

**Access to Land**

**Markets, Policies and Initiatives**

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# Access to Land: Markets, Policies and Initiatives

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**Abstract:** Acquiring access to land is an important issue for new entrants into farming. Traditionally, the succession of farms is within the family; market transactions are geared towards the enlargement of running farms. Policies and institutions have been built to facilitate this process. Current challenges of climate change, resource scarcity, biodiversity and equity, as are analysed by the Intergovernmental Panel on Climate Change (IPCC), the International Resource Panel (IRP), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Sustainable Development Goals (SDGs) reporting activities, make it so that there is a need to find alternatives for the current developments in farming, which is a process of up (scale enlargement) or out (stop farming). For these alternatives, new types of farmers who face the issue of access to land are needed. Based on FADN data and EUROSTAT data, current developments in the European farming sector were analysed to understand the impact of the process of modernisation on farmland markets and the complexities of access to land for new entrants. Whether these data may point to opportunities for alternative farming methods and the role of the direct payments of the European Union's Common Agricultural Policy were analysed. Policies and consequences are discussed. It is concluded that, whereas alternative farming models are promoted at the level of policy aims, this is not performed at the policy guidance level of land markets. Alternatives outside traditional institutions face the issue of scaling up to create impact. The Common Agricultural Policy is, in many ways, more of an obstacle than it is a promoter of providing access to land for new farmers. New policies are needed.

**Keywords:** access to land; agricultural innovation; Common Agricultural Policy; rural regeneration; land market

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## 1. Introduction

Current agriculture is in crisis. Agriculture is facing not only issues with its impact on the natural environment, such as on soil health and biodiversity [1], but also with the loss of the function of farming as the backbone of rural communities [2]. For decades, the logic of agricultural innovation has been about mechanisation, specialisation and scale enlargement. Cochrane [3] has analysed this development as an 'agricultural treadmill' [4,5] in which farmers must innovate and grow at the expense of farmers who step out, which results in a concentration of landholdings in fewer farms.

For as long as this treadmill has been defined, there have been authors [6–9] that looked for alternatives. Currently, these alternatives are on the agenda more and more to address challenges such as climate change [10], resource scarcity [11], biodiversity decline [12] and global equity [13], for which policies are being formulated as part of, e.g., the *European Green Deal* [14], its *Farm to Fork Strategy* [15] or, more generally, the *Sustainable Development Goals* [16]. This may also involve new entrants stepping into farming, which is at odds with the logic of the treadmill.

The mechanism of the treadmill [3,4] is that farmers are considered to be small firms that produce exchangeable commodities against a price they cannot individually influ-

ence. Farmers that come with innovations have a competitive advantage over their colleagues and receive a windfall profit. Other farmers soon follow this uptake, and in this way, innovations are internalised by the market. This internalisation does not only happen through lower prices for the commodities they produce, but also through the land market as farmers ‘...try to expand in an effort to realize these benefits. The resulting competition for land drives up rents, and profits go back to zero’ [17]. Farmers who do not expand or innovate step out and are overtaken by their innovative competitors [4]. For landowning farmers, it may be attractive to stop farming and rent out the land to the most competitive bidder, the process of which harms the ‘number of new entrants into farming’ [17] and contributes to a ‘oneway transfer of people and money out of rural communities’ [17]. Therefore, the issue is of relevance for a wider rural development agenda.

This paper considers, from a land market perspective, whether there is potential for rural regeneration by new farmers who operate outside this treadmill. Many of the critics, including Van der Ploeg [8], indicate that farmers must not be seen as entrepreneurs operating firms. Rather, there is a need for a revaluation of peasant farmers who are combining a range of activities and who do not depend on specialisation to produce a few market commodities. Farmers may redirect from producing exchangeable commodities towards producing unique products and services for a specific client base.

Critics, furthermore, show that coordinated efforts have constructed the treadmill and its appreciation of the farmer as an entrepreneur. Innovation was ‘not the work of a few lonesome inventors in attics or old barns; rather it resulted from organized and well-financed research several levels’ [3]. This has been channelled in public-financed infrastructure, such as ‘publicly funded access to research, information and training’ [4], as well as government-funded land consolidation programmes that allowed for large-scale mechanised farming practices [18].

The European Common Agricultural Policy (CAP) fits this infrastructure [19]. Since the 1957 Treaty of Rome, the CAP has as its first objective ‘to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour’ [20] (article 39-1a) as its first objective, which is still the first objective of the CAP in the treaties of today [21].

There is also a long tradition of analysing this treadmill concerning access to land, in which well-intended support to farmers to keep up in this land race is captured in higher land prices [22]. Cochrane [3] has characterised the ‘agricultural treadmill’ as a race.

‘No generalization can be made with respect to this race except to say that it probably operates to increase income disparities *within* agriculture: the labor income of the efficient producer, farming more land with more capital, holds constant or rises, and the labor income of average and poor farmers declines.’ [3]

So decades ago already, this development was criticized because of the promotion of disparities between farmers that step into the treadmill and farmers stepping out, as well as between renters and owners [17]. The outcome is not only that there are fewer farms, but also that farm holders have become older, resulting in the issue of a lack of rejuvenation [23].

Currently, policy agendas for farming have been changed from modernisation towards greener production methods [14,15]. Greener production methods involve more than a few updates, which can be performed as a simple fix by a farmer who is a few years before retirement but needs a different practice of farming. Therefore, the issue of rejuvenating farming is more than just a change of generations; it is also a change of practices.

Generational renewal can take place in various ways. It can be performed in the modernist ways by farmers that invest in entrepreneurial farming practises to work on a larger scale (more land, novel technologies) than previous generations, or it can be performed by farmers that ground themselves in a localised context of nature and society. In this latter practice, there is, from an economic perspective, less emphasis on external resources,

mechanisation and specialisation, but more on enlarging the ratio between the added value of the farm and the gross value of the production [9]. From the perspective of a farmer, it may look like a revolutionary change—a strong breach with past practices and the ‘path dependency’ [8] of its technologies—which is easier to accomplish for a new farmer than for a farmer who has already worked for decades on a farm.

It is likely, based on the analysis by Zagata and Sutherland [23], that this younger farming issue works towards both making the next step into the modernist ‘agricultural treadmill’ (young farmers that take the next step in innovative entrepreneurial investments) and breaching out of this treadmill towards green farming alternatives. Here, it may be that alternative forms of farming may provide ‘non-monetary benefits’ to new generations needed to keep them ‘satisfied with their profession’ [24], which may mean that farmers breach out of a single purpose of basic food production to a range of products and services. In this way, it may bend the outflow of labour and capital from rural areas.

