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Article

Interpreting Different Narratives about Land Services and Land Use Economics of Common Agricultural Policy

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Abstract: Since 2023, a new format of the Common Agricultural Policy (CAP) has been implemented in Europe. Market forces alone cannot guarantee land services, which can be described as flows of goods and services from ecosystems to human systems as functions of nature. Market forces also cannot ensure food security everywhere and at all times, so deliberate measures should incentivize farmers to adopt sustainable agricultural practices and maintain necessary skills and resources. This study identifies, quantifies, and interprets four narratives that are typical in the approach to food security and the public debate about the land services in the CAP Strategic Plans: (A) provision of land services within the Pillar 1 economics; (B) small vs. large farms; (C) direct payments in comparison with rural development; and (D) choices by the old and new member states. Participatory processes, descriptive statistics, and partial component analysis were used in terms of the methodology. The key finding is that the importance attached to eco-schemes varies among member states, although a majority dedicate approximately 25% of the Pillar 1 budget to them. We showed that small-scale farming countries move resources from Pillar 2 to strengthen direct payments. In contrast, affluent countries with robust agricultural structures can afford to reinforce Pillar 2 rural development through transfers from direct payments. To support small-scale and medium farms, appropriate support requires a combination of several measures, including the sizable hectare payment in Pillar 1 and farmer-oriented agri-environmental measures.

Keywords: small and large farms; direct payments; rural policy; land use economics; land services

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1. Introduction

Starting in 2023, a new format of the common agricultural policy (CAP) was implemented in Europe. Based on legislation from the European Commission mandate of 2018–2020, the goal of this new format is to drive changes in the direction of EU agri-food systems so that they align with the vision and objectives of land services that citizens require. These changes have become crucial due to the unparalleled global pressures that agricultural land use imposes [1–3]. The public budget will provide around 260 billion EUR to finance the CAP [4]. The policy has gradually shifted from providing simple income support to implementing a range of measures adapted to the provision of land services to tackle more frequent droughts and extreme weather events that threaten food security in the future [5,6]. To achieve this, member states are required to strategically use both direct payments and rural development through the CAP Strategic Plans based on their land use structure. However, the rural development funds alone are insufficient for creating all aspects of sustainable land use. Furthermore, CAP policies have previously faced criticism for their lack of nuance in accounting for localized agronomic conditions, which can adversely impact soil and the environment [7]. This study sets out to present the past and current policy developments, and to clarify the relationship of the CAP to the

delivery of land services. The objectives of the study are to identify, quantify, and interpret the descriptive statistical material in four main narratives with regard to the land services and land use economics under the CAP.

1.1. Land Services Associated with Agriculture

Where linked to beneficial soil effects, such as soil carbon storage, soil moisture, and biodiversity measures, the localized agronomic conditions amount to "land services which can be considered to be a sub-set of ecosystem services, which have been described as flows of goods and services from ecosystems to human systems as functions of nature" [8]. To enhance land services by farmers, policies are required to integrate various approaches to sustainable agriculture [9]. Therefore, engaging farmers and land managers in adopting land use practices that provide such services is crucial. This will help farmers understand the importance of sustainable land use and encourage them to follow this path [10,11]. Some studies differentiate between "services" that are deliberate and "externalities" that are unintentional [12,13]. Both offer useful perspectives for better understanding, but each only portrays a partial understanding of the significance and complexity of engaging society in land service literacy with respect to agriculture.

Food policies, such as the CAP, thus have to inquire about the sustainability of agricultural land use. While food is considered a provisioning land service, it is essentially a private good according to the public goods theory [14]. This is because public goods are characterized by the principles of non-rivalry and non-exclusion, meaning that when one person consumes landscape quality, there is still enough available for others [15]. However, although food is a private good, food security is a service that has only a partial aspect of public good. This means that there is a partial principle of access to adequate food supplies [16]. Market forces alone cannot guarantee the provision of land services. Market forces cannot also ensure food security in all places and at all times. Therefore, taking deliberate steps to incentivize farmers to adopt sustainable land use practices and maintain necessary skills and resources is necessary. Initially, policies focused on production and yields [17], but now the emphasis has shifted to the provision of land services. The CAP has made efforts to provide incentives to farmers. However, current policies may not link payments equally to agricultural production and land services provision. Also, the CAP has faced criticism for its limited impact on climate and the environment, and unbalanced costs and benefits, so in the pre-2023 era of the CAP, the policy struggled to deliver on its goals, report on the implementation costs, and ensure impacts on the ground [18]. While its past performance has been evaluated positively for farm incomes and negatively for land services [19,20], its present performance should be assessed in the context of the current CAP Strategic Plans to determine its effects on ensuring food security.

1.2. Historical Context of Land Use Economics in the EU

Twenty years ago, in 2003, the CAP was split into two parts, or pillars. The first pillar dealt with providing flat-rate payments per hectare of land without any link to production. The second pillar focused on rural development and the provision of public goods. Farmers had to comply with the standards of good agricultural and environmental conditions (GAEC). These standards included basic land services that were a necessary conditionality for the Pillar 1 direct payment. Some of the Pillar 1 land services were soil conservation, maintenance of soil organic matter and structure, avoidance of habitat degradation, and water management (Commission Regulation (EC) No 1122/2009). The 2014 reform introduced an additional layer of Pillar 1 land services, called greening. The rule encompassed crop diversification, non-production areas, and protection of the ratio of permanent grassland. However, the effectiveness of crop diversification was criticized by European auditors [21]. As a result, the current CAP introduces eco-schemes, which elaborate on the greening measures for an array of different land uses in each member state individually. While Pillar 1 payments, including eco-schemes, are annual flat-rate

payments and are fully funded from the EU budget, Pillar 2 subsidies involve projects or land-based commitments and are co-financed by member states.

The distribution of Pillar 1 direct payments and Pillar 2 rural development is a matter of much discussion among farmers due to the perceived higher bureaucracy in Pillar 2. Similarly, citizens and scientists debate the issue as the delivery of land services is more tangible in Pillar 2. Modulation, which is a budget transfer process, also affects land services provision; it was first used in 2003, allowing member states to redirect up to 20% of Pillar 1 direct payment funds into their Pillar 2 rural development budgets. In the beginning, there was a requirement for the new EU member states to modulate 3–5% of their direct payments under Pillar 1. This modulation lasted until their Pillar 1 direct payments reached the same level as those of the old member states [22]. Today, transfers from Pillar 1 to Pillar 2 are made to strengthen the land service provision through rural development measures such as agri-environmental schemes. On the other hand, transfers from Pillar 2 to Pillar 1 are made by member states to improve the position of producers within the overall budget. These shifts are influenced by various factors, such as farm income, employment, and quality of life.

Investments in land management policies that provide land services for nature are viewed as a source of rural development in the EU [23]. As early as 1992, Pillar 2 agri-environmental schemes were made accessible to farmers as a pilot program and, since 2004, accessible to farmers in all member states. By 2015, a specific objective had been included to reduce net greenhouse gas emissions related to land use and became implemented through agri-environmental and climate schemes [24]. However, there is a widespread perception among scientists that the CAP may not be well utilized. Pe'er et al. [25,26] express concern about the mismatch between the policy's objectives and the allocation of resources.

