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One policy, many policies: the spatial allocation of first and second pillar CAP Expenditure

Camaioni B.², Esposti R.¹, Pagliacci F.¹, Sotte F.¹

¹ Università Politecnica delle Marche, Dept. of Economics and Social Sciences, Ancona, Italy

² The National Institute of Agricultural Economics (INEA), Rome, Italy

f.pagliacci@univpm.it

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Summary

The Common Agricultural Policy (CAP) is the most important EU Policy in terms of total expenditure. Nevertheless, its impact on EU-27 regions is rather uneven: actually, some regions have historically received a larger support than others. Territorial imbalances, however, just represent only part of the story. The CAP comprises a wide range of agricultural and rural measures, from agricultural market interventions to agro-environmental payments and rural development measures. Due to their underlying objectives, expenditures from different CAP Pillars are allocated according to different territorial patterns at local level. In this paper, CAP real expenditures for years 2007-2011 are analysed at EU-27 NUTS 3 level, by considering expenditure intensity per hectare of utilised agricultural area (UAA), agricultural annual workforce unit (AWU) and agricultural gross value added (GVA). According to the distribution of Pillar One and Two funds across the EU-27, four groups of regions can be identified: i) top beneficiaries, ii) under supported regions, iii) agriculture-oriented beneficiaries, iv) rural-oriented beneficiaries. Several CAP expenditure typologies (Direct Payments, Market Intervention Measures and RDP's Axes, i.e., Axis 1, Axis 2 and Axis 3). Their Then, the paper directly focuses on Direct Payments, Market Intervention Measures and Rural Development Policy's Axes (i.e., Axis 1, Axis 2 and Axis 3). When analysing the spatial allocation highlights of single CAP expenditure typologies, different territorial patterns can be observed as well. In particular, the spatial analysis of both most supported and least supported NUTS 3 regions throughout the EU-27, clearly and suggests the existence of well defined spatial clusters. They seem to be determined by the nature of CAP itself. Indeed, despite being a single EU policy, CAP comprises a large set of measures, each of them showing a specific territorial allocation the heterogeneous nature of its measures and their spatial allocation makes the CAP a combination of several territorial policies.

Keywords: CAP, rural development, regional patterns
JEL Classification codes: O18, Q01, R58

One policy, many policies: the spatial allocation of first and second pillar CAP Expenditure

Camaioni Beatrice², Esposti Roberto¹, Pagliacci Francesco¹, Sotte Franco¹

¹ Università Politecnica delle Marche, Dept. of Economics and Social Sciences, Ancona, Italy

² The National Institute of Agricultural Economics (INEA), Rome, Italy

INTRODUCTION

The Common Agricultural Policy (CAP) still represents the most important EU Policy in terms of both total expenditure and share within the EU budget. Since its origin (1962), the CAP has largely supported agricultural sector and farmers' incomes. ~~In the 60s and 70s, those major objectives were mainly pursued through the implementation of economic incentives that focused on single commodities (i.e., market support measures).~~ Over time, ~~this supporte CAP~~ has undergone major changes and reforms, so most of the original market support measures have been gradually transformed into direct income support measures. ~~Furthermore, CAP territorial allocation~~ ~~More importantly, another major characteristic of the CAP support is that it is not, and has never been,~~ homogeneous throughout the EU ~~space~~. In particular, some regions have historically received a greater support than other EU areas (Shucksmith *et al.*, 2005; Copus, 2010; Crescenzi *et al.*, 2011; Camaioni *et al.*, 2013). This is due to several causes. Firstly, cross-country differences play an important role: EU Member States still receive differentiated amounts of CAP support. Then, at a lower territorial level, the spatial allocation of CAP expenditures also depends on specific features, such as either the presence of given agricultural activities or the general degree of rurality. Previous studies have already pointed out existing links between CAP expenditure and rural features at ~~the~~ local level (Camaioni *et al.*, 2013).

Nevertheless, these ~~agricultural and rural~~ features just represent part of the story. Actually, the CAP ~~currently~~ includes a wide range of measures, from agricultural market interventions to ~~rural and~~ environmental measures. Since Agenda 2000, the first pillar of the CAP has been mainly aimed at supporting agricultural activities and farmers' income, while the second pillar has ~~been identified as the referred to~~ Rural Development Policy (RDP). Due to their underlying objectives, ~~the~~ expenditures from ~~the two~~ different CAP pillars ~~isare~~ expected to be allocated according to ~~very~~ different spatial patterns ~~at local level~~. ~~Actually, a single EU policy (i.e., the CAP) should be more properly considered as a set of different policies, each of them having its own territorial peculiarities. TIn particular, when disentangling single measures' expenditures, specific territorial patterns may emerge: in fact, the local impact of these measures is uneven throughout the EU. Thus~~ the main aim of the paper is ~~to highlightingt~~ these major territorial imbalances. ~~Actually, a single EU policy (i.e., the CAP) should be more properly considered as a set of different policies, each of them having its own peculiarities. In particular, both Pillar One and Pillar Two measures show contrasting objectives as well as different local effects: accordingly, their spatially imbalanced allocation throughout the EU provides a complex pattern. Thus, the paper directly aims at investigating the spatial allocation of CAP expenditure at "local" level, by disentangling CAP measures and policies, in order to analyze shed light on their spatial and territorial allocation. To pursue this objective the of these different policies. In particular,~~ CAP real expenditures are analysed at NUTS 3 level, ~~i.e., the lowest territorial scale admitted by the available policy data.~~ ~~Although the ex ante spatial allocation of such a policy is usually~~

defined at either national or regional territorial level, *ex post* expenditure can be analysed even at NUTS 3 level.

According to this general framework ~~the~~, first part of the paper is aimed at describing the distribution of Pillar One and Two funds throughout the EU-27 space. This analysis is performed at this ~~highly~~ most disaggregated ~~feasible~~ territorial level (1288 NUTS 3 regions ~~are under study~~) for years 2007 to 2011 ~~(the last year with available policy data at this level)~~. ~~To take regional size~~ Due to regions' heterogeneity ~~over the throughout the~~ EU-27 space into account, CAP expenditure is expressed in intensity terms (CAP expenditure per ha. of utilised agricultural area; per annual work unit employed in agriculture; per thousand Euros of agricultural Gross Value Added), to ~~make regional comparisons feasible~~ ~~get comparable data~~. ~~By jointly considering the s-~~ Spatial allocation of ~~both~~ agricultural and rural measures, ~~is jointly measured~~. ~~Four~~ groups of regions ~~can be~~ ~~are~~ eventually identified (section 3): i) *top beneficiaries*: those NUTS 3 regions where both pillars' support intensity is above the EU-27 average; ii) *under supported regions*: those NUTS 3 regions where both pillars' support intensity is below the respective EU-27 average; iii) *agricultural-oriented regions*: those NUTS 3 regions where first pillar's support intensity is above the EU-27 average, while second pillar's support intensity is below; iv) *rural-oriented regions*: those NUTS 3 regions where first pillar's support intensity is below the EU-27 average, while second pillar's support intensity is above.

After this exploratory analysis, the ~~forth section -second part~~ of the paper focuses on ~~the spatial allocation of~~ specific CAP ~~measures~~ ~~measures~~. In particular, overall CAP expenditures ~~is have been~~ disentangled in the following five typologies: ~~-Pillar One has been disentangled into~~ Direct Payments and Market ~~Measure -~~Interventions (Pillar One); ~~Pillar Two (i.e., Rural Development Policy) has been disentangled among major axes~~ (Axis 1, Axis 2 and Axis 3 ~~measures~~ (Pillar Two)). According to this simple taxonomy, the paper describes the geographical distribution of each CAP expenditure typology at ~~local level throughout~~ NUTS 3 level across the EU-27. According to ~~the~~ observed results ~~(i.e., least and most supported regions)~~, the CAP shows polymorphic features, due to the set of different measures it ~~comprises~~ ~~includes~~. As a consequence, from a single policy, many spatially targeted policies seem ~~to~~ ~~emerging~~.

The paper is organised as follows. Section 2 provides further information on EU agricultural, rural and environmental policies under study. The section also describes the process of data collection at NUTS3 level on CAP real expenditure as well as its disaggregation among major typologies. Section 3 provides an exploratory analysis of the spatial allocation of CAP funds: Pillar One and Pillar Two are jointly considered here. Section 4 focuses on disentangled expenditures, by highlighting the territorial distribution of both least and most supported regions throughout the EU 27. Section 5 concludes the ~~paperwork~~, by suggesting some policy implications of the ~~empirical evidence~~ ~~analysis as well~~.

POLICY DATA: A GENERAL DESCRIPTION

The main aim of this analysis is giving evidences about spatial allocation of CAP expenditures, focusing on a very local level (NUTS 3 level) and covering the whole set of EU-27 Member States (Croatia is not considered here). The focus on CAP expenditures is due to several reasons. Firstly, its direct beneficiaries are spatially identified and its effects are strongly related to specific areas. Secondly, this policy comprises a wide set of measures, ranging from agricultural to measures to and environmental ones.

2-1-1.1. The Common Agricultural Policy: Agricultural, Rural and Environmental Measures

The main purpose of the present is to provide evidence about spatial allocation of CAP expenditures, focusing on a disaggregated territorial level (NUTS 3) and covering the whole set of EU-27 Member States

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(Croatia is not considered here). The CAP currently comprises a wide set of measures, ranging from agricultural to measures to and environmental ones.