Access to land is, according to several studies, the main issue for new entrants into farming [25,26]. In a report commissioned by the European Commission, access to land was considered to be ‘the most important barrier for young farmers to enter into the agricultural sector’ [27]. Central to this paper is the issue of whether, in the context of current developments in the land market, there is potential for access to land by alternative farmers operating outside this treadmill, but focusing on more diverse product portfolios and the embedding of farming in their communities and natural environments. The study was conducted in the context of the European Union and its CAP, but is of wider relevance, as both the modernisation of agricultural practices and the current challenges of climate change, resource scarcity, biodiversity and equity are of global relevance.

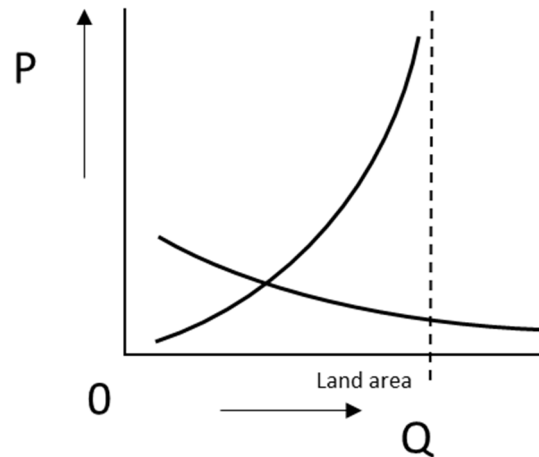
This issue will be discussed in this paper in the following way. After a short introduction to some economic principles, the paper will use FADN data and Eurostat data to study whether the current land markets are still reflecting the logic of the treadmill. This is important because if land markets still do so, then there is not much of an incentive for alternative pathways through the market. To put it in another way, the market as it is has been constructed based on current policy programmes, such as the CAP, but also on national programmes. National legislation may provide a lock-in to allocate land to farmers running in this treadmill. Furthermore, the paper investigates whether the FADN data show potential for alternative developments. This is followed by a discussion on how such an alternative may be developed.

## 2. Markets and Market Trends

Land is a specific good; there is a distinction between the values of ‘a land component and an improvement component’ [28]. The land component, the pure land value, is not based on the costs of producing it, as it is given by nature, which stands in contrast to the values of land improvements, such as irrigation works and buildings that people have added to the land. Specific to land is that these improvements are often bound to the land in such a way that they cannot be cost effectively separated from the land, making it so that ‘investments are locational fixed’ [29]. The following special features of land are distinguished by Alexander [30]. Firstly, land has limited *substitutability*; the specific location of land makes it so that it cannot be replaced easily by other lands. The land of a direct neighbour may have more value than land a little further away. Second is that land is a *limited resource*, not only globally, but also locally. Third is that land is an important *investment asset*. Fourth, and different from many other investment assets [30], is that there are considerable *public interests* involved in land. Fifthly, trading land has large *transaction costs*. Selling property takes time. It is the interplay of these characteristics that makes it so that land is very different from economic commodities [31]; that is, land market developments can be better explained if the institutional context is taken into account [32].

A specific feature of the land market is that local land supply is finite. Supply curves (Figure 1) become very steep close to the full use of this finite supply, which may enlarge this issue of accessibility towards properties. This well-known representation of supply

and demand curves shows that even when the quantity of demand in a market is high, this may not result in a transaction, as the price is too high. Furthermore, the quantity of demand may exceed the fixed area of land that is available. Due to urbanisation pressure, available farmland is in decline [33]. Moreover, farmland is often transferred within the family, making it so that only a very small percentage of available farmland is transacted through the market [34,35].



**Figure 1.** Supply and demand curves [29].

In many rural contexts, existing farms that enlarge their properties may be able to pay a higher price than new entrants to farming can afford. There are marginal costs to the benefits of a running farm acquiring some extra land, resulting in an improvement of benefits versus costs for the existing lands of the farm as well [36]. Furthermore, studies have revealed that it is 'easier for larger farms to expand' [37] and that large farms expand more than smaller farms, especially in a context of unequal farm sizes [37]. Rasva and Jürgenson [38] indicate that for many farms, it is a matter of 'to grow or go' [38].

Luijt and Voskuilen [36] analysed data in the Netherlands, showing that field crop farmers with a higher standard output not only hold more hectares, but also achieve higher standard outputs per hectare. Between 2005 and 2009, the average income per hectare for smaller farmers was EUR 554 standard output per hectare; for mid-sized farms it was EUR 706 per hectare, and for large farms, it was EUR 1171 per hectare. According to their insights, a mid-sized farm growing to a large farm could, if the costs per hectare stayed the same, pay more than twice as much for land per hectare than a small farm aiming to achieve a mid-sized farm [36]. Figures are different for different crops. This method shows what farms potentially can afford to pay. It does not reveal what they are paying for land and other costs that fit farming on a larger scale. An analysis of the net incomes of farms can show us what remains below the line.

In this paper, we will analyse two types of data to study the relationship between farm enlargement, farm concentration and farm development, that is, data from the FADN relating to the economic features of scale enlargement and EUROSTAT data relating to regional concentration of farmland holdings. The analysis focuses on data of relevance for new entrants into farming that aim for an alternative practice.

### 3. The Logic of Farm Enlargement and Its Impact on the Farmland Market

Statistical data provide insight into current developments. The statistical survey of the FADN allows for analysing farm developments throughout the EU. However, at the scale of the EU, there are many different contexts, including climate, price levels of labour and land and path dependency; there is diversity underlying the averages presented by the data.

The figures of the Farm Accountancy Data Network [39,40] underwrite the logic of farm enlargement (based on the treadmill idea), as they show that farms with higher standard outputs are larger (Table 1) and that generally, the standard output per hectare is higher the larger the farm is (Table 2).

**Table 1.** Size of farms in hectares of utilised agricultural area depending on economic size in Euro (€).

Economic Size (Standard Output)	Utilised Agricultural Area (ha, Average)							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
€2000–€8000 [A]	8.4	1.13	5.3	4.6	4.4	6.1	2.6	5.0
€8000–€25,000[B]	20.1	2.4	8.2	9.1	13.5	21.2	8.4	13.8
€25,000–€50,000 [C]	42.4	3.5	10.5	14.1	23.0	47.9	15.5	32.1
€50,000–€100,000 [D]	74.9	5.5	16.6	22.1	36.9	92.5	20.2	60.6
€100,000–€500,000 [E]	167.6	10.5	28.8	47.2	76.8	160.7	37.4	126.4
Over €500,000 [F]	685.9	31.1	70.5	121.7	268.4	301.5	86.3	657.9

Source: FADN [39].

