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The Distribution of CAP Payments - Redistributional Injustice or Spatially Adapted Policy?

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Abstract

This paper analyses the distributional equality of individual Scottish Government-administered payments in 2008 under CAP Pillars One (single farm payments) and Two (rural development measures) and in total, in terms of economic, social and spatial factors.

The analysis shows that 94% of all payments were paid to claimants in core rural areas (94%) while only a few (5%) claimants resided in urban areas or outside of Scotland (1%). However, in both Pillars, claims made by urban residents were often higher than those made by rural dwellers. The Ordinary Least Squares spatial analysis shows that the level of payments was extremely dependent on the geographical location and natural conditions. Spatial factors describing the economic situation in the area of the claimant were significantly related to the level of the CAP amounts paid. Overall, the level of amounts paid was positively related to the natural, economic and social structures of the area of residence.

The discussion tackles the question of whether the current system of farm income support by decoupled payments should be developed into a poverty payment system.

Keywords: Pillar One, Common Agricultural Policy, Gini-Coefficient, Rural-Urban distribution, distributional justice

JEL-Codes: Q15, R14, R11

1 Introduction

This paper offers an exploratory analysis of how equally the Common Agricultural Policy (CAP) Pillar One and Pillar Two payments in Scotland are distributed. Furthermore, as the place of residence of the claimants is known, an analysis by regions and spatial factors is carried out.

The analysis was stimulated by the widely shared suspicion that a significant part of CAP payments is paid to absentee landlords and to more favoured areas in terms of nature and economy. Such suspicion is deeply rooted in the fact that landownership in Scotland is highly unequally distributed.

One of the most prominent questions in decisions about how to spend public money is the question of distributional justice. In politics outside of agriculture, we find that there are two different motivations to pay support to individuals:

> First, to ensure that the poor (and often unemployed) have a certain quality of life (avoidance of hunger, a place to live, health insurance, etc.) and
>
> second, to invest in the creation of new and/or existing jobs (often done by payments to large investors).

The current CAP system is defined by the Treaty of Rome as targeted at "introducing technological progress into agriculture", thus increase food security, the rural quality of life, and the livelihoods of the agricultural community. In the EU12, these targets were largely reached by the late 1980s if the analysis is restricted to the agricultural sector. Since these times, although not officially announced, we have seen a transformation of this policy from investment policy into an income support policy.

The perception that most of the CAP's targets have not only been reached but often over-fulfilled was intensified in the 1890s by mountains of grain, butter, meat and other agricultural commodities, as well as by the negative environmental effects of intensive and often industrial farming. Additionally, as the CAP's functioning relied on the subsidised export of commodities produced in excess, it became a financial burden as well as a problem for Europe's trade partners in developing as well as developed countries.

This discussion led to several CAP reform steps starting with the MacSharry reform in 1992 until the most recent reform proposals by the European Commission (EC) in November 2010. Based on the reform steps of the Fischler Reform in 2003, Single Farm payments (SFP) are now the main instrument of CAP Pillar One. The introduction of the SFP represented a major shift from supporting farm production to so-called decoupling that is linked to land management under certain conditions (cross-compliance). For the next reform after 2013, the EC has proposed a number of measures to face the "new challenges" of climate change, water management, etc., and has written that in the next period the new payments under Pillar One should be distributed more equitably than before.

This leads to the question of how equitably distributed is the current SFP support (or SFP) in Scotland as a case study.

2 How equally distributed are CAP payments?

Kangas 2000 assumes that everyone would agree that justice should be the central principle of institutions that are responsible for the distribution of societal resources. Justice in redistribution is a matter of finding the right balance between duties and entitlements, i.e. the right ratio between benefits and burdens.

What splits the consensus is putting this principle into practice. Often, the key questions are: what should be redistributed (e.g. money, factor ownership, etc.)? To whom should it be redistributed (e.g. among every citizen, or only to commuters, to rural dwellers, the "poor", etc.)? And how much should be distributed (e.g. all resources equally to everyone, or only tax revenue, etc.)?

Looking around the world, we find that all sorts of re-distributional policies are backed by the argument that this policy will contribute to justice. For example, the Scottish Government wants to create a "wealthier and fairer, healthier, safer and stronger, smarter and greener" Scotland. In essence, this strategy means that re-distributional targets set by the government before 2007 (the date that the Scottish National Party entered government) are all revisited. In the political process, we often find that with governmental change the answers given to the above three questions are changed to a smaller or larger extent depending on the promises made to voters as well as in reaction to external challenges faced by new governments. On the other hand, even if new governments take a radical approach to introduce new re-distributional policies, they are often limited by longstanding commitments made by prior governments and by the resistance of the administrators that follow their own agenda. In general, however, all these political actors try their best to ensure distributional justice according to some definition.

Following Kangas 2003, there are a number of possibilities to guarantee impartial and just (re-)distribution in the primitive state (without interference of lobbies and societal groups). The best known method – often used with small children - is to follow the rule: "Who slices the pie, chooses last". This rule ensures that, since the one who does

the slicing has to choose his/her slice last, everyone will get an equitable share of the common resource. Especially in cases when there is a new (or newly defined) resource, this method can be used with success and will result in distributive equality. However, for most societal issues, such approach is not practical, due to the legal and societal framework, even if by social consent and common sense such approach would be the best.

In such a situation when the first or second best solution is not applicable, a third or even fourth best solution, in which some get more than others, might be more justifiable.

For example, Baldwin 2005 shows that, for the whole UK for the year 2003/4 e.g. the Queen received €231,000, the Prince of Wales €130,000 and the Duke of Marlborough € 296,000 of CAP payments in England. In analysing a full EU data set,he found that about 6% of all farmers in the EU15 got 53% of all CAP payments, and that 13% got 71%.

Already Brown 1990 shows for different farm types that the factor owners enjoy the biggest benefits of agricultural policy support. He showed that the CAP system of intervention prices etc. in the late 1980s gave the largest amount of money to those with the larger farms, while smaller farms benefitted less than proportionally. In essence, although the CAP was reformed several times between then and today, this finding did not change.