The paper focuses on CAP expenditure. Since 1962, CAP has been the most important EU policy: it has supported EU agricultural sector, implementing economic incentives to specific commodities. Over time, the CAP has undergone major reforms, also due to EU budget constraints. Thus, original market support measures have been mostly transformed into direct income support measures. Although a reduction in overall expenditure, CAP still represents a large part of EU policy budget, thus confirming the importance of agriculture over the construction of the EU (Shucksmith *et al.*, 2005). In 1999, Agenda 2000 reformed both the CAP and regional policies. In establishing a new financial framework, it defined two “Pillars” of the CAP. Then, following reforms (in particular Council Regulation 1290/2005) ~~created defined~~ two distinct funds for financing ~~each of them~~ these two pillars. The European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD) replaced the former European Agricultural Guidance and Guarantee Fund (EAGGF). EAGF, namely the First Pillar, ~~finances funds~~ both direct payments to farmers and ~~market~~ measures ~~or interventions to respond to market disturbances~~ (e.g., private or public storage, export refunds). EAFRD, namely the Second Pillar, is aimed at financing rural development programmes within single EU Member States.

For the 2007-2013 programming period, overall CAP appropriation for commitment ~~slightly exceeded~~ is equal to 4008,867 million €.

Despite ~~the~~ latest reforms, Pillar One still represents more than 75% out of ~~this~~ overall 2007-2013 ~~budget~~ CAP funds. It mainly comprises ~~two types of agricultural~~ policies:

- Direct Payments (DPs) support farmers’ and land managers’ incomes ~~conditional on the in return for them~~ respect ~~of ing~~ agro-environmental standards and ~~on~~ keeping the land in good condition. Support is ~~now~~ decoupled from production, thus ~~its~~ distortionary ~~s in~~ market ~~effects are expected to be very limited~~ ~~prices are mostly avoided~~;
- Market ~~I~~ntervention (MI) measures ~~are still have been introduced or~~ maintained for a number of product, ~~s: t~~ They respond to specific market ~~conditions and consists in a set of pretty conventional measures ranging from disturbances by adopting intervention buying, private storage aid to and, export refunds (therefore, under certain conditions, support beneficiaries are, in fact, is also addressed to traders and food industriesprocessors).~~

Both DPs and MI measures are directly managed by the EU Commission. ~~N;~~ nevertheless, either regional or national paying agencies are in charge of payments to direct beneficiaries. ~~Whereas DPs~~ DP ~~currently~~ account for a large share of the support ~~granted currently given to agriculture~~ agriculture through ~~the First Pillar as~~ market policies have steadily decreased over time, ~~also due to thanks to~~ market liberalization ~~implied demanded for by~~ international ~~agreements~~ constraints (Henke *et al.*, 2010).

According to CAP evolution over time, Rural Development Policy has been designed to complement CAP Pillar One. CAP Second Pillar includes additional measures, aimed at serving broader environmental and rural development objectives. In particular, it aims at supporting EU rural regions. In fact, they still represent a vital part of the EU and they have lately been facing new opportunities and challenges, despite some economic and social weaknesses and other territorial imbalances. Indeed, ongoing transformations of developed EU economies have largely affected EU rural areas ~~and the integration with the urban spaces~~ ~~well~~ (Mantino, 2005; OECD, 2006; Copus *et al.*, 2008; Eurostat, 2010; Esposti, 2011; Sotte *et al.*, 2012).

In 2007-2013 programming period, Regulation 1698/2006 provides a menu of 44 measures from which either Member States or their regions may choose, when designing specific their Rural Development Plans¹. Programmes are based on common strategic objectives. 2007-2013 RDP is focused on three “thematic axes”: i) Axis 1 aims at improving the competitiveness of the agricultural and forestry sector; ii) Axis 2 improves the environment and the countryside; iii) Axis 3 promotes quality of life in rural areas, encouraging diversification of the rural economy. A fourth axis (*Leader initiative*) has been added, too. Following a bottom-up approach, local action groups define their own strategy, i.e. under local development programmes, based on the three axes of the RDP, mostly following a bottom-up approach.

In order to provide a balanced approach to RDP, Member States and Regions are requested to spread EAFRD financial resources among each thematic axis. Nevertheless, allocation is not even. In 2007-2013 programming period, about 33% of EAFRD financial resources was committed to Axis 1, about 46% of resources to Axis 2, while just 13% out of total EAFRD resources to Axis 3. Copus (2010) already analysed the allocation of RDP expenditure across on both sectoral and territorial measures and found across EU Member States: actually, that the former intervention was found to be rather dominant. In fact, nevertheless, the allocation among thematic axes is even more unbalanced when considering comparing the single EU-27 Member States: differences are due to both allocation choices and distinction between convergence and non-convergence regions. Both elements may deeply affect the financial leverage that is generated by national and private co-financing (Camaioni and Sotte, 2010).

It has to be noticed that the CAP also represents, in terms of expenditure amount, the main EU pursues environmental policy objectives as well. Actually, within the current CAP design EU political framework, several most environmental objectives justify the adopted measures but they are pursued through not specifically-designed interventions and funds². For instance, through cross-compliance (that penalises farmers who infringe EU law on environmental, public and animal health, animal welfare or land management), DP are expected to improve the provision of environmental public goods, by fostering more sustainable farming systems. Among environmental conditions to be followed, the EC strongly recommends: i) prevention of soil erosion; ii) maintaining of soil organic matter and soil structure; iii) avoiding the deterioration of habitats; iv) protecting and managing water. Above mentioned environmental targets are mostly pursued in combination with cross compliance that penalises farmers who infringe EU law on environmental, public and animal health, animal welfare or land management. Furthermore, Pillar Two largely supports environmental objectives, but this is done through more targeted measures. Axis 2, in particular, is actually aimed at improving environmental objectives and it represents almost 50% of overall committed expenditures from RDP.

2.2.1.2. Disaggregating CAP Expenditures

According to the above-mentioned political framework, this section provides further information about the adopted data sources. Actually, EU policies data availability is rather poor, at least at local level

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¹ Rural Development Policy is implemented by specific programmes at either national or regional level. Unlike Pillar One, Pillar Two measures are selectively applied to specific areas or categories of beneficiary. Pillar Two differs from Pillar One in its implementation as well. Expenditures are not directly managed by the EU Commission: they are generally managed at national level, while just Spain, Germany and Italy opted for regional implementation. Other exceptions are represented by: Belgium (2 RDPs: Flanders and Wallonia); Finland (2 RDPs: Mainland and Region of Åland); France (6 RDPs: Exagone, Corse, Guadeloupe, Guyane, Martinique, Réunion); Portugal (3 RDPs: Mainland, Azores, Madeira); The UK (4 RDPs: England, Wales, Scotland and Northern Ireland).

² This is true, although DG-Environment actually also manages specific actions, such as the LIFE fund (supporting environmental and nature conservation projects, through grants and call for proposal) and the Eco-Innovation and Competitiveness and Innovation Framework Programme (CIP-EIP).

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(Shucksmith *et al.*, 2005); ~~a~~For instances, no information on CAP ~~real~~ expenditure *ex-ante* allocation is provided below ~~the~~ national level, ~~is provided~~ by DG Agriculture. ~~Conversely, just data referring either to the ex-ante allocation of funds or to the reconstruction of the~~Reconstructions of real expenditure based on ~~some sample observations (e.g., FADN data)~~ are available at regional level ~~but they are mostly based on some sample observations (e.g., FADN data)~~ (Esposti, 2007). ~~Nonetheless, d~~Data on ~~the~~ real *ex-post* expenditure are public, ~~as well: nevertheless though,~~ they are not collected in any comprehensive dataset, ~~covering all EU Members States~~. Here, ~~such~~ data on ~~real (ex-post)~~ CAP expenditure are ~~directly collected~~ from European Commission (DG Agriculture). According to the main aims of the work, CAP actual expenditures from two different funds (EAGF and EAFRD) have been taken into account³ and the final dataset gathers EU-27 payments from years 2007 to 2011.

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~~In the work, expenditure data refer to single payments received by beneficiaries throughout the EU 27, on the basis of the declaration of national (or regional) paying agencies. In order to keep the anonymity, data are provided at level 3 of NUTS (Nomenclature of territorial units for statistics) 2006 classification⁴. Expenditure data are analysed at the NUTS 3 level because it allows for a detailed representation of the allocation of expenditure: actually, NUTS 2 level is a too wide scale to be representative, whereas working at an even smaller scale (e.g., local administrative unit level) is unfeasible given the current data availability throughout the EU. In fact, eexpenditure data refer to single payments received by beneficiaries throughout the EU-27, on the basis of the declaration of national (or regional) paying agencies. Therefore, a very minute territorial level could be feasible, in principle. In practice, in order to keep their anonymity, data are provided only at level 3 of NUTS (Nomenclature of territorial units for statistics).~~ Thus, 1288 NUTS 3 regions are under study here⁵.

~~This e~~Nevertheless, expenditure aggregation at NUTS 3 level ~~still~~ poses some critical issues ~~as well~~. NUTS 2003 classification was in force in years 2003 to 2007; then, in 2008, NUTS 2006 classification was adopted.⁶ ~~Thus, s~~some expenditure from years 2007 and 2008, ~~however, still also concerns referred to the previous programming period and in particular both NUTS classifications occurred to has to be be used in order to univocally identify the beneficiary same NUTS 3-region in any given s even in the same year.~~ A major issue to be solved thus deal with univocal allocations of payments. In some cases NUTS codes simply changed when shifting from NUTS 2003 to NUTS 2006 classification, thus not really affecting the allocation of expenditures. Nevertheless, other changes affected territorial divisions as well: some NUTS 3 regions terminated, being split into two or more new NUTS 3 regions; some other NUTS 3 regions were merged; in other cases, boundary shifts occurred. In these cases, CAP expenditures that had been spatially identified according to NUTS 2003 classification had to be reallocated according to the new NUTS 2006 layer. In particular, when either splits or boundary shifts occurred, the following methodology has been adopted: expenditures of previous NUTS 3 regions were apportioned according to the share of total surface of the new NUTS 3 regions. This methodology follows the ~~idea assumption~~ that expenditure allocation within each NUTS 3 region is spatially homogeneous.