**Table 2.** Standard output per hectare by economic size in Euro (€)

Economic Size (Standard Output)	Average Standard Output per Hectare							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
€2000–€8000 [A]	€ 951	€ 11,969	€ 2068	€ 2120	€ 1385	€ 1263	€ 3016	€ 1235
€8000–€25,000[B]	€ 968	€ 11,487	€ 2471	€ 2277	€ 1230	€ 950	€ 2499	€ 1104
€25,000–€50,000 [C]	€ 1069	€ 15,793	€ 3832	€ 2912	€ 1741	€ 856	€ 3651	€ 1217
€50,000–€100,000 [D]	€ 1138	€ 18,683	€ 4477	€ 3346	€ 2173	€ 782	€ 4279	€ 1258
€100,000–€500,000 [E]	€ 1354	€ 25,076	€ 7421	€ 4144	€ 3068	€ 1049	€ 6455	€ 1795
Over €500,000 [F]	€ 1536	€ 41,393	€ 11,125	€ 7938	€ 3826	€ 2635	€ 11,485	€ 2085

Source: FADN [39].

The higher standard output per hectare (Table 2) for larger farms is not only for the extra hectares they use, but for all hectares. Therefore, the statistical data suggest that in current farms, there is a large incentive towards scale enlargement. If, as Luijt and Voskuilen [36] have suggested for the Netherlands' context, the idea is that these extra outputs can be unlocked by buying extra land, the result is that the extra output can be allocated to the extra land acquired to achieve higher production, especially for larger farms (Tables 3 and 4). The results presented are only an assumption. It is about different farms that are in different size classes. Differences in context between the farms may dictate these differences. Therefore, it is a potential increase that may not reflect the situation of a specific farm. However, it is also a step that many farms take as they grow.

**Table 3.** Potential increase in standard output per hectare for farm growing in size (authors based on FADN [39]).

Growth in Economic Size (Standard Output)	Average Increase in Standard Output per Hectare of New Land in Euro (€)							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
▪ From [A] to [B]	€ 981	€ 11,058	€ 3204	€ 2438	€ 1154	€ 823	€ 2263	€ 1031
▪ From [B] to [C]	€ 1159	€ 25,451	€ 8591	€ 4078	€ 2468	€ 782	€ 5001	€ 1303
▪ From [C] to [D]	€ 1228	€ 23,697	€ 5585	€ 4106	€ 2891	€ 702	€ 6382	€ 1303
▪ From [D] to [E]	€ 1528	€ 32,014	€ 11,442	€ 4846	€ 3896	€ 1412	€ 8998	€ 2289
▪ From [E] to [F]	€ 1595	€ 49,731	€ 13,690	€ 10,343	€ 4129	€ 4445	€ 15,339	€ 2154

Standard Output A (€2000–€8000), B (€8000–€25,000), C (€25,000–€50,000), D (€50,000–€100,000), E (€100,000–€500,000) and F (Over €500,000). Increase in standard output per hectare of new land, from [x] to [y] = ((Standard output per hectare [y] \* Utilised agricultural area [y]) – (Standard output

per hectare [x] \* Utilised agricultural area [x]) / (Utilised agricultural area [y] - Utilised agricultural area [x]).

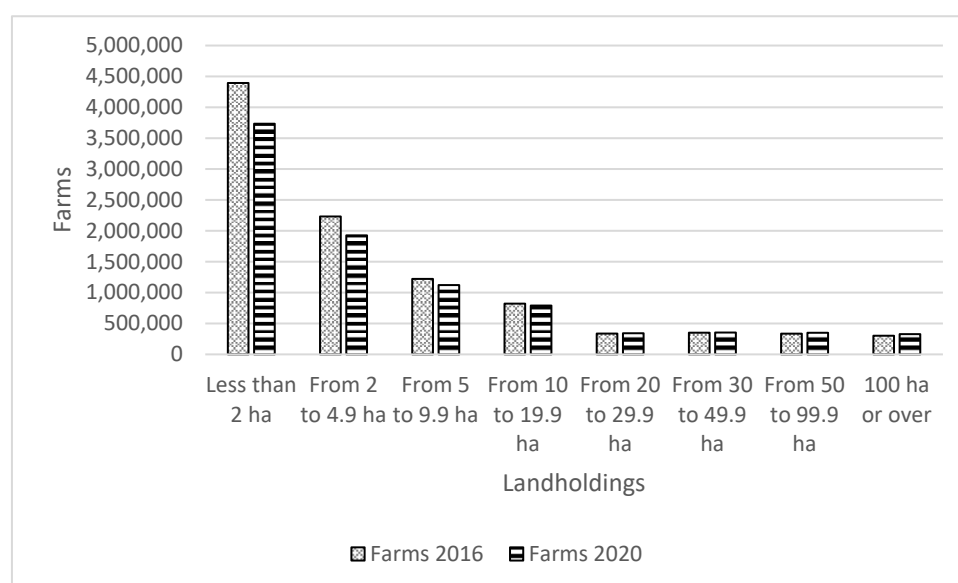
**Table 4.** Potential increase in standard output per hectare for farm growing in size relative to current output per hectare (authors based on FADN [39]).

Growth in Economic Size (Standard Output)	Increase in Standard Output per Hectare of New Land Relative to Current Standard Output per Hectare (based on Averages)							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
From [A] to [B]	103%	92%	155%	115%	83%	65%	75%	83%
From [B] to [C]	120%	222%	348%	179%	201%	82%	200%	118%
From [C] to [D]	115%	150%	146%	141%	166%	82%	175%	107%
From [D] to [E]	134%	171%	256%	145%	179%	181%	210%	182%
From [E] to [F]	118%	198%	184%	250%	135%	424%	238%	120%

Standard Output A (EUR 2000–EUR 8000), B (EUR 8000–EUR 25,000), C (EUR 25,000–EUR 50,000), D (EUR 50,000–EUR 100,000), E (EUR 100,000–EUR 500,000) and F (Over EUR 500,000). Increase in standard output per hectare land new land, from [x] to [y] = ((Standard output per hectare [y] \* Utilised agricultural area [y]) - (Standard output per hectare [x] \* Utilised agricultural area [x])) / (Utilised agricultural area [y] - Utilised agricultural area [x]).

For farms with animals, that is, Milk, Other grazing livestock, Granivores (pig and poultry farms) and Mixed (Table 4), the tables suggest that there is no incentive for smaller farms to grow incrementally, but this incentive only comes above a certain threshold. For all crops, it seems to be profitable for large farms to grow, at least taking into consideration how current farm practices have developed. These differences in a potential increase in output between small farms and big farms may contribute to the explanation of the unequal division of land holdings in many European regions. It at least adds to the explanation of why big farms aim to get even bigger, as there are economies of scale involved in current practices, and it also explains why certain types of farms do not make the step towards growth, as this cannot be reached incrementally. It also suggests why it is difficult for new entrants into farming to start a small farm, as they cannot pay the same price for the land as large farms that can unlock more extra output by growing larger.