With the advent of the new format termed "CAP Strategic Plans", the policy allows national or regional governments to implement such investments through Strategic Plans, and choose and suggest their own measures and specific objectives. One of the major improvements in the Strategic Plans is that they cover measures of both Pillar 1 and Pillar 2. Another crucial aspect is that the Strategic Plans intend to support small-scale farming by implementing measures such as capping funds for large farmers, introducing redistributive payments, defining which farmers are eligible for support, and providing equipment allowances for young farmers. In researching food security criteria through the CAP Strategic Plans, one needs to be careful to avoid accounting for land services as "benefits" that have already been incorporated into the food provisioning service [27].

1.3. Four Main Narratives

Broadly, one can highlight four main narratives that explain the key differences in the new format for food security.

1.3.1. The Provision of Land Services in the Pillar 1 Economics

Firstly, one of the most visible narratives which farmers partly objected to, emphasizes strengthening the provision of land services. Thus, a smaller portion of agricultural supports can be used for the economics of production, while a larger portion must be used to cover the provision of land services through standards of good agricultural and environmental condition, eco-schemes, and agri-environmental supports [1]. The land services approach is a well-documented arena of research [8,28,29], while the effects of agricultural policy have been examined over the past decades either in terms of public goods or ecosystem services [30,31]. Our research question in this narrative is how much importance is placed on the provision of land services in the CAP Strategic Plans.

1.3.2. Small vs. Large Farms

Secondly, another narrative is relevant to member states that have smallholder farms. This narrative focuses on the position of small-scale farming in regional and global economics. It has recently gained attention from agricultural researchers in relation to size

structure [32], lack of policy supports [33], and the need for diversification [34]. One version of this narrative explores the contrast between small and large farms in terms of their access to capital investments, social capital, and collaborative infrastructure [35]. The research question for this narrative was to investigate whether the average farm area in EU member states could be naturally divided into small and large representatives, and if there was bias in the basic support per average farm in each group.

1.3.3. Direct Payments in Comparison with Rural Development

Thirdly, there is the narrative that concerns the proportion of agricultural support that goes directly to farm economics (direct payments) in comparison to the support for an array of land use priorities within rural development. Rural development has been studied by sociologists for its multifunctionality potential [36] and ways of improving, innovating, and collaborating [23], while ecologists have studied this category of support for better potential results for land services. In this study, we employ the empirical data on policy to conclude about the position of rural development in the CAP Strategic Plans. With regard to this narrative, our research investigated the question of the distribution of agricultural support for rural development.

1.3.4. Old and New Member States

The fourth narrative is a transversal storyline that helps in interpreting the three previous narratives mentioned. This narrative is related to the validity of the classification of EU member states and the choices they make while utilizing the CAP funds, based on the division of old member states that comprised the European Union until 2004, and the new member states that have been in the European Union for two decades. This transversal narrative is mostly outdated, but it gained significant attention in the socioeconomic literature at the time of the twelve Central and Eastern European member states' accession when the new member states largely benefitted from the accession to the CAP [37–39]. Before 2020, the classification of old and new member states was based on a slightly modified version of Pillar 1 direct payments for new member states. However, two of these states, Malta and Cyprus, used the same version of Pillar 1 direct payments as the old member states. With the introduction of CAP Strategic Plans in 2023, all member states will use the standardized Pillar 1 direct payments, which is now a measure called Basic Income Support for Sustainability (BISS) [4]. The research question specific to this narrative will be to find the impact of choices in the old and new member states on the other narratives. It has been unclear whether this designation is still relevant in the current implementation of funds.

1.3.5. Research Outcomes

Starting from the main narratives, multiple land service benefits of small-scale farming are a focus of the study. Such farms were assessed by Ref. [33], who argued that the position of these farms goes unnoticed in agricultural policy, and by Guiomar et al. [32], to the effect that they can mobilize social capital for food provision in the local community, and thanks to their diversification they can promote resilience and biodiversity. According to Ref. [40], small-scale farming could be defined by a variety of criteria. By the indicator of farm area, small farms are less than 10 hectares, whereas medium farms have 10 to 99 hectares. According to the indicator of the European Standard Unit, investigated by Ref. [35], a small farm corresponds to around 16 ESU (1 ESU = 1200 euro/year) and medium farms up to 40 ESU. Guiomar et al. [32] provided a comprehensive summary of "the European context pertinent to small-scale farming, that encompasses mostly Mediterranean countries, South-eastern Europe, Northern Scandinavia, Ireland and Scotland" (p. 787). In Central Europe, small farms are complementary to large agri-food companies [35], p. 118. Prosperi et al. [34] argue that small-scale farming is characterized by resilience stemming from the rationale of how an organization creates, delivers, and captures value. Toma et al. [33] alerted about

the magnitude of land services from small-scale farming and the administrative burden associated with the implementation of agricultural support by small-scale farms.

What constitutes land services has been studied in detail in the literature [8,13]. However, the impact of the key narratives, which we identified in public debate, on the current policy has not yet been studied. The present study thus proceeded to address this scientific gap by analyzing the three key narratives in the context of the CAP Strategic Plans. It should be noted that our research questions mentioned above faced a significant challenge in that they focus on the CAP Strategic Plans as if the land use economics were unchanging. At the same time, the CAP Strategic Plans and all three overarching narratives aim for change. This challenge is inevitable because it is widely recognized that member states are often hesitant to deviate from the status quo [41], i.e., when discussing reforms to the CAP, the momentum for change has less impact on the actual situation than anticipated. This research study aims to document these different narratives through quantitative analysis, while also exploring the potential effects and the nature of the current CAP for small-scale farming.

2. Materials and Methods

2.1. Data

Data were obtained by analyzing both the qualitative and quantitative information from 28 Strategic Plans. An analytical data cell was created for EU-28. The documents that were analyzed for data were in electronic format dated December 2023, and were available either in English or the respective national language. We partnered with smallholder associations in EU member states to collect all of the Strategic Plans, and these associations also provided detailed financial data in English to aid in our analysis. To properly interpret the data from the documents in other languages, we used the translation of chapters from Strategic Plans as a supplementary method to gather data. The data were processed in the Statistica 12 program from an excel file with 14 assessment sheets. This article presents a concise summary of the data.

2.2. Study Area

The research covered the study area with the ambition to provide an overview of the distribution of funds and document the three narratives relevant to the CAP Strategic Plans in the 28 member states. All data were processed for the grouping of 28 countries. In each of the partial criterion assessments, the member states were arranged to create precise descriptive characteristics, not alphabetically. Given the flexibility of member states in designing Strategic Plans specifically tailored to agricultural structures in the country, a few regional examples were given to discuss the validity of the results. These examples included comparisons among the member states in the Central European region.

2.3. Methods

The research collected data by interdisciplinary iterations of two methods. The first method was semi-structured participatory processes, which involved collaborating with partner associations to gather data through multiple interactions and exchanges [42]. This method has been applied because it promotes appropriate assessments of promising technical and site design, which are relevant to land services. It also allows for better communication when addressing external participants. This also holds when the topic involves a great deal of complexity. Moreover, it facilitates the exchange of accurate information on internal environmental assessments [43]. The second method was a quantitative analysis with a descriptive character. The study used descriptive quantitative statistics to produce socioeconomic and policy-related results useful for policymakers.

Furthermore, the research employed, as a partial method, Principal Component Analysis, PCA. The principal components used included one set of variables in direct payments per hectare, which were assumed to be normally distributed. This derived variable was created as a linear combination of the original variables to explain the greatest variance [44].

