



The socioeconomic impacts of the CAP: Systematic literature review

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ABSTRACT

One of the main aims of the EU's common agricultural policy (CAP) is to promote the development of rural areas. Although there is a rich abundance of academic literature on the impacts of the CAP on rural areas, there has yet to be a comprehensive overview on the effects. The paper aims to fill this gap by providing a systematic literature review on the impacts of the CAP on the socioeconomic situation in EU's rural areas. A two-stage search procedure to identify the relevant literature is employed. Only 59 publications that estimated the socioeconomic impacts of the CAP were found. The main findings are the following: the reviewed studies have found CAP to have no significant impacts on rural development as an abstract concept and the rural population; positive but negligible effects on economic output, the generational change in farming and gender equality; a positive effect on employment; and limited or inconclusive evidence about the impact on economic diversification, regional cohesion and civil participation.

1. Introduction

The EU's common agricultural policy (CAP) is a political instrument used to regulate the distribution of financial support mainly to agricultural producers throughout the EU. Although its share of the EU budget has decreased from 66% in 1980 to 35% in 2020 (DG Agriculture and Rural Development, 2021a), it still comprises a considerable share of EU's total expenditure. It can thus be expected to have a substantial impact on the economic, environmental as well as social aspects of farming and living in rural areas. From the onset in 1957 the main aims of the CAP were to increase agricultural productivity, ensure a fair standard of living for farmers and assure availability of supplies at fair prices (Stead, 2008). For three decades that followed, the CAP was mostly directed at maintaining high market prices through import tariffs, target prices, market intervention and export subsidies. As a result, distortions of international trade led to disputes in the international arena, agricultural production soon exceeded domestic consumption, larger farms received the bulk of the income support and intensive farming encouraged by the high product prices provoked negative environmental externalities. These problems induced an ongoing reform process beginning in 1992 with the MacSharry reform that initiated the gradual phasing out of market support in favour of direct payments (Fig. 1). Since the Agenda 2000 reform, the CAP has been regarded as comprising of two Pillars. Direct payments and market support

constitute the first Pillar while the second Pillar includes modernisation, agri-environmental and rural development measures.

Socioeconomic measures other than farm income support were introduced to the CAP already in the early 1970s. However, the aim of these socio-structural measures at that time was not to promote rural development, but rather to slow down structural changes in agriculturally disadvantaged regions, modernise agricultural production and increase agricultural productivity as well as to address the potential excess supply of agricultural produce (Kjeldsen-Kragh, 2007). Although all payments to farmers have since the outset been relevant in terms of socioeconomic conditions of farm households, the development of rural areas became an integral part of the CAP only after the MacSharry reforms in the early 1990s (Garzon, 2006). The socioeconomic measures introduced with the Agenda 2000 reform had much wider scope than the early socio-structural measures. In addition to reinforcement of the agricultural sector, these also included protection of the environment and rural heritage as well as the modernisation and diversification of rural areas.

These three objectives have persisted in the regulation on support for rural development (European Parliament and Council of the European Union, 2013). In particular, "achieving a balanced territorial development of rural economies and communities including the creation and maintenance of employment" could be considered a reference to the expectation of socioeconomic impacts. Starting from 2021, the goal "to

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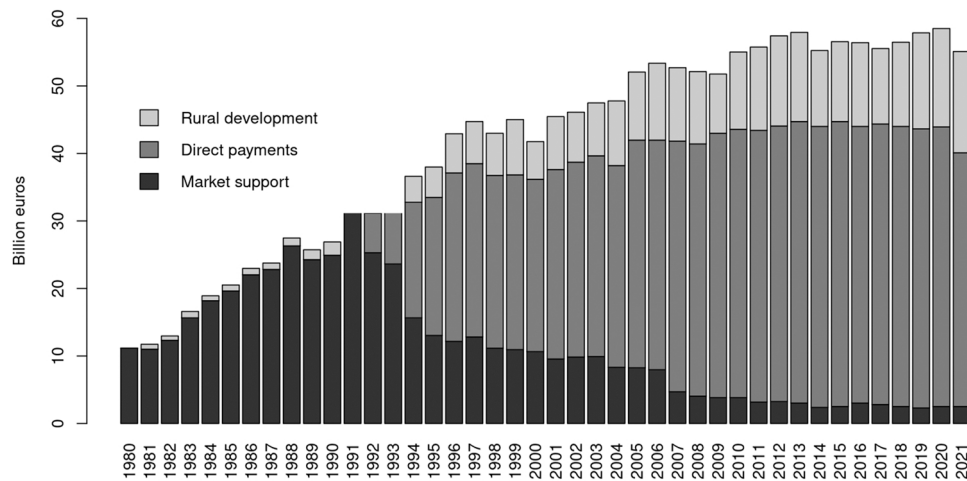


Fig. 1. CAP expenditure. (DG Agriculture and Rural Development, 2021b).

strengthen the socio-economic fabric of rural areas” is among the three objectives of the CAP, which also has set specific objectives related to attracting young farmers, sustainable business development in rural areas, employment, growth, gender equality, social inclusion and local development (European Parliament and Council of the European Union, 2021). Socioeconomic impacts can thus be summarised to refer to those outcomes of the CAP that relate to the social and economic situation of rural areas and are not limited only to agriculture.

The CAP can be considered one of the most researched public policies of the EU. Surprisingly, there are few attempts to summarise the evidence on the impacts of CAP instruments in the form of literature reviews. Erjavec and Lovc (2017) in their review of research on CAP explore the development of disciplinary divisions in research on the CAP, rather than analyse its outcomes. There is a review of literature on CAP impacts on socioeconomic development but it is very brief (ÖIR GmbH et al., 2021). Research on the employment impacts of the CAP has been systematically reviewed (Schuh et al., 2016; Vigani et al., 2019), but it is limited to only one particular outcome of the policy.

There are numerous studies investigating the impacts of the CAP on the economic performance of farms or on various environmental targets. However, the socioeconomic impacts have been rarely evaluated. Some impact evaluations deliberately disregard the policy goals of the CAP related to socioeconomic issues (OECD, 2017). The reasons behind this negligence are manifold. Some research is likely discouraged by the lack of data. While farm performance can be measured by an ample choice of economic variables collected by Farm Accountancy Data Network (FADN), farm or regional level data on socioeconomic variables are more difficult to come by, except perhaps for employment. Limitations related to lack of data could be relieved by access to increasingly more detailed data on CAP expenditure (Garrone et al., 2019; World Bank Group, 2018). The operationalisation of socioeconomic variables might also pose a difficult task, most often when the variable under investigation is rural development, a concept that gives room for a wide range of interpretations. Socioeconomic effects of the rural development policy measures of the CAP could be too small to be possible to demonstrate (Bednářková, 2015). Due to the relatively small amounts of financial resources allocated to these policy instruments, it would be difficult to link any such effects to these measures.

However, impacts on social and in particular economic variables should not be limited to those measures of CAP that are aimed at rural development. Not only does income support of the CAP encourage well-being of farm households but also other instruments of the various EU Structural and Investment Funds have shown to contribute to the socioeconomic development of rural areas (Becker et al., 2010, 2012, 2018; Bourdin, 2018; Cappelen et al., 2003; Crescenzi and Giua, 2020; Dall’erba, 2005; Dall’erba and Le Gallo, 2008; Mohl and Hagen, 2010).

These instruments are often aimed at less developed regions as are some of the CAP measures. As a result, isolating the effects of CAP or its particular measures from other policies and their instruments may not always be possible.

The purpose of this paper is to review the evidence on the socioeconomic impacts of the CAP using the systematic literature review approach. In addition to synthesising the results of research on the socioeconomic impacts of the CAP, the evolution of themes, relationships between topics, policy measures and used methodologies is also reviewed.

2. Material and methods

We follow the PRISMA¹ guidelines (Liberati et al., 2009) to overview the relevant literature. These guidelines were primarily devised to promote the rigour of literature reviews in intervention research. While research on the impacts of the CAP has not been as systematic or standardised as in intervention research in some other fields, the CAP as a policy is still analogous to any intervention. It can be considered a policy intervention with various participants – subsidies as the intervention, comparable units as controls and difference in outcomes as policy impact. Although the PRISMA approach originates from medical research, it is demonstrated to also be appropriate in other research areas.

Some previous literature reviews in agriculture have primarily used the Web of Science, Scopus and AgEcon Search databases as sources (Schuh et al., 2016; Velten et al., 2015; Weltin et al., 2018). Because these databases allow users to export results, these are also used to find publications for the current review. Further sources are derived from following up on citations in the selected studies. The databases include academic journal articles, book chapters, conference proceedings, working papers and reports. Impact analyses of the CAP are also regularly conducted for policy evaluation purposes, but such literature is not considered in the review. A natural approach would be to include Rural Development Programme evaluations carried out by member states. However, despite attempts to improve the methodology used in these evaluations, their results are questionable due to the frequent use of naïve methods (Andersson et al., 2017; Thoyer and Préget, 2019) and the lack of quantification of the effects (Vidueira et al., 2014). Moreover, the evaluations themselves are hard to find, especially in English. Although thematically relevant in the context of estimating the impacts of the CAP, these evaluations are not included in the review for the above-mentioned reasons.

¹ Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

The search term is searched from title, abstract and keywords of publications. Because prior to querying databases and investigating results it is not known what topics have been studied regarding the socioeconomic impacts of CAP, it is also not known what kind of specific keywords should be used to capture possible outcome variables. Therefore, a two-stage literature search is applied. In the 1st stage, all literature where any kind of CAP impact is studied is searched, then relevant topics are manually selected and respective keywords are determined. These keywords are then used in the 2nd stage to find relevant literature that the first stage search might have missed.

Determining the most useful search term consisted of three steps. First, words used in the titles, abstracts and keywords of several random relevant articles were examined to find the most suitable keywords to be used as a search term. The resulting term was then used to incrementally improve the search term by attempting to exclude irrelevant articles that were returned by queries. In line with some previous research (Fischer et al., 2015), several test searches were performed using different combinations of search terms.

As a result of this process, it was determined that three elements need to be present in search terms in order to retrieve relevant publications: (1) the policy, formatted as ““Common Agricultural Policy” OR “rural development” AND “European Union” OR EU”; (2) the policy instruments, formatted as “support OR subsidy OR payment OR measure”; (3) the mechanism of impact formatted as “impact OR effect OR relationship OR role”. Plural or lemmatisation is automatically considered by search engines, thus e.g. the common form “subsidies” is also considered when the search term only contains “subsidy”. The outcome (i.e. socioeconomic variables) was not included in the search term in the 1st stage of queries. The phenomena that are in some way or other relevant for the social and economic situation in rural areas are too numerous to explicitly define. Thus, the outcome is captured in the queries of the 2nd stage of the review.