Based on the potential increase in output, the expectation is that farms grow, which is reflected by statistical data (Figure 2).



**Figure 2.** Number of farms by landholding in the EU27 (based on [41]).

In the EU, there is a tendency towards fewer small farm holdings and more large farm holdings (Figure 2). Kay et al. [42] have analysed the inequality of farm holdings in Europe based on EUROSTAT data and revealed that the GINI index at the level of the EU was very high, equalling 0.81 in 2016 [42,43]. Note that a GINI of zero means that all land holdings are the same, and that with a GINI of one, all land is concentrated. Korthals Altes [29] has, using this same method, analysed the GINI at (NUTS 2) a regional level (Table 5, Figure 3). After all, it is at the level of the region that this inequality counts. Differences in landholdings between different regions may be a reflection of other differences in farming practices, including differences in climate, rather than in access to land.

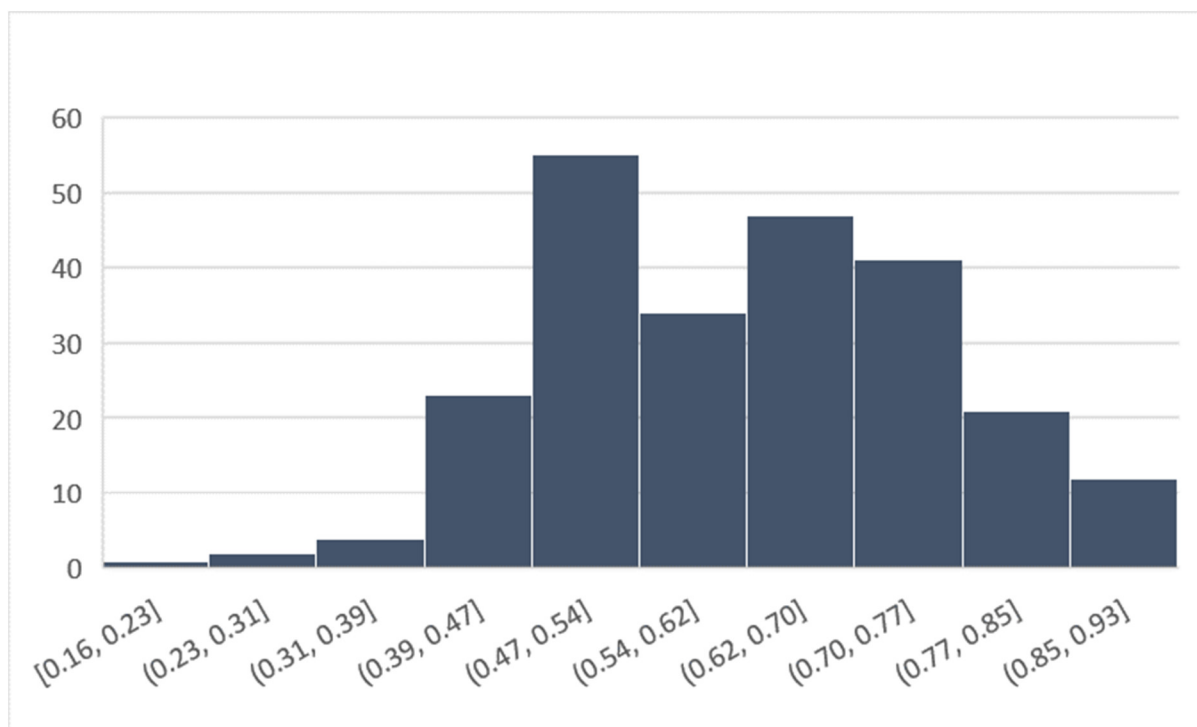
**Table 5.** Farm size inequality in the European Union based on the GINI index of land holdings by farm.

	GINI EU as a Whole	Average GINI NUTS 2 Region	Number of Farms (Million)
2005	0.81	0.64	14.2
2007	0.81	0.63	13.6
2010	0.82	0.62	12.0
2013	0.82	0.62	10.7
2016	0.81	0.62	10.2
2020	0.81	0.62	9.1

Note: 2020 is without the UK (112 thousand farms in 2016). Source author for 2020: Korthals Altes [29] for other years, both based on EUROSTAT [41] and earlier publications of ef\_m\_farmang data.

In 2020, there were 26 NUTS2 regions with a GINI of 0.81 or higher; 22 of these regions were located in Bulgaria, Hungary, Romania and Slovakia (see Appendix A). In Bulgaria, Romania and Slovakia, land restitution to heirs of original owners resulted in a splintering of ownership rights. Large companies have stepped in by acquiring lease rights to obtain reverse tenure situations [44]. In Hungary, the land has not been returned to the original owners, but a voucher system has been in place, resulting in a mix of large farms and smaller ones [45]. The others include two cities (Vienna and Lisbon) which have a limited area of farmland, such as a few relatively small vineyards in the hills close to the Vienna forest and some large farms in the flat areas on the east side of the Danube (and a city-owned farm of 2000 hectares) [46], a mountain area with large differences in size between vineyards in the valleys and mountain pastures (Aosta in Italy) [29,47] and a region (Jihovychod) in Czechia, which shares a border with Slovakia. Other regions with a large inequality (GINI above 0.67) include other regions in the CEE (from Latvia to Croatia and including the east of Germany), city areas, the well-known rural regions of inequality in the Iberian Peninsula (Andalucía, Alentejo, Extremadura and many others), some other mountain regions with both intensive valley agriculture and extensive mountain pastures (Trento), some other regions in the Mediterranean area (including in Greece and Italy) and some of the outermost regions of the EU (Guyane, Canarias). Two other outermost regions (Madeira and Mayotte) have the most equal division of farmland holdings in the EU (See Appendix A for the complete list).





**Figure 3.** Number of EU27 NUTS2 regions by GINI index of land holdings in 2020 (this paper, based on [41]).

Korthals Altes [29] indicates that many of the unequal farmland-holdings areas have a low score on the quality of government indicators as studied by Charron et al. [48,49]. This means that many people answer in questionnaires that they, e.g., do not feel that all people have equal access to public services or have equal access to get their interests promoted by the government. An in-depth analysis of the context of some of these regions, such as the NUTS 3 region of Teleorman in the NUTS 2 region Sud-Muntenia (GINI 0.86 see Appendix A) in Romania, shows that the large landholders have a powerful position in the economy outside the farming sector and tight relationships with people in office [29].

