,40%	13,01%	17,85%	5,40%	13,01%	17,85%
Finland	-26,30%	-17,64%	-0,67%	-23,23%	-12,69%	5,08%	1,14%	15,07%	20,76%	-7,97%	11,30%	18,57%
France	-50,81%	-20,87%	1,09%	-28,49%	-5,30%	11,12%	-10,32%	16,17%	33,08%	-1,88%	20,95%	40,55%
Germany	-17,15%	-7,07%	5,02%	-14,08%	-4,12%	2,93%	-2,18%	9,82%	25,71%	-5,92%	1,62%	9,95%
Greece	-49,89%	-33,78%	-24,98%	-7,91%	-0,64%	5,77%	8,74%	19,61%	29,49%	-5,56%	6,08%	16,10%
Hungary	4,69%	9,56%	18,06%	1,18%	8,54%	15,60%	-22,88%	-14,71%	-9,25%	-22,88%	-15,86%	-9,94%
Ireland	-10,16%	-8,39%	-6,61%	2,97%	8,57%	14,17%	7,38%	12,93%	18,47%	7,02%	9,58%	12,15%
Italy	-55,43%	-39,49%	-8,61%	-35,70%	-25,08%	-12,94%	16,41%	43,49%	59,15%	-3,48%	21,41%	32,54%
Latvia	-1,19%	3,63%	7,34%	-4,62%	-0,04%	21,27%	0	0	0	-13,37%	-9,74%	-3,70%
Lithuania	0,51%	5,23%	15,06%	-5,96%	-2,03%	4,65%	-16,38%	-10,11%	-4,59%	-22,35%	-12,99%	-8,92%
Luxembourg	-12,65%	-12,65%	-12,65%	-5,54%	-5,54%	-5,54%	0	0	0	0	0	0
Malta	-3,07%	-3,07%	-3,07%	-1,22%	-1,22%	-1,22%	0	0	0	0	0	0
Netherlands	8,02%	15,03%	20,63%	13,24%	19,43%	28,69%	-28,71%	-20,21%	-12,89%	-35,22%	-23,74%	-16,27%
Poland	-5,51%	-0,85%	4,96%	1,52%	6,54%	16,51%	0	0	0	-9,88%	-7,05%	-4,85%
Portugal	-6,72%	0,15%	8,43%	-6,39%	-0,79%	9,40%	-10,94%	-4,30%	0,75%	-5,79%	0,21%	4,18%
Romania	-10,21%	-0,23%	7,66%	-10,82%	0,08%	4,94%	-16,08%	-8,36%	-1,38%	0	0	0
Slovakia	-41,35%	-27,72%	-12,87%	-34,27%	-18,88%	-9,75%	-3,63%	-1,45%	-0,22%	2,87%	4,12%	5,61%
Slovenia	-18,63%	-18,63%	-18,63%	3,55%	3,55%	3,55%	0	0	0	0	0	0
Spain	-62,39%	-13,69%	-4,53%	-59,13%	6,51%	18,86%	2,59%	13,13%	66,99%	-11,71%	-2,42%	61,32%
Sweden	-1,45%	5,31%	10,27%	1,72%	8,42%	12,99%	-8,87%	-3,11%	1,24%	-14,48%	-10,04%	-3,96%

Note: In the table with the votes Against the EU, there were countries which did not elect any MEP included in an EP Group considered to be Against the EU, thus the "x" values. This happens mainly in countries which elect a small number of MEP (not giving space towards much representation), like Slovenia, Luxembourg or Malta. Other exceptions were of countries which did not elect any MEP to any of the considered Anti-EU EP groups, like EFD, EFDD, GUE/EFA or ID (such as Estonia, between 2009 and 2014, and Bulgaria, between 2014 and 2019).

Appendix 31 - 2009-2019 Pro EU Voting Shares Growth in EP elections in each region by LEADER intensity



Appendix 32 - 2014-2019 Pro EU Voting Shares Growth in EP elections in each region by LEADER intensity