For the reasons explained above, at the outset it was not possible to determine a complete list of specific topics relevant to the review. After running 1st stage queries and scrutinising the results while considering the previously outlined policy aims of the CAP, the following topics that could be considered as socioeconomic were identified from examination of the literature: regional economic output (GDP, GVA); rural development and quality of life; regional convergence and cohesion; employment, labour migration and job creation; population and migration; diversification into non-agricultural activity; civil participation; generational change; gender equality.

Some frequently appearing policy outcomes that could potentially be considered relevant were disregarded due to their indirect relation to the wider socioeconomic situation in rural areas. These topics were mostly related to the economic situation of farms and could be summarised by the following keywords: farm household income; redistribution of CAP funds between beneficiaries or policy instruments; market prices; viability of family farms, small and subsistence farming; size and type of farms; production efficiency; land use.

Eligibility, relevance and selection criteria are distinguished, each representing a stage in the process of literature selection. The first selection of publications to be included in the review is performed in the process of querying data from databases according to eligibility criteria. These criteria determine which publications are considered for the review and are thus referred to as such. In order to capture as much of the relevant literature as possible, lenient constraints are set to the initial selection of literature. The applied eligibility criteria are as follows. The language must be English. Timeframe or subject area is not limited. It was observed that subject area is often not correctly assigned in databases and should thus not be used as an eligibility criterion. Publication type in the current review includes academic publications such as journal articles and conference papers but also working papers. Working papers are not excluded because these are often methodologically rigorous and include important findings that are not published elsewhere. Although there may be some relevant studies (e.g. World Bank

Group, 2018) in grey literature, these are excluded as these are not included in used databases. As a measure of quality, peer-reviewed studies are distinguished from others and this aspect is taken into consideration when summarising the contradictory results of studies.

We introduce relevance criteria to automatically exclude some studies containing words that are likely to be irrelevant regarding the review question. Hence, these words determine irrelevant studies and can therefore be used to efficiently remove them prior to manual selection. In case of studies of socioeconomic effects, words related to e.g. environmental issues are not expected to be present in keywords, but they may occur in abstract. To determine irrelevant words, first all the words are stemmed using an algorithm (Porter, 1980), then the most frequent words and compound words are examined, and finally those that are irrelevant for our review question are used for the exclusion of studies. As such, relevance criteria represent the words that are used to exclude studies.

The decision on whether to include a publication is based on whether it fulfils each of the selection criteria. The following conditions deduced from our review question are imposed. Studies need to evaluate the impact of a CAP policy instrument. The SAPARD programme that can be considered as the pre-accession instrument of the CAP for new member states is also included. The outcome variable(s) examined are relevant to the social or economic situation and must investigate one or more of the topics outlined above. Impact needs to be empirically evaluated. Studies must consider the counterfactual situation where the CAP does not exist. Studies evaluating the impact of policy reforms are excluded while studies evaluating impact of scenarios are included only if the examined scenarios involve the existence or absence of the CAP. Thus, also ex-ante analyses are included if these consider the counterfactual.

Databases were queried for publications in August and September 2020. For each result returned by queries, basic publication metadata was recorded. For the publications finally selected for review, additional information on the background and attributes of studies was determined, e.g. variables analysed, methodology or data used. This information is presented in Appendix 1.

During the revision of publications that met the selection criteria, a number of issues relevant to summarising the impact analyses of the CAP were identified. First, measures are sometimes not correctly specified and linked to the specific CAP instruments. Some studies combine several measures under some overarching or ambiguous term, such as growth-oriented measures (Salvioni and Sciuili, 2018) or rural entrepreneurship diversification measure (Ozoliņš et al., 2015), without explicitly specifying the official name. Another difficulty is that terms such as “impact”, “effect” and “role” are often used even in case of merely descriptive studies (Cunder, 2007; Nikolov et al., 2012), where a counterfactual situation is not evaluated. Conversely, some studies don't contain these terms in the title, keywords or abstract, yet do include an impact evaluation. Occasionally, the results of the same study are published as working or conference papers prior to final peer-reviewed publication, and such duplicates need to be thus identified.

Perhaps the most distinctive challenge in summarising the impacts of the CAP is in distinguishing between the effect of the policy itself, the effect of a policy change (reform) or the effect of a possible policy change (scenario). Each of these three types of policy evaluations is common for the CAP. Seven studies that evaluated the impact of a CAP reform were identified (usually decoupling of direct payments in 2005) and 15 studies of the potential CAP scenarios (usually modulation of funds between instruments). These satisfied all criteria except for not evaluating the counterfactual situation relevant for this review. A distinction can be made by examining the counterfactual situation (as explained by Michalek, 2012): in case of a policy impact evaluation, the counterfactual should be complete absence of the policy under investigation. This may sometimes even be incorrectly specified by the authors, e.g. the effect of decoupled payments does not demonstrate the effect of the decoupling reform as suggested by Bartolini et al. (2015), rather the effect of these payments. Only studies that fall into the category where

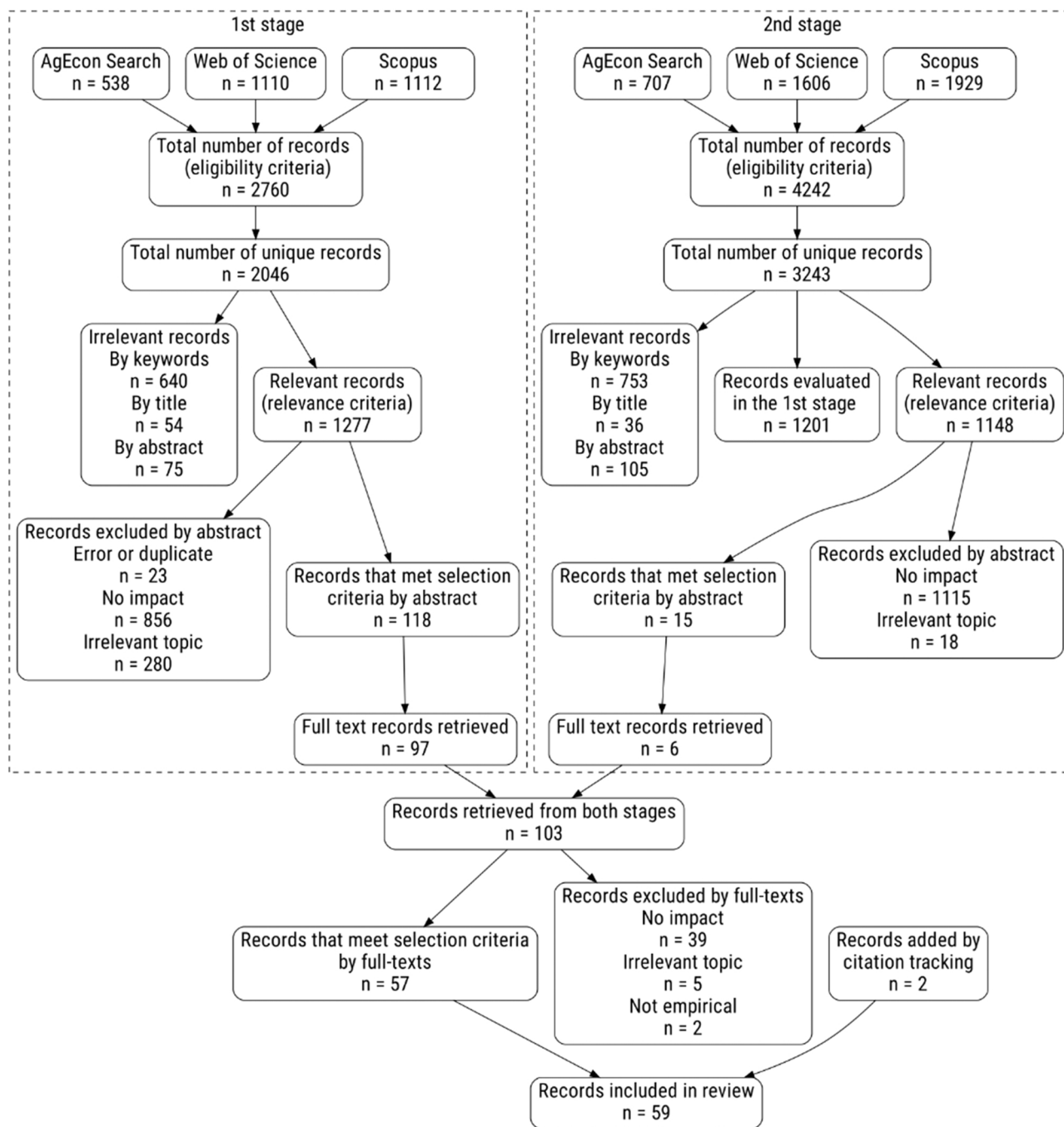


Fig. 2. Flow diagram describing study selection.

the effect of the policy itself is evaluated were included, whether by explicitly evaluating the counterfactual situation or by using so-called naïve descriptive statistics (DS).

3. Results and discussion

The selection process is outlined on Fig. 2. The 1st stage of the literature search yielded a total of 2760 publications from three databases. In order to remove duplicate publications, the DOI and titles were compared. As a result, 2046 publications were identified as unique, although it is likely that many duplicate publications were still present at this step. Only 1277 publications met the relevance criteria, i.e. did not contain any irrelevant words in the keywords, titles or abstracts. Manual selection from these 1277 publications was performed

according to the selection criteria, and the reasons for exclusion were the absence of evaluating the impact of a CAP instrument (856 publications) or socioeconomic effects (280 publications). In the case of 118 publications, the fulfilment of relevance criteria could not be determined by abstracts alone, and 97 available full texts were further examined.