The other principal component, in terms of average farm area per member state, then explains the largest variance in what remains after removing the effect of the first component. The PCA was used because the variables in the support set were highly correlated with each other, and it is useful to reduce their characteristics to an independent set. The overall interpretation method is illustrated in Figure 1. It used descriptive statistics and Principal Component Analysis (PCA) to quantify the main narratives related to land services associated with the land use economics of the Common Agricultural Policy (CAP). This method relied on quantitative storytelling, as described by Saltelli et al. [45]. In doing so, it helped us consolidate EU-level data without relying solely on a case study approach, which has been the norm in new member states (please see Ref. [46] for the Czech Republic and Ref. [47] for Slovenia).

However, the authors did not use an advanced statistical assessment because they worked with data categorized per country (n = 28), which means that the number of entries for each of the 14 criteria was limited for advanced models.

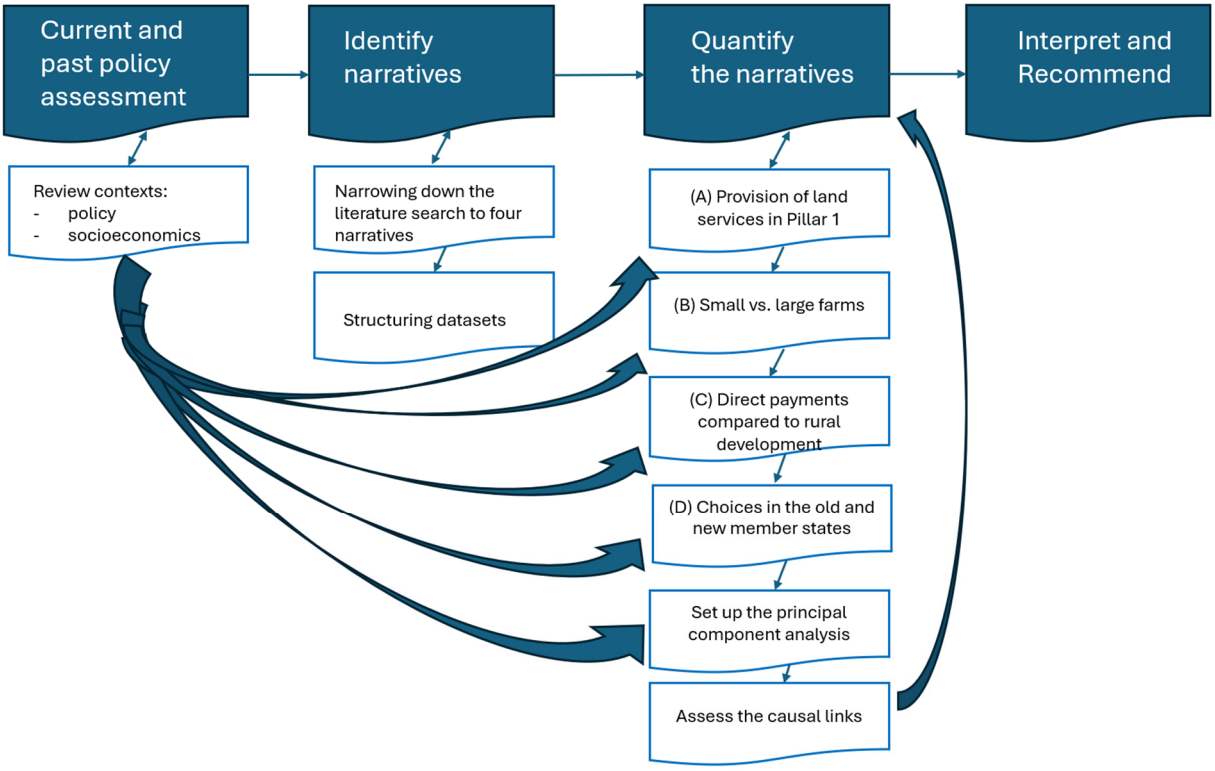

Figure 1. Methodology for interpreting descriptive statistical material via quantifying the narratives and Principal Component Analysis.

3. Results

3.1. Provision of Land Services within the Pillar 1 Economics

One of the main components of payment for ecosystem services is the eco-scheme within Pillar 1 (i.e., within supports that go directly to farm economics). The allocation of the Pillar 1 budget to eco-schemes determines the provision of land services. Some countries, such as Austria, Finland, Hungary, and Slovenia, allocate only around one–sixth of the Pillar 1 budget to eco-schemes (Figure 2). However, 13 member states focus on eco-schemes by allocating around 25% of the Pillar 1 budget (Figure 3). Table 1 captures the descriptive statistics of the figure. The member states who prioritize the economics of eco-schemes as the key payment for land services (the Czech Republic and the Netherlands) allocate 30% or 32% to eco-schemes. After analyzing how the choices are implemented by the old and new member states, we found that these categories establish fairly identical groupings when it comes to the share of the budget allocated to Pillar 1. This means that it

is difficult to associate the pro-eco-schemes member states and the minimum-eco-schemes member states with the historical adherence to the EU and the old and new labels. To better understand why some member states allocate more funds to land services through eco-schemes than others, a more detailed study is required. This study should investigate various factors such as agronomical conditions, biophysical and bioclimatic factors, and socioeconomic aspects.

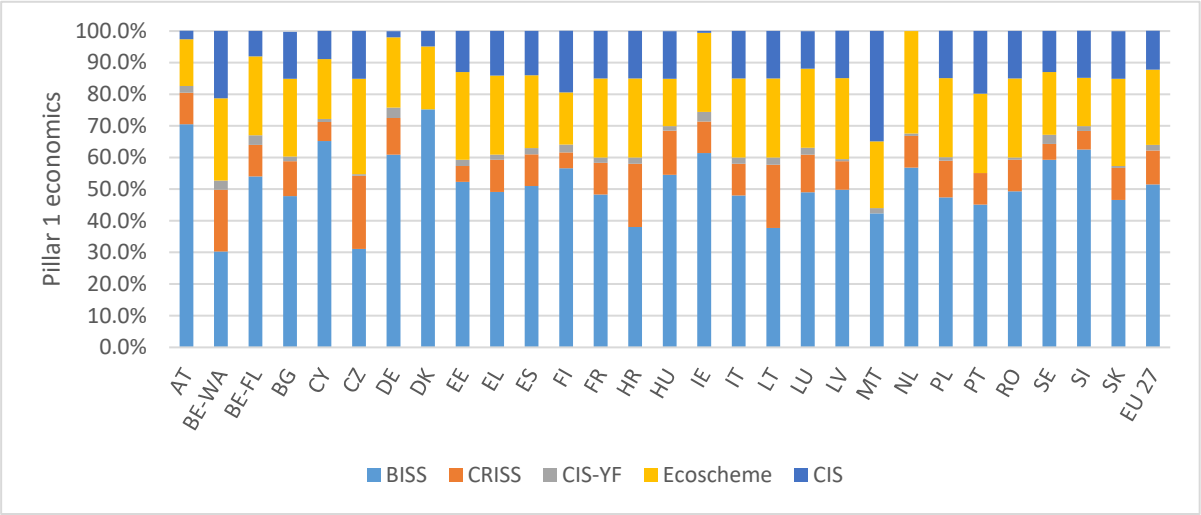

Figure 2. Position of eco-schemes within Pillar 1 payments. Note: BISS, Basic Income Support for Sustainability; CRISS, redistribution income support; CIS-YF, young farmer payment; CIS, voluntary coupled support.