In short, the outcomes of the analysis show that there is a tendency for scale enlargement. Furthermore, it shows that in some regions, this is a more equitable development than in others. The question remains whether the data show that this development is inevitable or whether they also suggest that there are alternatives for the treadmill.

#### 4. Analysing the Data from Alternative Development Perspectives about Land

The question is whether there are alternatives for the developments analysed above. The most obvious alternative pathway to enlarging farm income without enlarging the farm is to step outside the silo of current crops towards another crop. A switch from a farm with animals, for example (see Table 2), milk production, to another type of crop may result in a higher standard output. Although in the past many farms have been multifunctional [50], currently, the process of scale enlargement largely takes place within the pillars of a given production method. Stepping outside these pillars may result in even more added value than that provided by scale enlargement in the current way of production. One such new way of farming is a process of farm restructuring which may be as large in its impact as the current trajectory towards mechanisation and scale enlargement has been. Here, an ‘ever increasing lock-in makes paths more difficult to break over time’ [51] (page 147) within a specific trajectory of farm organisation. From the perspective of a ‘farm manager’, such a process of restructuring may feel like terminating the current farm and starting anew. After all, farms are so specialised that past investments may not be re-

used in the case of such a change. It is more a step taken as part of a process of generational renewal, with a new generation on the farm finding a new way of farming, than a step taken as part of natural development by a given farm. It is also complex, as not all local contexts allow for all kinds of transitions, i.e., not all land is fit for vineyards. Moreover, other matters, including public policies, may limit these possibilities. New types of farming may involve matters that are relevant for planning and environmental regulations, such as new types of buildings, new uses of existing buildings and a different impact on the environment. It may also be that the current specialisation of the farm is the ‘highest and best use’ [52] of the land in the current context. This means that changes in the context are needed to nudge farmers towards a different way of farming. After all, it is the context which has been important in structuring current agricultural development pathways [4].

However, as indicated in the introduction, going back to the basics of farming is not all about enlarging gross income. Alternative farming models are less focused on the total output of the farm than on receiving more added value [9]. Here the FADN indicator ‘Farm Net Income’ provides some insight, as this variable excludes the finances for external factors (such as rent, wages and interest) and subsidies and taxes on investments [53]. The share of farm net income relative to total output becomes smaller as the farm gets larger (Table 6). As decoupled payments in the CAP are per-hectare payments, the importance of these payments relative to net income is, in many cases, higher for big farms than for small farms (Table 7). However, most striking here are not the differences within a certain type of crop, but the differences between different crop types. For farms practising horticulture, the decoupled payments play a marginal role (2% to 3% of farm net income), but for farms active in field crops, they are often more than 50% of the net income. Labour-intensive crops seem to be less well subsidised than land-intensive crops, which has an impact that goes beyond the land market. It may be discussed whether this low contribution to labour-intensive farming meets the CAP objective ‘to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture’ [21] (article 29-1(b)). Individual earnings of persons active in horticulture (Table 7) seem to be less supported than those for people active in other forms of farming, and it is precisely this horticulture where many new entrants into farming find their way [26,54,55].

**Table 6.** Farm net income as a percentage of total output (source FADN [39]).

Economic Size (Standard Output)	Farm Net Income as a Percentage of Total Output (Based on Averages)							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
€2000–€8000 [A]	41%	40%	39%	57%	46%	39%	23%	35%
€8000–€25,000 [B]	46%	38%	50%	57%	44%	48%	17%	41%
€25,000–€50,000 [C]	38%	33%	42%	52%	42%	38%	23%	35%
€50,000–€100,000 [D]	34%	31%	40%	46%	36%	35%	21%	29%
€100,000–€500,000 [E]	27%	23%	32%	35%	25%	29%	18%	21%
Over €500,000 [F]	20%	13%	29%	25%	15%	27%	15%	8%

**Table 7.** Decoupled payments of CAP relative to farm net income (source FADN [39]).

Economic Size (Standard Output)	CAP Decoupled Payments Relative to Farm Net Income (Based on Averages)							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
€2000–€8000 [A]	48%	2%	14%	23%	16%	30%	12%	26%
€8000–€25,000 [B]	47%	3%	10%	21%	23%	43%	24%	33%
€25,000–€50,000 [C]	51%	3%	7%	17%	23%	57%	15%	43%
€50,000–€100,000 [D]	54%	3%	6%	15%	27%	59%	18%	53%
€100,000–€500,000 [E]	59%	2%	5%	17%	35%	58%	19%	58%
Over €500,000 [F]	68%	3%	3%	11%	48%	40%	14%	126%

Larger farms lease a larger percentage of their farms (Table 8) and pay more rent per rented hectare in most cases (Table 9). This suggests that large farms are leading the demand for rented land (as they pay more), which implies that access to land is difficult for smaller farms that need a better ratio between net income and total income of the farm.

**Table 8.** Share of rented utilised agricultural area by economic size (source FADN [39]).

Economic Size (Standard Output)	Rented Utilised Agricultural Area (%) of Total Utilised Agricultural Area (Based on Averages)							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
€2000–€8000 [A]	22%	22%	6%	10%	18%	27%	12%	14%
€8000–€25,000 [B]	31%	18%	11%	16%	27%	30%	17%	26%
€25,000–€50,000 [C]	43%	24%	21%	19%	32%	45%	24%	38%
€50,000–€100,000 [D]	55%	32%	31%	25%	47%	54%	32%	51%
€100,000–€500,000 [E]	69%	43%	59%	35%	64%	62%	52%	70%
Over €500,000 [F]	75%	62%	68%	49%	67%	72%	58%	82%

**Table 9.** Rent paid per ha rented utilised agricultural area (source FADN [39]).

Economic Size (Standard Output)	Rent Paid in Euro (€) per ha Rented Utilised Agricultural Area (based on Averages)							
	Field Crops	Horticulture	Wine	Other Permanent Crops	Milk	Other Grazing Livestock	Granivores	Mixed
€2000–€8000 [A]	€ 113.51	€ 168.00	€ 158.82	€ 173.91	€ 53.75	€ 85.80	€ 80.65	€ 60.56
€8000–€25,000 [B]	€ 134.82	€ 388.64	€ 179.55	€ 177.62	€ 48.38	€ 74.61	€ 61.43	€ 61.30
€25,000–€50,000 [C]	€ 151.67	€ 555.95	€ 377.31	€ 214.13	€ 85.41	€ 85.18	€ 122.55	€ 100.65
€50,000–€100,000 [D]	€ 153.80	€ 651.70	€ 510.49	€ 259.39	€ 129.11	€ 80.18	€ 164.82	€ 123.60
€100,000–€500,000 [E]	€ 180.07	€ 822.49	€ 853.46	€ 325.23	€ 203.95	€ 102.77	€ 283.13	€ 161.61
Over €500,000 [F]	€ 211.28	€ 1190.52	€ 1286.18	€ 430.44	€ 225.13	€ 140.94	€ 418.68	€ 140.60