In the 2nd stage, updated search terms were used, now containing keywords for relevant topics. The selection process and principles were otherwise the same as in the 1st stage, with the additional step of excluding the records evaluated in the 1st stage. The relatively high number of remaining relevant records after that step indicates that many studies were missed in the 1st stage. However, considering that only six of these met the selection criteria, the records introduced in the 2nd stage were mostly irrelevant. Thus, most relevant records were already captured in the 1st stage. A total of 59 studies was found that met all the

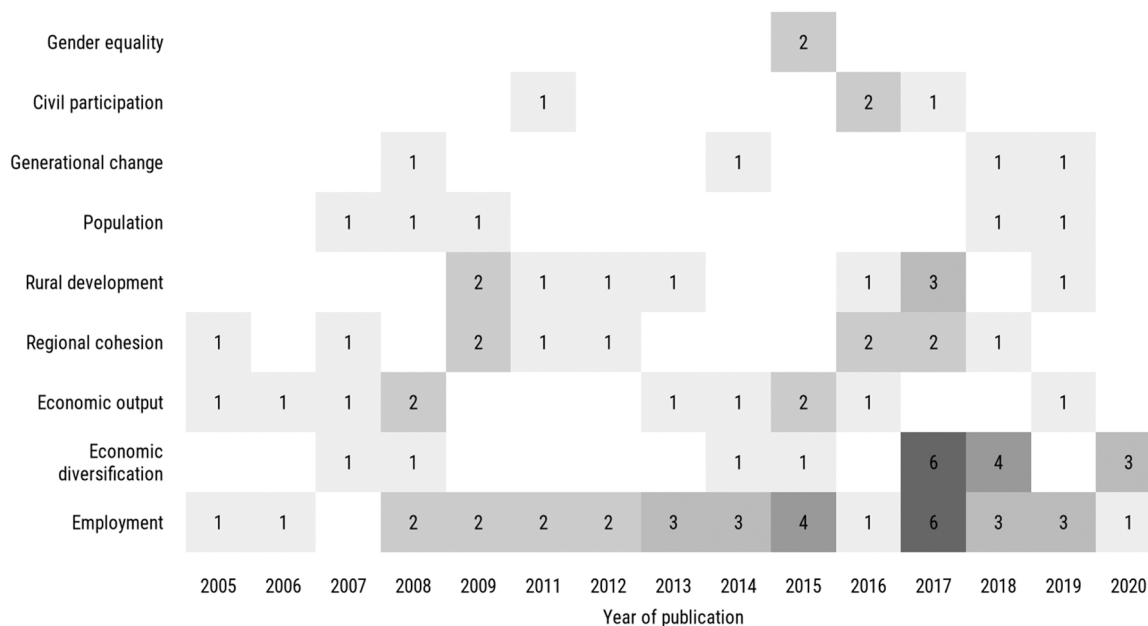


Fig. 3. Number of studies including topics per year of publication.

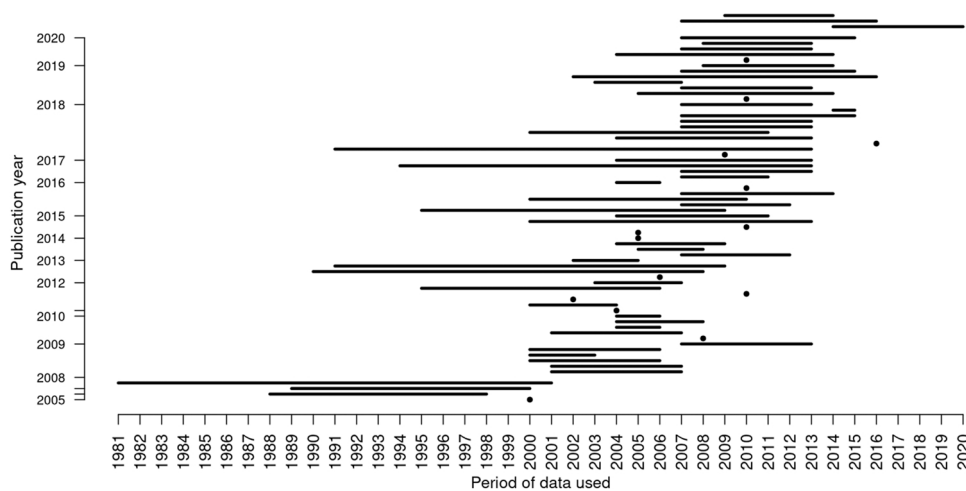


Fig. 4. Period of data used of included publications where available.

selection criteria after examining the full texts of the retrieved records from both stages.

3.1. Topics, policy instruments and methods

We examined topics by the number of times each topic occurs in publications each year (Fig. 3). These trends can be described according to persistence and relevance, as introduced by Velten et al. (2015). Persistence can be understood as the share of years that a topic appears in literature from all the years considered, whereas relevance shows the average share of studies on a topic from all the studies of that year. There were only two topics that can be considered highly persistent: employment and economic output. Both are represented in most of the years investigated here. Employment is also a highly relevant topic, as it is represented in most of the years by the highest number of publications. For studies on the socioeconomic effects of the CAP, it is not observed that some new topics are introduced over time, whereas others diminish as expected. An exception to this is economic diversification, which has received considerably more attention since 2017. In light of the fact that the promotion of the diversification of farm activities was included

among the rural development measures of the CAP in 1999 (Council of the European Union, 1999), this cannot be interpreted as a result of a policy change. Thus, the relevance of topics does not seem to be dependent on policy changes.

It is notable that there were no publications published before 2005 that fulfilled all the review criteria. Moreover, the number of studies included in the review published before 2008 was only 9. This can be explained by the focus of the CAP and the limitations of data. Studies on the socioeconomic impacts of the CAP seem to be associated with rural development support when the temporal range of data is considered (Fig. 4). Introduced with the Agenda 2000 reform, the initial amount and use of this support was planned for seven years. This is evident in the research of the socioeconomic impacts of the CAP where the years assessed in the studies were often between 2000 and 2007 for studies published in 2008–2012. Studies published from 2015 onwards generally use data on the 2007–2013 programming period. A slight lag can be explained by the fact that some funds were used after the end of the programming periods. The increased interest in the evaluation of the CAP impacts during the 2007–2013 programming period could be related to the introduction of a common monitoring and evaluation

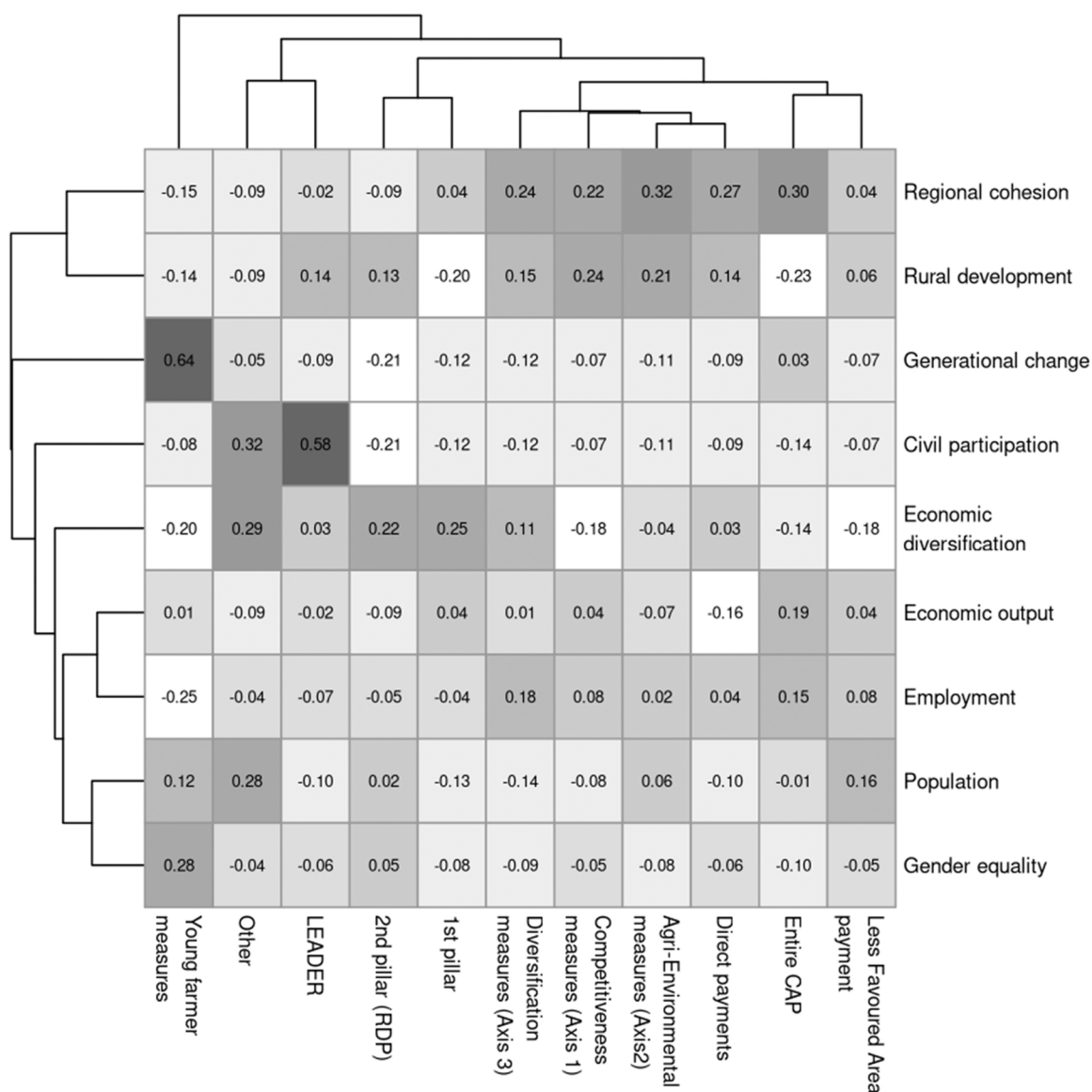


Fig. 5. Pearson's R between CAP instruments used (bottom) and evaluated policy outcomes (right). The dendrograms were calculated using Hierarchical agglomerative clustering based on Ward's method.

framework (Council of the European Union, 2005). There have been few studies in which the data used spans more than a decade.

We assigned policy instruments to each reviewed publication according to how precisely authors outlined it. Many studies examined the entire CAP funding to evaluate the impacts of the policy as a whole (Bonfiglio et al., 2016; Garrone et al., 2019; Hansen and Herrmann, 2012; Loizou et al., 2019; Mattas et al., 2008; Petrick and Zier, 2011; Rizov et al., 2018; Rogoznicki et al., 2018). Other studies investigated and compared the effects of one (Bournaris et al., 2014; Kouřilová and Pělucha, 2017; Ozoliņš et al., 2015) or several specific policy instruments of the CAP. This latter differentiation may be between measures (Dudek and Karwat-Woźniak, 2018; Lasanta Martínez and Laguna, 2007; Mantino, 2017; Pelucha et al., 2017), or even Pillars (Mack et al., 2021; Mattas et al., 2008; Olper et al., 2012; Tocco et al., 2013). For more convenient analysis, some authors have categorised all the CAP instruments into a few categories according to their purpose. Psaltopoulos et al. (2006) classified several instruments into farm income support, aids to increased agricultural productivity and aids to economic diversification. Salvioni and Sciulli (2018) isolated and evaluated instruments that can be described as growth-oriented measures. Some

studies have combined the effects of EAFRD with various EU structural and investment funds, most commonly the European Regional Development Fund and the Cohesion Fund (Crescenzi and Giua, 2016; Juvancic et al., 2005; Montresor et al., 2011).

