Liberalized land market and gradual subsidy decoupling; competition between farms and challenge for the agro-ecological transition. A case study in different agricultural regions of Wales.

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ABSTRACT: Land is considered as the most important production factor in farming. Since the 1990s farm subsidies have been gradually decoupled from farm production in most European countries; it is widely recognized that it led to a capitalisation of the given subsidies in land. At a time when European countries are reflecting on their future agricultural policies (EU level and national) to try to transition their agriculture towards more sustainable production systems, we need to understand the possible challenges regarding access to farmland. To answer this question Wales is an interesting case-study, its subsidy decoupling was gradual (1992, 2003, 2013) while its tense land market was liberalized from 1995 in an extremely competitive farming environment. This created 3 successive competitive environments which influenced the choices of existing farming systems and actors of the land market. Two agrarian diagnosis realised in Wales, in a lowland and an upland territory give a different insight on those farm evolutions. The analysis of their differentiation and the selection that happened among them from 1992 will help understand how land markets participated to lock some farms into some path of evolution resulting in a less environmentally sustainable management. The economic analysis of different modelled farms will help us understand how land access can constitute a challenge to the adoption of more agro-ecological faming systems. The next farming policy in Wales looks set to focus on helping farm to move towards more sustainable system, there is a risk that if the land access component is not looked after the goal might only be reach by a selection of farms.

KEYWORDS: Agrarian Diagnosis, Land Market, Farm based, System Based, Case-Study

ABBREVIATIONS

AR: Agricultural Revenue RP: Raw Product DK: Capital Depreciation AV: Added Value
CAP: Common Agricultural Policy
DC: Dairy Cows
DM: Dry Matter
EU: European Union
ha: hectare
KL: 1000 litres
MMB: Milk Marketing Board
NVZ: Nitrate Vulnerable Zone
Pbs: Pembrokeshire
UK: United Kingdom

LEXICON

Real Term: Economic value after the effect of rising prices is considered
Direct Payment: Payment directly given to the farmer
Coupled payment: Payment linked to farm's output
Decoupled payment: Payment not linked to farm's output
Historical reference: Payment computed from a given time period farm output
Milk Marketing Board: Monopoly Cooperative on Milk from 1932 to 1992.
Remuneration: Provides an income for the farmers as a family business
Profitable: For the farm as a business

INTRODUCTION AND CONTEXT:

1.1 Preamble – origins of this paper

Land is recognized among the most important production factor in farming therefore it had an important place in the conception of the second half of the 20th century agricultural development (Hodge, 2007). Its goals were to increase production by increasing the use of all production factors and inputs becoming available for the farming system combined to increases in labour productivity. As Part of the government policies to promote this, has been a support to family farms, tasked to implement it. To reach this goal a stable farming economic environment, including more tenant-favourable tenure types were introduced to enable family farms to implement this revolution (Cochet, 2008). This was successful but meant that as farms expanded, high prices of land and a shortage of land for expansion were identified, under the analysis of the actors at the time the market was deemed misfunctioning due to an supply shortage linked to the post-war tenant-favourable tenancy framework (CAAV 2005). In Wales, the problem was considered worse given the dense network of small family farms (compared to England).

The 1980s with the rise of neo-liberalism in UK politics saw successive governments choosing amongst the most liberal approach to farming policy in the European Union, and this as quickly as possible. Either inside the increasingly flexible Common Agricultural Policy (CAP) framework or in the UK context. As part of this liberal shock, to address the land supply shortage, new landlord-favourable, flexible tenancy laws were introduced to incentivize owners to rent-out what was under-used. This context of reducing support in an increasingly competitive environment led to a differentiation of farms with different ways to access production factors, including land (Lenormand *et al.* 2021). Under successive iteration of the CAP, Wales that had gained devolution of agricultural policy chose to gradually decouple subsidies from production as in most EU countries from 2003.

Today, a new radical shock is due to take place with Brexit in terms of policy and trade environment. The agricultural policy is set to focus on sustainable agriculture and payment for ecosystem services (Welsh Government, 2020), ahead of most of Western Europe (Farm to Fork Strategy). While over the There has been various approaches to try to understand the possible impact on farms of future scenario, most of them are focused on the economic viability of farms (e.g. ERAMMP model). But so far there has been little research on the role of the liberalised land market is playing in farm's evolution mechanism and its impact on economic, social and environmental sustainability of farming system, though it has been recognized as an important driver of agriculture development (Hodge, I. 2016). In general, the existing literature shows that the change in the general policy environment impacted the land market and led to price increases linked to subsidies (Ciaian, *et al*. 2019 or Traill, 1977), the market in the UK has mostly been analysed through a broad supply/demand scope (e.g. CAAV 2021 or Defra 2006). But the little price and supply data available (Savills, Farmland Market 2021) or Defra, Business Rent Survey, 2020) tend to show the diversity of approaches to gain access to farmland (renting agreements, partnerships) and some strong differences in trends between upland and lowland areas that are unexplored.

RESEARCH QUESTIONS:

To try to understand those elements we would like to understand; How did the land market liberalisation impacted farm evolution in Wales in the wider context of Agricultural Policy change? This in different conditions. What was the impact of the liberalisation on the sustainability of farms? What lessons do we need to draw at the eve of a second shock?

INTRODUCTION: The land markets as an under-researched influence on farm structural change

1.1 A secure family farm favourable land market as part of the post-war farming development

After the Second World War western Europe countries focused their agricultural policy on increasing output, by using pro-production agricultural policies. To reach this goal a focus was operated on family farms that were to implement output focused technological evolution also increasing labour productivity (Devienne, 2003).

A secured framework was provided for farms to work in, much in line with post-war social policies package. Agricultural outputs markets were controlled through a combination of quotas, safety net for prices, storage capacities, subsidies on export or consumption… There were several programmes aimed at guiding farm evolutions towards implementing this package, retirement, or investment subsidies. There were also some programmes aimed at subsidizing farming in challenging areas (Campbell 1985, Bowers and Cheshire 1983).

As in France the family-farm tryptic combining total control of the capital, work and land was favoured, in this regard the access to land was particularly secured/regulated in the aftermath of the second world war (Cochet 2008, Quinn *et al*. 2010). But in the UK, contrary to other EU countries, no structural tools were needed to reorganise landholding (e.g. France with SAFER); indeed farms were already larger and coherently organised than in most of Western Europe due to the past agrarian history. But a new heavily regulated tenancy system in favour of the tenant was introduced in 1948 and strengthened in 1986 (Cf Fig. 2), social farm renting was also available with the County Council farms (Prince 2012). Combined to the continued use of heavy succession taxes. The proportion of tenant farmers stood at 88% in 1908 but by 1994 this had reduced to just 24% (MAFF Statistics; Howell et al. 1999). As a result, many estates, large traditional landowners disappeared but most managed to retain at least part of their land.

By 1992 Welsh farms had specialized on different livestock productions but also increased in size with reduced labour, mostly by buying land and implementing labour productivity improvements historical statistics show. A selection among farms had already taken place but as farms were incentivized to expand and increase output or leave the industry, they were further incentivized in this through specific capital taxation policies as shown in Gibbard and Ravenscroft 1993, for example the inheritance tax relief for farms (Butler 2015). Since 1984, active owner-occupier farmers pay no inheritance tax on farmland and benefit from a hefty rebate on other farm elements (while landlords are only exempted for 50% of the tax), allowing successors not to bear the full brunt of land value appreciation (J. Butler 2015). This further consolidated existing farms and the shift in landholding to owner-occupancy. It also led to a disconnection between the price of vacant land versus the one of tenanted land but also disjointing the rent value from the price of land as described in (Gibbard and Ravenscroft 1997 or Traill 1977).