The root causes for the unequal distribution of CAP payments across farms that are described sporadically in the literature.

Keeney 2000 analysed the distributional impact of direct payments on Irish farm incomes for the period between 1992 and 1996. She concluded that the Gini coefficient as a measure of distribution of the direct payments between 1992 and 1996 fell from 0.6277 to 0.5475, meaning that the equality of payments during this period increased considerably. However, this development in Irish farming was accompanied by a large dependency of small farms on subsidies to achieve a positive income. She also found that 30% of all farms in Ireland were responsible for 98% of all market-based farming incomes, leaving just 2% for the rest mostly small farms. She states: “market income now contributes less to total income across the majority of farms than

ever before, but remains the single largest influence deciding the income ranking of a farm" (Keeney 2000, 263). This led her to the conclusion that the CAP payments were not very well targeted and therefore are unequally distributed.

Allanson 2006 described the redistributive effect of the CAP in 1999/2000 on Scottish farm incomes. He showed that about two-thirds of all CAP payments reached the farm household, while the rest went to the factor owners (e.g. land owners, factor suppliers, etc.). He concluded that the then-existing system was not able to re-distribute income to those actually most in need of it, but indeed supported the well-off (Allanson 2003, 2006).

Schmid et al. 2006 analysed how equally CAP payments were distributed in a number of member states, based on FADN data. In their analysis of data from 2001, they found that the distribution of the Pillar One payments across European countries (EU14 excluding Greece due to the non-availability of data) varies considerably. The concentration ratio (Gini coefficient) shows that there are two types of member states: Portugal, the UK, Spain, Italy and Germany, which have high levels of concentration (about 0.7 or higher) and a second group of countries in which the CAP payments are a little more equally paid out. This second group consists of Belgium, Denmark, France, Ireland, Luxemburg, the Netherlands, Austria, Finland and Sweden with a CR of between 0.49 and 0.64. They therefore endorse the "rule" that 20% of all farmers get 80% of the payments. Regarding the impact of CAP payments on farm household incomes, they project that the current CAP system of paying SFPs would increase inequality to a large extent in the sample of Austrian FADN farms.

For Hungarian agriculture, Hubbard et al. 2007 show that the distribution of CAP payments has been unequal, with Gini coefficients over 0.7 for FADN data between 2002 and 2005, and less than 20% of the Hungarian farmers getting about 80% of all subsidies. During the process of Hungarian accession, the inequality of distribution went down slightly from 0.75 in 2002 to 0.72 in 2005. The farm group that got the highest share of agricultural subsidies in 2005 were the economically organised large mixed farms that got about 20% of all subsidies, followed by large arable farms and the large arable privately organised farms with 14% and. 12% respectively. The groups that got the smallest share of subsidies were the permanent and horticultural farms followed by pig and poultry farms. Our conclusion from this is that

landownership increases the amount of subsidies being paid to the individual farm or landowner as the labour-intensive production systems (pigs, poultry, cattle) profit from the current payment system less than other organizations.

Hence, with hardly any exception known to the author, the bulk of studies conclude that the current instruments of the CAP do not prevent a substantial part of the farm community from being the poorest citizens of the EU member states. At the same time, direct payments to high-income farm units clearly enlarge the considerable income inequalities in the sector regardless of the wealth that asset ownership might present for the farmers in case of selling their farms.

Dax 2005 has shifted the focus of distributional justice to the spatial level of distribution of CAP payments across Europe in order to enhance the importance of the rural development Pillar Two. He finds that Pillar One expenditures do not support territorial cohesion, since the highest levels of CAP payments are correlated with the most fertile areas in Europe. According to the maps presented in his article, the same is true for Pillar Two expenditures to some extent. With the latest reform making a small shift from the old-style area-based payments in Pillar Two towards a better targeted remuneration of environmental goods and services as well as a stronger focus on rural development measures, he found some changes over time. However, overall he finds that territorial (or social) cohesion was still not a favoured target of the CAP until recently.

Such territorial approach has also been advocated and used by a number of studies that have dealt with questions related to the environment and especially the effect of agri-environmental schemes on the provision of public goods and services (e.g. EEA 2009, Elbersen et al. 2009, Farmer n.d., Feinerman & Komen 2003.) These studies all have in common that they try to make the link between environmental quality and the payments that have been made under the current Pillar Two Axis Two schemes, notwithstanding whether these payments reach the addressed area or not.

Such territorial approaches are often related to the use of GIS or similar software. For example, the ESPON project has provided a number of interesting features describing where the CAP expenses are spent locally.

To the knowledge of the author, there is no analysis of the effect of location on individual CAP payment claims or on distributional justice.

3 CAP payments in Scotland 2008 – description and framework

In 2007, the European Commission (see Article 44a of Council Regulation (EC) No. 1290/2005 as amended by Council Regulation (EC) No. 1437/2007 and Commission Regulation (EC) No. 259/2008) decided that the member states had to publish the names, addresses and amounts claimed under CAP support for all payment recipients[1]. In each Member state, webpages were set up on which the general public could inspect how much money each claimant of CAP support got in the preceding year. In the case of the UK, the Department published this information for the Environment, Food and Agriculture (DEFRA) as well as by the devolved administrations in Northern Ireland, Scotland and Wales.

Initially, this data gave the following information for calendar year 2008: name (company, family partnership or a natural person), place of residence of the claimant, postcode area, amounts claimed under Pillar One, Pillar Two and in total. Later on in the year 2008/9, this presentation was altered to one in which more detailed information was given, ordered by area in which the claim was made as well as more specific information about claims under Pillar Two, e.g. Less Favoured Area (LFAS, agri-environmental, and other schemes.

For this paper, the first data base has been used, processed and analysed and amended by the Scottish Index of Multiple Deprivation information and information about the rurality of the place of residence of the claimants (see additional information in the annex).