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³ ~~As the attention here is on allocation of EU expenditure, n~~National co-funding for RDP expenditure is not considered for the purpose of the current analysis.

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⁴ ~~Even though the NUTS 2010 classification is currently adopted (Commission Regulation (EC) No 105/2007), NUTS 2006 classification (Commission Regulation (EC) No 1059/2003) is adopted here: actually, most of information at sub-regional level included into Eurostat dataset is actually still provided according to that classification.~~

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⁵ For the purpose of the analysis, 15 NUTS 3 regions have been dropped out from the original dataset, due to lack of territorial contiguity with the European continent (see, for instance, the French Departements d'outre-Mer, the Canary Islands...).

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⁶ ~~Even though the NUTS 2010 classification is currently adopted (Commission Regulation (EC) No 105/2007), NUTS 2006 classification (Commission Regulation (EC) No 1059/2003) is adopted here: actually, most of information at sub-regional level included into Eurostat dataset is still provided according to that classification.~~

Nevertheless, in order to properly assess the spatial allocation of CAP expenditures, weighted values expressing CAP expenditure intensity has to be considered. Support intensity can be expressed by means of different dimensions. As the policy under study here mostly deals with agricultural issues, following dimensions have been selected: agricultural area, agricultural labour force, gross value added from agricultural activities⁷. More in detail, the following expenditure intensity indices were taken as basic units for the analysis:

- Expenditure per hectare of utilised agricultural area (€/UAA) ~~UAA refers to areas directly used for farming activities (arable lands, permanent grasslands and crops). Unused agricultural land (e.g., woodland and land occupied by buildings, farmyards, ponds) are not included.~~⁸
- Expenditure per annual work unit employed in agriculture (€/AWU)⁹ ~~one annual work unit corresponds to the total amount of work performed by a single person occupied on a full-time basis on an agricultural holding.~~
- Expenditure per thousand Euros of agricultural gross value added (€/1000 €)¹⁰ ~~the gross value added from sector A (Agriculture, forestry and fishing) is considered (NACE, Rev. 2).~~

Main statistical source for these variables is *Farm Structure Survey* from Eurostat. This is a periodical survey (2000, 2003, 2005 and 2007) that reports data on UAA and AWU employed in agriculture, at NUTS 3 level. When available, latest figures are considered. Data on agricultural GVA (expressed in thousand Euros) come from Eurostat National and Regional Economic Accounts: ~~due to take the current economic crisis, heavily affecting the economic cycle into account, the 2007-2010 yearly average Agricultural GVA value for years 2007 to 2010 is here considered, here~~¹¹.

Some further caveats about data used have to be pointed out as well. Availability of NUTS 3 data on agriculture across Europe is rather poor/incomplete (Shucksmith *et al.*, 2005), so missing values largely affect *Farm Structure Survey* data on hectares of UAA and AWU employed in agriculture. Among others, they mostly affected NUTS 3 observations throughout particularly in Germany, the UK and Austria. Firstly, missing values for years 2007-2013 have been replaced by adopting 2005, 2003 and 2000 data respectively, when available (e.g., for NUTS 3 regions in Spain, Italy, Austria). This solution does not ~~Same methodology cannot be applied~~ to most German NUTS 3 regions, throughout Germany: Following Shucksmith *et al.* (2005), missing values in those regions/cases have been replaced by considering data available at higher territorial level. In particular, the method chosen for apportionment of higher-level (NUTS 1 or NUTS 2 level) UAA and AWU data on hectares of UAA and AWU to NUTS 3 level ~~was~~ mainly based on the following two core variables: total surface (in square kilometers) and ~~number of~~ agricultural employment. The former was used to apportion UAA from NUTS 2 to NUTS 3 level; the latter to apportion AWU in

⁷ The choice partially follows the methodology suggested by Copus (2010). He analysed the intensity of rural development expenditure per hectare of agricultural land (UAA), per agricultural holding, per annual work unit (AWU) and per European size unit (ESU). Nevertheless, patterns of intensity were just analysed at national level. At NUTS 3 level, data on agricultural holdings and European size units are not reliable, showing a great amount of missing values.

⁸ UAA refers to areas directly used for farming activities (arable lands, permanent grasslands and crops). Unused agricultural land (e.g., woodland and land occupied by buildings, farmyards, ponds) are not included

⁹ One annual work unit corresponds to the total amount of work performed by a single person occupied on a full-time basis on an agricultural holding.

¹⁰ The gross value added from sector A (Agriculture, forestry and fishing) is considered (NACE, Rev. 2).

¹¹ Years 2007 to 2009 are used for Italy.

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agriculture. The methodology relies on the assumption that farming activities in relation to UAA and AWU do not vary significantly within each ~~Country or higher~~ NUTS ~~level 2 regions~~ (Shucksmith *et al.*, 2005)¹².

~~A final Further remarks concerns how very high deal with the way CCAP expenditure intensities are treated is computed.~~ When expressing ~~expenditure intensity~~ by means of specific agriculture-related variables, “artificially” high values may be observed in a few cases¹³. In order to get rid of such ~~distortive distortionary case effects~~, regions fulfilling at least one the following criteria have been excluded from the analysis:

- UAA (utilised agricultural area) \leq 1000 ha.;
- Agricultural AWU (annual work units) \leq 10;
- Gross value added from agriculture \leq 100,000.00 €.

According to these criteria, 30 regions have been ~~identified excluded. T~~; they mostly are capital cities (e.g., Bruxelles, Copenhagen, Paris, Dublin, Riga, London) and other city regions, mainly located in the UK. These exclusions do not really affect the overall dataset. ~~Actually, t~~The number of total observations under investigation ~~becomes is~~ 1258 ~~but and~~ excluded regions account for a negligible share on overall CAP expenditure: ~~a~~ Although ~~representing accounting for~~ 2.33% ~~out of~~ the total number of EU-27 NUTS 3 regions, they account for less than 0.4% ~~out of~~ total CAP expenditure.

AN EXPLORATORY ANALYSIS OF THE SPATIAL ALLOCATION OF EU FUNDS

According to the major characteristics of CAP, ~~both EAGF and EAFRD~~, territorial imbalances in both EAGF and EAFRD expenditures allocation are expected to occur, due to large socio-economic and environmental differences throughout the EU, at first. Referring to ~~the our~~ sample of 1258 observations (~~see section 2.2~~), Table 1 ~~reports some shows major~~ descriptive statistics for CAP expenditure intensity in terms of land, labour and agricultural GVA, respectively. Mean and standard deviation, as well as quartiles from the cumulative distribution function, are shown. On average, overall 2007-2011 CAP support per ~~single~~ NUTS 3 region was about 1,800 € per hectare of UAA ~~and~~ 47,600 € per AWU employed in agriculture: ~~Moreover, CAP support amounted to~~ 1,800€ per thousand Euros of agricultural GVA ~~in each region~~.

According to the quartile distributions provided in the lower part of Table 1, ~~Table 2 reports~~ the cumulative shares of ~~total raw~~ CAP expenditure ~~have been computed as well: it represents the amount of total expenditure accounted for~~ each ~~specific range~~ quartile of the distribution (~~Table 2~~). The lower quartile in terms of CAP expenditure intensity ~~generally~~ accounts for less than ~~1720%~~ of total raw expenditure. When considering the CAP expenditure intensity per thousand Euros of agricultural GVA, such a share is just 12.7%. Conversely, ~~both the 3rd and the 4th ranges in terms of CAP expenditure intensity got a total support that is larger than expected. Actually,~~ the 3rd quartile range is the largest one ~~as it accounts by itself~~ for more than 40% of total CAP expenditure, while the upper quartile account for about 25-35% of total CAP. A possible explanation of these results may be ~~found in~~ the fact that ~~those~~ regions ~~showing a~~ the highest

¹² Nevertheless, for a few regions within the sample, it was not possible to apportion data from higher territorial level according to the above-mentioned methodology. In particular, three NUTS 3 regions still miss the value for UAA, six regions miss the value for AWU; one region misses the value for the agricultural GVA. Due to their very urban features, it seems plausible to consider them having no agricultural activities at all (i.e., UAA, AWU and agricultural GVA equal to zero).

¹³ They refer to urban areas whose values for UAA, AWU and agricultural GVA are quite small. Nevertheless, the same regions may account for some share of CAP beneficiaries and of CAP expenditure as well. Some beneficiaries, indeed, may be located in urban regions, although managing their agricultural activities in other regions. This situation may imply “artificially” (i.e. misleading) high levels of expenditure intensity for some urban regions.

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expenditure intensity are generally smaller (and mostly more urban) than other NUTS 3 regions, thus accounting for a lower share on overall raw expenditure.

Picture emerging from these statistics, however, reveals just part of the story about the uneven distribution of the CAP expenditure. What is more interesting is the spatial quartile distributions across the EU-27 as mapped in the Annex. Remarkable heterogeneity and specific territorial patterns emerge. Firstly, it has to be noticed that the overall picture significantly changes with three indicators. This issue has been already pointed out in previous studies (see for instance, Camaioni *et al.*, 2013). When considering intensity of total CAP expenditure per UAA, regions in Eastern EU Member States mostly belong to the lower quartile of the distribution (low expenditure intensity). Conversely, urban regions and other NUTS 3 regions in the Netherlands and Belgium show highest CAP expenditure values throughout the EU. Figures about the allocation of CAP expenditure in terms of agricultural AWU follow a fairly similar territorial pattern: regions in Northern and Western Member States tend to show large CAP expenditure intensity. On the contrary, when focusing on CAP support per thousand Euros of agricultural GVA, results are pretty different. Whilst previous indices suggested the existence of a major Eastern-Western divide in the allocation of overall CAP expenditure, such a divide definitely vanishes according to this indicator.