The larger share of farm net income to total income for smaller farms (Table 6) underwrites the conclusions that Oostindie et al. [56] drew for dairy farming, which they based on individual farm accounts. Farms that focus on reducing costs are more resilient during a crisis. The impact, both positive and negative, of changes in gross income (if these changes are independent of changes in costs) on net income is larger the smaller the ratio is between net income and gross income. This suggests that larger farms are riskier than smaller farms. This illustrates the importance that agricultural policies have in scale enlargements of farms, as these policies contribute to a stable environment that reduces the risks of farming big. The outcome is that for many types of crops, the growth of the farm does not transfer into a high net income per hectare. A considerable amount of this growth is captured by the extra costs of managing a large farm, including higher costs for renting land, which fits the treadmill theory.

Renting extra land involves not only making extra costs, but also getting extra decoupled payments of the CAP, as these are based on the area of farmland. In a way, the higher rent paid by larger farms can be seen as a capturing of decoupled payments by land markets [57–61]. Moreover, the CAP likely has an impact on farm sizes [62]. This makes it have, relative to existing farmers, a negative impact on new entrants into farming. In addition, the CAP is not likely to support other green development aims [63].

## 5. Discussion: Towards an Alternative Infrastructure

What does the previous analysis of existing farms say on the issue of access to land for new farmers? As indicated in the introduction, access to land for new farmers is a big issue in the European context of ageing farmers [23]. The fact that the highest rents are paid by large farms and that the added value is larger for bigger farms contributes to the fact that many new entrants have a large issue in getting access to land. Therefore, many new entrants go for crops that promise a high output per hectare of land, such as horticulture [26].

In this context, the Common Agricultural Policy (CAP) may be less of a support and more of a hindrance to these new entrants. The average share of CAP decoupled payments is, for farmers in horticulture, marginal to the farm net income (Table 7). Therefore, it does not support them considerably. Furthermore, the decoupled payments are captured by the land market, resulting in high land prices and making the land market very difficult to access for new entrants [60]. Existing landholders keep the land to harvest the grants, which are higher than the rent in most member states [64]. It seems that many new entrants into farming would be better off without the decoupled payments of the CAP (as it forms a barrier to access to land) than with the CAP (as the contributions from the CAP to horticulture are marginal). This is quite a disappointment, as the CAP aims to foster generational renewal [65]. Furthermore, the EU suggests that farming should transform into a practice contributing to a green deal. It suggests that the modernisation programme of the CAP, as has been carved in the Treaty of Rome [20] and upheld by a coalition of interested parties ever since, needs an update, which is very difficult. Treaties [21] are quite difficult to change, as they need consent from all member states and their parliaments. Opening this box of Pandora may also result in unforeseen outcomes, making continuation a part of a pragmatic political approach.

In addition, many national policies and legal structures aim to facilitate farmers running in the treadmill by supporting them to be one step ahead of the competition. An analysis of government legal tools and policies in the European Union shows that access to land for new farmers was not an established policy aim anywhere [66].

‘Unlike for the agenda for modernisation of farmland, for which most of the EU Member States have had land consolidation instrument, there is no successfully dispersed legal and policy arrangement to provide access to land for new generations.’ [66].

It is therefore the case that new entrants may find the best options for the issue of access to land outside markets and policy. Although several initiatives and organisations acquire land to make it available to new entrants into farming, many more are active in supporting other stakeholders to take action. These organisations exchange knowledge, such as in the Erasmus-Plus-funded projects ‘Fostering access to land for a new generation of agroecological farmers’ [67], ‘Learning towards access to land’ [68] and ‘Setting up a Learning Platform for Farmers’ Access to Land’ [69]. One of the leading actors in the access-to-land movement is Terre de Liens, whose foundation was founded in 2003 [70], and which has a range of legal entities, such as a national association, several regional associations to ensure local embeddedness, a charity foundation to allow for using gifts and bequests [70,71] and an investment fund, the ‘Foncière Solidaire’, [71] to allow for acquisition and use of low-interest funding to acquire farmland to be leased to new farmers. Macombe [71] evaluates this structure as ‘... a potential for durable collective alternatives to individual ownership of agricultural land, the future extent of which depends on future policy decisions.’ [71] Some older organisations, such as BD Grondbeheer in the Netherlands (founded in 1978), have not been directly involved in these Erasmus programmes, but have been inspired towards taking a more active role in obtaining new sources of finance to broaden their scope by this new access-to-land movement [55].

Loveluck, Martin-Prével, Rioufol, Farrell, Murtagh, Graham, Swade and Blasco [55] have provided an overview of 64 innovative actions, which have been categorised based on an ‘access to land pathway’ [55]. This pathway has the following stages. First, there are innovative practices that support people in their development towards professional farmers before they have access to land. Examples are schools that teach people to become farmers or traineeships. Secondly, there are practices that aim to ensure that land in general will be available for farm use. This can be initiatives and organisations that fight against land take, organisations that favour sustainable or more specifically agroecological use of farmland or organisations that support the use of local lands for local food provision [55]. Thirdly, there are initiatives that aim for land to be controlled by organisations

that favour 'more sustainable practices' [55]. So, land acquisitions by Terre de Liens or other organisations on the access-to-land network fit under this heading. Fourthly, there are the actual disposals of land towards new entrants by these organisations. Usually, this happens in the form of a lease. The price and conditions of the leases fit the proposed use of the land, which is different from many market leases that aim for high prices and a short turnover, which is not fostering sustainable land use. Fifthly, there are actions that support new farmers if they already have the land. Being a farmer only starts after having access to land to be able to use it for farming. The overview of the 64 practices shows that different initiatives have different focuses, but that the whole realm of this pathway is covered by the set of initiatives selected [55].

This access-to-land pathway can be seen as an alternative to the pathway of the agricultural treadmill. The main difference is that the organisation of this pathway lacks many of the government resources that the mainstream has, as government resources have not been set up to support this. Alternatively, access-to-land institutions are searching for support from local authorities and other stakeholders [72].