Such data can be used for a number of analyses about the spatial distribution of CAP payments related to the place of residence of the claimants. Furthermore, by specific calculation this allows for the analysis of distributional and spatial justice of the claims.

[1] Recently, however, the publication of the data used in this paper was made invalid by a ruling of the European Court at the 9 November 2010 in Joined Cases C-92/09 and C-93/09.

The CAP claimant's data was reclassified on the basis of the rural-urban classification for 2007/8 provided by the Scottish Government. This index provides information about how rural a specific postcode location is. These postcodes (about 120,000 in Scotland) consist of about five and up to eight characters, in two parts.

The first parts of the postcode (e.g. OX17), were linked to the longitude and latitude provided by free map tools (Free Map tools 2010), processed in excel and linked to the six-fold rural-urban classification of 2008 (Scottish Government 2008).

The six-fold rural-urban classification describes rurality based on travel times to urban centres. Another possible classification would have been the rurality index provided by the OECD (e.g. OECD 2008); however, this index uses a territorial approach rather than providing information about the degree of rurality based on point information such as the postcodes.

The categories 'accessible rural' and 'remote rural' (five and six if available) constitute the rural parts of Scotland, while categories one and two constitute the urban parts of Scotland. The intermediate categories three and four are understood as the "urban fringe" (an area in which rural and urban characteristics overlap; Abler 2001).

The following table describes the factors that were responsible for the classification of the postcode areas to different rurality categories.

Table 1 rural-urban classification in Scotland 2008

Rurality Index	Description
1	Large Urban Areas Settlements of over 125,000 people;
2	Other Urban Areas Settlements of 10,000 to 125,000 people.
3	Accessible Small Towns Settlements of between 3,000 and 10,000 people and within 30 minutes drive of a settlement of 10, 000 or more
4	Settlements of between 3,000 and 10,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.
5	Settlements of less than 3,000 people and within 30 minutes drive of a settlement of 10,000 or more.
6	Settlements of less than 3,000 people and with a drive time of six-fold: over 30 minutes to a settlement of 10,000 or more.

Source: Scottish Government 2008

This data was linked to each claimant's postcode area and in a final step the SIMD and economic information was added for each postcode area.

This SIMD data measures a number of indicators of deprivation, and so can be understood as quality of life indicators.

The data used to analyse the locational impact on the amount paid to individual farmers. The locational information of the claimants has been classified with the available information about the local council area (LCAs) of Scotland:

Aberdeen City, Aberdeenshire, Angus, Argyll & Bute, Dumfries & Galloway, Dundee City, East Ayrshire, East Lothian, East Renfrewshire, Edinburgh, City, Eilean Siar, Fife, Glasgow City, Highland, Inverclyde, Midlothian, Moray, North Ayrshire, North Lanarkshire, Orkney Island, Perth & Kinross, Renfrewshire, Scottish Borders, Shetland Islands, South Ayrshire, South Lanarkshire, Stirling, West Dunbarton, West Lothian

In a final step the data was amended by a number of different information that either originated from the SIMD or from official estimates of economic performance of these areas.

Total Population 2007, Number of Income Deprived People 2009, Number dependent on Tax Credits 2009, Number of Employment Deprived 2009, Working Age Population 2007 (men 16-64, women 16-59), Pupil Performance on SQA at Stage 4 (SQA,2005/6-2007/8), School Pupil Absences (Scottish Government, 2005/6 - 2007/8), Drive Time to GP 2009 (mins), Drive Time to Petrol Station 2009 (mins), Drive Time to Post Office 2009 (mins), Drive Time to Primary School 2009 (mins), Drive Time to Secondary School 2009 (mins), Drive Time to shopping facilities 2009 (mins), Public Transport Travel Time to GP 2009 (mins), Public Transport Travel Time to Post Office 2009 (mins), Public Transport Travel Time to shopping facilities 2009 (mins), SIMD Crimes per 10,000 total population, Agriculture, Forestry and Fishing GVAs at current basic prices (£ million), GVA at current basic prices in £ million of the production sector, Construction GVAs at current basic prices in £ million, Distribution, transport and communication GVAs at current basic prices in £ million, Business services and finance GVAs at current basic prices in £ million, Public administration, education, health and other services GVAs at current basic

prices in £ million, Total GVA in £ million GVAs at current basic prices in £ million, and GVA per head of population at current basic prices.

Three different analyses have been carried out.

A frequency analysis of the data classified to Local Council areas and the "rurality" of the postcode area of the claimants (SG, 2008).

The calculation of the Gini coefficient as a conclusive measure of the redistributional equity of the CAP payments under a) Pillar One, b) Pillar Two and c) in total.

An OLS estimation of the influence of available spatial and economic information (SIMD, 2009) on the amounts paid to the claimants.

4 Scotland – some key figures

Scotland has a population of about 5.2 million. The most important economic sectors are business and financial services with a share of 29% in Gross Value Added (GVA) of £101,598 million in 2008, followed by public administration and services with 26%, distribution, transportation and communications with 20%, industry (production) with 17%, construction with 7% and agriculture, forestry and fishing with 1%. While all other industries provided labour roughly equal to their GVA share, the employment share in agriculture, forestry and fishing was roughly double that of its GVA with 2%.

GVA per head of population in 2008 across Scotland was very high in Edinburgh (£34,000), Glasgow (£29,000) and Aberdeen (£28,000). The local council areas with the lowest GVA per head were East and North Ayrshire (£12,000), Dunbartonshire and Helenburgh & Lomond (£12,000), Scottish Borders (£13,000), the Western Isles (£13000) and the Highlands of Scotland (£14,000). In general the more remote areas (seen from the three above mentioned Large Urban areas (LUA) Aberdeen, Edinburgh and Glasgow) have a GVA per head that is lower than the average of roughly £20,000 a year, while areas that are nearer to the LUA have higher average GVA per head.