Nevertheless, analysing spatial divide only focusing on the overall CAP expenditure may be partially misleading. Different measures within the CAP are expected to be affected by very different territorial patterns. Differences between EAGF (Pillar One) and EAFRD (Pillar Two) expenditures clearly emerge. On average, in years 2007 to 2011, NUTS 3 regions received about 163 million Euros as Pillar One expenditure and just 30.5 million Euros as Rural Development Policy expenditure. Average support per hectare of UAA was thus equal to 1,541€ and 304€ respectively (Table 3). Standard deviation is very large in both cases, even after having removed regions with “extreme” urban features. Actually, some regions received a really reduced support, while other regions were highly supported (e.g., more than 1,000€ per hectare of UAA)

Table 1. CAP expenditure intensity descriptive statistics, 2007-2011 (~~Total~~ number of observations: 1258).

	Expenditure per UAA (€ / UAA)	Expenditure per AWU (€ / AWU)	Expenditure per GVA (€ / .000 €)
Mean	1,844.13	47,582.58	1,800.29
Standard Deviation	2,140.31	62,315.10	2,303.33
Minimum	128.09	546.28	28.77
1st Quartile	1,092.33	15,266.28	903.35
Median	1,598.41	36,075.91	1,453.07
3rd Quartile	2,135.53	61,463.14	2,079.99
Maximum	47,215.59	950,650.32	36,024.24

Source: own elaboration

Table 2. Cumulative shares (%) of CAP expenditures (2007-2011) by quartiles of expenditure intensity (~~Total~~ number of observations: 1258)

	Cumulative % of CAP expenditure		
	CAP Expenditure per UAA (€ / UAA)	CAP Expenditure per AWU (€ / AWU)	CAP Expenditure per GVA (€ / .000 €)
Minimum	0.00	0.00	0.00
1st Quartile	16.76	16.06	12.72
Median	27.60	20.97	24.41
3rd Quartile	73.73	67.16	64.88
4th QuartileMaximum	100.00	100.00	100.00

Source: own elaboration

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Picture emerging from these statistics is just part of the story. What is more interesting is the spatial allocation of the distributions quartiles throughout the EU-27. Spatial quartile distributions of CAP expenditure intensities in the European space are mapped in Appendix 1. Remarkable heterogeneity and specific territorial patterns emerge. Firstly, it has to be noticed that the overall picture significantly changes with three indicators. This issue has been already pointed out in previous studies (see for instance, Camaioni *et al.*, 2013): in fact, when considering intensity of total CAP expenditure per UAA, regions in Eastern EU Member States mostly belong to the lower quartile of the distribution (low expenditure intensity). Conversely, urban regions and other NUTS 3 regions in the Netherlands and Belgium show highest CAP expenditure values throughout the EU (due to the fact that some beneficiaries are located in urban regions, some distance from location of land in rural areas). Figures about the allocation of CAP expenditure in terms of agricultural AWU follow a fairly similar territorial pattern: regions in Northern and Western Member States tend to show large CAP expenditure intensity. Conversely, when focusing on CAP support per thousand Euros of agricultural GVA, results are different. Whilst previous indices suggested the existence of a major Eastern-Western divide in the allocation of overall CAP expenditure, such a divide is definitely less sharp according to this indicator than previous ones.

Nevertheless, the focus on overall CAP expenditure may be partially misleading. Different measures within the CAP are expected to be affected by very different territorial patterns. Differences between EAGF (Pillar One) and EAFRD (Pillar Two) expenditures are straightforward. In years 2007 to 2011, NUTS 3 regions on average received about 163 million Euros as Pillar One expenditure and just 30.5 million Euros as Rural Development Policy expenditure. Average support per hectare of UAA was thus equal to 1,541€ and 304€ respectively (Table 3). Furthermore, standard deviation is very large in both cases, even after having removed those regions with very limited rural features. Actually, whereas some regions received a really reduced support, other regions were highly supported (e.g., more than 1,000€ per hectare of UAA).

Table 3. Pillar One and Two expenditure intensity (€ / UAA) descriptive statistics, 2007-2011 (Total number of observations: 1258)

	Pillar One expenditure (€ / UAA)	Pillar Two expenditure (€ / UAA)
Mean	1,540.48	303.65
Standard Deviation	1,967.47	460.08
Minimum	33.99	4.78
1st Quartile	799.64	122.68
Median	1,305.97	207.96
3rd Quartile	1,872.27	355.36
4th Quartile (maximum) Maximum	45,472.59	8,905.23

Source: own elaboration

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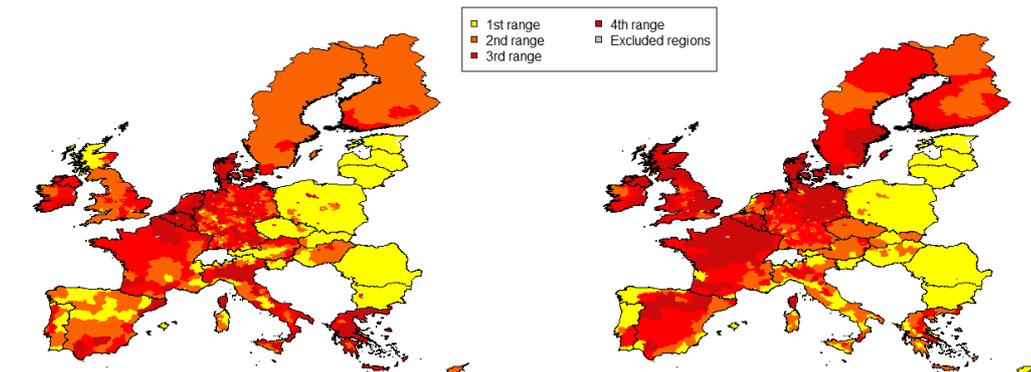
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Focusing on the spatial allocation of funds, Pillar One expenditure, as obvious, follows largely the general allocation characterising overall CAP expenditure. Considering this is due to its overwhelming relevance out of total CAP. Focusing on expenditure per hectare of UAA and per agricultural AWU, intensity of Pillar One expenditure largely follows the spatial allocation of major agricultural activities throughout the EU-27. Nevertheless, some interesting findings can be pointed out. Very low values generally affect all Eastern EU Member States regions, with a few exceptions. Conversely, many regions belonging to Northern France, Belgium, the Netherlands and Germany (as well as most regions in Northern Italy) belong to the 4th range of the distribution: they are actually characterised by the highest Pillar One expenditure intensity throughout the EU. This is true when considering both UAA and agricultural AWU. Expenditure intensity is above the median value also in some Spanish and Greek regions. Those regions

share large agricultural sectors: despite large amounts of agricultural areas, in those regions the intensity of Pillar One support is surprisingly high (Figure 1).

Figure 1. Spatial quartile distribution for Pillar One expenditure intensity per hectare of UAA (€/UAA) (left) and per agricultural AWU (€/AWU) (right) at NUTS 3 level (2007-2011 values)

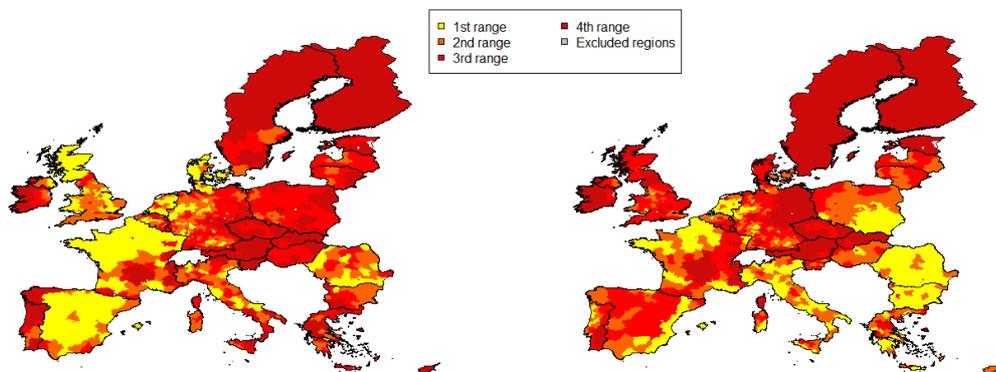


Source: own elaboration

Commento [U2]: Nella legenda di questa figura, come nella prossima e in quelle in appendice, credo sia preferibile sostituire "range" con "quartile".

Conversely,The spatial allocation of Pillar Two expenditures follows rather different territorial patterns. RDP expenditure intensity per hectare of UAA is low in flatlands throughout Northern France and Spain. Regions in Scotland, Spain and Northern France belong to the 1st range of the distribution quartile, too. On the other extreme of the distribution, many Eastern EU Member States are highly supported (ranking in either 3rd or 4th range of the distribution) and also many mountain regions throughout the Alps and the Pyrenees belong to the upper quartiles (Figure 2). When considering RDP expenditure per agricultural AWU, however, lowest values are observed in most Eastern Countries (e.g., Romania and Bulgaria) as well as as well as in in some Italian and French regions. Conversely, expenditure intensity is high in most regions throughout Scandinavian Countries. When considering expenditure per hectare of UAA, even many Eastern EU Member States are highly supported (ranking in either 3rd or 4th range of the distribution). Furthermore, many mountain regions throughout the Alps and the Pyrenees belong to the upper quartiles of the distribution (Figure 2).

Figure 2. Spatial quartile distribution for Rural Development Policy Pillar Two -intensity expenditure intensity per hectare of UAA (€/UAA) (left) and per agricultural AWU (€/AWU) (right) at NUTS 3 level (2007-2011 values)



Source: own elaboration

According to these findings, it emerges a sort of compensatory effect or substitutability between the two pillars of the CAP: seems that regions that are little supported in terms of Pillar One expenditure are highly supported in terms of Rural Development expenditure and vice-versa. Indeed, when jointly analysing the territorial distribution and spatial allocation of both Pillars of the CAP, opposite-more complex patterns are observed throughout the EU. Above-mentioned territorial imbalances can be better summarised highlighted by identifying NUTS 3 regions where both ose Pillar One and Pillar Two support per hectare of UAA¹⁴ is either above (or-below) the EU-27 value¹⁵. Taking the EU-27 value as the benchmark, The reference to this expenditure intensity index is due to the fact that it is more robust than other indices; furthermore, it currently represents the major criterion to funds redistribution, according to 2014-2020 CAP reforms.