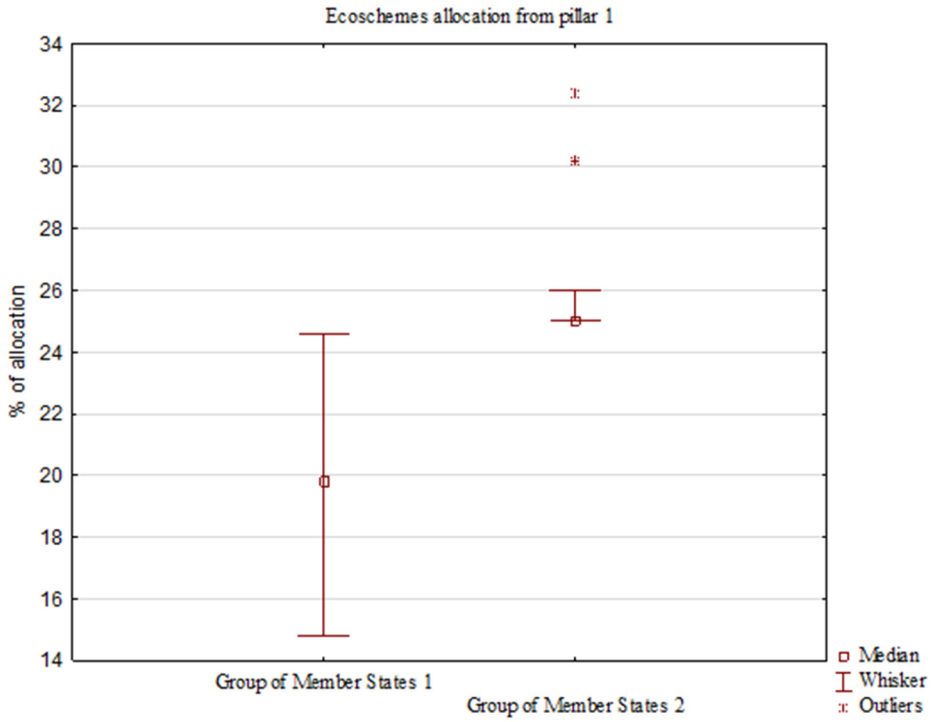

Figure 3. Eco-schemes allocation from Pillar 1.

Table 1. Descriptive statistics of the two groups of member states.

Variable	N	Mean	Median	Minimum	Maximum	Std. Deviation
Group of Member States 1	11	19.19091	19.8	14.8	24.6	3.415393
Group of Member States 2	17	26.15294	25.0	25.0	32.4	2.159606

It is worth noting that land use is partly driven by direct income support. Figure 4 displays the direct payment per hectare in each country. In our interpretation of this criterion, we excluded the outlier value and established that there is a significant level of consistency among the EU member states. Two equally sized groups of countries scored slightly above average and slightly below average. However, this analysis has its limitations, and it would be helpful to adopt a case study approach to gain a better understanding of whether higher hectare payments indicate a greater risk of adverse effects on the environment. From the perspective of the new member states, two countries (in addition to Malta) fall into the category of higher-achieving countries, while nine countries fall into the category of lower-achieving countries. In Figure 5, there is a complication that affects the direct payments made by each country. The payments are reduced by deducting land rental fees. This means that the interpretation of the winners and losers will be different from the preceding criterion. When considering the rental fees for land across Europe, five new member states have positive farm income, whereas seven of them have negative farm income. Furthermore, as we show in the next section, farmers receive redistributive payment (CRISS) according to a certain threshold of hectares, e.g., up to 150 hectares in the Czech Republic, which is the dominant number of agricultural holdings in the country. Thus, the incentive from Pillar 1 economics is the aggregate of these components of support, and, for instance, for the aggregate of BISS and CRISS, the Czech Republic has the largest support per hectare in the Central European Region.

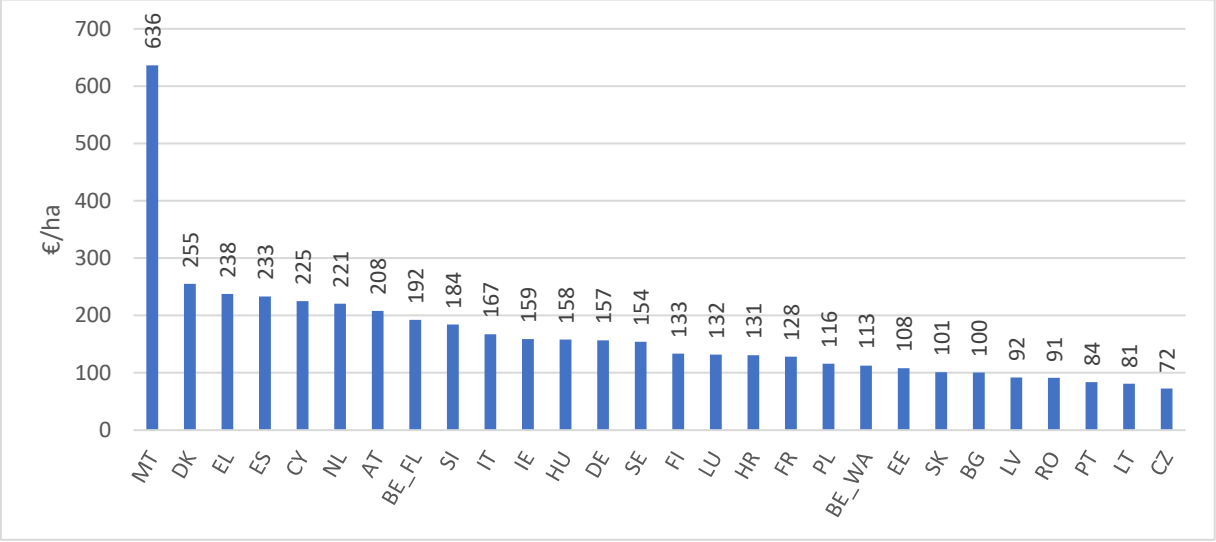

Figure 4. Basic Income Support for Sustainability (BISS) in €/ha.

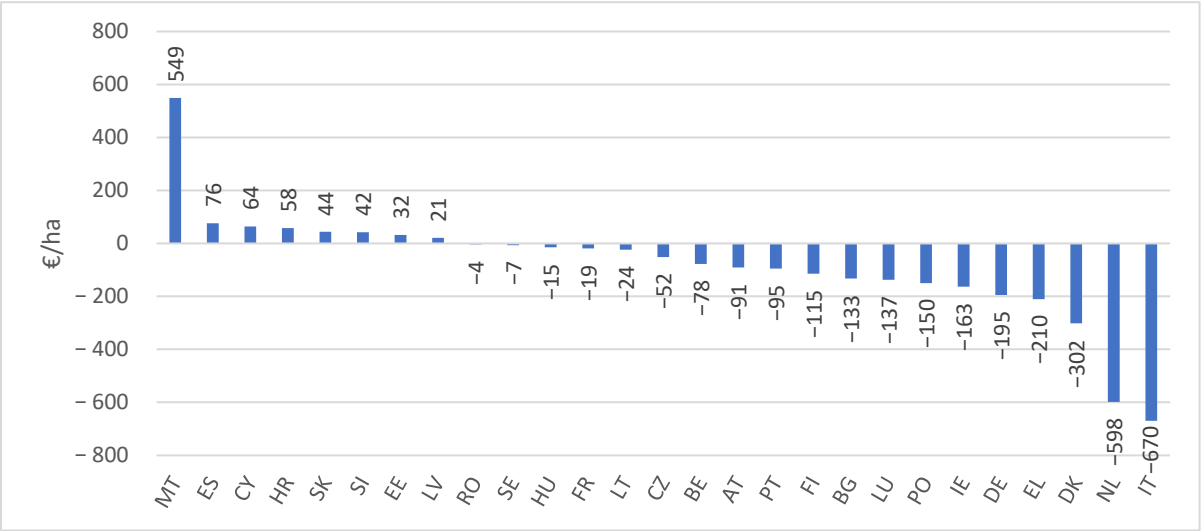

Figure 5. BISS support amount after deduction of the land rental fee (BISS minus the rental fee, in €/ha).