Due to the differences in the design of the two CAP Pillars, the selection of specific payments has been more common with Pillar 2 investment measures, as these are directed at numerous activities with a variety of purposes. Moreover, several measures under Pillar 2 have had a more direct association with improving socioeconomic development in rural areas. Measures related to fostering entrepreneurship, tourism and other non-agricultural activities in rural areas (Bednaříková, 2015; Ozoliņš et al., 2015), protecting cultural heritage (Kouřilová and Pělucha, 2017) or the LEADER measure (Furmankiewicz et al., 2016) are more likely to have an impact on the variables relevant in the current review. However, because direct payments represent a substantial share of CAP and in a general sense have a specific function as an income provision tool for agricultural producers, this instrument has also been used as a variable with a potential socioeconomic impact (Bartolini et al., 2015; Hansen and Herrmann, 2012; Loughrey and Hennessy, 2018; Martinho, 2015).

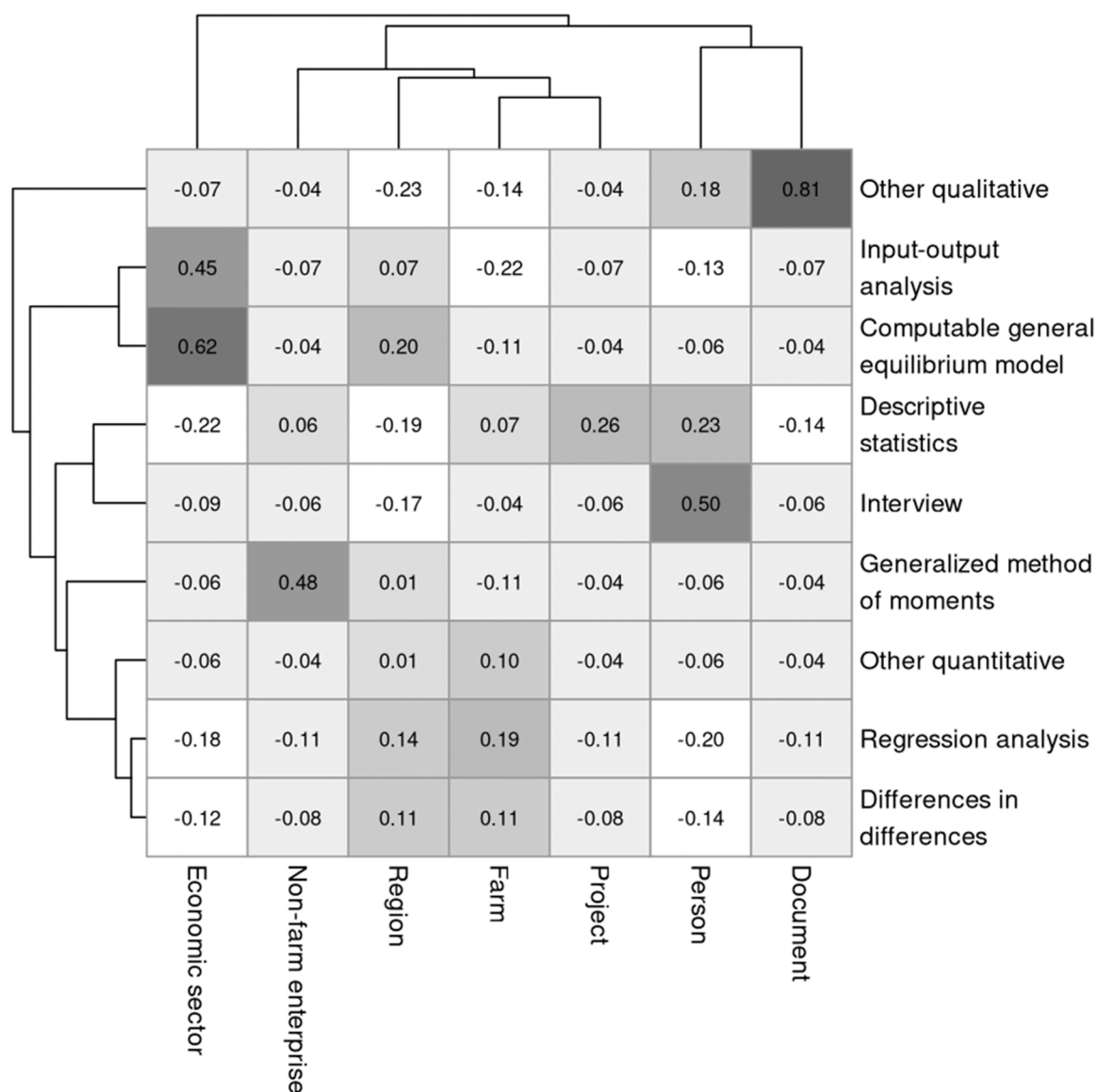


Fig. 6. Pearson's R between units of analysis (bottom) and methods (right). The dendrograms were calculated using Hierarchical agglomerative clustering based on Ward's method.

The relevance of research topics is evident when examining the relationships² between policy instruments and outcomes (Fig. 5). As expected, the evaluation of generational change in agriculture is highly related to measures supporting young farmers, and civil participation tends to be evaluated in the context of the LEADER measure. The impact of the CAP on economic diversification is not limited to diversification measures but is also estimated as an effect of both Pillars. Considering the instruments used, most notably employment and economic output have been evaluated similarly. Also, population and gender equality were similar in this respect. Whereas the CAP impact evaluations on gender equality were related to measures supporting young farmers, change in population has a stronger relation to some more specific measures, e.g. mountain compensatory allowances (Lasanta Martínez and Laguna, 2007). Regional cohesion and rural development tended to

² The relationships between instruments, topics, methods and data are estimated as Pearson's correlation coefficients between values of the two variables that were each quantified as dichotomous variables. This is equivalent to Phi coefficient. The dendrograms illustrate similarities of variables in terms of these correlations, so that the distances between similar variables are lower.

be measured similarly via various axes of RDPs and direct payments with a few exceptions. The negative correlation of rural development with the 1st Pillar and entire CAP indicates that the effect of these instruments on rural development has seldom been estimated or not at all.

The impact evaluations of the CAP have been diverse in the methodological approaches taken. The majority of such studies have implemented quantitative methods, although some have also been entirely qualitative or included some qualitative elements such as interviews (Dax et al., 2016; Mattas et al., 2008; Midmore et al., 2008; Unay-Gailhard and Bojnec, 2019). A notable characteristic of the selected CAP impact assessments is the frequent use of (regional) input-output (I-O) modelling (Bonfiglio et al., 2016; Loizou et al., 2014; Psaltopoulos et al., 2006). Such models aid in examining different economic activities within an entire region and quantify the effects of shocks, thereby providing a useful tool for impact evaluation. Despite some suggestions to implement counterfactual methods that involve differences-in-differences (DiD) analysis when evaluating the impacts of the CAP (Evaluation Expert Network, 2014), only eight studies modelled a control group to explicitly evaluate the counterfactual situation. While computable general equilibrium (CGE) and I-O models also allow for

Table 1

Number of studies by topics and by conclusions about the socioeconomic impacts of the CAP.

Topic	Negative	None	Mixed	Positive
Economic output	0	1	0	29
Employment	8	6	4	37
Population	0	3	0	1
Generational change	0	1	0	3
Diversification	1	3	1	5
Rural development	0	3	2	2
Regional cohesion	0	5	1	4
Civil participation	0	0	1	1
Gender equality	1	3	0	1

considering the counterfactual, these have several disadvantages when applied to CAP (Michalek, 2012, pp. 13–14). The most frequently applied method was descriptive statistics, which can be considered as very limited in the context of impact evaluation.

The socioeconomic impacts of the CAP were most often examined on the level of regions or farms. These units of analysis were related to quantitative methods and were negatively correlated to interviews and other qualitative methods (Fig. 6). Interviews and to some extent descriptive statistics were naturally applied when the unit of analysis was persons, i.e. beneficiaries of CAP support or other stakeholders. As expected, I-O and CGE models tended to similarly analyse resources of economic sectors or regions. The most frequent method, descriptive statistics, was somewhat related to projects and persons, and was usually applied to describe project activities (Dudek and Karwat-Woźniak, 2018; Florina, 2020) or survey responses (Kocur-Bera, 2017; Kourilová and Pěluha, 2017; Marquardt, 2011). Regression analysis and DiD methods were similar, as both were related to data on farms and regions.

Only 13 of the 59 reviewed studies evaluated the impact of the CAP in multiple countries simultaneously (Appendix 1). Most studies examined only a single country, and 16 studies were limited to a few or just one region of a single country. Several studies estimated the socioeconomic effects of CAP in all EU countries at the time of evaluation (Ballesteros and Hernández, 2017; Bonfiglio et al., 2016; Garrone et al., 2019; Jansson et al., 2008; Marquardt, 2011). However, it can be concluded that the evaluations of the CAP studied here tend to be limited in terms of geographical coverage.

3.2. Evidence on policy impact

Because evaluations of the impact of the CAP have used different methodologies, theoretical conceptualisations and relationships, narrative assessment of evidence is performed to synthesise the results of the studies. Additionally, some text mining techniques were applied to titles, keywords and abstracts to discover topics and relationships between the publications, but this did not yield very meaningful results. It is likely that the vocabulary used in these publications does not distinguish them from other literature and the topics examined are too distinct for publications to be linked via citations. A summary of the results of reviewed studies is provided in Table 1 and in more detail in Appendix 2. In the following narrative description these results are presented as precisely as possible, i.e. quantitatively when available.

3.2.1. Economic output

Indicators such as total output, GDP and GVA are often used as proxies to assess the size of an economy or economic development and have thus also been examined in the context of the CAP impacts. Most studies on this topic have applied I-O analysis or extended this to more complex social accounting matrix (SAM) analysis or CGE models. Such methods have provided (often ex-ante) estimates on the proportional change of output or GDP in a given region during a time period that can be attributed to an inflow of the CAP support. As this support is not uniformly distributed among countries or regions, it is important to

consider the spatial context of studies.