Following this framework, each region can be positioned on a Cartesian plane where the *x*-axis refers to Pillar One support intensity and the *y*-axis to Pillar Two support intensity. The origin of the plane (0,0) is positioned in the respective EU-27 values. This representation thus splits EU-27 NUTS regions into four groups:

- High-High cases (NUTS 3 regions where both pillars' support intensity is above the EU-27 average): *top beneficiaries* (NUTS 3 regions where both pillars' support intensity is above the EU 27 average);
- Low-Low cases (NUTS 3 regions where both pillars' support intensity is below the respective EU-27 average): *under supported regions* (NUTS 3 regions where both pillars' support intensity is below the respective EU 27 average);
- High-Low cases (NUTS 3 regions where Pillar One's support intensity is above the EU-27 average, while Pillar Two's support intensity is below it): *agriculture-oriented beneficiaries* (NUTS 3 regions where Pillar One's support intensity is above the EU 27 average, while Pillar Two's support intensity is below it);

¹⁴ We consider here this expenditure intensity index because it is more robust than other indices and currently represents the major criterion for funds redistribution, according to 2014-2020 CAP reforms.

¹⁵ With "EU-27 value", here it is meant the support intensity computed over the whole EU-27 (i.e., total EU-27 support divided by total EU-27 UAA). The value differs from the EU-27 average as shown previously (i.e., the average computed over all the observed EU-27 NUTS 3 regions). The reference to this expenditure intensity index is due to the fact that it is more robust than other indices; furthermore, it currently represents the major criterion to funds redistribution, according to 2014-2020 CAP reforms.

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- Low-High cases (NUTS 3 regions where Pillar One's support intensity is below the EU-27 average, while Pillar Two's support intensity is above it): rural-oriented beneficiaries (NUTS 3 regions where Pillar One's support intensity is below the EU-27 average, while Pillar Two's support intensity is above it).

Following this rough classification, Figure 3 maps the four groups of regions, when support intensity is expressed per hectare of UAA. Pillar One and Pillar Two supports are jointly above their respective EU-27 values (High-High case) in 288 High-High regions, mostly located in Eastern Germany, Southern Italy, Greece and Ireland. Nevertheless, many Western EU regions show Pillar One's support above the EU-27 value, whilst Pillar Two's support is below the EU-27 value (are High-Low cases while,). Conversely, NUTS 3 regions in Eastern Member States as well as across and in Scandinavia generally fall in the Low-High case. Lastly, 282 regions are less supported referring to both CAP Pillars (Low-Low) cases: areas of Scotland and Wales, the wide majority of Spain, Romania and Bulgaria as well as and other some Italian regions fall in this group. As shown in Table 4, top beneficiaries just High-High cases represent 13.24% out of the total EU-27 UAA. On the opposite, under supported Low-Low regions represent 30.02% out of total UAA. Nevertheless, it is confirmed that easy to notice that for more than a half of EU-27 NUTS 3 regions we observe a sort of substitutability shows a sort of cross compensation among between the two Pillars, thus confirming that Pillar One expenditures and Rural Development ones support opposite regions throughout the EU.

Though just providing a rough picture about EU allocation of CAP expenditures, as it focuses on overall expenditure intensity from Pillar One and Pillar Two, Figure 3 still highlights the clear Eastern-Western divide: most of EU Western regions show a larger Pillar One's support, while RDP support is larger in Eastern ones. Furthermore, some Country specific patterns emerge as well. To better investigate this allocation patterns, however, a further decomposition of the CAP is needed.

Table 4. Classes of joint support per UAA: number of NUTS 3 regions and share on total EU-27 UAA

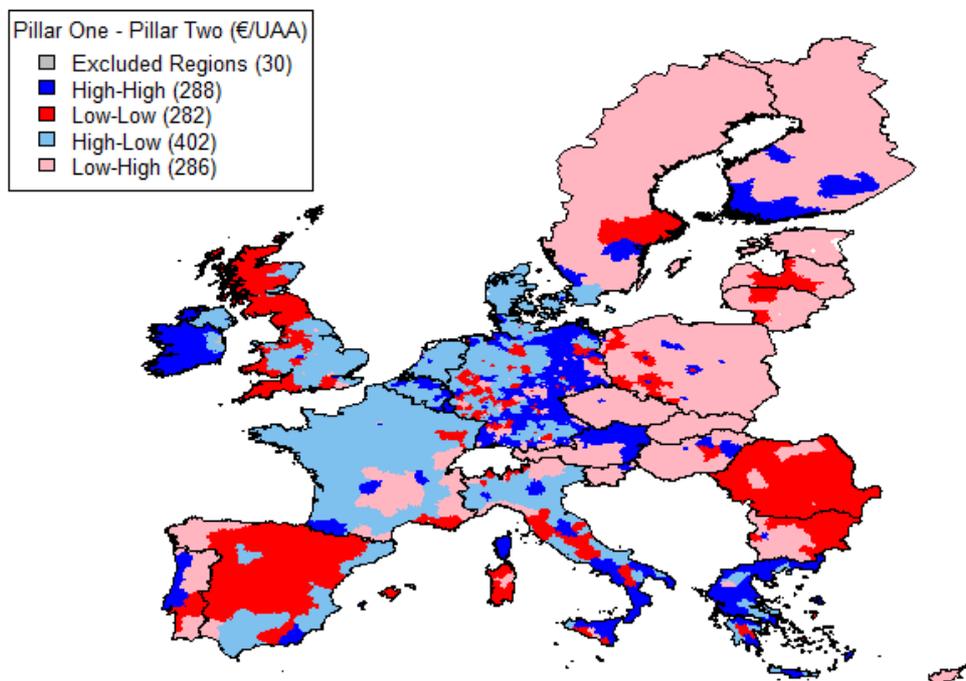
	No. of regions	Share (%) out of total UAA
Top beneficiaries	288	13.24
Agriculture-oriented beneficiaries	402	31.81
Rural-oriented beneficiaries	286	24.91
Under supported regions	282	30.02
Excluded regions	30	0.03
Total	1288	100.00

Source: own elaboration

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Figure 3. Pillar One and Pillar Two support per hectare of UAA: joint analysis



Source: own elaboration

TABLE 4. CLASSES OF JOINT SUPPORT PER HECTARE: NUMBER OF NUTS 3 REGIONS AND SHARE OUT OF TOTAL UAA

	NO. OF REGIONS	SHARE (%) OUT OF TOTAL UAA
TOP BENEFICIARIES	288	13.24
AGRICULTURE-ORIENTED BENEFICIARIES	402	31.81
RURAL-ORIENTED BENEFICIARIES	286	24.91
UNDER-SUPPORTED REGIONS	282	30.02
EXCLUDED REGIONS	30	0.03
TOTAL	1288	100.00

SOURCE: OWN ELABORATION

MAP PROVIDED IN FIGURE 3 JUST REPRESENTS A ROUGH PICTURE ABOUT EU ALLOCATION OF CAP EXPENDITURES, AS IT JUST FOCUSES ON OVERALL EXPENDITURE INTENSITY FROM PILLAR ONE AND PILLAR TWO. NEVERTHELESS, THE FIGURE SHEDS LIGHT ON SOME IMPORTANT FINDINGS. ACTUALLY, A SHARP EASTERN-WESTERN DIVIDE EMERGES: MOST OF EU WESTERN REGIONS SHOW A LARGER PILLAR ONE'S SUPPORT, WHILE RDP SUPPORT IS LARGER IN EASTERN ONES. FURTHERMORE, SOME COUNTRY-SPECIFIC PATTERNS EMERGE AS WELL.

MOVING FROM THESE GENERAL RESULTS, IN THE FOLLOWING SECTION CAP EXPENDITURE WILL BE DISENTANGLED, THUS PROVIDING SPECIFIC EVIDENCES ON SPATIAL ALLOCATIONS AT LOCAL LEVEL. IN PARTICULAR, SUCH AN ANALYSIS WILL POINT OUT THAT CAP ACTUALLY COMPRISES MANY POLICIES, SHOWING VERY DIFFERENT PATTERNS.

ONE POLICY, MANY POLICIES: DISENTANGLING CAP EXPENDITURES

In order to stress the complex nature of CAP, the following CAP expenditures typologies ~~can be~~ [here](#) identified. ~~In particular,~~ Pillar One expenditures ~~have been~~ [disentangled-split](#) into Direct Payment (DP) and Market Intervention (MI) measures. Both ~~the interventions~~ are directly aimed at supporting agricultural activities throughout Europe. ~~Furthermore,~~ ~~e~~Expenditures from Rural Development Policy (Pillar Two) ~~are have been split into disentangled among its main 2007-2013~~ axes: Axis 1 (improving the competitiveness of the agricultural and forestry sector), Axis 2 (improving the quality of the environment and the countryside) and Axis 3 (promoting quality of life in rural areas). ~~While~~ Axis 1 ~~still prevalently concerns the farming activity~~ and Axis 3 ~~mostly refer to rural measures,~~ whereas expenditures from Axis 2 are ~~mostly~~ aimed at ~~protecting and promoting environmental policies throughout Europe~~ [public goods and](#) ~~Axis 3 more generally concerns rural activities and communities.~~

~~In particular, in order to provide in-depth analyses on CAP expenditure spatial allocation throughout the EU-27,~~ ~~the following sections will focus on~~ [the spatial allocation throughout the EU-27 of these](#)

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disentangled expenditures ~~as described above. For the sake of simplicity, Section 4.1 will focus on expenditures from CAP Pillar One; section 4.2 will focus on expenditures from Rural Development Policy. Again, in this following analyses, the expenditure intensity is expressed per hectare of UAA is taken into account.~~¹⁶

4.1.1.3. Direct Payments and Market Intervention Measures

~~In the following figures, (The spatial allocation of expenditure disentangled CAP expenditure is illustrated considered here, by highlight stressing most extreme regional observed values. In particular, in the following figures, regions showing both lowest and highest expenditure intensities are mapped: 1st and 10th decilerange of each distribution are mapped thus considered here~~¹⁷.