3.2. Small vs. Large Farms

Several countries have an average farm area larger than 75 hectares: France, Slovakia, Luxembourg, Bulgaria, and the Czech Republic. Out of these five, the farm structures in the Czech Republic and Slovakia have an average size of over 100 hectares. However, the farm area is decreasing in these countries as well. The countries with large farms have relatively high allocations of BISS direct payments per average farm. On the other hand, there are 11 member states whose farm area is smaller than 25 hectares, and four with an average farm less than 10 hectares. Table 2 shows that BISS direct payment is about three times larger in countries with an average farm of less than 10 hectares. This overall comparison hides the differences between member states with large and small farms when it comes to the average farm income. When comparing the income per farm, among the countries with average farms smaller than 25 hectares, only Austria has a relatively high BISS support per average farm (5172 €/ha).

Table 2. Comparison of average farm area and BISS support for the average farm.

Member State	No. of Farms	Utilized Agricultural Area in 2020	Average Farm Area	BISS	BISS per Average Farm
		thous. ha	ha	€/ha	€
DK	37,970	26,620.0	69.0	255	17,593
FR	325,110	28,897.9	88.9	128	11,377
SK	18,610	910.0	102.6	101	10,366
LU	1760	132.1	75.1	132	9884
NL	44,640	1814.5	40.6	221	8967
ES	663,150	24,434.6	36.9	233	8588
CZ	30,170	3523.9	116.8	72	8466
DE	310,920	16,595.0	53.4	157	8356
SE	57,020	3005.5	52.7	154	8117
BE-FL *	33,890	1367.1	40.3	192	7751
BG	66,050	5047.3	76.4	100	7665
EE	16,700	985.5	59.0	108	6373
FI	49,730	2270.0	45.7	133	6082
IE	123,300	4511.4	36.6	159	5806
AT	106,460	2646.9	24.9	208	5172
HU	171,170	4997.9	29.2	158	4612

Table 2. *Cont.*

Member State	No. of Farms	Utilized Agricultural Area in 2020	Average Farm Area	BISS	BISS per Average Farm
		thous. ha	ha	€/ha	€
BE-WA *	N/A	N/A	N/A	113	4539
LV	57,640	1969.0	34.2	92	3136
IT	795,190	13,122.1	16.5	167	2759
EL	605,800	5267.5	8.7	238	2.066
PT	171,580	3970.4	23.4	84	1938
LT	125,500	2942.8	23.5	81	1896
HR	104,200	1506.2	14.5	131	1887
SI	56,530	484.1	8.6	184	1577
RO	826,690	13,048.8	15.8	91	1441
MT	5070	10.7	2.1	636	1343
PL	1,322,680	14,483.4	10.9	116	1269
CY	32,530	135.6	4.2	225	938

Source: own compilation based on the Strategic Plans and Eurostat (2020). * Note: For Belgium, there are differences between provinces in CRISS. Farm numbers, farm area, and average farm size are listed in total under BEL_FLA.

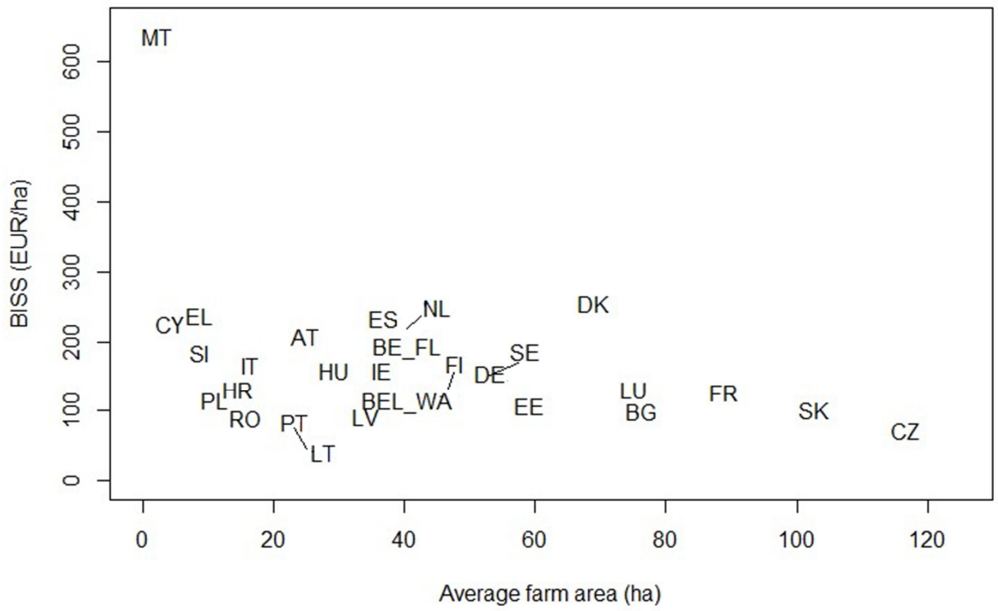

Figure 6. Principal Component Analysis (PCA) analysis.

If we interpret this statistical material according to the classification of the old and the new member states, there is no obvious division in average farm areas in the two groupings of countries. In fact, the category of the new member states includes the extreme polarities of the very large corporate farms in the Czech Republic and Slovakia [48], and very small farms in Poland [49], Romania, and Bulgaria.

However, despite having large farms, the Czech Republic is among the six worst performers in the balance of agricultural trade, which is an indicator of poor agri-food industry competitiveness. As our further assessments show, it is worth noting that a negative balance of agricultural trade is not unique to these countries, as 17 member states have this issue. On the other hand, some countries such as the Netherlands, Spain, Poland, France, Denmark, Belgium, and Ireland have a positive balance in agricultural trade.

Member states regulate the balance between small and large farms by implementing CRISS (redistribution of a percentage of additional direct payments per hectare to smallholders). This support category is additional to BISS. Redistributive income support

means that there is an increase in payments for smallholders whose farmed area is below the farm average (Figure 7). After conducting a detailed interpretation, the hypothesis that using the redistributive payment as an effective support to small farms has to be declined. The average CRISS at the EU level is 70.2 EUR/ha. By classifying the member states into categories—CRISS-supporters (above average), CRISS-utilizers (below average) and CRISS-adversaries (not implementing redistributive payments)—we found that five new MS were among the supporters, regardless of whether they had large farms (such as the Czech Republic) or small farms (such as Bulgaria). The majority of the old and new member states were classified as CRISS-utilizers, and their farm size did not have any correlation with the classification. In Northern Europe, there are two of the CRISS adversaries, possibly due to a focus on social equity, rather than the size of their farms.