In this context, it has been demonstrated that the increase of regional economic output due to various measures was between 0.01% and 1% for three regions in Greece in 1988–1998 (Psaltopoulos et al., 2006), 0.32% for a region in Greece in 2007–2013 (Loizou et al., 2014) and between 0.09% and 0.39% for a region in Czech Republic in 2007–2013 (Bednaříková, 2015). A positive impact of CAP expenditure on output in the Slovenian region was attributed to mostly increased output in the service sector (Juvancic et al., 2005), which suggests increased household consumption as a mediating variable. The economic increase due to a combination of CAP instruments could be expected to be larger, but this is not always the case. While in a region in Greece the increase in output in 2007–2013 was estimated to be 1.54% due to 1st Pillar subsidies (Loizou et al., 2014) and 6.01% due to 2nd Pillar subsidies (Mattas et al., 2008), for another region in Greece it was found to be only 0.024% in 2014–2020 (Lampiris et al., 2018). Variability of output effects has also been demonstrated for the 1988–1998 period where the increase due to farm income support was estimated to have been between 0.01% and 4.3%, depending on the region (Psaltopoulos et al., 2006).

Similar estimates have been found regarding the impact of CAP subsidies on GDP. Various measures related to the CAP that were implemented in Poland in 2004–2008 and 2007–2013 were estimated to increase GDP by 0.07–0.3%, except for investment subsidies in construction in which case the estimated effect was 5.3% (Zawalinska, 2009; Zawalinska et al., 2013). In Italy, 2nd Pillar measures were found to have a positive effect on GDP in 2003–2007 (Salvioni and Sciuilli, 2011) and five selected 2nd Pillar measures were estimated to increase GDP by 0.1% in 2007–2013 (Felici et al., 2008). A study estimating the effects of CAP in 15 EU countries in 1989–2000 demonstrated that the increase of GDP that can be attributed to 1st Pillar expenditure was always less than 0.01% (Esposti, 2007). A small effect of both 1st and 2nd Pillars on GDP growth in 1994–2013 was also demonstrated in a study of 12 countries, albeit with some regional differences (Crescenzi and Giua, 2016).

The relationship between CAP subsidies and regional GVA has been estimated for some RDP investment measures for the 2007–2013 period. The relevant studies have concluded that these measures have increased GVA in Scotland, Ireland, Portugal (Castaño et al., 2019) and Latvia (Ozoliņš et al., 2015).

The evidence presented here suggests that the impact of CAP subsidies on the economy or its growth is positive but usually negligible, whether the economy is expressed as total output, GDP or GVA. This result does not appear to be contingent on policy instruments, geographical area or time period. Although most of the studies that have studied this area have applied some form of I-O analysis, similar results have also been demonstrated by the applications of other methods.

3.2.2. Employment

Employment is the most common socioeconomic variable investigated in the context of CAP impacts. Considering that some CAP measures have a more (RDP Axis 3) or less (direct payments) direct impact on employment, this is to be expected. While total CAP expenditure was reported to increase employment in a Greek region by 5.2% in the 2007–2013 programming period (Loizou et al., 2019) and have a positive effect in Slovenia (Juvancic et al., 2005), most studies have examined more specific instruments and found smaller effects.

Direct payments were found to increase employment by just 0.1% in Poland in 2004–2008 (Zawalinska, 2009) and have a positive effect in Portugal (Martinho, 2015), while another evaluation of direct payments in Italy found the instrument to have a negative impact on farm employment (Mantino, 2017). This negative effect was suggested to be caused by decreased labour requirements or more risk-averse behaviour as a result of the subsidies. Two studies that evaluated LFA payments found these subsidies to have no (Petrick and Zier, 2011) or negligible (Zawalinska et al., 2013) impact on employment. Other studies have instead focused on unemployment as a dependent variable and reported

the negative effect of CAP in this respect (Galluzzo, 2018; Michalek, 2012). The fact that the CAP impact on employment may vary depending on context was also demonstrated in a study of Greek regions (Psaltopoulos et al., 2006) that found the positive impact of CAP on employment in 1988–1998 to vary between 0.05% and 8.6%, depending on measure and region.

RDP measures were reported to have had a positive impact on employment in 2007–2013 in Greece (Lampiris et al., 2018) and Italy (Mantino, 2017; Mattas et al., 2008) but no significant effect was found in Italy in 2003–2007 (Salvioni and Sciuili, 2018). The lack of impact of the 2007–2013 RDP on unemployment was also determined in Romania (Galluzzo, 2018). Different types of RDP instruments have been found to impact on employment differently. While investments in technology and modernisation were reported to increase employment in Poland (Zawalinska, 2009), Greece (Bournaris et al., 2014) and Italy (Mantino, 2017), in three German regions such measures were reported to have led to job losses (Petrick and Zier, 2011). This latter result can be explained by the fact that modernisation potentially introduces labour saving technologies. Conversely, agri-environmental measures have been argued to have an opposite effect, as such measures favour labour-intensive technologies (Midmore et al., 2008; Petrick and Zier, 2011). However, this line of reasoning is somewhat in contrast to findings for the 2007–2013 RDP in Italy, where investment support was reported to generate higher employment effects than agri-environmental measures (Mantino, 2017). RDP support for non-agricultural activities has been found to increase employment in Greece (Loizou et al., 2014) and Czech Republic (Bednářková, 2015).

In case of 2nd Pillar measures that have been aimed at economic diversification and development of enterprises (Axis 3), beneficiaries were required to create non-agricultural jobs because of the supported projects. A number of studies have reported the number of jobs created in this context as an employment effect (Castaño et al., 2019; Dudek and Karwat-Woźniak, 2018; Florina, 2020; Klepacka et al., 2013; Ozoliņš et al., 2015), although the indirect employment impacts of such measures have also been additionally noted (Kouřilová and Pélucha, 2017; Midmore et al., 2008). While the positive impact of the CAP on employment is direct and obvious in such cases, the absolute number of jobs is a poor representation of the relative importance of the CAP in employment. It has been noted that the beneficiaries of economic diversification measures often created a minimum required number of jobs, resulting in poor efficiency of the respective expenditure (Hapenciuc et al., 2014). Also, it is likely that many of the created jobs were short-term, and no evaluations on how many of the created jobs persisted after the projects ended were found.

In addition to the overall change in employment, another stream of research has investigated farm labour migration and the outflow of labour from agriculture to other sectors. Such studies have usually found that CAP in general tends to maintain the labour force in agriculture according to multiple country studies (Olper et al., 2012; Tocco et al., 2013), although there is an important distinction to be made between the two Pillars. Pillar 1 payments tend to have a higher impact on decreasing labour outflow than those of Pillar 2 (Olper et al., 2012), and the latter have been demonstrated in some cases to increase out-farm migration (Tocco et al., 2013) and non-farm employment more than 1st Pillar expenditure (Rizov et al., 2018). In terms of direct payments, coupled payments have been found in multiple country analyses to provide higher incentives for labour to remain in the sector compared to decoupled payments according to two non peer-reviewed studies (Olper et al., 2012; Tocco et al., 2013), although the opposite has also been observed (Garrone et al., 2019). Another distinction in terms of the labour outflow effect of the CAP has been made between old and new member states. Total CAP expenditure has been found to have a positive impact on keeping labour force in agriculture in new rather than old member states (Tocco et al., 2013). This contrasts with the 2nd Pillar, which has been found to reduce the outflow of labour in old member states, but not in new member states (Garrone et al., 2019). In addition

to labour outflow from agriculture, decoupled direct payments have also been found to decrease the probability and intensity of off-farm work in the case of farm operators (Loughrey and Hennessy, 2018).

The impact of the CAP on employment also differs when considering family and hired labour. In Italy, the RDP (Salvioni and Sciuili, 2011) as well as direct payments (Bartolini et al., 2015) have been found only to increase family farm labour, while having insignificant or negligible effect on hired labour. Agri-environmental measures in Slovenia were found to increase hired labour for field crop farms, but the increase for dairy farms was in family labour (Unay-Gailhard and Bojnec, 2019).

There is also reason to believe that the employment impacts of CAP have substantial regional spillover effects (Benga et al., 2017; Bonfiglio et al., 2016), as different instruments either free the labour force from agriculture or, conversely, provide new job opportunities.

While the magnitude of the impact of the CAP on regional employment is dependent on the characteristics of policy instruments (Garrone et al., 2019), measurement of employment and location, it has generally been found to be positive. Similarly, Schuh et al. (2016) in their literature review of employment effects of CAP found that the policy has helped maintain employment in agricultural sector and create rural jobs, although possibly at a very high cost.

3.2.3. Population

There are few studies that have assessed the impact of CAP on the number of people in rural areas. This is likely due to the high ambiguity of this relationship. One way in which CAP helps maintain population in rural areas is by providing income support to small agricultural and other enterprises as has been argued in a non peer-reviewed study of a remote rural area in Spain in 1981–2001 (Lasanta Martínez and Laguna, 2007). Conversely, in a study from Poland and Czech Republic (Stolbova and Niewęglowska, 2009) and a non peer-reviewed study of Romania (Galluzzo, 2018), no significant relationships were found when examining the interaction between CAP expenditure and population in rural areas on a regional level. Similar results were obtained in a study of RDP expenditures in 2008–2013 in Hungary (Bakucs et al., 2019). In addition to observing an increase of outmigration from the poorest Hungarian regions during that time, propensity score matching combined with the differences-in-differences approach (PSM-DiD) failed to demonstrate an increase in a migration-based Quality of Life index as a result of RDP expenditure. Thus, while CAP income support likely helps subsistence farms to remain viable, most evidence indicates that the CAP has been unable to affect migration in rural areas.

3.2.4. Generational change

Among the multitude of activities of the CAP is supporting young farmers in entering the agricultural sector and transferring land to young trained farmers. In Poland, the notable increase in the share of young farmers and a decrease in the share of old farmers in 2002–2010 has been attributed to the implementation of CAP measures (Rogoznicki et al., 2018). Other studies have assessed the effectiveness of instruments particularly aimed at young farmers. The 2nd Pillar measure Setting up of young farmers has been reported to increase the transfer of land to young farmers and assist with farm setup costs in Greece (Bournaris et al., 2014). However, a non peer-reviewed evaluation of the same measure in Italy indicated that the measure was ineffective (Carbone and Subioli, 2008). The subsidies were argued to be too small to attract young people into the agricultural sector, and many of the beneficiaries did not actually manage a farm but simply received subsidies due to belonging to a family that owned a farm. A study investigating the attitudes of young farmers in the UK concluded that the Young Farmer Payment of the 1st Pillar had a positive effect on motivation, which in turn had a negative effect on intentions to leave the farm (May et al., 2019). In summary, there is some reason to believe that CAP has helped young farmers to start or continue farming activities, but respective measures might not have always been effective.