The main population centres can be found mainly in the South (Glasgow and Edinburgh) and in the North-East (Aberdeen). However, also these figures seem to indicate that urban centres are better off, according to the Scottish Index of Multiple Deprivation (SIMD) the so-called pockets of "deprivation" can be found equally spread across the country. Such deprivation in terms of the economic situation is often found at places were an historical industry is in decline or has finished this process in the last ten to twenty years (e.g. fishing industries across the coastline with Fraserburgh, Wick, Lochinver or Ullapool, wood processing in Fort Williams, Ship industry in Glasgow at the Clyde, etc.). Regarding other key figures about the rural-urban split in Scotland, the SIMD shows that in general people in rural areas have a longer life expectancy than urban dwellers also emergency health care has a longer reaction time, school kids in general have better A levels achieved and crime rates are lower in rural areas than in urban areas.

Unemployment is often higher in rural areas than in the urban centres or on the urban fringe. Transport mobility and access to public services is due to the large distances and often mountainous areas one of the core problems in rural Scotland and this problem is even more proliferated on the most important isles (Orkney, Shetland and Western Isles).

In 2008 the estimated net value added at factor cost of Scottish agriculture was £1052 million. Of this roughly 50% (£578 million) came from payments and subsidies (e.g. Single Farm Payments, Less-Favoured Areas Support Scheme, Land Management Contract Menu Scheme, Set Aside Payments, Environmentally Sensitive Areas and other agri-environmental Schemes (most of them paid by Pillar Two)).

Land use in Scotland in broad categories can be characterised as being specialised in the North and Northwest on extensive sheep and cattle husbandry. In the South and Northeast we find pigs and some dairy cows as well. Across Scotland there are about up to 15% area that is woodlands - some in forests some in farm woodlands -and wherever the natural conditions fit, cereal farming with wheat, barley and other crops on about 22,000 ha annually.

Regarding the structure of farms we find that there is a duality in Scottish Farming. On the one hand we find a majority of small (often part time) farming e.g. in the Highlands and Islands with the crofting system, on the other hand we find large

estates (in the Highlands and Islands often as sporting estates) or if the natural conditions fit also large scale cereal farms.

There were about 26,000 owner occupiers and about 18,000 spouses that work on a farm in Scotland in 2008, these had about 20,000 hired staff and about 6000 casual staff. The total agricultural area of Scotland is about 5.6 million hectares of which about 10% were used for crops, fallow or set-aside, about 32% for grassland (under 5 years since sowing) and the rest was rough grazing and farm woodlands. Husbandry in Scotland is basically concentrated on sheep farming with a herd of 7.1 million animals, followed by cattle with 1.8 million heads, about 0.4 million pigs and about 14 million poultry.

Overall the figures provided by the Scottish Government over the last ten years reveal that agriculture is a business on decline in terms of land and labour use while capital use is intensified.

A speciality of Scotland is that while in most parts of Western Europe landownership has been distributed to the land users in the early 19th century, landownership in Scotland staid at a level that is often described as feudal. An analysis of the landownership in Scotland done by Wightman 1996 shows that 1630 landholdings own 8,901,290 acres (about 3.6 million hectares or 45% of the surface of Scotland).

This unequal distribution of landownership affects the distribution of CAP payments since the latest reform has decoupled payments from production and introduced a system in which payments are linked to land-use and -ownership. This system of Single farm payments (SFP) is linked to 19 regulations (cross compliance) and the good agricultural and environmental conditions (GAEC) which all in essence mean that farmers have to respond to the already existing legal framework and – if they do – will get an annually often farm based payment per ha. Basically therefore we find an income support without too strict regulations.

Subsidies and payments have a significant influence on the annual profit of Scottish farmers. Depending on the type of farm, the dependency of Total Income from Farming (TIFF) on subsidies is between 120% and about 50%. In general, crop-producing farms are less dependent of subsidies than the less favoured area based

extensive sheep farms that often realise an annual loss (or negative net farm income) even including the SFP.

For sheep farmers and extensive cattle farmers, the existing payments no longer supports technological progress or aims at a more efficient farm organisation or viable under market conditions but covers deficits that are caused by being in production.

4 Results

4.1 Frequency analysis

In 2008, £546 million was paid to 22,429 claimants of total CAP payments in Scotland; £427 million to 19,905 claimants under Pillar One, and £119 million to 18,228 claimants under Pillar Two. Claims per claimant ranged from £1.36 to £844,000 under Pillar One, and from £0.28 up to £272,000 under Pillar Two.

The average claim per claimant under Pillar One was £21,467, under Pillar Two £6,551 and in total £24,374[2]. As table two shows the highest average claims are made in accessible small towns followed by accessible rural areas and the lowest average claims are made in the remote rural areas.

[2] The average figures do not add up, as a number of claimants did not claim under both Pillars.

Table 2 Average payments per claimant in 2008 by Pillar and region

	Pillar One	Pillar Two	TOTAL CAP
Large Urban Area	£27,303.66	£7,861.26	£29,145.75
Other Urban area	£23,932.14	£5,880.35	£24,879.06
Accessible Small Towns	£30,079.38	£6,979.33	£33,060.44
Remote Small Towns	£25,424.48	£7,062.59	£28,638.12
Accessible Rural	£29,230.73	£6,743.99	£31,334.02
Remote Rural	£14,385.98	£6,258.73	£18,385.18
Outside Scotland	£21,073.83	£8,122.93	£18,550.60
Total	£21,466.09	£6,551.90	£24,374.86

4.2. Spatial distribution of place of residence in 2008 (see Figure 1)

We found that 434 claimants lived in large urban areas (e.g. Glasgow, Edinburgh, Aberdeen), 785 claimants in other urban areas (often the outskirts of these cities), 3200 in accessible small towns, 4026 in remote small towns (e.g. Inverness, Melrose, St. Andrews, Perth, Dundee, Dumfries), 5628 in accessible rural areas (e.g. Fife, the Borders), 7890 in remote rural areas (e.g. the Western and Northern Ilses, Caithness, Sutherland, Ross and Cromarty, Inverness-shire).