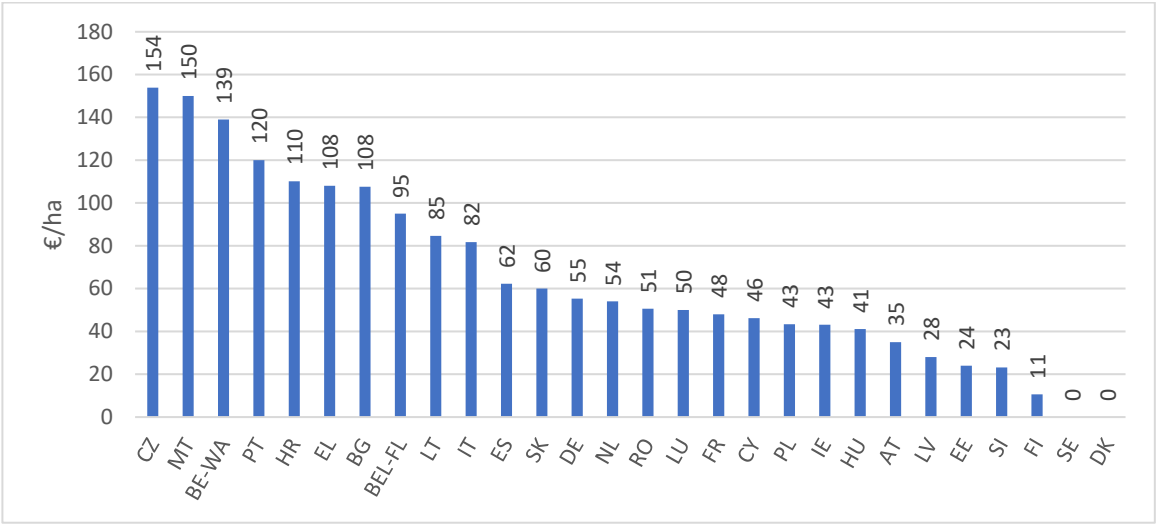

Figure 7. Redistribution of income support for sustainability (€/ha) per country.

3.3. Direct Payments in Comparison with Rural Development

Rural development is a program within the CAP Strategic Plans. It supports farm modernization through capital investments and land-based payments. It provides significant help with environmental aspects of land use through agri-environment management. Although rural development always receives a smaller share of funds than Pillar 1 economics, some countries put great emphasis on it (Figure 8). In the past, the new member states used to align themselves with Pillar 2 rural development. This was because, during the socialist era, the government of Czechoslovakia (which included today's Czech Republic) mainly implemented scant regulatory measures in land use. Weak environmental policies were the norm during this time, due to a lack of enforcement [48]. In the early 1990s, strong citizen support for regulating negative effects to land services came to the forefront. At the same time, the Czech government had almost no experience in designing and implementing environmental policies in close collaboration with stakeholders [48].

Currently, the countries that put emphasis on rural development are Cyprus, Slovenia, Austria, Croatia, Finland, Slovakia, and Poland. It is worth noting that except for Slovakia, these countries have small average farms, as shown in the previous section. Therefore, it is possible to conclude that rural development economics is stronger in these member states to enable more support categories for small farms. Another criterion for the focus on rural development is national co-financing. In this perspective, the Czech Republic applies the fifth highest national co-financing for rural development, with 63% (103 €/ha), compared to 40% (Poland), 51% (Austria), 34% (Germany), 37% (Slovakia), 80% (Hungary), and 34% (France). Finally, one should also consider the country's strategy in strengthening one or the other pillar by voluntary transfers (so-called modulation). The Netherlands is the leader in strengthening rural development economics by 20% at the expense of Pillar 1. On the

other hand, Poland has an opposite strategy in reducing rural development economics by 29% in favour of the Pillar 1 economics (Figure 9).

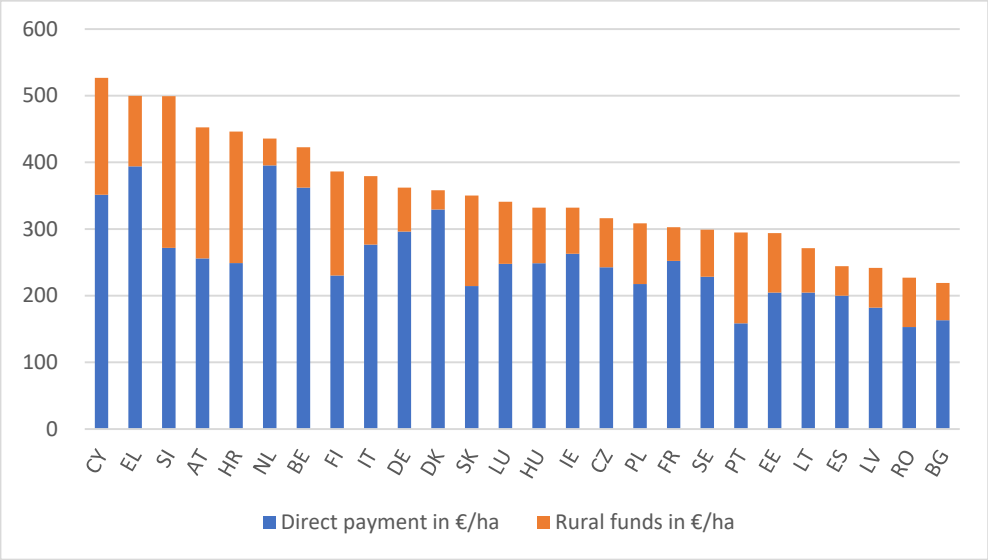

Figure 8. Yearly budget in Pillar 2 rural development per member state in €/ha.

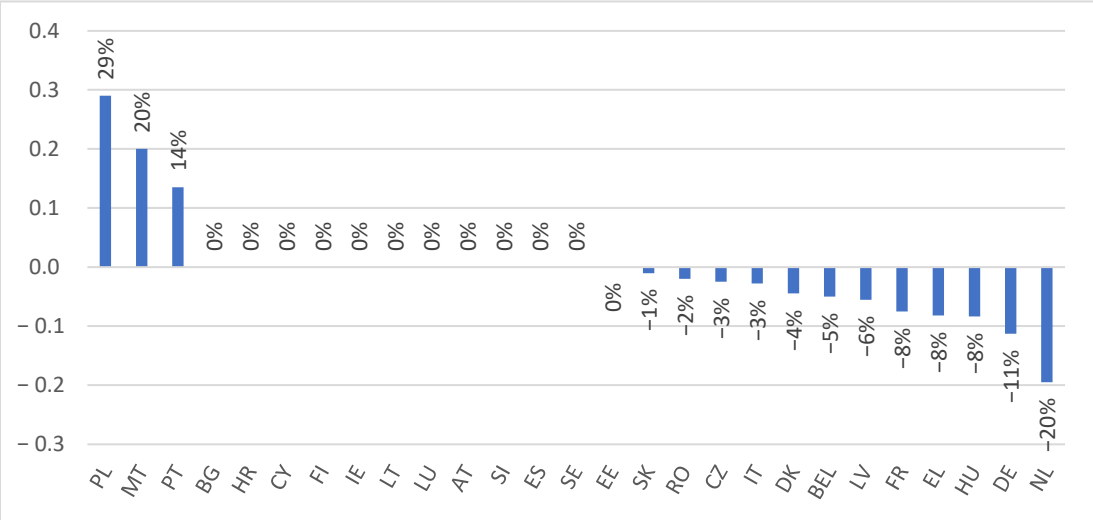

Figure 9. Transfer between Pillar 1 and Pillar 2 budgets (increase in Pillar 1 direct payments: positive numbers; increase in Pillar 2 rural budget: negative numbers).