Figure 4 ~~represent~~ shows the distribution of both least and most supported regions, when considering DP expenditure intensity per hectare of UAA. Least supported regions mostly fall in Eastern Countries (e.g., Romania, Bulgaria and the Baltic Countries). Nevertheless, some Scottish regions and some Alpine NUTS 3 regions are ~~also~~ included in this ~~decile class, too.~~ On the opposite ~~side decile we find,~~ Greek NUTS 3 regions ~~as well and~~ some regions in Northern Italy, in the Netherlands and in Germany ~~are among the most supported ones when considering direct support to EU farmers.~~

~~The spatial allocation of most and least supported regions~~ in the case of terms of MI measures, ~~the extreme cases are expenditure intensity per hectare of UAA is much~~ more geographically scattered (Figure 5). This is due to the specific nature of this typology of agricultural support. In particular, some Finnish and Baltic NUTS 3 regions fall among the least supported ones (~~first decile~~); ~~the same is true~~ for some French, British and Irish regions. Conversely, many Mediterranean regions are included in the 10th ~~decilerange~~ of the distribution (~~;-i.e., this is also the case of some Spanish and Italian regions and of Cyprus~~). ~~In particular,~~ it can be noticed that some EU Countries ~~present both comprise both most supported and least supported extreme~~ regions. ~~It is also worth noticing that, Furthermore,~~ at EU level, ~~not only extreme cases of DP expenditures are found to be more spatially concentrated than MI expenditure measures;~~ ~~Indeed,~~ regions belonging to the ~~last decile 10th range~~ of the DP expenditure intensity ~~distribution (i.e., those regions showing the highest values of expenditure intensity per hectare of UAA are also smaller (-) just represent 54.96% out of total UAA) than those in the last decile ; whereas when considering the intensity of MI expenditure intensity measures, the highest decile represents 8.41(8.4% out of total UAA).~~

Table 5. Pillar One expenditure intensity: share of least supported (1st decile) and most supported (10th decile) regions ~~out of~~ total UAA

	Share (%) out of total UAA	
	DP	MI measures
1st decilerange : Least supported regions	14.02	11.10
10th decilerange : Most supported regions	4.96	8.41

Source: own elaboration

Figure 4. Direct Payment expenditure intensity: least supported (1st ~~decilerange~~) and most supported (10th ~~rangdecile~~) regions per hectare of UAA

¹⁶ Results for the other two expenditure intensity indicators (on AWU and agricultural GVA) are available upon request.

¹⁷ According to this classification, 1st and 9th deciles are used to split the distribution. Both 1st and 10th ranges of each distribution include 126 observations (i.e., NUTS 3 regions).

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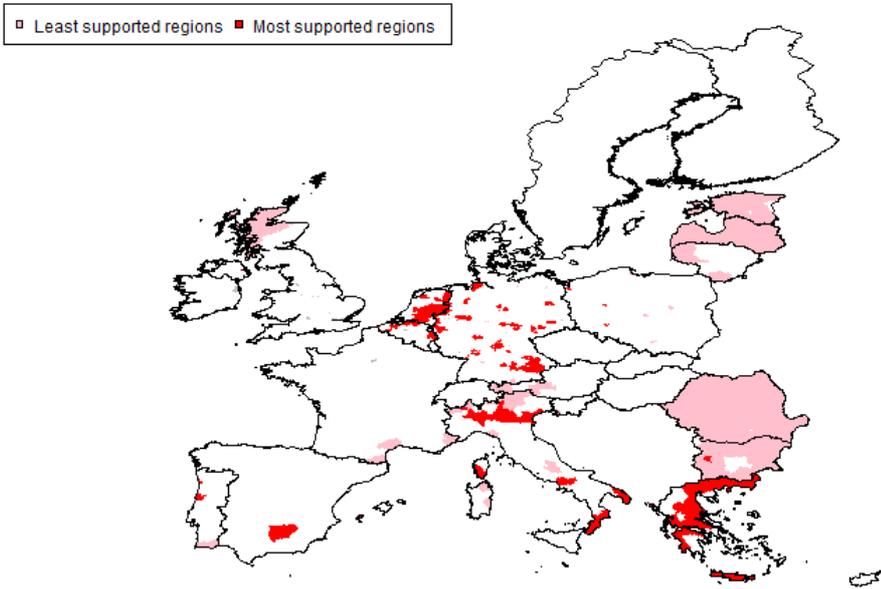
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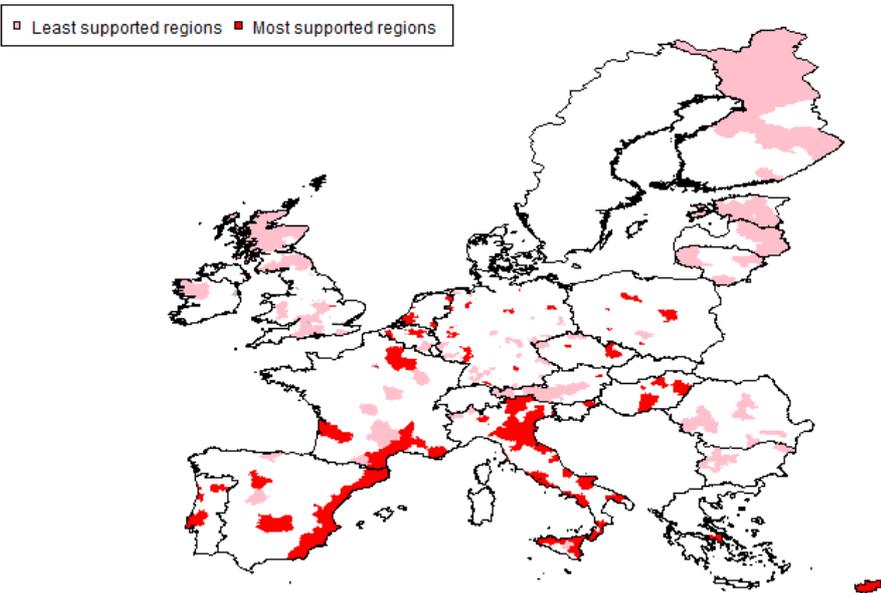
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Source: own elaboration

Figure 5. Market Intervention expenditure intensity: least supported (1st [rangecile](#)) and most supported (10th [rangecile](#)) regions per hectare of UAA



Source: own elaboration

4.2.1.4. ~~Direct payments and market intervention measures~~ RDP axes

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~~When focusing~~ With ~~on~~ Pillar Two expenditures, results show rather different patterns. In fact ~~Actually~~, expenditures intensity per single Axis (“~~Axis 1 – Improving the competitiveness of the agricultural and forestry sector~~”; “~~Axis 2 – Improving the environment and the countryside~~”; “~~Axis 3 – Quality of life in rural areas and diversification of the rural economy~~”) distributes across the ~~affects~~ EU NUTS 3 regions in differentiated ~~opposite~~ ways.

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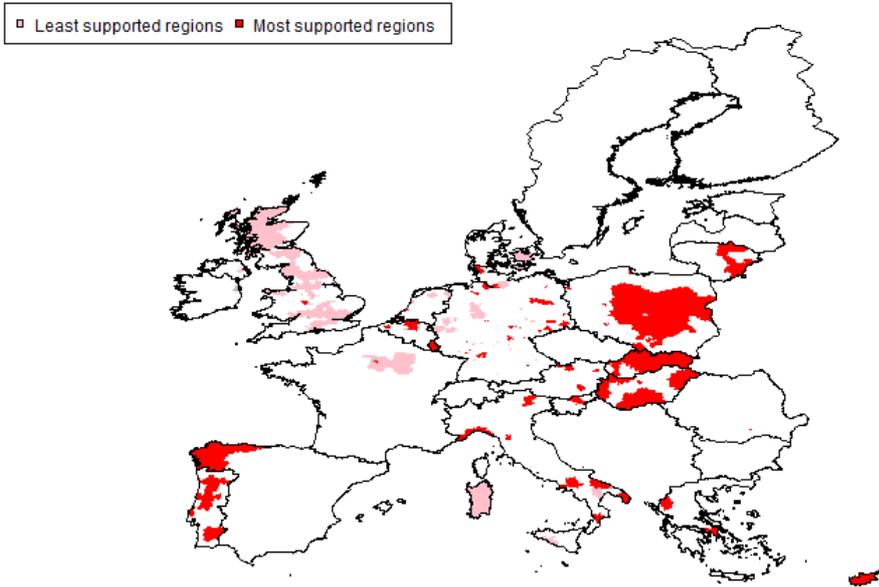
Axis 1 expenditure intensity shows a major ~~concentration~~ (10th decile) in throughout ~~EE~~ Eastern Europe NUTS 3 regions (Poland, Slovakia, Hungary and Cyprus). Other regions in the top ~~ranking above the~~ 9th deciles of the distribution are regions from Portugal and North Western Spain. Conversely, most of the UK as well as some urban regions in Germany share the lowest expenditure intensity values when considering Axis (1st decile) ~~+~~ (Figure 6).