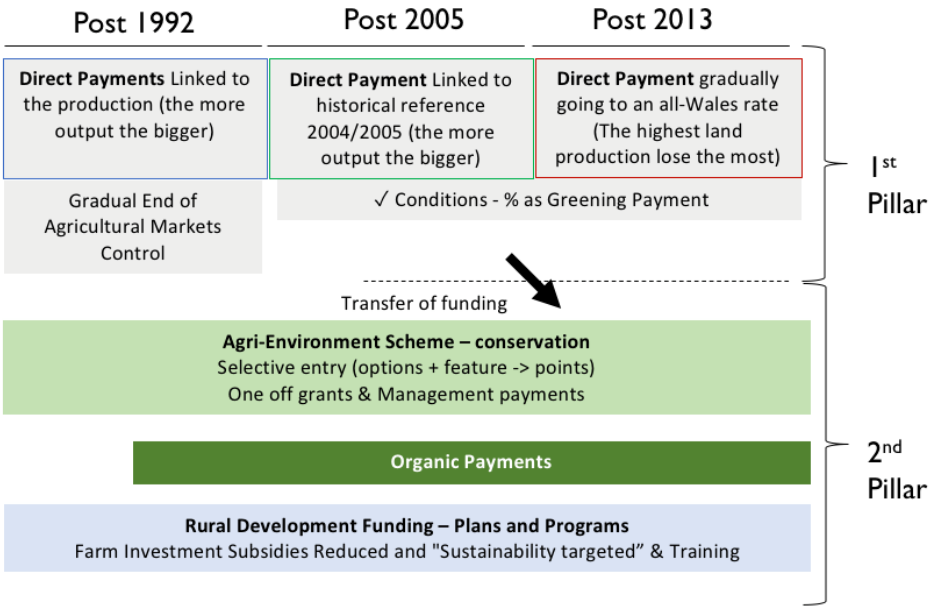
As a direct consequence of those policies, landowners were disincentivized to lease-out land (farmers or large landowners) and there was less and less land available on the rental market (CAAV 1996 or statistics from the MAAF), most of it being farmed directly, or under risk-sharing agreements (Cf fig.1)(including by traditional landowners) or grey rental agreements (Cf Fig.1). These reports do not enable us to understand local differences in the local land market context.

1.2 From 1980, a liberal shock took place for agriculture's environment

Although a neo-liberal conservative government was in place in the UK from 1982 onwards, agricultural policy was largely determined in Brussels and thus retained its traditional focus, they nevertheless set out the political scene for the following 35 years, and as soon as possible the UK made

the most liberal and less costly choices possible linked to the UK rebate (D'alfonso 2016). The first liberal choice was to free the quota markets in the UK, so that the right to produce could be traded as a commodity between individual farmers and landowners. For the UK, the CAP reform of 1992, gave the opportunity to control the cost of the agricultural policy while it evolved into a twin-track model (Cf Fig 1.): one focused on markets, economic outputs, and farm incomes (Barthélémy *et al.*, 1999) while the other was centred on environmental and rural development measures (Dobbs *et al.*, 2008). Related to this broadening of goals, choices on the CAP were gradually devolved, enabling national and regional governments to choose the precise implementation of key elements in the package.

FIGURE 1: SIMPLIFIED POST 1992 CAP IMPLEMENTATION IN WALES (BY THE AUTHOR FROM THE LITERATURE)



Within this process of reform, the market support measures of the 'first pillar' were reduced and direct payments were introduced as a compensation mechanism, this was driven by European tactics within the emerging global trade liberalisation process. The UK moved to break up its post-war agricultural marketing monopolies in response to strengthening EU internal market and competition rules and set the safety net of market support even lower (using the mechanism of the green pound). By 1998, farm output prices were aligned on fluctuating world market levels (Hobbs *et al.* 2008).

But the second axis which introduced Agri-Environment schemes paying for non-market benefits and was compatible with the trade outlook, with the Environmentally Sensitive Areas introduced from 1987 in the UK (Buller 1999) protect sensitive environmental landscapes in particular parts of the country. Those payments were linked to few changes in management, mostly focused on grazing density on mountain land and protection for some landscape features (Boatman *et al.* 2008). A more flexible menu-based approach, Tir Cymen, was subsequently piloted in 3 parts of Wales from 1992 prefigurating later schemes. Finally, agricultural regulations were tightened most notably in the form of an expanded implementation of the EU Nitrates Directive (Burt *et al.* 2010).

1.3 Can the changes in witnessed on the land market be attributed to the liberalisation of 1995?

In this changing environment, the tenancy market was liberalized from 1995 with a broad agreement across the sector; traditional landowners, farmer's unions… (Defra 2006 or Gibbard and Ravenscroft 1997). Indeed, further farm expansion was supposed to mitigate the difficult context in farming. The land tenure legislation was partially liberalised through a new flexible approach of variable-term 'Farm

Business Tenancies', from 1995 (Hill *et al.* 1985). This reversed the balance of power, with landlords able to adopt a best-price, best-time approach to renting land, with greater possibility to retain control of land at the end of each term (Savills Research UK, 2018)(Cf Fig 2.).

FIGURE 2: A DRIVER OF CHANGE, RANGE OF TENANCIES, FROM 1995. A BEST-PRICE APPROACH FOR LAND PRICES WITH LANDLORDS IN CONTROL (INTERVIEW FINDINGS COMPLEMENTED BY BUTLER ET AL 2008, B. ROHÉ 2018)

	Type of Agreement	Length of the Agreement	Breakpoint	Lease price for land
Formal	**Full Agricultural Tenancy (FAT) 1986** Not available anymore. Land and Buildings	**Very Long Term** - Lifetime lease until retirement (county council farm) - 3 generations (private landlord)	At the end of the agreement If no direct succession	**CAP subsidies to the farmer.** Regular rent reviews (every 3 years) Agreement on improvements/investments and possible compensations. Relatively low compared to FBT. Price per acre or holding price.
Formal	**Farm Business Tenancy (FBT) Since 1995** Bare Land (and Buildings)	**Medium to Long-Term** min : 1 year max : 15-30 year Average: 5 years	<2year : At the end of the agreement >2year : At least 2 years before	**CAP subsidies to the farmer (except grey agreements, except high rent to integrate CAP payments)** By tender/application or by agreement between the parties. Agreement on improvements/investments/management and possible compensation. High compared to FAT. Price per acre or holding price.
Formal	**Grazing License** Bare Land	**Short to Medium** Uncertain max: 2 years	At the agreement's end. Unregulated.	**CAP subsidies to the farmer (except 11months agreements)** Right to graze. Possible restrictions of use. Higher compared to FAT, lower than FBTs, possible amicable agreements.
Informal	**Gentleman/Handshake Agreement** Bare Land	**Short to Medium** Uncertain Length : <1year Mostly: 11 months	At the agreement's end. Unregulated.	**CAP subsidies to the landowner (except amicable agreement)** Prices vary strongly. Depending on the closeness of management from the landlord; - Services included in the rent (Fertiliser, hedges...) - State and quality of the land and improvements agreed - Multiple users or Restrictions of use Usually higher than FBTs, except amicable cases. Price per acre.
Informal (Output Specific)	**Fodder Grower**	**Very Short Term** Harvest the crop	« At will » Unregulated.	**CAP subsidies to the landowner** Only having the right to harvest the crop (grass, cereals...). Management by the landlord. Usually by bidding, tender or agreement. Price per acre.
Informal (Output Specific)	**« Grazing »** Bare Land	**Very Short Term** Months maximum	« At will » Unregulated.	**CAP subsidies to the landowner** Right to graze during a specific time. Price per head.
Formal	**Contract Farming, Sharefarming, Partnership** Land, Building, Capital and Work.	**Medium to Long-Term** 1 year to 30 years	« At will » Following the agreement's rules.	**CAP subsidies included in the land value remuneration.** Agreement negotiation.