4. Discussion

4.1. Main Observations and Findings

In the last twenty years, there has been a growing awareness of the environmental impact of farming, which has gained significant political attention. One of the main goals is to improve the environment and ecosystems by focusing on land services. The Common Agricultural Policy (CAP) has prioritized the maintenance and enhancement of land services since the 1980s, and the priority came to the fore with the pursuit of rural development programming and, finally, the CAP Strategic Plans of 2020 and 2023. However, researchers raised concerns about the lack of effectiveness of the CAP in the face of increased production intensity [50,51]. Within the CAP Strategic Plans, the eco-schemes, the agri-environmental measures, and good agricultural and environmental condition standards aim to incentivize land services provision through sustainable land use practices. Despite

all the efforts to incentivize land services through agriculture, there are still concerns about the adverse soil parameters and a declining state of biodiversity in the EU [52,53], although the situation would be arguably worse without these policy instruments. Additionally, sustainable land use, which is one of the main policy goals, must be balanced with the total productivity that is inherent to farm economics in all countries [54].

Reviews of the CAP in 1999, 2003, and 2004, and under the Strategic Plans in 2020 and 2023, have emphasized the need to improve the provision of land services through sustainable land use, while also protecting biodiversity and ensuring food security and competitiveness. The latest reforms prioritize enhancing farm competitiveness, increasing carbon storage, reducing greenhouse gas emissions through agriculture, and incorporating land uses suitable for biodiversity conservation. Such reforms struggle to consider that farmers and land managers are faced with the challenge of making decisions regarding land use and farming practices, while taking into account various external factors. Physical constraints can limit the quantity and sustainability of food that can be produced and the range of land services that can be provided. Additionally, economic factors dictate the need to balance maximizing food production with provisioning and regulating land services [55]. In this study we have explored four narratives that are characteristic of the public debate about the land services in the CAP Strategic Plans.

Many other studies noticed that land use economics of the CAP reform options is often put forward as a denigration of the policy support habit [56]. Similarly to our study, the literature, such as Harvey et al. [57], emphasized that many authors do not analyze the basis of strategic and programmatic dependence in the first place. This is shown by the ellipsis of policy role in land services from EU agriculture or the tendency to dismiss the emphasis on land services as "mere" issues of equity or political expediency [58]. Furthermore, our study could not go in the same way as the previous studies associated with the European Commission, which stated that the CAP Strategic Plans mainly focus on providing income support for farmers and promoting productivity growth and innovative technologies [59–61]. However, we were able to confirm the finding of the European Commission study that the reformed CAP presents an opportunity for more significant land services for the environment, climate, and resource use. We aimed to remain concise in our study, but we found that in some countries with small-scale farming support has been prioritized through Pillar 2 rural development funds. However, national co-financing also has a role to play [62]. Therefore, we concur with the finding of Ref. [61] that the impact of the CAP on rural development still needs to be determined.

Our main finding is that it is essential to interpret the descriptive statistical material based on quantifying the narratives associated with land services and do so in a similar way to how data has been interpreted in the past when there was less emphasis on quantitative tools, their use and reuse. Interpretations that take into account the descriptive statistical material while contextualizing it by quantifying the main narratives is the first and crucial step that points to the dependence of land services from agriculture on existing programs. Understanding the member states' decisions is crucial to gradually build up the knowledge base on the true costs of land services and highlighting the need to break the dependence on both aid and programs [57]. There are limitations to using descriptive statistics to quantify the main narratives. This method cannot be used to input data into advanced statistical modelling, which makes it difficult to calculate the trade-offs between different measures in the CAP Strategic Plans. As a result, we cannot accurately assess the trade-offs in land services provided by Pillar 1 and Pillar 2. However, this method still allows us to present land services as the intended benefits of reform, which must focus on ensuring a stable future for competitive farms. This includes achieving reliable and predictable farm income, along with positive outcomes for land services.

4.2. The Provision of Land Services in the Pillar 1 Economics

The economics of land services has been explained in general [63] and further elaborated for agriculture [64–71]. As a recognized think piece, it is an important part of Pillar 1

economics. The extent of land services linked with Pilar 1 economics are affected by a combination of biophysical and agronomic factors, such as the primary land use and the proportion of semi-natural habitats that serve as a crucial resource for land services, as well as socioeconomic factors that relate to the level of poverty or wealth in the region. These factors have been outlined in Appendix A Table A1 for five different countries. Until recently, Pillar 1 policies could not thus establish causal relationships between interventions and outcomes, which is essential for policymakers [72]. This has changed with the onset of eco-schemes in 2023, aiming to improve the shortcomings of greening policies introduced in 2014 in the CAP [21]. Eco-schemes are a new feature in Pillar 1, while the agri-environment remains the only mandatory measure in Pillar 2. Member states vary in the importance they attach to eco-schemes, although a large majority dedicate around 25% of the Pillar 1 budget to them. However, to understand whether and to what extent these measures are delivering land services and biodiversity benefits on the ground, it is important to know that they work differently than Pillar 2 agri-environmental schemes. Eco-schemes are voluntary, though potentially they are measures that have a universal character, applying to all farmers across the EU-27, similarly to Pillar 1 direct payments. The variability of eco-schemes in technical design will be the main difficulty in assessing their effectiveness in 2027 when the CAP Strategic Plans expire. In addition to eco-schemes that focus on biodiversity, soil, water, and climate issues under land services, Pillar 1 economics dedicates enormous resources to incentivizing the food provisioning service through Pillar 1 direct payments (BISS). There are also several other payment components for young farmers and sensitive production sectors. However, it is not easy to compare BISS per hectare among and between member states because other factors, such as rental fees for land, also play a role in the magnitude of the incentive offered to a farm from the public budget. For example, the outlays for BISS in the member states show that the Czech Republic has the lowest absolute BISS in EUR per hectare. But after the deduction of the rental fee for land, the country is in the middle of the scale of the size of adjusted BISS. According to broader policy studies [4,61], eco-schemes are the most radical change in Pillar 1 land use economics, similar to our research findings. Researchers in Ref. [4] provide more detailed information on the specific land services supported by eco-schemes, stating that member states prefer to support climate change mitigation and soil protection. With regard to redistributive payment, our research found a wide variety of approaches, while Ref. [4] researchers further discovered that the allocation to redistributive payments has significantly increased compared to the previous programming period.

4.3. Small vs. Large Farms

Small farms vs. large farms is a predominant narrative in the countries on either of the extremes of the size structure [73]. Many researchers have so far used a case study approach to analyze the CAP, as the flexibility governs the technical design of policy measures [74]. The case study approach focuses on the effects of the policy on small-scale farms, which are often overlooked in the large sustainability themes and EU budget analyses in EU-wide assessments. In 2006, research on the position of the new member states in land use economics of the CAP [74] also assessed the impact of accession on the small-scale farms to find out if some small-scale farms were left out. Appendix A Table A1 provides an abbreviated study of small and large farm proportions based on area and ESU. To provide support to small-scale farming, suitable programming at the national and regional levels is necessary. The Small-Farm Scheme has been introduced from the 2014 to 2020 period, but in the immediate past it was underutilized by member states. This scheme gives the option to the national/regional authorities to support small-scale farming in a relatively simple way. However, appropriate support requires a combination of several measures, including a sizable hectare payment in Pillar 1, user-friendly agri-environmental measures, and a well-funded advisory. A study by Ref. [33] revealed persistent structural flaws in the CAP and challenges in creating a favorable policy environment for small farms while utilizing strength/weakness methodology and expert validation from 46 policy experts from five

countries. In our analysis, we found that the CAP Strategic Plans are construed according to agricultural sectors, and according to the layers of land services, with only redistributive support to identify the position of resources to small farms in contrast with large farms. To note, the academic literature classifies the threshold size of small farm by an array of criteria, whereas this research investigated, through PCA, the existing data for Europe and came to the 10 hectare threshold. In the reported research, we were able to identify the size of BISS direct payments per average farm. The finding is that there is a considerable difference in resources going as an incentive to an average large farm and others, although BISS direct payment per hectare is three times higher in an average small farm (less than 10 hectares) than in large farms (over 100 hectares). In contrast to the use of redistributive payments, member states with small-scale farms prefer to allocate stronger budgets for Pillar 2 rural development. For small-scale farms, it is important to carefully investigate the two further narratives being involved. For example, the literature documents that land services are crucial for small-scale farms. We found out that member states with more small-scale farming allocate a larger proportion of the CAP economics to Pillar 2 funds than more affluent member states with larger agricultural structures.