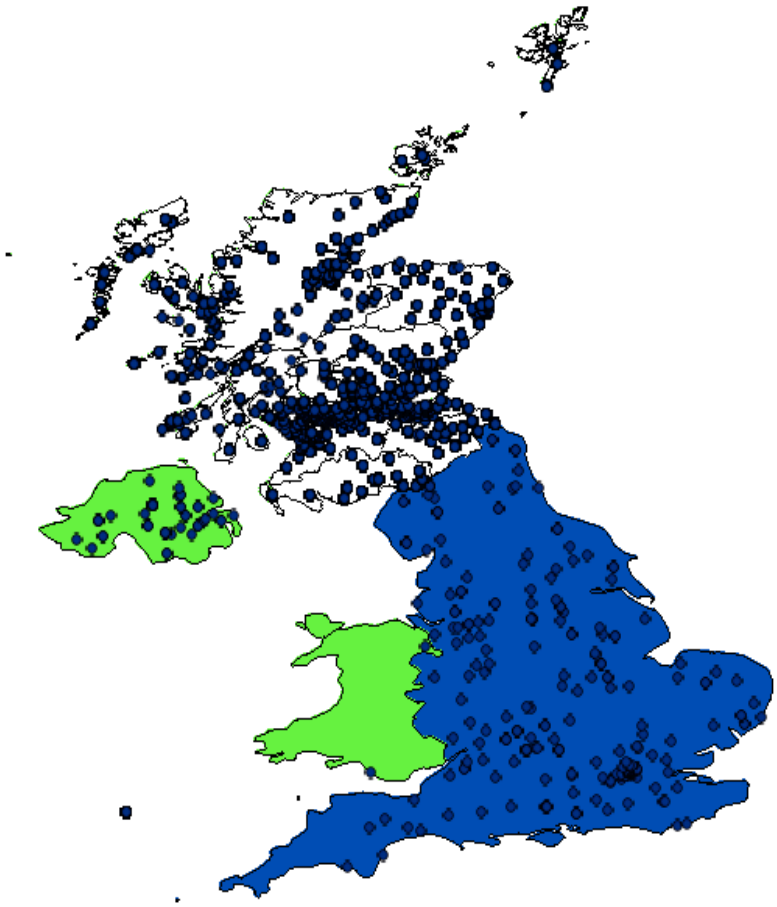
In adding up some of the categories into the broader rural urban categories we found the following percentages. The majority (about 85%) of the claimants in Scotland live in rural areas. About 5% of the claimants reside in large urban areas. If only accessible rural and remote areas are counted as rural, we find that under Pillar One 88%, under Pillar Two 88% and in total 86% of the claims are made to rural regions. Further analysis shows that these claimants get 84% under Pillar one, 86% under Pillar two and in total 85% of all Scottish governments governed CAP payments. Therefore, 14% to 16% of CAP payments are paid to areas that are either urban or outside of Scotland.

483 claimants lived outside Scotland. Of these, most the bulk part lived in the English Borders (e.g. in Berwick upon Tweed), some in Northern Ireland, central London or elsewhere in the UK, and a few (less than 30) abroad (e.g. Brussels, Copenhagen, Australia, Hong Kong).

The share of the total CAP expenses of claimants residing outside Scotland was as 1.63% of total expenditure, under Pillar One as 1.36% and 2.58% in Pillar Two expenses. The amounts of the Scottish CAP expenses spent on residents outside

Scotland in 2008 were £5.582.336 under Pillar One, £3.076.438 under Pillar Two, and £8.904.775 in total.

Figure 1 Spatial distribution of claimants in the UK



Source: Scottish Government and own calculations

Property of the borderline shapefile: Crown Estate and Scottish Government

Table 3 Spatial distribution of Scottish Governments CAP payment claimants in 2008 in percent

	Total	Pillar 1	Pillar 2
Large Urban Area	2,14%	2,04%	2,49%
Other Urban area	3,37%	3,57%	2,67%
Accessible Small Towns	18,00%	19,07%	14,17%
Remote Small Towns	21,08%	21,99%	17,84%
Accessible Rural	31,41%	32,92%	26,03%
Remote Rural	22,36%	19,04%	34,23%
Outside Scotland	1,63%	1,36%	2,58%

The analysis reveals that the expenditure that does not reach in the first place claimants residing in rural (agricultural areas) is for the total 7.14%, for Pillar One 6.98% and for the Pillar Two expenditure 7.73%. About 92% of all expenditure of the Scottish government is therefore paid to claimants in rural areas.

However, Table 4 shows that the mean claim in remote rural areas is considerably lower than the average claim made in Scotland. Such claims only reach about 64% in total (£15.493 annually), under Pillar One even only 54% and under Pillar Two at last about 88% of the national mean claim. Claimants outside of Scotland get in total less than the average claim, but their Pillar Two claims under are slightly higher than the national average claim. This result for a Pillar that is targeted at supporting rural development in Scotland is surprising.

Table 4 Average claims by area by fund and in average in Scotland 2008

	Total	Pillar One	Pillar Two
Large Urban Area	111%	115%	153%
Other Urban area	96%	103%	87%
Accessible Small Towns	126%	133%	106%
Remote Small Towns	117%	122%	105%
Accesible Rural	125%	129%	109%
Remote Rural	64%	54%	88%
Outside Scotland	78%	101%	127%
Average claim	£24.375	£21.466	£6.552

4.3 Distribution of claims across Scotland in 2008

In order to get a complete picture of the distribution of claims across Scotland similar to the classification of the Scottish Government[3], the data was re-classified into several classes (e.g. claims under £1,000; between £1,000 and £2,000, etc.) For each class, the average claim and the sum was calculated so to see how equally the payments are paid and in order to build a Lorenz curve (Figure 2).

[3] The Scottish Government presents annually information about how much claims are made by claimants classified by the amount of the claim being made. Eg. that under 5% of the claimants claim amounts of more than £500,000 annually.