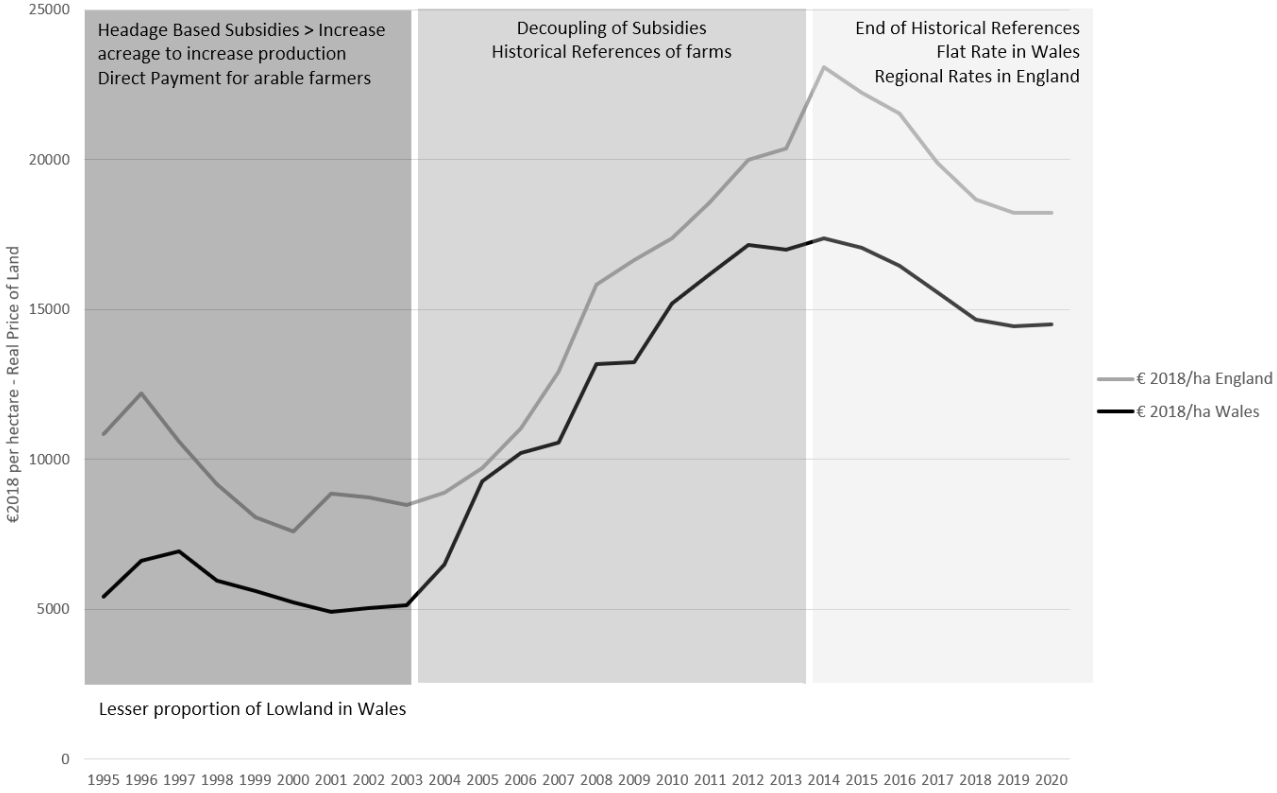
Subsidy decoupling from direct agricultural production followed gradually from 2003 to 2019 (Cf Fig. 1), it was reported that it led to an increase in the price of land not explained by the market parameters on agricultural subsidy impact on the land market (Savills Research UK 2021 or Ciaian *et al*., 2019)(Cf Fig 3.). The result of this context was that from 1992 the number of active farms continuously reduced while an expansion and specialisation of subsisting farms responding to the different drivers as shown in Lenormand *et al.* 2021.

But after an initial increase in the balance of tenanted land under regulated agreements; FBTs after 1995, the additional of tenanted land reduced rapidly to much lower levels from 2003 (CAAV 2005 and 2021). At the same time the amount of land made available on the land market reduced quickly. Loughrey *et al.* 2020 showed percentages hovering around the 0.5% mark for five different EU countries over 10 years; the figure was 0.4% for England but 0.2% for Wales (Savills, 2021). Besides, existing actors and land-use are in competition on this thin market with rural newcomers; large corporations and financial investors (e.g. pension funds, insurers) as well as NGOs and wealthy philanthropists with very different sets of objectives for their land (Dwyer and Hodge, 1996), most recently including rewilding or sequestering carbon (Savills Research UK 2020).

Academic work on the land market and its functioning have focused on the general supply/demand pattern and land values at the country level, linking it heavily with the subsidy system functioning (Střeleček *et al.* 2010). Those do not explain the apparent supply and cost issues on the market and do not explain the evolution of farms or the mechanism by which the farms dealt with those. And while there is clear evidence that there has been different dynamics (later increase of upland land value) for different productions and land types that do not match the macro-economic approach. This is partly linked to the level of information collected being restricted to land sales (since 1990) and

rented land with formal agreements, only detailed surveys tend to have a comprehensive view (Buller *et al.* 2007). Far from the amount of data collected by the SAFER in France (Reports and presentations 2019).

FIGURE 3: REAL AVERAGE PRICE OF FARMLAND IN ENGLAND AND WALES IN €2018 (SAVILLS, 2020)



Finally, while the tenancy reform of 1995 was deemed a milestone, several types of unregulated ways of renting-out land were already available to landowners (Cf Fig. 1). Those are very difficult to follow in the data available given their unregulated nature (CAAV 2021), but they were particularly important for farms (expansion pre-1995), or large landowners (ways to retain control of their land) as shown in Defra 2006). Combined to the structural 'laissez-faire' around transactions on agricultural land compared to several EU countries in terms of purchase control (limitations, conditions) (Safer 2015), there is an admission that the diversity of actors in the land market and relationships inside it are extremely complex (Butler *et al.* 2008).

1.3 Land markets are not well understood and not recognized among the challenges by policy

In preparation for leaving the EU, the devolved governments of the UK began a process in 1997 to review agricultural policy and design future frameworks for farming and land management support. The future Sustainable Farming Scheme (SFS) of the Welsh Government, to be implemented after 2022, sits in this vision and aims at shifting the focus of support away from its significant farm income support focus and closer to a multi-faceted sustainability (inc. economic and environmental goals together), with payments for public goods (UK House of Commons, 2019; National Assembly for Wales - Climate Change, 2019; Welsh Government White Paper 2020). There is a clear willingness to set farmers in a role of land stewards, in this respect. This echoes the EU Farm to Fork strategy for the future CAP.

Though land as a production factor has clearly been under pressure recently (Savills 2021), it has so far not been identified whether the land market structure, particularly liberal had an impact on farm's

evolution and their sustainability in isolation to other factors. Many challenges have been identified for farms in the post-Brexit era, but access to land for farming and other uses has not officially been recognized as a policy issue in Wales (Brexit and our land 2018 or Welsh Government 2020), in contrast to Scotland (Williams 2015). Actors and the literature tend to identify it as a barrier to entry in farming (Zagata et al. 2017), but the evidence available does not enable us to isolate the land market element. It has been absent of most modelling, or analysis done to assess the impact of EU-exit (e.g. ERAMMP model) except for long-held expectations that the change of subsidy system would release land and reduce land prices (Gibbard and Ravenscroft, 1997; Roberts 2018).

As the next section of this paper discusses, empirical work in case study areas of Wales has highlighted the importance of the land market in patterns of farm differentiation, as well as the little-known intricacies of its structure. Taking the analysis to a level closer to the ground to at the same time isolate the land market specific impact from local determinant (as described by Dwyer 2021). We suggest that this challenging land market has a greater influence than is commonly reported in the UK literature; via its influence both upon renting (tenant farming) and buying (farm ownership and management). Those needs can be answered by the agrarian diagnosis approach allowing us to link the functioning of the land market to the farming system functioning through an understanding of the agrarian system processes.

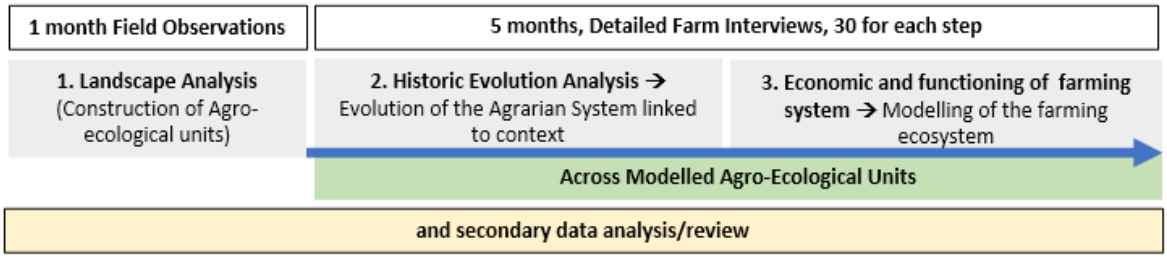
2. METHOD

2.1 The Agrarian Diagnosis an original approach to the landholding challenge

The method of agrarian diagnosis (Cochet and Devienne 2007) from the French 'comparative agriculture' theory enables a holistic systems-based approach to analyse any typical small agricultural area (40-50 km^2); providing a fine-grained qualitative construction of quantitatively-defined models, connected to the wider context and history.