4.4. Direct Payments in Comparison with Rural Development

We studied the comparison between direct payments and rural development as a third narrative. This research took the starting point recognizing the importance of improving the mechanisms for planning, managing, and financing rural development at the local level [75]. Sociologists have emphasized over two decades that the multifunctionality discourse is most relevant to rural policy [76]. On the other hand, the neoliberal discourse structures the debate about direct payments [58]. Our research went beyond the sociological approach of analyzing the empirical data of the policies. We had to note that rural development economics has a structure of subsidies that is not universally applied because land services and biodiversity impact multifunctional economic metrics that will depend inter alia on the level of uptake by farmers. The uptake matters, even though many of these measures may be widely available and have simple requirements (for example, Pillar 2 measures, such as training and advisory activities, or basic management under the agri-environmental measure). National co-financing is characteristic of Pillar 2 land use economics, whereas Pillar 1 consists of flat-rate hectare payments to farmers, such as BISS and redistributive payment, funded from the EU budget. According to research by Refs. [62,77], some member states may face limitations in their ability to co-finance Pillar 2 rural development. Furthermore, certain Pillar 2 programs that support capital investment which require public funding may need to rely also on bank loans or private sources. Our study focused only on documenting the basic distribution of Pillar 1 direct payments and Pillar 2 rural development, and we observed significant shifts between pillars in many member states. As a result, we can only infer that different strategic choices may need to be made on how to fund certain items from Pillar 1 or Pillar 2 in comparison with the previous period in the same member state.

Although we could not analyze Pillar 2 rural development in detail (we refer the reader to a dedicated study by Ref. [60]), we could still observe that small-scale farming countries (Poland, Malta, and Greece) tend to shift resources from Pillar 2 to direct payments. In contrast, affluent countries with modernized farm sectors, such as the Netherlands and Germany, can afford to strengthen Pillar 2 rural development by transferring resources from direct payments. We concur with the assessment by Ref. [4] that allocating almost 50% of Pillar 2 rural development funding to two measures with land services character (the agri-environment and compensations to farmers in areas with natural or specific constraints) is a significant achievement. Additionally, we concur with their proposal to systematically evaluate the impact of administrative burden.

4.5. Old and New Member States

Broader policy studies [4,61] suggest that a more nuanced approach than we undertook here, in terms of the analysis of funding of various measures in Pillar 1 and Pillar 2,

with far more numerous indicators, is necessary. Such more extensive approaches would effectively document priorities on stronger competitiveness and land services performance in individual countries. In our research, we clarify that the classification to distinguish the old and new member states was introduced twenty years ago, at the time of the latest enlargement. Appendix A Table A1 shows that the classification does not indicate homogeneity between the two groups in terms of land use, land services from semi-natural habitats, or the distribution of small and large farms. Additionally, socioeconomic criteria in Appendix A Table A1 reveal a significant divergence in relative wealth in some new member states like the Czech Republic and relative poverty in an old member state such as Greece (measured by the proportion of regions with a gross national income below 90% of the EU). This indicates the obsolete nature of the classification of the old and new member states. Previously, the categorization of old and new member states was very relevant to our first narrative concerning Pillar 1 direct payments. This was due to the slightly modified version of the measure in the new member states. However, this has become outdated since 2023, as the standardized version of BISS has been implemented. Regarding the second narrative, we have shown that small-scale farming exists in varying degrees throughout the EU. On the other hand, very large farms are still the norm only in the Czech Republic and Slovakia, due to the history of land use economics in the second half of the 20th century. When it comes to the third narrative on the distribution of Pillar 1 direct payments and Pillar 2 rural development, we found a mix of the old and new member states among the proponents of Pillar 2.

5. Conclusions

We suggest that interpreting narratives, especially when linked to in-depth interpretive effort based on descriptive statistical data, may represent a less contentious and more socially robust alternative to the current method of quantitative analysis in evidence-based policy. Therefore, we urge for the practice of concise storytelling to explain complex policy agendas and encourage the reflective use of science and scientists in policymaking contexts.

In this research, we assessed four different narratives that influence public debate and are commonly found in most assessments. This meant investigating the research questions on land services in Pillar 1, small and large farms, the distribution of Pillar 1 direct payments and Pillar 2 rural development, and finally, the choices by the old and new member states. The research questions have been addressed with the help of descriptive statistical data. An EU-wide assessment of the Common Agricultural Policy (CAP) is always a timely and challenging task, which has gained momentum in international institutions associated with CAP implementation [78–81]. Our research provides a concise assessment of the role of land services through eco-schemes in the implementation of Pillar 1 economics. In the future, the assessment of eco-schemes should take into account the flexibility offered at the member state level. Finally, it is important to note that after twenty years of implementing the CAP in a two-pillar structure, the disparities between countries in the east and west have decreased. Therefore, we suggest that the categorization of nations as old and new member states is a result of historical processes and shifting power relations.

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Appendix A

Table A1. Characteristics of land services and land use economics in several Member States.

Member States	Old/ New	Dominant Land Use				Land Services from Seminatural Habitats	Agricultural Land Use as a Proportion of GDP (%) (as of 2007)	Proportion of Small Farms (Area by Farm Class in %)			Proportion of Farms in Different ESU Classes (%)			Where GNI is under 90% of EU27 Average
		Arable	Permanent Pasture	Permanent Crops	Grazing Livestock (% of All Livestock)			Small (0–10 ha UAA)	Medium (10–50 ha UAA)	Large (over 50 ha UAA)	1 to 16 ESU	16 to 100 ESU	Over 100 ESU	
Czech Republic	New	73.5	25.4	1	52.3	Mixed, incl. significant semi-natural grassland	0.9	16.7	22.5	61.8	9.8	19.4	70.9	N
France (Main-land)	Old	66.8	29.3	3.8	67.4	Very diverse, incl. lowland and upland semi-natural habitats	1.5	33.9	28.7	37.4	33.5	49.5	16.9	N
Germany	Old	70.4	28.3	1.1	54.3	Mostly highly modified/improved, but semi-natural montane habitats	0.6	36.4	40.6	23	46.3	40.9	12.7	N
Greece	Old	50	20.3	54.5	78.2	Large areas of semi-natural habitats, incl. important Mediterranean systems	2.8	90.1	9.4	0.5	87.1	12.7	0.3	Y
Romania	New	63.8	33.2	2.4	69.5	Large areas of semi-natural habitats in mountains and lowlands, and extensive arable	5.1	98.7	1	0.3	98.7	1	0.2	Y

Source: [64].

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