Figure 2 Lorenz curve of CAP Total payments in Scotland differentiated by individual claimant

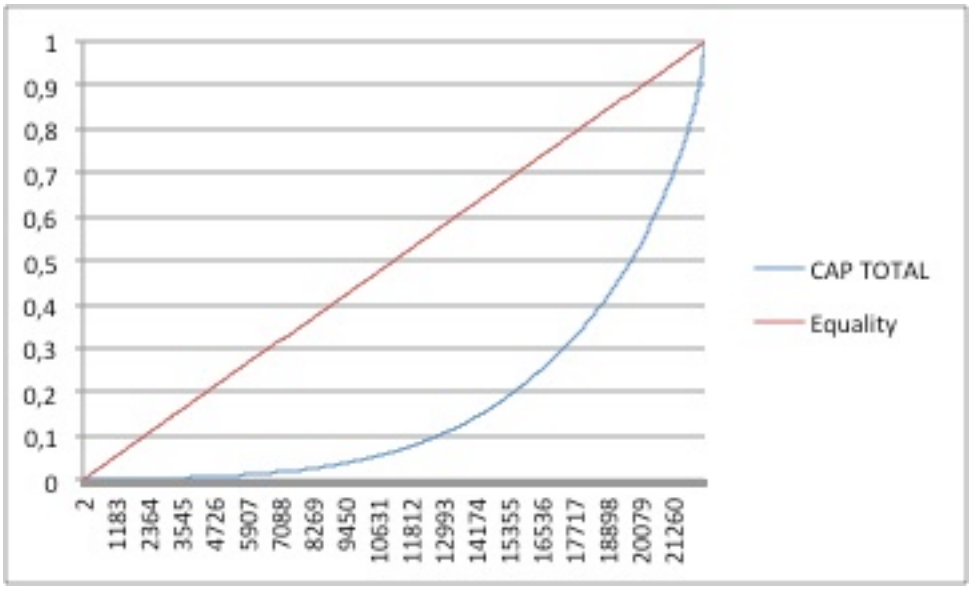


Table 5 distribution of CAP payments by deciles of claimants and percentage of total amount claimed

	Pillar One N = 19905	Pillar Two N= 18229	Total N = 22429
Total in £	£427.282.497, 33	£119.421.165, 15	£546.703.663, 84
1st decile	0, 14%	0, 47%	0, 17%
2nd decile	0, 38%	0, 74%	0, 44%
3rd decile	0, 85%	1, 39%	0, 91%
4th decile	1, 75%	2, 41%	1, 74%
5th decile	3, 36%	3, 87%	3, 17%
6th decile	5, 81%	5, 54%	5, 42%
7th decile	9, 10%	8, 12%	8, 76%
8th decile	13, 43%	12, 01%	13, 41%
9th decile	20, 22%	18, 95%	20, 47%
10th decile	44, 96%	46, 50%	45, 51%

As a rule of thumb, about 30% of all claimants in Scotland claim of the total CAP expenses about 79%, while the rest of the claimants with 70% (often small farmers, crofters or part-time and hobby farmers) got about 21% of all expenses of the SG. This distribution is true for Pillar One and Pillar Two expenses. Given that a) any CAP payment is related to landownership and b) land property is highly unequally distributed in Scotland, such result was expected.

Furthermore this separation into ten groups allows differentiating the groups by the mean claim the groups have made. These average claims can be found in the

following table. In the first six deciles the average claimed amount doubles each time as it is shown under the column Pillar One and under total.

It can be seen that the average claim is about £21.000 a year under Pillar One, about £6.000 under Pillar Two and the combination of the both claims due to the higher number of claimants is just about £24.000. Given that in Scotland in 2008 the poverty pay was between £12 and £13.000 annually and that the annual median salary was about £28.000, the average claim is a sound social payment.

Table 6 Average claims by decile in £ in 2008

	Pillar 1	Pillar 2	Total
10%	£298, 86	£309, 05	£408, 86
20%	£823, 74	£486, 29	£1.076, 49
30%	£1.818, 39	£910, 90	£2.213, 62
40%	£3.761, 72	£1.578, 83	£4.240, 67
50%	£7.215, 93	£2.539, 44	£7.733, 14
60%	£12.469, 47	£3.628, 13	£13.219, 93
70%	£19.529, 57	£5.321, 86	£21.365, 53
80%	£28.843, 24	£7.874, 78	£32.704, 69
90%	£43.424, 39	£12.418, 88	£49.908, 44
100%	£96.287, 57	£30.326, 04	£110.531, 34
Average	£21.466, 09	£6.551, 16	£24.374, 86

4.4. Gini-coefficient

The gini-coefficient is a measure of statistical dispersion. It measures the inequality of a distribution, a value of 0 expressing total equality and a value of 1 maximal inequality (Breiman et al. 1984). In such it often is used in economics to describe the distribution of incomes, wealth or like in this case of payments made to individuals.

There are a number of applications being made gini-coefficients of which the most famous one can be found in the measures of poverty by the World Bank (Worldbank n.d.). In some cases the gini-coefficient is also used to analyse the impact that remittances have on household welfare in Latin America (e.g. Acosta et al. 2008).

In agricultural economic literature we find for example that Vollrath 2007 has employed a gini-coefficient to assess the impact that the land ownership has on technical efficiency of farming. Keeney 2009 has analysed with this method the

transfer and distributional efficiency of farm support policies on farm household income.

We have calculated the gini-coefficients (Dg) for Scotland in 2008. The gini-coefficient is calculated by the following formula:

$$Dg = \sum_{i=1}^{n} h^i \frac{2i - n - 1}{n}$$ (Equation 1)

with h^i is the fraction of (in this case) payments that the individual claimant got from the total amount of payments made in 2008. The individual claims in order to calculate the gini-coefficient have been ordered by their amount in ascending order, $h^1 < \ldots h^{20} \ldots < h^n$. n is the number of each case and here the maximum number was 22,429. For the calculations of the gini-coefficients of Pillar One the maximum n was 19,905 and for Pillar Two it was 18,229.