Table 2
Overview of studies included in the literature review.

Source	Publication year	Peer-reviewed	Instrument	Dependent variable	Method	Countries	Data period	Unit of analysis
(Bakucs et al., 2019)	2019	Yes	RDP	Quality of Life index, Rural Development Index	GPSM, DiD	HU	2008–2013	Region (LAU-1)
(Ballesteros and Hernández, 2017)	2017	Yes	LEADER, RDP	Tourism	Document analysis	EU27	1991–2013	Document
(Bartolini et al., 2015)	2015	No	DP	Farm and external labour	GPSM	IT	2000–2010	Farm
(Bednaříková, 2015)	2015	Yes	RDP measures 311, 312 and 313	Production, income and employment	I-O model	CZ	2007–2012	Sector
(Benga et al., 2017)	2017	No	RDP	Employment	PSM, DiD	LV	2007–2013	Region
(Bonfiglio et al., 2016)	2016	Yes	CAP	GDP, employment	I-O model	EU27	2007–2011	Region (NUTS-3)
(Bourmaris et al., 2014)	2014	Yes	RDP measure 112	Transfer of land to young farmers	DS	EL	2000–2013	Farm
(Carbone and Subioli, 2008)	2008	No	RDP measure 112	Farmers' age	DS	IT	2000–2003	Farm
(Castaño et al., 2019)	2019	Yes	RDP	Rural economy and employment	Literature review	ES, IE, PT, RO, UK, MT	2007–2013	Document
(Chmielewska, 2009)	2009	Yes	DP, RDP	Technical infrastructure, health care, education	DS	PL	2004–2006	Region, beneficiary
(Crescenzi and Giua, 2016)	2016	Yes	CAP	GDP per capita average growth rate	Regression analysis	BE, DE, UK, AT, FI, FR, EL, IT, NL, PT, ES, SE	1994–2013	Region
(Dax et al., 2016)	2016	Yes	LEADER	Policy performance for rural regions and societies	Case studies and interviews	AT, IE	2007–2013	Respondent
(Dudek and Karwat-Woźniak, 2018)	2017	Yes	RDP measures 311, 312 and 313, LEADER	Jobs created	DS	PL	2007–2015	Project
(Esposti, 2007)	2007	Yes	CAP	GDP per unit of labour	GMM-DIFF, GMM-SYS	EU15	1989–2000	Region (NUTS-2)
(Felici et al., 2008)	2008	No	RDP measures 112, 113, 121, 123 and 311	GVA in agriculture and food processing, GDP	I-O model (REMI-IRPET)	IT	2000–2006	Region
(Florina, 2020)	2020	Yes	RDP measures 6.2 and 6.4	Jobs created	DS	RO	2014–2020	Project
(Furmankiewicz et al., 2016)	2016	Yes	LEADER	Number of third sector organisations	DS	PL	2004–2013	Region, Local Action Group
(Galluzzo, 2017a)	2017	Yes	RDP	Agritourism enterprises	Regression analysis (fixed effects model)	IT	2000–2011	Farm
(Galluzzo, 2017b)	2017	Yes	CAP	Employment, agritourism	Correlation and regression analysis	RO	2007–2013	Region
(Galluzzo, 2018)	2018	No	CAP	Unemployment, emigration	Regression analysis	RO	2007–2015	Region
(Galluzzo, 2020)	2020	Yes	CAP	Agritourism	Correlation analysis	RO	2007–2016	Region
(Garrone et al., 2019)	2019	Yes	CAP	Agricultural employment	Regression on panel data	EU27	2004–2014	Region
(Giaccio et al., 2018)	2018	Yes	CAP	Tourism	DS, statistical hypothesis testing	IT	2007–2013	Farm
(Hansen and Herrmann, 2012)	2012	Yes	CAP	Economic cohesion	Correlation, linear regression	DE	1991–2009	Region (NUTS-1)
(Hapenciuc et al., 2014)	2014	Yes	SAPARD	Jobs created, number of arrivals and overnight stays in accommodation facilities	Correlation analysis and other DS	RO	2004–2011	Beneficiary
(Istemic, 2015)	2015	Yes	RDP measures	Division of work and decision-making on family farms in context of gender	Regression analysis	SI	2004–2006	Farm
(Juvancic et al., 2005)	2005	No	CAP	Output and labour requirements	I-O model	SI	2000	Sector
(Klepcka et al., 2013)	2013	No	LFA, RDP	Job creation	Regression analysis	PL	2004–2009	Farm
(Kouřilová and Pélucha, 2017)	2017	Yes	RDP measure 323	Tourism, employment, economic activities, voluntarism	DS based on survey responses	CZ	2016	Respondent
(Lampiris et al., 2018)	2018	Yes	RDP	Output, employment, income	I-O model (GRIT)	EL	2010	Sector
(Lasanta Martínez and Laguna, 2007)	2007	Yes	CAP	Number of farms, population, personal income	Correlation analysis	ES	1981–2001	Region
(Loizou et al., 2014)	2014	No	RDP Axis 4	Output, employment, income	I-O model (GRIT)	EL	2010	Sector
(Loizou et al., 2019)	2019	Yes	CAP		I-O model	EL	2010	Sector

(continued on next page)

Table 2 (continued)

Source	Publication year	Peer-reviewed	Instrument	Dependent variable	Method	Countries	Data period	Unit of analysis
(Loughrey and Hennessy, 2018)	2018	No	DP	Total output, employment and household income	Regression analysis	IE	2005–2014	Farm
(Mack et al., 2021)	2020	Yes	CAP	Farm households' labour allocation decisions	PSM	RO	2009–2014	Region (LAU-2)
(Mantino, 2017)	2017	Yes	RDP	Number of newly established enterprises in the secondary and tertiary sector	Regression analysis	IT	2007–2013	Region
(Marquardt, 2011)	2011	No	LEADER	Employment	DS based on survey responses	EU27	2010	Rural network
(Martinho, 2015)	2015	Yes	RDP	Implementation of rural development policies	Regression analysis	PT	2010	Region
(Mattas et al., 2008)	2008	No	CAP	Agricultural output, employment and productivity	Interviews, mathematical programming, I-O model	IT, UK, EL, SE	2007–2013	Region
(May et al., 2019)	2019	Yes	DP	Employment, output, income	Structural equation model	UK	NA	Farm
(Michalek, 2012)	2012	No	SAPARD	Incentives of young farmers to stay in the farm	GPSM, DiD	PL, SK	2002–2005	Region (NUTS-4)
(Midmore et al., 2008)	2008	No	RDP	Rural Development Index, unemployment	Case studies and interviews	DE, EL, HU, IT, SE, UK	2000–2006	Respondent
(Montresor et al., 2011)	2011	Yes	CAP	Employment	Regression analysis	EU15	1995–2006	Region (NUTS-2)
(Oedl-Wieser, 2015)	2015	Yes	RDP	Economic growth and convergence in terms of GVA and employment	Document analysis, interviews, DS	AT	1995–2009	Civil servant, document
(Olper et al., 2012)	2012	No	CAP	Gender equality	Regression on panel data	EU15	1990–2008	Region (NUTS-1, NUTS-2)
(Ozoliņš et al., 2015)	2015	No	RDP measure 311	Farm labour migration	DS	LV	2007–2014	Region
(Pechrová, 2013)	2013	Yes	RDP	GVA, number of jobs created	Regression (multinomial logit model)	CZ	2007–2012	Region
(Pelucha et al., 2017)	2017	Yes	AEM, LFA, RDP Axis 3	Rural development	Correlation and other DS	CZ	2004–2013	Region
(Petrick and Zier, 2011)	2011	Yes	CAP	Geographic, demographic and economic indicators	DiD	DE	1999–2006	Region
(Psaltopoulos et al., 2006)	2006	Yes	CAP	Employment	I-O model	EL	1988–1998	Region, firm, household
(Rizov et al., 2018)	2018	Yes	CAP	Output, income, employment	GMM-SYS	UK	2008–2014	Enterprise
(Rogoznicki et al., 2018)	2018	Yes	CAP	Non-farm employment	DS	PL	2002–2016	Farm
(Salvioni and Sciuilli, 2011)	2011	No	RDP	Generational renewal	DiD	IT	2003–2007	Farm
(Salvioni and Sciuilli, 2018)	2018	Yes	RDP	Rural GDP, GVA, employment growth	DiD	IT	2003–2007	Farm
(Stolbova and Niewęglowska, 2009)	2009	Yes	LFA	Employment	DS	PL, CZ	2004–2006	Farm
(Zawalinska et al., 2013)	2013	Yes	LFA	Depopulation, unemployment	CGE model	PL	2005	Region (NUTS-2), sector
(Zawalinska, 2009)	2009	No	CAP	GDP, employment	CGE model	PL	2004–2008	Region (NUTS-2), sector
(Tocco et al., 2013)	2013	No	CAP	Economic growth, employment	Regression analysis (probit model)	FR, HU, IT, PL	2005–2008	Farm
(Unay-Gailhard and Bojnec, 2019)	2019	Yes	AEM	Out-farm migration of agricultural workers, farm exit rates	Interviews, DS, regression analysis	SI	2007–2015	Farm

3.2.5. Economic diversification

The diversification of economic activity in the context of CAP is mostly related to supporting the transition of small farms towards non-agricultural activities. In addition to providing alternative income to farmers, encouraging entrepreneurship has also been deemed to contribute to the economic development of rural areas. Most studies have focused on the provision of tourism services by farms as an outcome of participation in CAP measures. A positive relationship has

been noted between farms with tourism activities and 2nd Pillar payments for rural development in Italy (Galluzzo, 2017a; Giaccio et al., 2018). Whereas CAP expenditure as a whole in Romania has also been found to positively correlate to the adoption of tourism activities by farmers on a regional level (Galluzzo, 2017b), other research using similar methods indicates that 2nd Pillar payments have a very small effect, and the impact may also be negative in the case of 1st Pillar payments (Galluzzo, 2020). This latter result can be explained by the

Table 3
Impacts identified from studies.