The typified field study entails three successive and interdependent steps (Cf Fig. 4). The first step is studying the landscape through desk review (geology, geomorphology, soil science, secondary data...) and field observations (identifying long-term patterns of change). This is followed by in-depth semi-structured interviews with retired farmers who have witnessed and took part in the agricultural transformations of recent decades. During those, quantified technical, economic, and qualitative environmental and social changes on the farm are discussed as precisely as possible. The aim is to understand farmers' motivations in relation to their environment. This enables a specific and in-depth understanding of farming system differentiation across the agro-ecological units in the landscape. An analysis of trajectories of farm change takes place using the reconstruction of farm systems through time, generating a typology of farms within that territorial setting. These modelled farm types are linked to their historic differentiation in the landscape.

FIGURE 4: THE AGRARIAN DIAGNOSIS A 6 MONTH IN-DETAIL STUDY OF A SMALL AGRICULTURAL AREA. THREE INTERDEPENDENT STEPS. (BY THE AUTHOR FROM COCHET AND DEVIENNE 2007)



This typology forms the basis for a targeted sampling of farms where a second round of interviews will take place. These are in-depth agronomic and economic examinations of existing farming businesses' functioning, based upon the characterisation of all the main farming systems present in the landscape,

identified via the typology, and defined as distinct 'archetypes' (Cochet, 2011).

This diagnosis at different scales makes it possible to characterize the operating logic of each production system, including elements relating to its use of land and its history. For example, the method identifies the historic accumulation of the land necessary to the operation of the farming system and its operation, indicating how it has affected farm evolution and farmers' room for manoeuvre. to the approach enables us to prioritize between the economic and environmental challenges and constraints faced by each farm type, as well as to examine how they combine and how their shape change. In this way, and through interactive and continuing triangulation against secondary data sources and relevant literature.

The Agrarian Diagnosis is therefore an adequate tool to understand the combined role played by a liberalized land market and consecutive reforms of the CAP at a local scale on farm evolutions, as well as the functioning of the land market in relation to those. It also provides an extensive record of the access to land by farms within a regulated framework or not.

2.2 Two Agrarian Diagnosis case-studies in Wales

The generalization of findings of an Agrarian Diagnosis relies on the ability to scale its findings up by comparing with other areas and different contexts. UK farmed land is commonly split between Lowlands (<300m of altitude, dairy or arable focused, best land available) and Uplands (>300m of altitude, beef and sheep focused, a mix of rough mountain/hilly land and grazed and enclosed grassland). Two typical Welsh small agricultural areas have been studied with the agrarian diagnosis method in 2019 and 2020 – Cf Appendix 1:

The South Pembrokeshire study area is located at the south-western tip of Wales: it is a coastal lowland broadly representative of South Wales. The study area covered a diversity of bedrock and a gradient of oceanic influence from Narberth to Castlemartin. South Pembrokeshire (Pbs) is a hilly lowland area under 200m of altitude with a "*bocage*" landscape (a landscape with fields delimited by tree lined hedges and lots of grassland); it features a North-South soil and climate gradient, typical of South Wales lowlands. This diversity gives a range of typical Welsh lowland agricultural production to take place including milk, beef, sheep and potatoes. Pbs farming is very much focused on livestock and grassland. Most traditional estates (privately-owned) have disappeared over time, and today, most farmers own their homestead and holding (authors' fieldwork, Welsh Agricultural Statistics 2018).

The Bala area, around the upper Dee valley catchment, in North-West Wales. It is organized around the Dee valley, enshrined in the middle of a plateau up to the lakes of Llyn Tegid and Llyn Celyn. An area relatively isolated and scarcely populated, at the border with Snowdonia National Park and with a diversity of landscapes illustrating a typical Welsh upland landscape. The lush, wide alluvial valley transitions up to green hills (brown-topped with semi-natural vegetation) or slopes more steeply to reach the more mountainous parts (higher in altitude – up to 700m - and wide ridges arrangement, rough-grazing with rocky outcrops and screes). This general organization from the Alluvial Valley - more lowland conditions (V) to the Hills/Slope (H) and then the Mountain (M) can be found in every upland area of England and Wales. Farming in the Bala area has specialized in mainly beef and sheep production with a gradient of possibilities depending on the position of farms in the landscape. The landholding structure is a mix of owner-occupied farms and relatively traditional, large estates (privately owned – by individuals or investors- or by landowning institutions such as the NGO the National Trust, which holds land for conservation and amenity purposes, for the benefit of the nation). (authors' fieldwork; Welsh Agricultural Statistics, 2018)

In each of these areas, the historical, geographical and economic analysis of farm differentiation in the agrarian diagnosis was used to understand the role played by the land market on a range of farm types in different landscapes, and vice-versa. Then the economic results of farm archetypes were considered in relation to the land market situation, to reflect on the possibility of an agro-ecological transition.

3. RESULTS – HISTORICAL APPROACH TO DIFFERENTIATION AND THE LAND MARKET

In the run up to the 1990s, uplands and lowlands had very different situations in terms of demand for land. Upland farms historically tend to be larger, and these were still gradually implementing the various elements of the 20th century agricultural revolution and its enhanced tools for labour productivity (e.g. quad-bikes for shepherding, big bale silage…). The capacity to expand land wise was not as strong as in the lowlands, where new tools, supplying greater labour productivity were emerging for dairy farms.

3.1 Period 1: From 1992 to 2003, a very competitive farming environment, the land market, an enabler

In general, the impact of the liberalisation described above was gradual. The first element was the introduction of quota trades, selling on a free market the right to produce for livestock production (only on breeding stock and dairy cows) representing a high cost barrier to expansion. Particularly for dairy farms given the level of the quotas awarded to the UK (Barthélémy et al. 1990). Aside the scope to expand was very limited (land available to buy or rent; the number of farms around; difficult investment context) even in a supportive market price for agricultural outputs (Cf Fig.5). From 1996, those collapsed successively on the different livestock productions, as the result of crisis (BSE - beef, Foot and Mouth-sheep) but linked to the market deregulation (Milk). In this context, an extremely narrow window appeared to increase farm incomes using the latest labour productivity and land productivity tools, balancing low prices by low input prices and direct subsidies on the farm output/livestock (Cf fig.5). For expansion, loans would not be granted if the farm was not profitable or capitalized. The new tenancy framework therefore lowered the investment threshold to increase the size of the farm and made available some land.

Indeed, it was not only large landowners that took advantage of the new framework but also farmers approaching retirement age. You could rent-out your land while retaining a relatively high control of it and secure a risk-free income. The appetite for this was greater in Pembrokeshire than in the Upper Dee Vale; perhaps because for dairy farmers, this strategy could be combined with leasing out or selling your milk quota as an asset.

Social renting through the county councils was dependent on the policy of each local authority and was gradually wound down from 3-4% of the land to around 1% by 2016, mostly by selling land to sitting tenants to finance their functioning (Prince 2012). Gradually reducing their importance in the landscape for the community, particularly for young farms.

In Pembrokeshire, 40% of farms went out of dairying from 1996 (Cf Fig. 5.) with a price-based selection taking place among dairy farms, therefore many reduced the intensity of their land use either retiring or going into beef production (sucklers or finishing). The lesser demand on the land, allowed some land to be rented-out to expanding farmers.