We found that all CAP payments are unequally distributed across Scotland. The total payments had a gini-coefficient of 0.649, the Pillar One payments of 0.685 and the Pillar Two payments showed a gini-coefficient of 0.7. Therefore Pillar One payments are more equally distributed Pillar Two payments. So in comparison it seems that the single farm payments are able to contribute more to distributional justice than the Pillar Two payments. Furthermore even in the regions the equality was not given but in each location often a highly unequal distribution of the payments (reflecting the unequal landownership in Scotland) was present.

The gini-coefficients for the CAP payments were as follows:

Table 7 Gini-Coefficients of CAP payments in Scotland 2008

	Pillar One	Pillar Two	total
Large Urban Area	0.63	0.72	0.59
Other Urban area	0.66	0.75	0.62
Accessible Small Towns	0.59	0.71	0.58
Remote Small Towns	0.67	0.63	0.63
Accessible Rural	0.61	0.71	0.59
Remote Rural	0.73	0.69	0.69
Outside Scotland	0.86	0.76	0.76
Total	0.69	0.70	0.65

As the figures show Pillar One payments are marked by a high inequality as are the Pillar Two as in both cases the values are above 0.5. In total however due to the fact

that there is a higher number of claimants this inequality is lower than in the specific pillars. Inequality of claims across the areas is higher outside of Scotland than it is inside of Scotland. In such the second highest inequality is found in rural remote areas under Pillar One. Even under Pillar Two inequalities are present also it would have been expected that in a pillar that explicitly is targeted at rural development and the support of sustainability this distribution would have been more equal. Overall with a minimum gini-coefficient of 0.58 in accessible small towns equality of payments is not given to a large extent.

4.5. Influence of spatial factors on the individual claims in 2008

In order to test the influence of spatial, economic and social factors on the claims made, an exploratory ordinary least squares regression analysis was undertaken.

This was done with PASW 18. The dependent variable was the amount of claim in £ being made under Pillar One and Pillar Two resp. by the individual claimants in 2008.

4.5.1 Pillar One

The results reveal that there is a positive (but not statistically significant) relation between the rurality index (where 1 stands for urban centre and 6 for rural remote area) and individual claims. The spatial location has a significant relation to the place of residence of the claimants and the amount claimed. Regarding the latitude it can be said that the further south a claimant lives the higher the amount is s/he claims. Furthermore the further East a claimant, the more is claimed. This result is in accordance with the spatial distribution of the more fertile areas in the South and East while the North and Western parts of Scotland have more unfavourable production conditions.

Regarding the transport mobility, we find that the longer the car drive times to any service point (e.g. GP, shops, post office) are the higher are the CAP claims. On the other hand, it is also shown that the shorter the public transport travel times, the higher the claims.

There is a significant negative relation between the dependent variable and the total population in the LCA. This means that claimants residing in less populated areas (i.e. rural areas) get more SFP than residents of higher populated areas. The other social indicators are not significant but there is a hint in this data that a higher share of the

working age population in the total population decreases the payments, a higher unemployment leads to a lower amount and that more tax credit claimants in the surrounding area increase the amount paid under Pillar One.

Regarding the economic key figures of the areas we find that the most important key figures are the share that agriculture, industry and the transportation sector have of total regional GVA. In all cases, this means with a significant relation that the lower this share is, the higher the amount of money claimed is. Regarding the GVA per head in the areas we find a (again not significant) positive correlation that indicates: the better the economic situation of the adjacent area the higher the claim is.

Table 8 OLS estimation of influence of locational factors on amount of individual claims

Dependent individual Pillar One claim in 2008	B	Std. Error	Beta	t	Sig.
Constant	397819	36282		10.97	0.000
Six-fold code 2008	461	287	0.02	1.60	0.109
Latitude	-5665	616	-0.22	-9.20	0.000
Longitude	5807	394	0.25	14.72	0.000
Drive time car to services	136	588	0.01	0.23	0.817
Drive time public transport to services	-349	294	-0.08	-1.19	0.235
Total population in heads	-0,0150	0,0060	-0.04	-2.58	0.010
Share of working age pop.	-36255	50218	-0.02	-0.72	0.470
Employment deprived people ratio	93963	344313	0.04	0.27	0.785
Income deprived ratio	-178800	159992	-0.15	-1.12	0.264
Tax credit claimants ratio	896189	180657	0.12	4.96	0.000
Agriculture share of total regional GVA	-63749	37203	-0.05	-1.71	0.087
Production share of total regional GVA	-32902	15804	-0.05	-2.08	0.037
Construction share of total regional GVA	-34731	40546	-0.02	-0.86	0.392
Transport share of total regional GVA	-26207	13844	-0.03	-1.89	0.058
Public administration share of total regional GVA	28543	23738	0.04	1.20	0.229
GVA per head in £	0.056	0.279	0.01	0.20	0.841

R	R Square	Adjusted R Square
0.334a	0.111	0.111

Source: Own calculations

Overall, the OLS regression analysis shows that the higher claims are made where:

the place of residence is more eastern,

the place of residence is more southern,

the population of the Council area is lower,

the number of people on tax credit is higher,

the share of agriculture, industry and transportation is the lower,

the higher is the claim being made by the residents.

As the beta coefficients show, the most important factors are the spatial location rather than the socio-economic ones. Therefore the claims being made under Pillar One can be said to be in general dependent on the favourable agricultural conditions in southern and eastern Scotland.

4.5.2 Pillar Two

For the Pillar Two claims, which are largely LFA and agri-environmental payments and are should be paid in rural or rural remote areas, we found the following relations.

We find that the more rural an area is the higher is the individual claim. Latitude as well as longitude are highly significant and show that the more western and the more southern a claimant resides the higher the claim is s/he gets. While the latitudinal result was expected, the longitudinal result was surprising. As already been measured with the rurality classification we find also a significant influence of the transportation times. While car transport has a positive influence (e.g. the longer the time is to the central place, the higher is the amount claimed), the opposite is true for the public transportation services.