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Expenditure intensity from Second Pillar's ~~s from Rural Development Policy's~~ Axis 2 are aimed at promoting rural environment: ~~thus, they are~~ coherently targeted to high nature-quality regions as well as less urbanised areas. Actually, many Scandinavian NUTS 3 regions, Irish regions and Alpine regions (e.g. regions from Austria and Slovenia) are comprised ~~in~~ the 10th range of the distribution, thus showing the highest being the most ~~support~~ intensity across ~~ed regions throughout~~ the EU-27. Conversely, flatlands across Northern France as well as many NUTS 3 regions in Bulgaria, Romania and Scotland fall below in the 1st decile of the distribution (Figure 7). Finally,

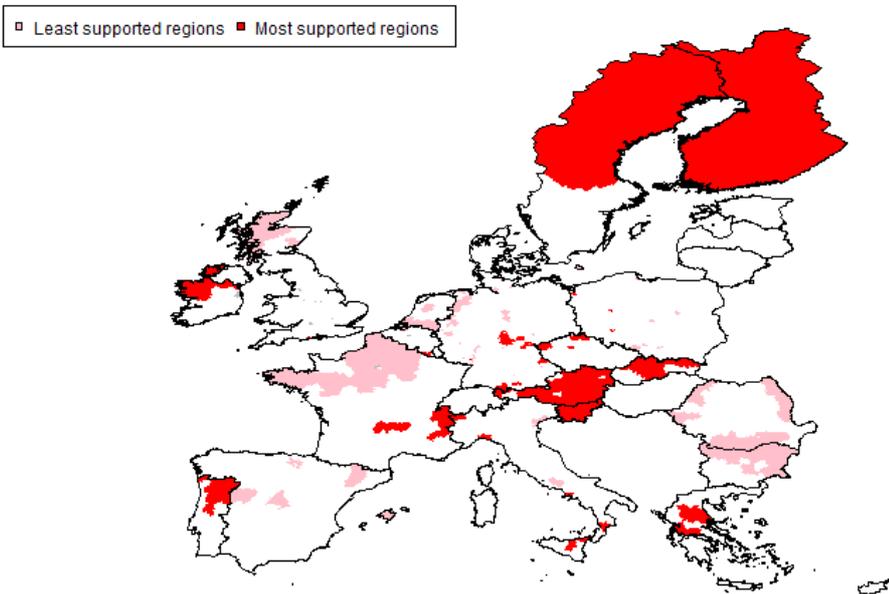
Expenditures targeted to the improvement of quality of life in rural areas (Axis 3) show, once again, a sharp North Eastern – South Western divide. Although geographically scattered, most of ~~NUTS 3 regions~~ ranking in the 10th decile range of the distribution of the expenditure intensity per hectare of UAA belong to Eastern Countries. Some exceptions are represented by Northern Sweden and some regions in Germany and Austria. On the opposite side, Ireland, Portugal and Southern Spain share the lowest values of Axis 3 expenditure intensity per hectare of UAA (Figure 8).

Figure 6. ARDP Axis 1 expenditure intensity: least supported (1st decile) and most supported (10th decile) regions per hectare of UAA



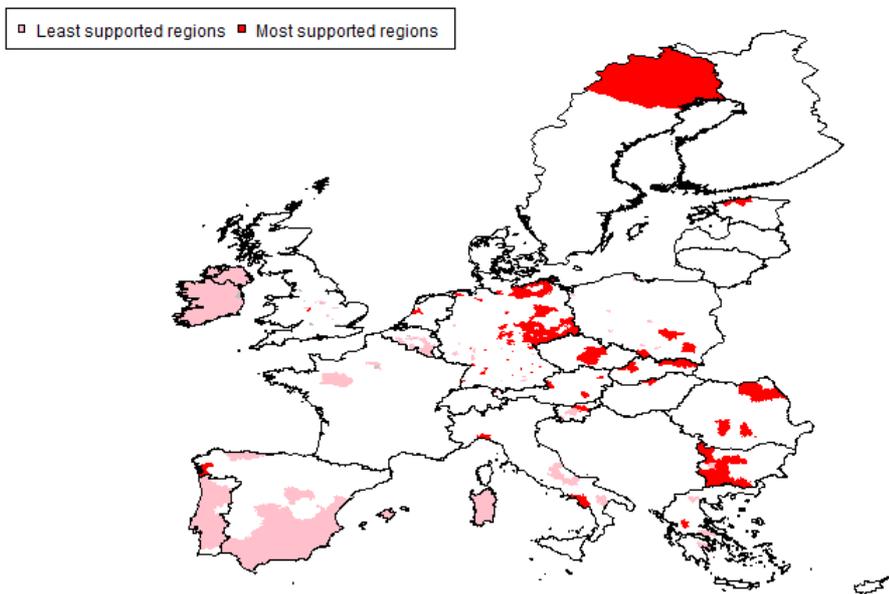
Source: own elaboration

Figure 7. RDP Axis 2 expenditure intensity: least supported (1st [rangdecile](#)) and most supported (10th [rangdecile](#)) regions per hectare of UAA



Source: own elaboration

Figure 8. ARDP Axis 3 expenditure intensity: least supported (1st [decilerange](#)) and most supported (10th [drangecile](#)) regions per hectare of UAA



Source: own elaboration

Referring to Rural Development Policy's With respect to RDP's -axes, Table 6 shows the share of both least and most supported regions and most supported ones out of total EU-27 UAA. Expenditures from Axis 3 are found to be more spatially concentrated than expenditures from Axis 1. Indeed, NUTS 3 regions in the highest decile of Axis 3 expenditure intensity distribution just represent 4.13% out of total UAA. Conversely, regions in the highest decile of Axis 1 expenditure intensity distribution represent 9.30% out of total EU-27 UAA.

Table 6. Pillar Two expenditure intensity: share of least supported (1st decile) and most supported (10th decile) regions out of total UAA

	Share (%) out of total UAA		
	Axis 1	Axis 2	Axis 3
1st decile range: Least supported regions	6.31	13.24	12.39
10th decile range: Most supported regions	9.30	7.05	4.13

Source: own elaboration

All these results confirm that the uneven distribution of CAP expenditure intensity throughout the EU-27, when considering specific CAP measures, becomes a sort of multiform territorial policy. If this is true when considering overall expenditures, measure-specific expenditures show even more imbalanced patterns throughout Europe. Actually, when moving to more disentangled measures, different pictures emerge. In order to stress these aforementioned territorial patterns, for each NUTS 3 regions we can map the number of expenditure typologies ranking in which it ranks in lowest and highest deciles. range per each NUTS 3 regions can be mapped. DP, MI measures, Axis 1, Axis 2 and Axis 3 expenditures are here considered as main expenditure typologies. Figure 9 maps how many times each region fall in the 1st decile number of expenditure typologies ranking in 1st range (i.e., lowest expenditure intensity) for the five CAP expenditure

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typologies; Figure 10 does the same for the maps the number of expenditure typologies ranking in 10th decile range (i.e., highest expenditure intensity).

Several EU peripheral regions fall rank in the 1st decile for more than one lowest range of distribution for a large number of CAP expenditure typologies. In particular, Scottish NUTS 3 regions seem are particularly under supported compared to the EU average (Figure 9). Conversely, when focusing on the 10th decile highest range, a different picture emerges. Again, some more peripheral regions are among those falling in more than one 10th decile the most supported ones throughout Europe. This result clearly confirms the existence of a sort of substitutability cross compensation among CAP different measures. Nevertheless, however, only just a few regions in some Eastern countries rank in the highest decile of the distribution for more than one CAP expenditure typology (Figure 10).

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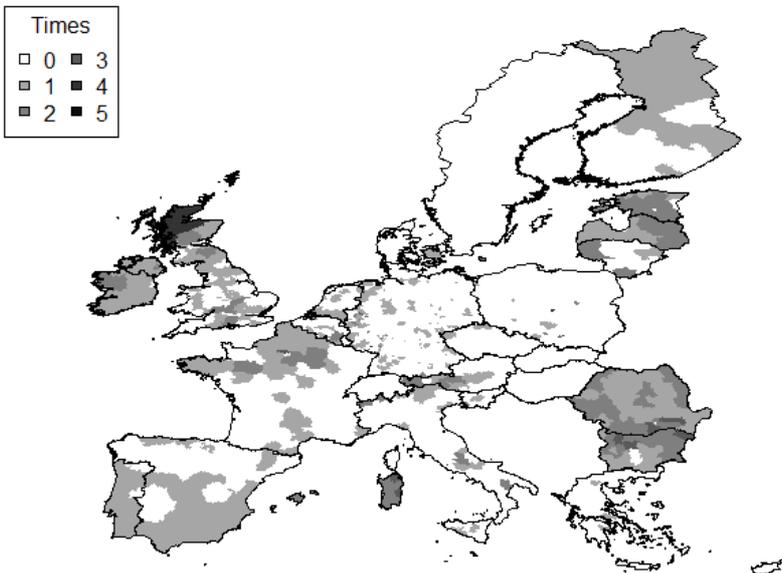
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Despite aforementioned specific results, major emerging evidence is represented by CAP puzzling nature. The largest EU policy in terms of allocated budget actually comprises a wide set of different policies, each of them characterised by specific aims and, as a consequence, by alternative territorial allocations as well. In particular, this study has proved that Western EU NUTS 3 regions mostly benefit from support to agricultural activities (i.e., expenditures from Pillar One) whereas support from rural development measures (e.g., expenditures from RDP Axis 2 and Axis 3) is largely targeted to Eastern EU NUTS 3 regions.