In response to the FBT, large landowners in lowland areas changed their renting policy, renting out land that might previously have been farmed directly or sold, due to the constraints of the rental markets. In a relatively starved market, renting became a relatively risk-free and possibly more remunerating option. So, farms coming out of long-term historical tenancies would often be rented

FIGURE 5: COMPARED PRICE EVOLUTION FOR FARMGATE OUTPUTS AND A RANGE OF PRODUCTION FACTORS FROM 1992 TO 2019
[1]SAVILLS 2021 [2]EU COMMISSION FARM ACCOUNTANCY NETWORK DATA 2009 [3] WORLD BANK DATA 2020 [4] FAOSTAT 2021

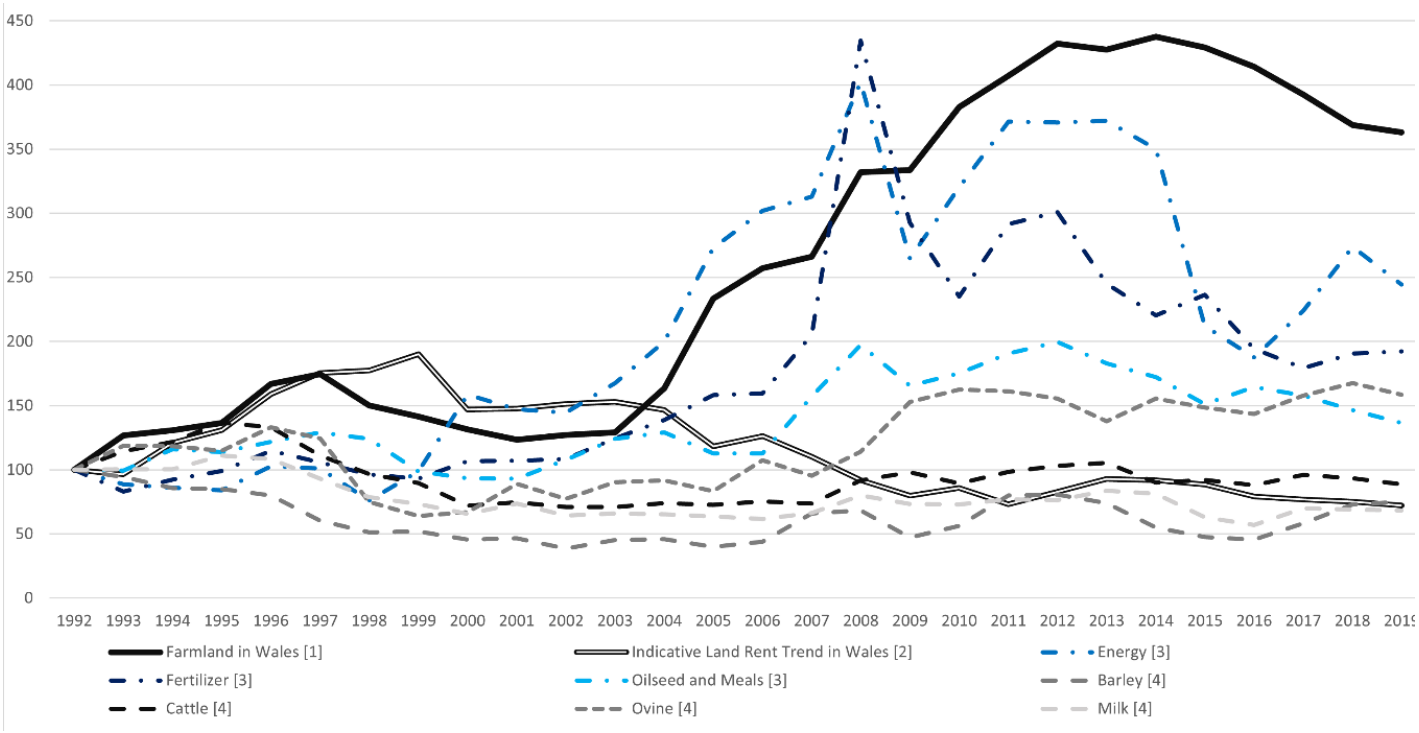
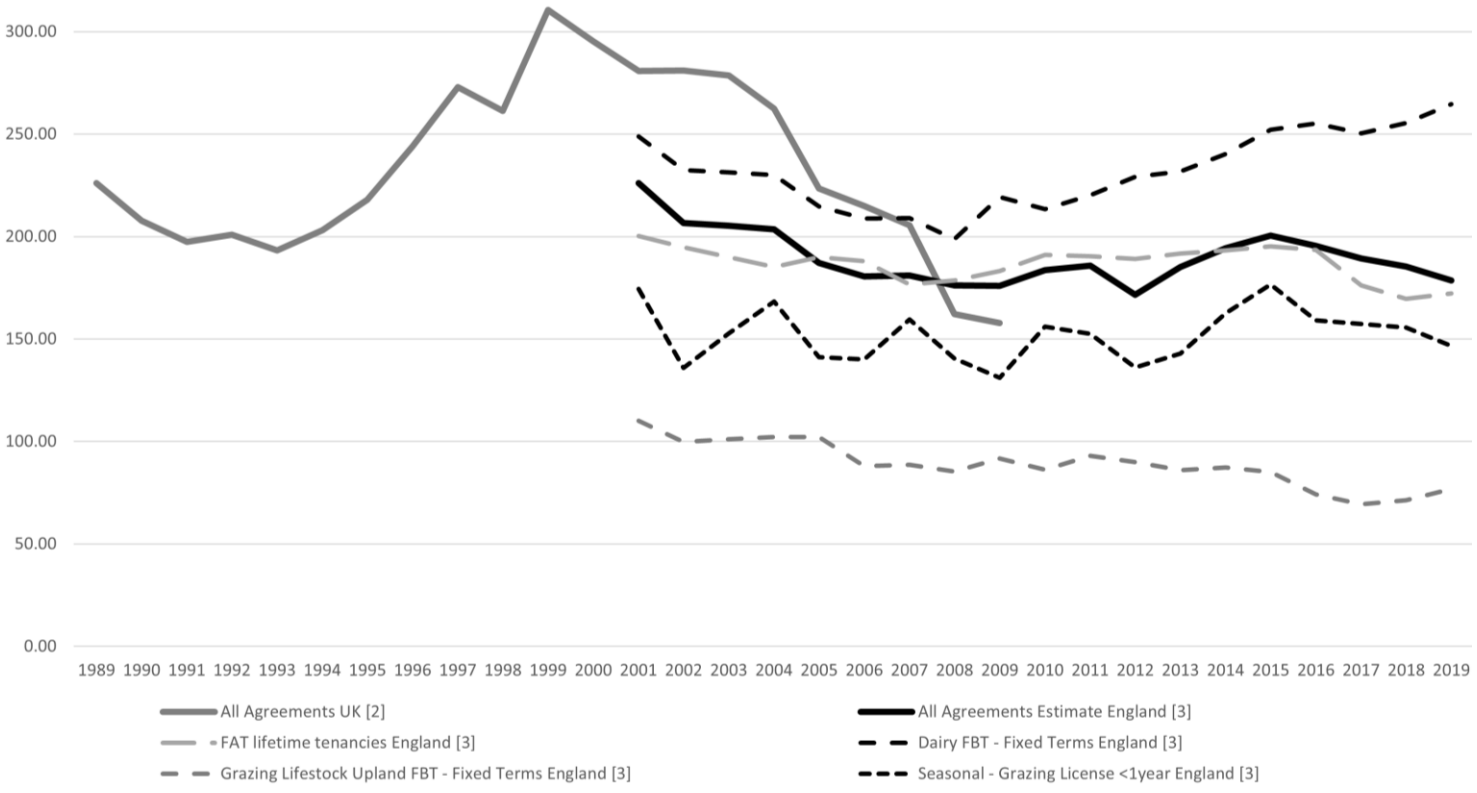


FIGURE 6: RENT PRICE EVOLUTION IN ENGLAND FROM 1992 TO 2019 BY AGREEMENT TYPES AND LAND USE IN £2018/HA [1][2] FARM ACCOUNTANCY NETWORK DATA 2009 [3] DEFRA FARM BUSINESS RENT SURVEY 2021



on FBTs of anything between 5 and 20 years, the market gradually settling around a 15-year period as the most common model for farms and 3 years for bare land (CAAV 2021), seen as short leases by farmers.

Subsisting dairy farms were trying to expand to subsist in a defavourable context. Those with young farmers or several family members- the price of rented land was already quite high, sometimes over 200£/ha/year (Cf Fig 6.), there was a general competitive, best-price, best-terms approach to renting land. More security and flexibility in the lease would mean a higher price tag, for example under a FBT compared to unformal agreements (Cf Fig.1).