Economic output			
GDP	RDP	Positive	Salvioni and Sciulli (2011)
GDP	Direct income transfers	Positive	Zawalinska (2009)
GDP	Investment subsidies in construction	Positive	Zawalinska (2009)
GDP	Investment subsidies in human capital	Positive	Zawalinska (2009)
GDP	Land subsidies	Positive	Zawalinska (2009)
GDP	1st Pillar	None	Esposti (2007)
GDP	Various measures	Positive	Felici et al. (2008)
GDP	LFA payment	Positive	Zawalinska et al. (2013)
GDP	CAP, RDP	Positive	Crescenzi and Giua (2016)
GVA	Investment measures and agri-environmental measures	Positive	Castano et al. (2019)
GVA	Diversification	Positive	Ozoliņš et al. (2015)
GVA	Encouragement of tourism activities	Positive	Ozoliņš et al. (2015)
Household income	Diversification	Positive	Bednářková (2015)
Household income	Encouragement of tourism activities	Positive	Bednářková (2015)
Household income	Diversification	Positive	Bednářková (2015)
Household income	LEADER	Positive	Loizou et al. (2014)
Household income	CAP	Positive	Loizou et al. (2019)
Household income	Diversification	Positive	Psaltopoulos et al. (2006)
Household income	Aids to increased farm productivity	Positive	Psaltopoulos et al. (2006)
Household income	Farm income support	Positive	Psaltopoulos et al. (2006)
Output	Pillar 1	Positive	Loizou et al. (2019)
Output	Diversification	Positive	Psaltopoulos et al. (2006)
Output	Aids to increased farm productivity	Positive	Psaltopoulos et al. (2006)
Output	Farm income support	Positive	Psaltopoulos et al. (2006)
Output	CAP	Positive	Juvancic et al. (2005)
Output	2nd Pillar	Positive	Lampiris et al. (2018)
Output	RDP	Positive	Mattas et al. (2008)
Output	Diversification	Positive	Bednářková (2015)
Output	Encouragement of tourism activities	Positive	Bednářková (2015)
Output	Diversification	Positive	Bednářková (2015)
Output	LEADER	Positive	Loizou et al. (2014)
Employment	Decoupled direct payments	Mixed	Loughrey and Hennessy (2018)
Off-farm employment	LFA payment	Positive	Zawalinska et al. (2013)
Aggregate employment	Setting up of young farmers	Positive	Bournaris et al. (2014)
Annual Work Units	Diversification into non-agricultural activities	Positive	Bednářková (2015)
Employment	Encouragement of tourism activities	Positive	Bednářková (2015)
Employment	Support for business creation and development	Positive	Bednářková (2015)
Employment	2nd Pillar	Positive	Lampiris et al. (2018)
Employment	LEADER	Positive	Loizou et al. (2014)
Employment	CAP	Positive	Loizou et al. (2019)
Employment	1st Pillar	Negative	Mantino (2017)
Employment	2nd Pillar	Positive	Mantino (2017)
Employment	Single Payment Scheme	Positive	Martinho (2015)

Table 3 (continued)

Economic output			
Employment	RDP	Positive	Mattas et al. (2008)
Employment	RDP	Positive	Mattas et al. (2008)
Employment	Agri-environmental measures	Positive	Midmore et al. (2008)
Employment	Agri-environmental measures	Positive	Petrick and Zier (2011)
Employment	LFA payment	None	Petrick and Zier (2011)
Employment	Modernisation	Negative	Petrick and Zier (2011)
Employment	Aids to increased farm productivity	Positive	Psaltopoulos et al. (2006)
Employment	Economic diversification measure	Positive	Psaltopoulos et al. (2006)
Employment	Farm income support	Positive	Psaltopoulos et al. (2006)
Employment	Growth oriented measures	None	Salvioni and Sciulli (2018)
Employment	Direct income transfers	Positive	Zawalinska (2009)
Employment	Investment subsidies in construction	Positive	Zawalinska (2009)
Employment	Investment subsidies in human capital	Positive	Zawalinska (2009)
Employment	Land subsidies	Positive	Zawalinska (2009)
Employment	RDP	None	Salvioni and Sciulli (2011)
Family and total labour units	1st Pillar, 2nd Pillar	Positive	Olper et al. (2012)
Farm labour migration	Agri-environmental measures	Positive	Unay-Gailhard and Bojnec (2019)
Hired and family labour	Decoupled payments	Mixed	Bartolini et al. (2015)
Household and external labour	RDP Axis 3, LEADER	Positive	Castano et al. (2019)
Job creation	Diversification, LEADER	Positive	Dudek and Karwat-Woźniak (2018)
Job creation	RDP	Positive	Dudek and Karwat-Woźniak (2018)
Job creation	Diversification	Positive	Florina (2020)
Job creation	Diversification	Positive	Florina (2020)
Job creation	Diversification	None	Hapenciuc et al. (2014)
Job creation	LFA payment	Positive	Klepacka et al. (2013)
Job creation	RDP	Negative	Klepacka et al. (2013)
Job creation	Conservation and upgrading of the rural heritage	Positive	Kouřilová and Pěluha (2017)
Job creation	Diversification	Positive	Ozoliņš et al. (2015)
Labour displacement	RDP Axes 1 and 2	Positive	Benga et al. (2017)
Labour displacement	RDP Axis 3	Positive	Benga et al. (2017)
Labour outflow	Coupled payments	None	Garrone et al. (2019)
Labour outflow	Decoupled payments	Negative	Garrone et al. (2019)
Labour outflow	2nd Pillar	Mixed	Garrone et al. (2019)
Non-farm employment	LEADER	Positive	Midmore et al. (2008)
Non-farm employment	Direct payments, RDP	Positive	Rizov et al. (2018)
Out-farm migration of agricultural workers	2nd Pillar	Positive	Tocco et al. (2013)
Out-farm migration of agricultural workers	CAP	Mixed	Tocco et al. (2013)
Out-farm migration of agricultural workers	Coupled direct payments	Negative	Tocco et al. (2013)
Out-farm migration of agricultural workers	2nd Pillar	Negative	

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Table 3 (continued)

Economic output			
Substitution of capital by labour			Klepcka et al. (2013)
Total labour requirements	CAP	Positive	Juvancic et al. (2005)
Unemployment	CAP	Negative	Galluzzo (2018)
Unemployment	RDP	None	Galluzzo (2018)
Unemployment	SAPARD	Negative	Michalek (2012)
Population			
Depopulation	LFA payment	None	Stolbova and Niewęglowska (2009)
Emigration	CAP	None	Galluzzo (2018)
Outmigration	RDP	None	Bakucs et al. (2019)
Population	Various measures	Positive	Lasanta Martínez and Laguna (2007)
Generational change			
Generational turnover	Setting up of young farmers	None	Carbone and Subioli (2008)
Percentage of farms headed by people under 35 and over 65	CAP	Positive	Rogoznicki et al. (2018)
Transfer of land to young farmers	Setting up of young farmers	Positive	Bournaris et al. (2014)
Young farmers' incentives to leave	Young Farmer Payment	Positive	May et al. (2019)
Diversification			
Active agritourism	Subsidies for rural development, subsidies for generational turnover	Positive	Galluzzo (2017b)
Agricultural holdings with agrotourism	1st Pillar	Negative	Galluzzo (2020)
Agricultural holdings with agrotourism	2nd Pillar	None	Galluzzo (2020)
Amount of support to farms with agrotourism	1st Pillar, 2nd Pillar	Positive	Giaccio et al. (2018)
Choice to diversify	1st Pillar	None	Giaccio et al. (2018)
Farms with agritourism	1st Pillar, 2nd Pillar	Positive	Galluzzo (2017a)
Non-agricultural enterprises	CAP	Mixed	Mack et al., 2021
Non-agricultural job creation	RDP	Positive	Dudek and Karwat-Woźniak (2018)
Non-agricultural job creation	Diversification	Positive	Florina (2020)
Number of arrivals and overnight stays	Diversification	None	Hapenciuc et al. (2014)
Rural development			
Beneficial impact on rural regions	LEADER	None	Dax et al. (2016)
Quality of life	LEADER	Positive	Ballesteros and Hernández (2017)
Regional Development Index, Quality of Life Index	RDP	None	Bakucs et al. (2019)
Rural development			
Rural Development Index	RDP	None	Pechrová (2013)
	SAPARD	Mixed	Michalek (2012)
Standard of living			
Various socioeconomic indicators	RDP	Positive	Kocur-Bera (2017)
	LEADER	Mixed	Marquardt (2011)
Regional cohesion			
Beta-convergence	CAP	Positive	Montresor et al. (2011)
Convergence			
Development disproportions	Pillar 1	Positive	Esposti (2007)
	Direct payments, RDP	None	Chmielewska (2009)
GDP	CAP	None	Bonfiglio et al. (2016)

Table 3 (continued)

Economic output			
GDP	CAP, RDP	None	Crescenzi and Giua (2016)
Reduction of development disparities	CAP	Positive	Juvancic et al. (2005)
Regional disparities in income	CAP	Mixed	Hansen and Herrmann (2012)
Spillover effects of output, income, employment	CAP	None	Psaltopoulos et al. (2006)
Territorial cohesion	Agri-environmental measures, LFA payments	None	Pelucha et al. (2017)
GDP	Direct payments, RDP	Positive	Zawalinska (2009)
	Axes 1,2,3		
Civil participation			
Third sector organisations	LEADER	Mixed	Furmankiewicz et al. (2016)
Voluntarism	Conservation and upgrading of the rural heritage	Positive	Kourilová and Pélucha (2017)
Gender equality			
Division of work and decision-making on family farms	Setting up of young farmers, Early Retirement	None	Istencic (2015)
Women's employment	CAP	None	Mattas et al. (2008)
Women's participation in agriculture	2nd Pillar	Negative	Midmore et al. (2008)
Women's share among beneficiaries	RDP	None	Oedl-Wieser (2015)
Women's employment	Diversification	Positive	Castano et al. (2019)

fact that by providing income support, direct payments decrease the incentives of farmers to seek alternative activities. Regarding the number of arrivals and overnight stays, the effect of the diversification measure on the tourism sector has been reported as limited in Romania (Hapenciuc et al., 2014).

Without a focus on tourism, CAP expenditure in Romania has also been found on average not to have contributed to the creation of new enterprises in rural areas (Mack et al., 2021). The related finding that funds exceeding a certain amount per inhabitant did significantly support enterprise creation suggests that the lack of impact is due to limited funding. However, there has been little interest in how CAP measures have contributed to economic diversification to non-agricultural activities other than tourism. The presented evidence does not firmly demonstrate that rural economies have been diversified due to CAP expenditure.

3.2.6. Rural development

Although rural development is a broad and ambiguous concept (Abreu et al., 2019), some studies have calculated composite indicators or used some proxy variables to investigate its potential interaction with CAP expenditure on a regional level.