Figure 9. Number of times regions fall in the 1st decile for the five expenditure typologies ranking in the lowest range

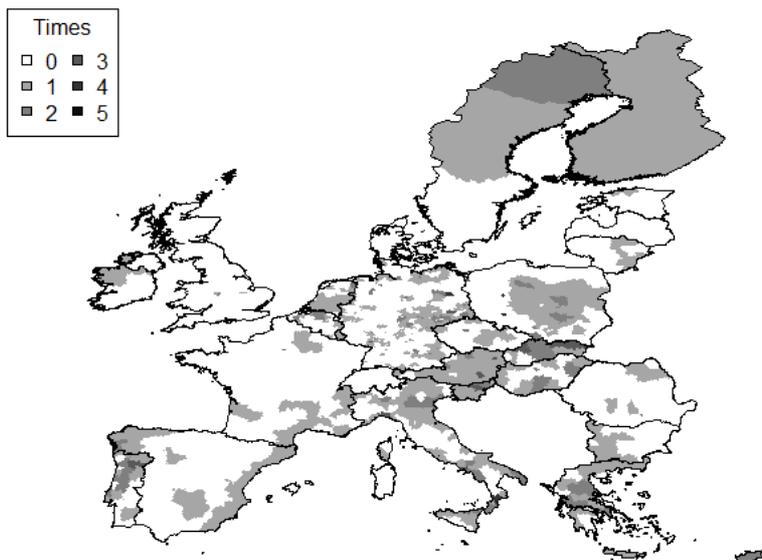
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Figure 10. ~~Number of times regions fall in the 10th decile for the five expenditure typologies. Number of expenditure typologies ranking in the highest range~~

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CONCLUSIONS

The analysis of the spatial allocation of CAP expenditure ~~has shed light on some major patterns across the EU space. In particular, this analysis has~~ provided some insightful findings ~~and, raising~~ important policy implications with reference to the current debate about the redistributive effects of latest ~~(2013) CAP reform (2014-2020)~~. The intensity of CAP support (in particular, ~~support~~ per unit of agricultural land) shows major territorial imbalances ~~throughout across~~ the EU-27 ~~space~~. ~~These i~~mbalances mainly refer to both urban-rural dichotomy and long-term cross-country differences Eastern Countries. Indeed, support ~~intensity~~ received by urban and central regions tends to be higher than that received by more rural and peripheral ones. Moreover, CAP expenditures show large concentrations across flatlands in North-Western EU. ~~Conversely, Though~~ support intensity is lower than the average in most regions of Eastern Europe, ~~where~~ a greater amount of Pillar Two expenditure (compared to Western Countries regions) is generally observed. These findings have been stylized by identifying NUTS 3 regions whose ~~both~~ CAP First and Second Pillar support per hectare of UAA is above ~~and~~ below the EU-27 values ~~(top beneficiaries, under supported regions, agriculture oriented beneficiaries, rural oriented beneficiaries)~~. Under supported regions ~~actually~~ represent about 30% of total UAA ~~while top beneficiaries cover just 13% of total UAA. In fact, but~~ more than a half of NUTS 3 regions actually show a sort of ~~substitutability cross compensation~~ between Pillars' expenditures. In general, Western EU regions show Pillar One's support above ~~and a the EU 27 average,~~

~~whilst~~ Pillar Two's support ~~is below it the EU-27 average (High-Low case)~~. ~~The opposite occurs in~~ ~~Conversely~~, NUTS 3 regions in Eastern Member States as well as across Scandinavia ~~mostly fall in the Low-High case~~.

~~Whenever~~ ~~In the second part of the paper~~, more disentangled CAP expenditures (i.e., DP, MI measures, RDP Axis 1, Axis 2 and Axis 3) ~~is have been~~ taken into account. Focusing on ~~each expenditure typology~~, the least ~~supported regions~~ and the most supported ~~regions ones have been mapped for each expenditure typology~~. ~~Support intensity is expressed in terms of utilised agricultural area and 1st and 10th ranges of each distribution have been considered, respectively. Again,~~ a puzzling picture emerges: due to different policy objectives, each CAP expenditure typology shows rather different territorial patterns. For instance, when considering DP support (EAGF), regions from Bulgaria and Romania as well as Baltic Countries are found among the lowest supported areas. Conversely, when focusing on environmental measures (i.e., expenditures from RDP Axis 2), Scandinavian and Alpine regions show the highest support intensity throughout the EU-27. In general terms,

~~After having mapped~~ these results at the EU scale, the impression is that the large territorial imbalances of one major EU policy, the CAP, is actually the consequence of the combination of a set of important results have emerged. In particular, CAP cannot be no longer considered as a single policy: it should rather be considered as a set of multiple and alternative policies and measures often behaving, in their territorial allocation, as substitutes.

~~! THESE POLICY MEASURES ARE SPECIFICALLY TARGETED EVEN AT REGIONAL AND LOCAL LEVEL.~~

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ACKNOWLEDGMENTS

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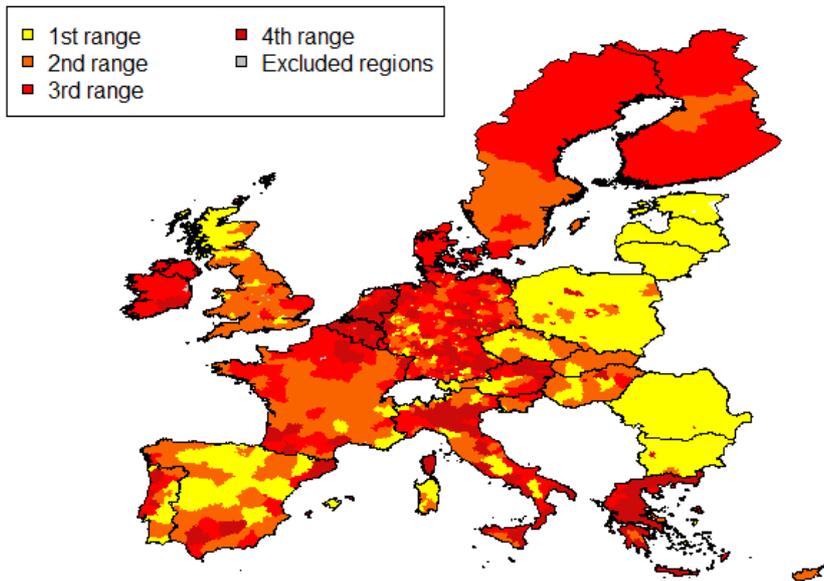
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ANNPPENDIX A

Spatial quartile distributions of CAP expenditure intensities in the European space are respectively mapped in Figure A1 (CAP expenditure per ha. of UAA), Figure A2 (CAP expenditure per AWU employed in agriculture), and Figure A3 (CAP expenditure per thousand Euros of agricultural GVA). Values for just 1258 observations are reported: other regions are labelled as “excluded regions”.

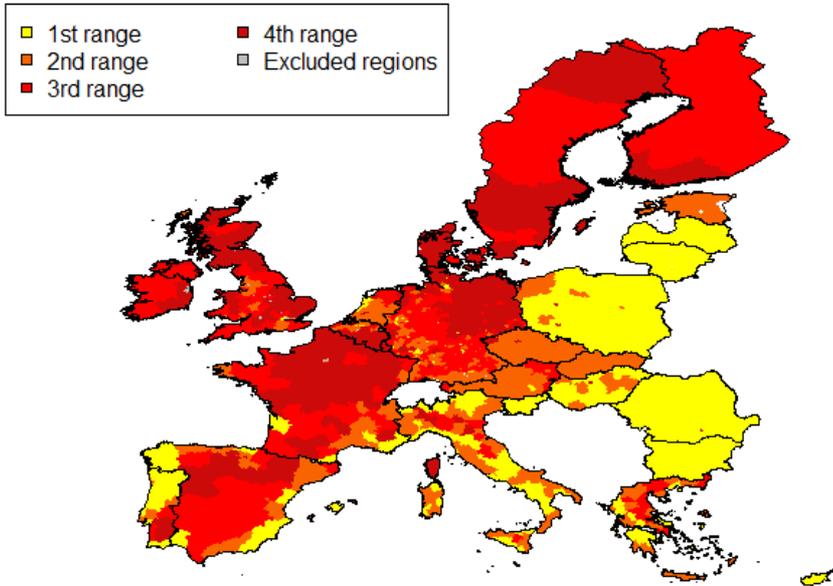
Figure A1. Spatial quartile distribution for CAP expenditure intensity per hectare of UAA (€/UAA) at NUTS 3 level (2007-2011 values)



Source: own elaboration

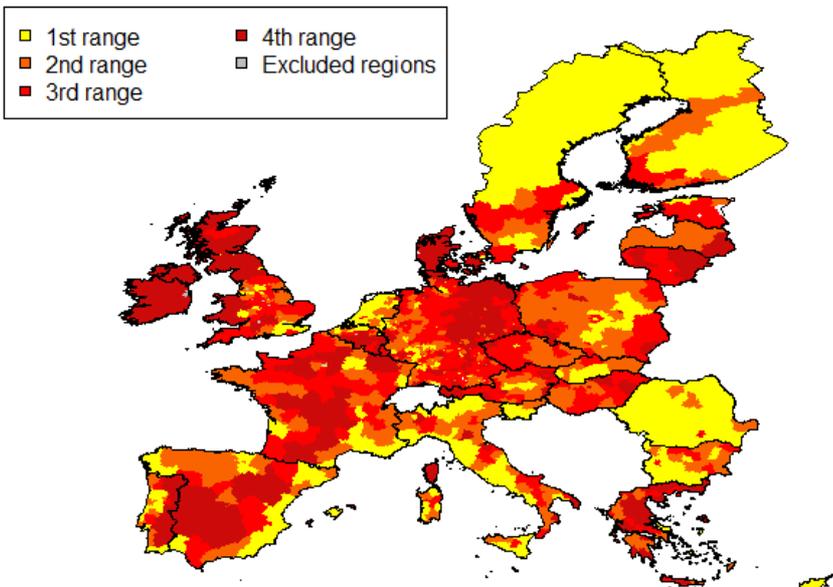
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Figure A2. Spatial quartile distribution for CAP expenditure intensity per agricultural AWU (€/AWU) at NUTS 3 level (2007-2011 values)



Source: own elaboration

Figure A3. Spatial quartile distribution for CAP expenditure intensity per thousand Euros of agricultural GVA(€/1.000 €)



Source: own elaboration