As many farmers renting-out land were attached culturally to their land, some would rent-it out on preferential terms to local trusted farmers, sometimes at a lesser price, most likely to smaller farmers, or would retain some element of control (Cf Fig.1). Expanding farms were still trying to buy when possible, balancing capital growth of the production system and profit tax reduction. As a result, dairy farms were intensifying their land management to pay for the cost of land taken on, the additional infrastructure, the borrowing cost, and the quotas (Townsend Chartered Surveyor 2016).

At this point land of a former farm would be rented-out in one block, but when whole farms came on the market to be sold, they would most often be split in order to find interested bidders in a difficult investment context. Those buying land would also be specialized beef and sheep farms for which the newly introduced headage payments were profitable. As a result, on beef and sheep farms, the pressures described for dairy farms was not as strong, the farms that expanded the fastest would have a large family.

Finally, the same changes provided for a revival of potato farming, historically a significant feature which had declined during the 1970s and 1980s as farms concentrated and specialised. This came to fruition thanks to this reduction of the land production intensity on many farms, it would pay for very short lets on the best quality of land up to 400-500£/ha/for a crop, also requiring adequate rotation in between, it started in the second half of the 1990s.

In Bala area, the amount of land released by farms retiring was much lower. Upland valleys dairy farms were pushed out of dairying and converted to beef and sheep production, but the rest of the hills and valleys increased its land use intensity. Indeed, during the 1990s the weight and meat quality standards on beef and sheep markets were hiked up requiring many adaptations to maintain the same remuneration, while the subsidy focus was on hiking up breeding stock and finishing numbers (the subsidy payment was more interesting than on dairying). Both were achieved more by using increased amounts of inputs than by taking on more land. However, some large expansions were made by farming families who required more land. Renting and buying, to support an increased number of family members. An example of this lesser pressure on the market would be that farms were still be sold as one block or the lesser rent prices (Cf Fig 6.). The agreements could be informal as well but tended to be relatively secure and lower priced. The appetite for expansion was lesser post 1996 as farmgate prices reduced under the impact of several crisis. Reinforcing the subsidy dependence of upland farms.

On farms with mountain land where bio-physical conditions prevented intensification, the 90s marked a change of paradigm, from production to ecosystem conservation. The first ESAs targeted mountain land, paying for income foregone due to the reduced level of stocking required in the agreements. As a result, the impact of lower production potential, translating in lower incomes was reduced. Nevertheless, mountain land remained relatively unattractive at the time and would still be sold (Savills 2021). Hill or Valley floor farms would buy it, usually farms with the largest family workforce, operations, and capital.

Summary of the section: We note that different strategies have been witnessed over the different landscapes by different actors giving a very nuanced view. Uplands with their 3 agro-ecological altitude steps had a land market that was less challenging than in lowlands. The influence of the subsidy system and off inputs/outputs markets was low in lowlands but higher in the uplands. It explains the only slight increase in land price due to a limited demand versus the supply (Cf Fig 3.) and the quick increase in rented land prices, particularly in lowlands (Cf Fig 6.). The land market structure allowed and selected farm's expansions over this period.

3.2 Period 2 and 3: The decoupling of subsidies in 2 phases from 2003 had a bigger impact in Uplands than Lowlands

Period 2: In 1999, the UK introduced devolution of certain powers to Wales. The newly formed Welsh government gained powers to set its own agricultural policy in response to Europe's Agenda 2000 CAP reforms. From 2003, it was decided to implement the first Pillar subsidy partially linked to output, using historical output reference levels (Boinon *et al*. 2003), it removed the incentive of further production increase out of market considerations but still benefited highest subsidy recipient at the time, the large and intensive beef and sheep systems.

Period 3: From 2013, a Wales-wide, uniform flat-rate decoupled Single Payment Scheme was introduced. Though it had a redistributive element which favoured smaller holdings, it favoured holdings with large acreage. Full decoupling was finally attained in 2019 (Hart 2015).

Period 2 and 3: On the 2nd Pillar, from 1999 two 'all-Wales' Agri-Environment schemes followed one another, Tir Gofal and then Glas-Tir (from 2012) focused mostly on the protection, management or creation of environmental and historical features through 5-year contracts including annual acreage payments (management) and environmental grants (investment support) (Wynne-Jones 2013). Those payments were still based mainly on income foregone. The Welsh government also developed enhanced business support for farming over that period.

Buying land with subsidy rights was an attractive option. A farm would pay between 2 and 4 years of subsidies for the entitlements, therefore guaranteeing further income. There were no alterations to the framework around land use. But the context on agricultural markets fluctuated wildly for farms (Cf Fig 5). Indeed output prices improved slightly as demand increased, but still remained at a lower level compared to 1992. They also fluctuated up and down considerably quicker. On the flipside, inputs prices went up. The investment context only eased up from 2008 onwards after the financial crisis (due to the quantitative easing policy) and quota prices rapidly collapsed, removing two barriers to expansion (Townsend Chartered Surveyor 2016).

General: Retiring out of direct farming activity, renting-out some land as a smallholder, was now even more interesting. Indeed, with the definition of active farmer in the CAP rules, it was possible to rent-out the land and claim the subsidies. The rented land supply reduced tremendously on the formal market (CAAV, 2020). The land sold reduced in anticipation from 2001 (approximately halving in Wales according to Savills, 2021), despite many farms retiring under continued market and crisis pressure. On the flipside there was an increase in out-of-farming buyer's demand, sometimes letting it back (Savills, market reports 2021, interviews of 2021).

In this context of reduced supply, there was increased interest in buying land in the balance described above due to the payments. Farms coming on the market were now split even more in the face of the supply/demand balance, the incorporation of subsidy rights in the land price only explaining part of the increase witnessed (Cf fig. 3 and 5). This is also true for rented land, whole farms became increasingly rare to find on the rental markets in high pressured areas, like Pembrokeshire.

In Pembrokeshire, selection pressure of farms based on their remuneration reduced, but a differentiation of farms happened in response to the challenging input/output market context and not so much to subsidies. The land market plays it part, sometimes restricting farms into pathways:

- Farms that had expanded on a high output, high input strategy further felt the need to scale-up following the removal of barriers to expansion in the difficult context; they required large amount of land quickly, therefore how choosy they could be in terms of terms of location. This further consolidated the farms into increasingly inside/autumn calving dairy system, it reduces the need for a large grazing platform near the homestead.
- Dairy farms that didn't expand massively in the 1990s followed an opportunistic step by step expansion, therefore trying combine relatively favourable leasing terms, convenient land and the family workforce availability. If the land is dispersed despite being on favourable terms in case of further expansion it can get complicated.
- The development of New-Zealand type, dairy grass-fed farms with large herds requires a large, grouped grazing platform. Few landowners can supply it (namely few large family farms or traditional estates) and few neighbours would be able to complement it. But the low input low output nature of this system is compatible with a high remuneration of the land price and low prices, though it needs a secure lease given the investment required on the land infrastructure.
- More farms went into organic farming, incentivized by schemes and the growing market, those need a real lease security given their commitment in the organic scheme, additionally they need to compensate a lower output per hectare by farming wider acreages. It means that their opportunities in the lease market would be lower, and the price paid possibly higher.

Finally, if a high subsidy-stripped land rent is paid it means a high added value must be returned to remunerate the different production factors and the land. It explains that the available supply of land to rent for beef and sheep system in areas dominated by dairy farms became extremely reduced as those systems needed subsidies to balance their remuneration, the only farms in this category that could deal without it were more remunerating finishers and those with high historical references. Opportunities would also come up from amicable lease from landowners (institutional, private, or retired) with a compatible price-tag and potentially restrictions of use attached to it.

Since 2010-2013, the defavourable crunch between outputs and inputs prices combined to the growing demand drove more dairy farms to expand and specialize their milk production in relation to what resources were available (including landholding). Beef and sheep farms on the contrary reduced their land use intensity, particularly those that had made the most of the subsidy and cheap inputs. A selection kept happening, now mostly on beef and sheep farm maintaining a lower stream of new unformal leases stream. Rented land prices increased as inputs prices had risen, producing fodder out of the land was increasingly interesting.