Many of these initiatives happen on a relatively small scale. Terre des Liens has acquired 5750 hectares of land for 219 farms [55]. Although a notable share of the other 390,000 farms [73] in France consult Terre de Liens to improve agroecological practices, it is still outside mainstream farming. Notably, organisations such as Terre de Liens provide an alternative to the current market-based allocation of land based on the idea that land should not be a commodity, but a common good [74]. Therefore, it is an alternative to the practices of markets and public policies. Building such an alternative, a parallel to land market allocations, is something that is not easy to deliver. This is an emerging movement. Although certain local governments participate in it well based on supporting initiatives [75], it is mostly not based on mainstream land policies, but is about specific actions outside policies which aim to stay outside the logic of the treadmill. Therefore, it is a different context that is being created outside the dominant logic, for which new allies are sought and found at local government levels. If the government is willing to support this development as well, it is necessary to support every stage of this pathway and to change financial support to farmers in a way that there is an incentive for big farms to transfer a part of their land to new farmers in a way that supports a sustainable way of farming. The current direct payment programme, in which farmers will get fewer grants if they do so, is a measure that puts the cart before the horse.

Although this study is focused on the EU, it has a wider relevance both in the global North [76] and in the global South. Although 'secure and equal access to land' for 'small-scale food producers' is one of the targets of the SDG, there is no official indicator to measure access to land [77]. Furthermore, next to farming, there is a wider competition for land. This competition is not reserved for traditional forms of urban sprawl for housing, economic sites and infrastructure [78], but also for clean energy production, which may result in 'a klondike-like landrush' [79] for sites designated for energy harvesting or 'energy injustice' [80] concerning the planning of hydropower plants, biodiversity offsets [81] and water management [82]. There is a hunger for land for which issues of fair governance are on the table.

Consequently, there is a policy gap between the aims and targets of providing farmers access to land, with the policies in action on one side resulting in a displacement of these farmers on the other side.

## 6. Conclusions

The question in this paper is why markets and policies do not cater to provide new farmers access to land; farmers who are aiming for new farming practices that support addressing the current challenges of rural areas. The short answer is that current institutions are built to guide the process of farm modernisation. This process has been analysed as an agricultural treadmill [3], which is upheld with an infrastructure of policies and other institutions. It has an impact on the land market. Large farms that grow can pay

higher prices than new entrants into farming. Moreover, many of the incentives and farm grants are captured by the land market, resulting in higher prices. Large, growing farms enlarge their landholdings primarily via rent. Due to the growing dominance of rent as a way to assemble more farmland, incentives and grants flow through the accounts of active farmers towards non-farming landowners, who are the final recipients of public funding to support farmers.

There is some scope in the market for other ways of farming, such as farming different crops and finding a better ratio between farm net income and the gross turnover of a farm, but whether these are indeed feasible strategies depends on the local context.

There are many policy initiatives that, in response to challenges of climate change, resource scarcity, biodiversity loss and global equity, promote other ways of farming at a high level of abstraction, such as the Farm to Fork Strategy [15], but these have not resulted in changes in the conditions on land markets, nor have they developed operational programmes that make a difference to the topic of access to land for new farmers. For many new farmers, the capturing of agricultural subsidies by the land markets and the consequent high costs of entering farming outweigh the potential benefits of direct payments from the EU Common Agricultural Policy.

For new entrants into farming, neither market conditions nor policies provide a way to access land. However, there is a network of access-to-land organisations that aim to fill this gap by providing support to potential new farmers, addressing land taken from farming to other sectors, promoting sustainable use of farmland, providing land to new farmers and supporting farmers that farm outside the treadmill. New policies may learn from these practices and support new farmers through these ways rather than by financing landowners through the purses of farmers.

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## Appendix A. Inequality of Farmland Holdings by NUTS2 Region in the European Union in 2020 Based on EUROSTAT [41]

Code	Region	GINI2020
RO22	Sud-Est	0.88
RO32	Bucuresti-Ilfov	0.88
SK01	Bratislavský kraj	0.88
HU23	Dél-Dunántúl	0.87
BG33	Severoiztochen	0.87
HU22	Nyugat-Dunántúl	0.86
HU12	Pest	0.86
RO31	Sud-Muntenia	0.86
HU21	Közép-Dunántúl	0.86
BG32	Severen tsentralen	0.86
HU31	Észak-Magyarország	0.85
BG42	Yuzhen tsentralen	0.85
BG31	Severozapaden	0.85
AT13	Wien	0.84
CZ06	Jihovýchod	0.84
BG34	Yugoiztochen	0.84
HU32	Észak-Alföld	0.84
HU33	Dél-Alföld	0.83
SK03	Stredné Slovensko	0.83
RO42	Vest	0.82

SK02	Západné Slovensko	0.82
ITC2	Valle d'Aosta/Vallée d'Aoste	0.82
HU11	Budapest	0.82
BG41	Yugozapaden	0.82
PT17	Área Metropolitana de Lisboa	0.81
LV00	Latvija	0.79
SK04	Východné Slovensko	0.79
ES43	Extremadura	0.79
ITH2	Provincia Autonoma di Trento	0.78
ES61	Andalucía	0.78
CZ07	Strední Morava	0.78
ES70	Canarias	0.78
PT18	Alentejo	0.78
ES23	La Rioja	0.77
LT01	Sostines regionas	0.77
ES62	Región de Murcia	0.77
CZ01	Praha	0.77
LT02	Vidurio ir vakaru Lietuvos regionas	0.76
ES30	Comunidad de Madrid	0.76
FRY3	Guyane	0.76
RO12	Centru	0.76
RO21	Nord-Est	0.75
CZ08	Moravskoslezsko	0.75
DE60	Hamburg	0.75
HR03	Jadranska Hrvatska	0.74
ES42	Castilla-la Mancha	0.73
ITI1	Toscana	0.73
CZ05	Severovýchod	0.73
CY00	Kypros	0.73
ITI4	Lazio	0.73
RO41	Sud-Vest Oltenia	0.73
PT16	Centro (PT)	0.73
ITC4	Lombardia	0.73
HR02	Panonska Hrvatska	0.73
PL43	Lubuskie	0.73
FRL0	Provence-Alpes-Côte d'Azur	0.73
PL52	Opolskie	0.72
PL51	Dolnoslaskie	0.72
PL42	Zachodniopomorskie	0.72
ITF4	Puglia	0.72
ITC1	Piemonte	0.72
EE00	Eesti	0.71
DED4	Chemnitz	0.71
PT20	Região Autónoma dos Açores (PT)	0.71
CZ02	Strední Cechy	0.70
ITH3	Veneto	0.70
ES52	Comunitat Valenciana	0.70
ITI2	Umbria	0.70
ITH4	Friuli-Venezia Giulia	0.70
CZ03	Jihozápad	0.70
ITF6	Calabria	0.70
ITI3	Marche	0.70
PT15	Algarve	0.70
ITG1	Sicilia	0.70
EL42	Notio Aigaio	0.70
DED2	Dresden	0.70
ITF5	Basilicata	0.69