Calculations of indexes that aim to describe rural development usually include a large number of socioeconomic indicators. The first known attempt of this latter approach used a rural development index composed of 17 or 21 indicators to measure the effects of the SAPARD programme on rural development in Poland and Slovakia (Michalek, 2012). Regions that received more funds from the programme were matched to others using the generalised PSM method (GPSM), and the programme effect was then calculated using the DiD approach. The study demonstrated that while the programme influenced rural development positively in Poland, the effect was negligible or even negative in Slovakia. A similar methodology using 170 indicators was applied in Hungary to evaluate the impact of RDP measures on the Regional

Development Index and the Quality of Life Index (Bakucs et al., 2019). Despite testing various ways to calculate support, rural development and their interaction, the impact of RDP was always found to be insignificant or even negative. Similar results for RDP were also found in a study in the Czech Republic where though an increase in subsidies was argued to decrease the odds of a municipality being less developed, this relationship was not significant (Pechrová, 2013).

Other studies have not explicitly operationalised rural development or quality of life in rural areas but instead left these concepts to be defined by the survey respondents or interviewees. Such an approach has been used in evaluations of the LEADER measure, as it aims to support rural development through social innovation (Dax et al., 2016, p. 58). While it is claimed that the LEADER measure has had a positive effect on rural development by providing feedback on the implementation of relevant measures, no evidence of such an effect has actually been found (Marquardt, 2011). Those involved in the LEADER measure have indicated that they are not satisfied by quantitative changes in policy performance of rural regions as a result of the funds used (Dax et al., 2016). Although the tourism actions of the LEADER measure likely have a measurable quantitative effect on rural development via employment, marketing and infrastructure, the effectiveness and efficiency of the measure are unclear (Ballesteros and Hernández, 2017).

The attempts to find a quantitative relationship between a combination of various socioeconomic indicators and rural development measures of the CAP have in most cases not indicated a policy effect. Despite the fact that LEADER measures are sometimes believed to directly and indirectly contribute to rural development, the magnitude of this effect has not been measured.

3.2.7. Regional cohesion

The rural development effects of CAP have also been evaluated in the context of regional cohesion, i.e. lack of disparities between regions of the EU. Most relevant research has been involved with the reduction of these disparities due to CAP expenditure and thus focused on the convergence of regions.

Some evaluations of how CAP funds influence regional imbalances have analysed the initial distribution of funds. In the context of EU27, it has been demonstrated that most CAP expenditure from both Pillars has concentrated in rural and intermediate regions (Bonfiglio et al., 2016). Whereas in Poland it was also found that poorer regions absorbed more funds relative to GDP (Zawalinska, 2009), in Czech Republic the more developed municipalities in a socioeconomic context were found to receive more funds from agri-environmental measures and LFA payments (Pelucha et al., 2017).

Among EU15 and EU27, the economic convergence of NUTS2 and NUTS3 regions has been found by econometric approaches to have been positively influenced by 1st Pillar expenditure (Esposti, 2007) as well as by the entire CAP (Bonfiglio et al., 2016; Montresor et al., 2011). This positive impact of CAP expenditure on convergence has been observed together with a negligible or insignificant effect on overall growth (Esposti, 2007). In Slovenia, a non peer-reviewed study also concluded that CAP measures contribute to the reduction of development disparities, although at a low pace (Juvancic et al., 2005). Conversely, other studies of single countries have not found a positive relationship. An evaluation of data spanning almost two decades demonstrated that CAP expenditure had not affected income convergence in Germany (Hansen and Herrmann, 2012). In Poland, the disproportions in regional development were argued not to have been diminished by direct payments and RDP due to insufficient funding or limited time of evaluation of implementation (Chmielewska, 2009). Agri-environmental measures in particular were found to have negative effects on socioeconomic cohesion in Czech Republic (Pelucha et al., 2017).

One explanation for the inability of CAP funds to reduce regional disparities is that subsidies only stimulate the economy in regions with the capacity to develop, i.e. in already economically more advanced

regions. Whereas “spatially blind” CAP measures have been argued to improve regional growth in the most disadvantaged and peripheral regions, spatially targeted rural development measures have been found to have a positive influence only in the most advanced regions (Crescenzi and Giua, 2016). CAP funds have also been argued to be less efficient in poorer regions in terms of GDP growth (Zawalinska, 2009).

Another finding that often appears in evaluations on the impact of the CAP on regional cohesion and convergence is related to spillover effects. Despite the fact that the agricultural sector is the main beneficiary of CAP expenditure, these funds affect the entire economy via agricultural and other investments (Montresor et al., 2011). Moreover, it has been found that even if CAP funding is allocated to rural regions, its economic effect spreads into wealthy urban regions (Bonfiglio et al., 2016). A study of two rural and one urban Greek regions demonstrated using input-output analysis that the economic benefits of the CAP expenditure in rural areas mostly leaked to the more affluent urban regions (Psaltopoulos et al., 2006).

The evidence on the impact of the CAP effect on regional cohesion thus remains inconclusive. However, there is reason to believe that CAP expenditure is most effective and efficient in already developed regions and tends to spill over to urban regions despite the fact that the initial allocation favours rural areas.

3.2.8. Civil participation

Some measures of the 2nd Pillar support projects may mobilise the residents of rural areas to cooperate in subsidised activities, promoting civil participation and voluntary action. To some extent, such projects have been financed via the diversification activities of the 2nd Pillar, but more notable in this respect is the LEADER measure. This has been explicitly studied in Poland (Furmanekiewicz et al., 2016) where a tangible outcome of the LEADER measure in 2004–2013 was a substantial increase in the number of third sector organisations in locations where the measure was implemented. It was also noted that these involved organisations had a positive impact on civil engagement in planning local development, although in many cases they did not involve any meaningful civil participation. A similar effect has also been observed in Czech Republic for the implementation of an Axis 3 measure that was aimed at protecting cultural heritage (Kouřilová and Pělucha, 2017). The implemented projects arguably increased interest in project implementation and voluntary participation in projects while restored buildings often became community centres. In conclusion, although some studies have noted the positive impact of some 2nd Pillar measures on civil participation, relevant evidence has so far been rather limited.

3.2.9. Gender equality

While gender equality is not a prominent topic in CAP, gender mainstreaming has been relevant in the implementation and evaluation of 2nd Pillar measures in particular (Oedl-Wieser, 2015). In the context of CAP, this topic is related to women’s participation, and it has been examined either regarding women’s employment or representativeness among beneficiaries.

Women’s employment as family labour has been investigated among beneficiaries of instruments related to the setting up of young farmers and early retirement (Istencic, 2015). No differences were found between beneficiaries and other farms in terms of division of work. A study of 5 countries (Mattas et al., 2008) concluded that CAP has had no significant effect on women’s employment since only a few agritourism measures promote employment for women specifically. Considering the fact that women constituted only a slight majority (61%) among new employees in the agritourism measure in Romania (Castaño et al., 2019), even measures supporting tourism can be considered to have a limited impact on gender equality. Though men and women have been found in Austria to benefit equally from created jobs in the LEADER measure, women still constitute a minority of new employees from all other examined measures (Oedl-Wieser, 2015, p. 692).

Meanwhile, it has also been suggested that women tend to be more

active in diversification activities, and this trend might result in the decrease of women's participation in agriculture (Midmore et al., 2008). For all the investigated Pillar 2 measures in Austria, women have been found to always be a minority among participants (Oedl-Wieser, 2015, p. 692). However, in order to draw any conclusions from this, the share of women among farmers should also be taken into consideration. It has been argued that there isn't enough gender awareness among the civil servants responsible for the implementation of RDP, and rural development measures are not designed with gender equality in mind (Oedl-Wieser, 2015).

The evidence thus indicates that CAP has not promoted gender equality in terms of created jobs, except for measures related to agritourism and the LEADER measure, where the impact has also been modest.

Conclusions

The aim of the paper is to provide a systematic literature review on the impacts of CAP on the socioeconomic situation of rural areas in the EU. Despite the abundance of literature on the impact of the CAP only 59 publications that have evaluated the socioeconomic impact of the CAP were found. The earliest publications among these were published in 2005. This may be due to the fact that socioeconomic issues did not become a prominent part of the CAP until the Agenda 2000 reform. The temporal range of data applied in most examined studies spanned over several years and often coincided with the CAP programming periods. This indicates that studies on the socioeconomic impacts of CAP often tend to focus on particular implementation periods of the policy. Yet, there was no evidence that changes in the policy influenced the selection of topics. Only two topics, employment and economic output, can be regarded as being persistent in the literature, with employment being the only topic that has been continuously relevant since 2005.

Both particular 2nd Pillar measures and various other CAP instruments have been used as dependent variables in evaluations of the socioeconomic effects of the policy. The instruments under investigation are often related to the topics, e.g. the Young farmer measure is most often used to evaluate its effect on generational change. Still, studies of specific measures are uncommon and most studies have instead examined the effects of a combination of instruments. Most studies have applied descriptive statistics but computable general equilibrium and input-output modelling as well as differences-in-differences and qualitative methods have also been common. Only several of the included studies have considered more than one region, and the examined evaluations have usually focused on a single country or a part of it. Thus, due to the regional differences of the EU, the results of these studies are usually not generalisable individually.

The evidence of the socioeconomic impacts of the CAP varies not only by regional context but also by topics. For rural development and population, significant impacts have not been demonstrated. The positive effects that have been found for economic output, generational change and gender equality have generally been negligible in magnitude. Numerous studies on the various effects of CAP on employment have often reached contradictory conclusions but CAP has primarily been shown to have a positive impact on employment. For economic diversification, regional cohesion and civil participation, there is limited or inconclusive evidence of CAP impact. Broadly speaking, the noteworthy socioeconomic effects of CAP have usually been evident only when evaluated via simple descriptive statistics. Counterfactual methods have rarely suggested clear effects. Likewise, the impacts of the CAP can only be plainly demonstrated for very direct relationships, such as jobs created as a result of supported projects. For more general and indirect relationships, such as regional employment, the socioeconomic effects of CAP have proven to be more difficult to establish. As this attempt to summarise studies of different countries and their regions suggest, the effects and effectiveness of CAP instruments seem to be influenced by the local social and economic conditions. This also seems

to be recognised in the current reform process that delegates some of the allocation of the of CAP support to member states, resulting in more consideration of local conditions (Erjavec and Erjavec, 2021).

As the impact of the CAP is highly dependent on context, future research is suggested to avoid some of the previous trends, such as focusing narrowly on a single region or not differentiating between various instruments of the CAP. Descriptive statistics is often considered as a naïve approach to impact evaluation and should thus be avoided in favour of methods that also consider a counterfactual situation. Some relevant topics such as population trends and other socio-demographic indicators of rural development have received limited attention regarding the impacts of CAP, and such areas would benefit from further research.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix 1

See Table 2.

Appendix 2

See Table 3.

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