For farms expanding, to deal with the increasingly spread-out nature of their operation, a mix of buying, renting, and outsourcing some parts of the production system was introduced. The outsourcing is a testimony of the highly specialized areas on dairying; the appearance of support farmers, producing fodder, rearing youngstock for landlocked farms sometimes in other landscape.

In Bala area, until 2003 the subsidy profile was not in favour of the upland, particularly hill and mountain farms with limited margins to increase outputs from the land. But gradually, it started to favour the largest farms, and particularly farms with mountain land. Indeed, second pillars subsidies were still easier to deal with in terms of compromise than was the case for purely hills or valley farms.

On the supply side, there was a continuous drive out of farming due to the price pressure and less supportive subsidy regime with retirements, diversifications out of farming, part-time working.

Particularly among small and medium sized, hill and valley farms and most of all on those fully tenanted. On the hill and valleys, the amount of land sold reduced but the amount of land available to rent increased gradually. With the new subsidy system, very little mountain land would now be sold.

With the continuing poor economic results of beef and sheep farms and rising inputs price, farms tried to reduce their inputs' use. But to maintain their remuneration -particularly whenever a new family member joined - the answer has been to expand the size of the farm to cope. One of the strategies, was to continually purchase some land as it was becoming available, particularly if one had successors. For renting it worked more by opportunity in terms of conditions, location and price paid given the smaller room for manoeuvre economically. As a result, some farms have extremely dispersed land of different types constraining the farming system heavily. Those tend to focus more on sheep farming than cattle farming, nevertheless it had a lesser impact on the evolution of farming systems than in dairy farming areas.

The demand on the Upland renting market has been increased over the last 10 years, particularly close to lowland areas, with the development of new high added value specialized types of farming, upland dairy spring calving farms, heifers rearing for lowland farms or poultry farming.

- The first ones usually transform hill or valley land into grazeable land on which higher yielding systems wouldn't be able to operate. In the upland, there is the possibility to find larger grazing platforms than in the lowlands, with large farms that grew over 50 years or from traditional estates.
- The heifers rearer can deal with a more spread-out grazing platform, but both require large amount of silage grade land that can be more difficult to find.
- Poultry farms, needs land to spread the manure and some workforce, they also have some biosecurity challenge for spreading.
- Finally, the development of organic farms is done through multiplying by 3 the amount of land to keep the same amount of livestock.

All those differentiated farms look for to "long-term" renting potentially for a premium (up to 250-275£/ha) with or without buildings, sometimes through integration, sometimes by sharing the risks. Those would not necessarily rely on the subsidy payment.

In the uplands, the pressures coming from the non-agricultural sector are stronger. Either residential pressure for homes or second homes (including to convert in holiday lets), electricity generation or now to promote conservation or carbon capture. Some of those might supply the land back on the rental market with potential management conditions restricting systems that can access it – namely relatively low output beef and sheep system. Closer to population centres residential buyers are particularly important. Investors are even more interested in buying land, now as a way to offset carbon emissions.

Summary of the section: We witnessed a co-evolution of farms and the land market, though direct subsidies have played a part they are only a side of the environment favouring landowning. Incumbents' landowners in the agrarian system have been favoured when it comes to the land market and making the most through the land capitalisation either for now or for the future (with the tax regime), mostly family farms and few buyers, building on capital and often going through tough times (health, stress, financially). There has been a concentration of land control by few farms combined to some land concentration by large actors (private estates, trusts…). While the land ownership is still relatively dispersed in lowlands it is not the case in the uplands.

There is a state of expectation by many subsidy-reliant farms to see what will come after Brexit, this has constrained both the supply and the demand. In difficult market conditions farms have changed

their orientations looking for ways to add value through different productions, economic activities or different managements, but most have expanded. In this context the Brexit process has only marginally tweaked the land market evolution in those areas where the dominant pressure is currently associated with market drivers. In lowland areas even more landlocked in terms of land "quality" prices have increased much higher up to the level of the Netherlands.

Therefore, new entrants trying to settle in farming by themselves have struggled, they enter either on the few favourable tenancies relet as such (private estates, county councils) or out of their own wealth (including working aside) and depending on the agricultural market fortunes. Instead, there is a growing pathway of capital building through high added value productions sometimes combined to the ladder of share-farming in order to compensate for the challenge of entering the very capitalized industry without collateral while still needing to cover a commercial rent.

The highest bidder approach has created a disperse and diverse landholding pattern that does not favour the best approach from an environmental or farming system point of view, it locked some farms in pathways that do not lead to an overall sustainable land use; with high land productivity, inefficiencies linked to spread-out land…

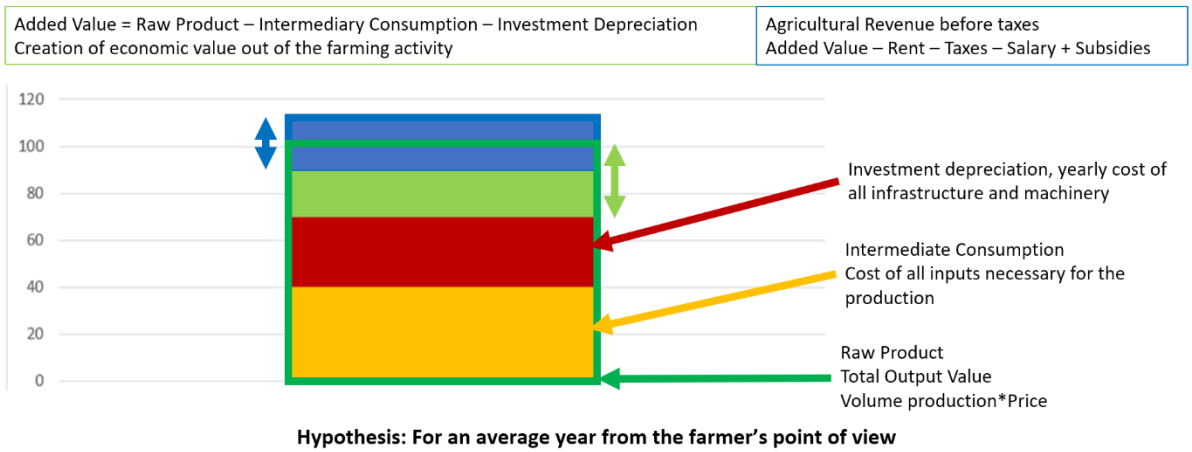
4 RESULTS – ECONOMIC RESULTS OF FARM ARCHETYPES COMPARED TO THE LAND MARKET SITUATION

4.1 Introduction

For this section we use the data from the modelled archetypes as described in the method section. On each we have range of information about their functioning, be it from the economic point of view or the agronomic point of view (Cochet and Devienne 2007). To simplify the results, we grouped farm archetypes by broad categories to represent different strategies from the landholding structure.

With the agrarian diagnosis we analyse farm economics from the family farm point of view (Cf Fig 7.). The Added Value (AV) is the difference between the output of the farm and the costs, it represents the economic value created because of on-farm production. By looking at the agricultural revenue before income tax (Added Value - Taxes - Interest - Rent + Subsidies) from the family point of view we can compare different farms regardless of their business structure. All economic data is given in €2018[1].