FRY2	Martinique	0.69
ES51	Cataluña	0.69
DK01	Hovedstaden	0.69
ES11	Galicia	0.69
RO11	Nord-Vest	0.69
ES22	Comunidad Foral de Navarra	0.69
ES21	País Vasco	0.69
ITC3	Liguria	0.69
EL41	Voreio Aigaio	0.69
FRJ1	Languedoc-Roussillon	0.69
ITF1	Abruzzo	0.68
AT11	Burgenland (AT)	0.68
ITG2	Sardegna	0.68
ES53	Illes Balears	0.68
ITH5	Emilia-Romagna	0.68
EL43	Kriti	0.67
PL63	Pomorskie	0.67
DK05	Nordjylland	0.67
DK02	Sjælland	0.67
DK04	Midtjylland	0.66
SE32	Mellersta Norrland	0.66
PT11	Norte	0.66
PL62	Warminsko-Mazurskie	0.66
ITF3	Campania	0.66
ES24	Aragón	0.66
SE22	Sydsverige	0.66
SE11	Stockholm	0.65
DEG0	Thüringen	0.65
SE23	Västsverige	0.65
SE31	Norra Mellansverige	0.65
HR05	Grad Zagreb	0.65
ES41	Castilla y León	0.64
PL22	Slaskie	0.64
DK03	Syddanmark	0.64
ITH1	Provincia Autonoma di Bolzano/Bozen	0.64
SE33	Övre Norrland	0.64
CZ04	Severozápad	0.64
EL64	Stereia Ellada	0.64
HR06	Sjeverna Hrvatska	0.64
PL41	Wielkopolskie	0.63
DEB3	Rheinhessen-Pfalz	0.63
DED5	Leipzig	0.63
NL33	Zuid-Holland	0.62
DEB2	Trier	0.62
ITF2	Molise	0.62
ES13	Cantabria	0.62
SE21	Småland med öarna	0.62
SE12	Östra Mellansverige	0.62
FRF2	Champagne-Ardenne	0.62
EL54	Ipeiros	0.61
PL61	Kujawsko-Pomorskie	0.61
EL51	Anatoliki Makedonia, Thraki	0.61
EL53	Dytiki Makedonia	0.61
EL30	Attiki	0.61
DE13	Freiburg	0.61
EL52	Kentriki Makedonia	0.61
ES12	Principado de Asturias	0.61



EL61	Thessalia	0.60
FRF1	Alsace	0.60
DEB1	Koblenz	0.60
EL62	Ionia Nisia	0.60
EL63	Dytiki Ellada	0.59
FRY4	La Réunion	0.59
DE26	Unterfranken	0.59
DE12	Karlsruhe	0.58
NL42	Limburg (NL)	0.58
SI03	Vzhodna Slovenija	0.58
DE11	Stuttgart	0.57
PL91	Warszawski stoleczny	0.56
SI04	Zahodna Slovenija	0.56
FRK2	Rhône-Alpes	0.56
DE40	Brandenburg	0.56
DEA4	Detmold	0.55
FRI1	Aquitaine	0.55
NL22	Gelderland	0.55
DEA1	Düsseldorf	0.55
NL41	Noord-Brabant	0.55
BE21	Prov. Antwerpen	0.54
NL32	Noord-Holland	0.54
DE71	Darmstadt	0.54
DE72	Gießen	0.54
PL81	Lubelskie	0.54
PL82	Podkarpackie	0.54
DE24	Oberfranken	0.53
FRY1	Guadeloupe	0.53
DE73	Kassel	0.53
AT12	Niederösterreich	0.53
DEA5	Arnsberg	0.53
DEF0	Schleswig-Holstein	0.52
DEA2	Köln	0.52
DE14	Tübingen	0.52
DE30	Berlin	0.52
BE10	Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest	0.52
DE93	Lüneburg	0.51
DE25	Mittelfranken	0.51
AT34	Vorarlberg	0.51
EL65	Peloponnisos	0.51
FRM0	Corse	0.51
AT22	Steiermark	0.51
DEC0	Saarland	0.51
BE24	Prov. Vlaams-Brabant	0.51
DEA3	Münster	0.51
PL92	Mazowiecki regionalny	0.51
NL13	Drenthe	0.51
PL84	Podlaskie	0.50
FI1D	Pohjois- ja Itä-Suomi	0.50
DE92	Hannover	0.50
DE91	Braunschweig	0.50
DE94	Weser-Ems	0.50
FI19	Länsi-Suomi	0.50
PL71	Lódzkie	0.50
AT21	Kärnten	0.50
BE22	Prov. Limburg (BE)	0.50
DEE0	Sachsen-Anhalt	0.49

FI1B	Helsinki-Uusimaa	0.49
FRJ2	Midi-Pyrénées	0.49
NL34	Zeeland	0.49
DE80	Mecklenburg-Vorpommern	0.49
AT33	Tirol	0.49
BE23	Prov. Oost-Vlaanderen	0.49
DE22	Niederbayern	0.49
BE25	Prov. West-Vlaanderen	0.48
LU00	Luxembourg	0.48
FI1C	Etelä-Suomi	0.48
NL21	Overijssel	0.48
PL72	Swietokrzyskie	0.48
AT32	Salzburg	0.48
PL21	Malopolskie	0.48
IE06	Eastern and Midland	0.47
DE23	Oberpfalz	0.47
FRD1	Basse-Normandie	0.47
NL31	Utrecht	0.47
FI20	Åland	0.47
DE27	Schwaben	0.46
DE50	Bremen	0.45
FRI2	Limousin	0.45
BE33	Prov. Liège	0.45
DE21	Oberbayern	0.45
BE31	Prov. Brabant wallon	0.45
NL23	Flevoland	0.45
FRC1	Bourgogne	0.44
NL11	Groningen	0.44
IE05	Southern	0.43
BE32	Prov. Hainaut	0.43
FRI3	Poitou-Charentes	0.43
BE35	Prov. Namur	0.42
AT31	Oberösterreich	0.42
FRH0	Bretagne	0.42
IE04	Northern and Western	0.42
FRK1	Auvergne	0.42
FRE1	Nord-Pas-de-Calais	0.42
NL12	Friesland (NL)	0.42
FRG0	Pays-de-la-Loire	0.42
BE34	Prov. Luxembourg (BE)	0.41
FRD2	Haute-Normandie	0.41
MT00	Malta	0.41
FRC2	Franche-Comté	0.38
FRE2	Picardie	0.36
FRF3	Lorraine	0.35
FRB0	Centre-Val de Loire	0.35
FR10	Île de France	0.31
FRY5	Mayotte	0.30
PT30	Região Autónoma da Madeira (PT)	0.16

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