Regarding the social indicators we found that the total population size of the residents areas has a negative impact, e.g. the higher it is, the lower is the claim. As this is no significant relation the following indicators give a clearer picture as the share of the working population is as significant as is the share of the unemployed, the income deprived and the share of the tax credit claimants of the total population. The result can be understood as that the higher the share of the working population as well as the share of the income deprived is the higher are also the claims being made. The opposite is true for the share of the unemployed and the tax credit dependent people,

here the lower this share is of the total population the higher is the claim being made in Pillar Two.

Again significantly related to the claimed amounts are the economic indicators. The calculations shows that the following factors have a negative impact on the amounts claimed: the share of agriculture, industry, construction and public administration as well as the absolute extent of the GVA per head. This means that the lower the GVA per head is, the higher the claim is. On the other hand there is a positive influence of transportation sectors regional importance, meaning that the higher this importance is the higher is the claim.

	Unstandardized Coefficients		Standardized Coefficients		
Pillar Two	B	Std. Error	Beta	T	Sig.
Constant	80160	13313		6.021	0.000
Six-fold code 2008	624	106	0.070	5.909	0.000
Latitude	-2186	218	-0.273	-10.020	0.000
Longitude	1279	140	0.173	9.168	0.000
Drive time car to services	990	210	0.277	4.710	0.000
Drive time public transport to services	-276	106	-0.203	-2.608	0.009
Total population in heads	-0,003	0,002	-0.028	-1.471	0.141
Share of working age pop.	145065	18483	0.240	7.848	0.000
Employment deprived people ratio	-518700	127134	-0.605	-4.080	0.000
Income deprived ratio	219320	58789	0.546	3.731	0.000
Tax credit claimants ratio	-143400	65484	-0.059	-2.191	0.028
Agriculture share of total regional GVA	-40822	13402	-0.100	-3.046	0.002
Production share of total regional GVA	-17255	5771	-0.072	-2.990	0.003
Construction share of total regional GVA	-48803	14674	-0.076	-3.326	0.001
Transport share of total regional GVA	18945	5068	0.065	3.738	0.000
Public administration share of total regional GVA	-42706	8761	-0.186	-4.875	0.000
GVA per head in £	-0.693	0.102	-0.304	-6.797	0.000

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.192	0.037	0.036	10981.347

Overall the calculations show that the most important factor are

the spatial location followed by

the social factors presented,

while economic factors (e.g. GVA per head, etc.) have only minor influence as the beta-coefficients show.

In comparison to the factors that influence the Pillar One payments shows that rural development are more targeted to the areas in which rural development policy is needed to assist people and regions.

6. Discussion & conclusion

The CAP claims made in Scotland in 2008 were individually as well as spatially unequally distributed. Insofar as the current payments per ha are based on fertility of the land, this is not an unexpected result. In average the current main payment provides a sound income for Scottish farmers differentiated by area as well as by claimants.

Secondly, a small but considerable amount of money is paid to claimants that live in urban areas or even outside of Scotland. The suspicion here is that the current decoupled Pillar One payment system is much more coupled to landownership than before (Breustedt & Habermann 2011).

This is not in accordance with the common expectation that CAP should be a policy targeted at agricultural areas or at least the farming communities. It can not be expected that urban or non-domestically resident claimants contribute much to the prosperity of rural areas. Therefore, a new rule would be needed that prohibit spending claims on residents that live abroad. Furthermore, in the specific case of Scotland, there should be a more thorough inquiry into whether the claimants residing in core centres of urban areas in fact spent most of the claimed money on their farm e.g. for local labour, local rural factors, etc. The obvious suspicion in such cases is that absentee farm occupiers spend the claims in urban areas (whether as business investments or on their lifestyle).

The third implication is related to the already known finding that CAP expenditure to a large extent supports incomes rather than technological progress. CAP payments can be understood as a welfare payment, enhancing the incomes of farm households rather than following any other of the original CAP targets. This assumption is supported by a number of official publications that report that without CAP payments farming is a highly unprofitable business in a number of rural areas and often on small

farms. Therefore in practical terms CAP payments are social welfare payments for the largest number of farms while in the bigger farms CAP payments are a welcome amendment to already existing high incomes from production and often diversified investments (e.g. renewable energy, sporting enterprises, etc.).

For the future of the CAP and especially the Pillar One payments in Scotland there are two main messages from this analysis.

First, from a point of view of distributional justice a more equal distribution of the payments under Pillar One should be envisaged. The current cross compliance regulations are already state of the legislation and therefore it is hard to justify these payments for the next programming period. A way forward would be to pay a lump sum that leans forward to the poverty pay already existing in the UK. This would be an opportunity to support those farms who are already depending to a 100 or even more per cent with their annual household income on CAP expenditure. Currently the poverty pay in the UK equals about £13,000 (see DWP 2009).

Supposed that such a lump sum is paid to each farmer in Scotland who actually claims, the expenses under Pillar One would be reduced to £258 million annually. Such a system (probably based on historical claiming enterprises) would enhance distributional justice and therefore result in a gini-coefficient of 0 (Indicating that each farmer gets the same amount). Furthermore such a system would save about £168 million that would be secondly free for an amendment of Pillar Two measures (e.g. Investment into new technologies like tidal power, education, etc.).

Such additional funds would solve the second revealed problem: Rural development measures are given to the areas that are likely to be in the richer South-Eastern parts of Scotland rather than to the poorer North-Western parts.

This problem is that, against popular knowledge Pillar Two funds are not entirely spent to claimants in rural areas. With the additional funds more investment into agri-environmental schemes (axis two) as well as into rural development measures (axis three) and the successful LEADER approaches would be available. Furthermore there could be specifically designed programs that would enhance the payments to rural remote areas and ensure that also the areas seem unattractive now, there would be more initial support for initiatives that try to develop such remote rural areas.

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