FIGURE 7: THE SPECIFIC APPROACH TO ECONOMIC PERFORMANCE OF FAMILY FARMS OF THE AGRARIAN DIAGNOSIS (BY THE AUTHOR FROM COMPARED AGRICULTURE SCHOOL DEVIENNE, S. 2019)



Hypothesis: For an average year from the farmer's point of view

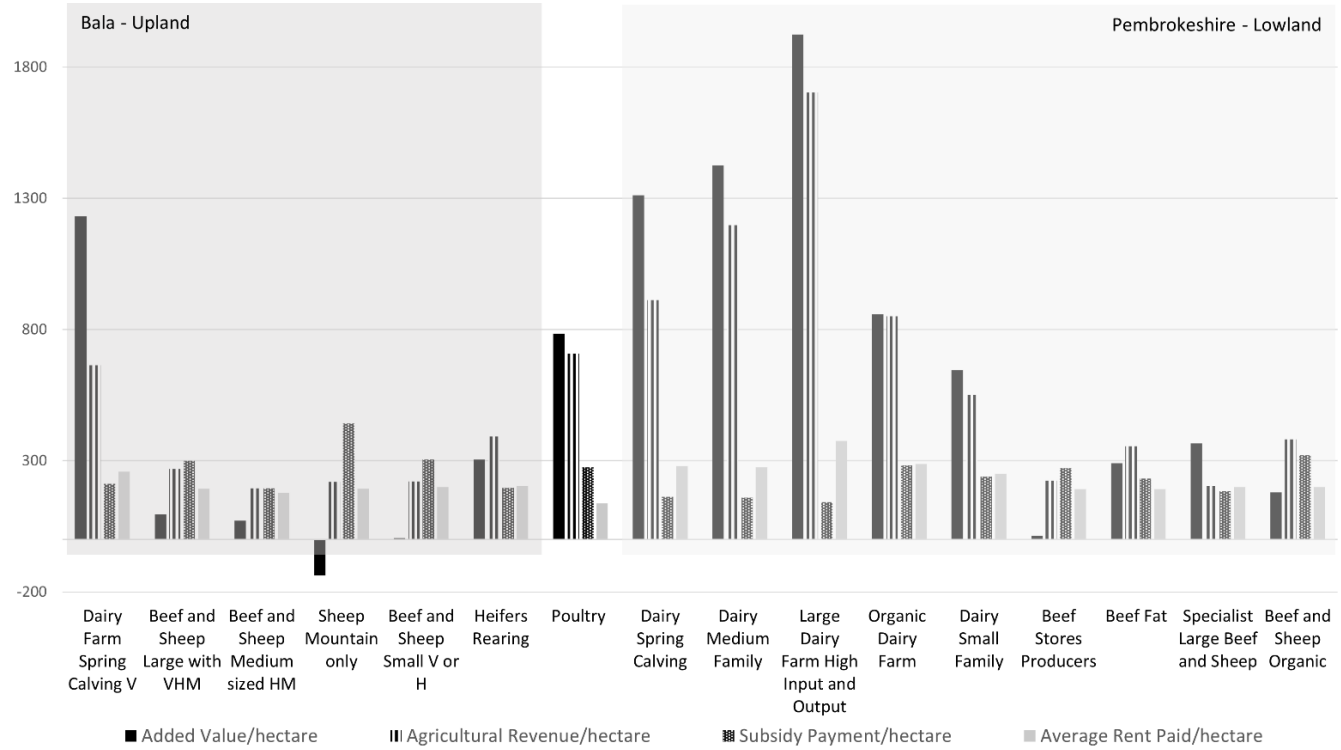
To analyse the economic performance, we grouped together archetypes that presented similar landholding structure they we gave an example of their structural organisation in Appendix 2 and 3.

4.2 The opportunity of taking more rented land

Comparing the economic performance of farming systems (Cf Fig. 8) enables us to separate the farms in 2 categories; Ones that have an added value per hectare over the rent and the others. We therefore analyse the interest of renting more land by looking at the potential added value that can be gained from each additional hectare (under the assumption that it is within the other parts of the system capabilities)

On **Bala** area, archetypes span over three agro-ecological altitude steps, the alluvial valley (L), the rolling hills (H) and the mountain (M), supplying a gradient of conditions. The picture is quite striking, none of the beef and sheep systems (even organic ones that are included in the groups) manage to attain the threshold, even more so as we climb up in altitude. The more mountain land, the closer to zero they are, showcasing the low output and low valorisation of outputs from the rough land. But all those systems use relatively little rented land, most of it being on preferential stable terms. On the flipside, dairy spring calving system, heifers rearing, and poultry farms manage to sustain their rent level from their output but are heavily dependent on renting, they are relying on more expensive land, and a higher proportion of rented land.

FIGURE 8: FARMING IN WALES, ECONOMIC PERFORMANCE PER HECTARE FOR DIFFERENT MODELLED FARM CLASSES COMPARED TO SUBSIDIES, LAND RENTING OR OWNING THE LAND (ALL VALUES IN €2018). FROM FIELDWORK AND AGRARIAN DIAGNOSIS, 2019, 2020. V- VALLEY H- HILL LAND M - MOUNTAIN LAND



When it comes to the level of agricultural revenue that can be achieved, Beef and sheep system always higher, or very close to the average rent paid. The subsidies close the gap linked to the low remuneration out of traditional production systems (store cattle and relatively light and late lambs), or more production focused one. We also notice that small beef and sheep farm tend to be unable to

cover the price of renting land in all cases explain. High added value production despite the high level of rent (or land value remuneration if share farming) still return reasonable incomes/ha for farms making the case for expansion.

For **South-Pembrokeshire** farming systems, spanning over 2 landscapes small (S) and wide (W) ridges, the later supplying the more versatile agro-ecological conditions. We have a different context regarding the average rent paid, it fluctuates a lot more with much higher upper limits, and much more unformal and uncertain agreements. The levels of added value per hectare that farming systems can achieve are much higher and this is reflected in the rent level. We notice that beef finishers and specialist beef and sheep farmers tend to be able to cover the price of the rent from the farm activity alone, making the case for an expansion based on rented land. This is not the case of stores producers with an added value per hectare close to zero. In Pembrokeshire the dependence on renting of those systems tend to be slightly higher than in the lowlands. Even moderate levels of commercial rents tend to be very difficult to pay on some beef and sheep farms, if the farm is not family owned, it is difficult to operate. Dairy systems in Pembrokeshire have a clear case for expansion by renting land even at expensive prices, reflecting their high added value and production per hectare, the bigger they are, more intensive they are the more they rely on expensive uncertain leases.

Overall, the subsidy payments per hectare vary, being higher for farms with mountain land, organic farms, those that own all their land or in favourable renting terms that do not share their subsidy payment, in turns impacting the opportunity of buying more land or renting more to expand. In the end the only farms that cannot access the rental market are unattractive income-wise small farms on traditional productions and in a difficult landscape position (Beef stores, late lambs…). Others can access the land market but only if subsidies are attached to it, others depend mainly on their own land and can still rent without subsidies, but the gains are small. Finally high added value system can afford very high rents/land-value return without getting the subsidy and still manage to get a farm income per hectare.

If we look at the supply side on the uncertain land market, the income achievable by support farmers, producing fodders and rearing heifers it sufficient to sustain a living, but renting-out land might require a supplement by a side-job or a pension.

This analysis shows that the rental market is mainly driven by the dominant agricultural markets more than the subsidies but also, that there is a clear 2-sided rental market; one amicable including subsidies and more reasonable rents and another relatively expensive, sometimes very uncertain and stripped from its subsidies. This has clear implications for the functioning of farming system having an impact on their functioning and constraining some.

CONCLUSION – is an Agro-Ecological transition possible in this liberal land market:

Farming in Wales faces a period of likely significant change, following the UK's exit from the EU. We have shown how the Welsh land market, as in the UK in general has seen prices greatly inflated partly due to the subsidy regime. The fieldwork confirmed that it is a more and more immobile and selective market, each bit of land according to the statistics would be sold on the market every 500 years.

The extremely competitive environment in the agricultural sector during the last 30 years has contributed to a selection amongst farms. The liberal land market has played a part in allowing the selection to happen, removing one the barriers to expansion or retiring at first, particularly in lowlands. But also representing an obstacle for some farming systems and driving farm evolutions into some pathways, sometimes to exit the industry or to expand continuously. The dynamics on renting and buying farmland market have been different in lowlands and uplands with different

consequences.

In the recent years constrained supply faced a land hungry market which is no less hungry today, still selecting among potential new users and owners for farmland. We saw that only high added value production can remunerate the rental market without subsidies, there is a clear difference in terms of pressure on the land market between historically specialized areas on remunerating productions and the uplands which recently have seen the development of high added value productions. To deal with the increasing demand. The strategies for farms outside of the highest bidders are more complex and rely on opportunities from other landowners that do not follow the best-price objective.

Rent prices are adjusted to the added value while land prices have locked in value and now mirror the scarce offer meeting a dynamic demand that can afford it.

In the short-term, we are looking towards a new shock, in Wales it is going to be stronger with the newly introduced country-wide Nitrate Vulnerable Zones rules. It is likely that a new selection that a new selection is going to take place among farms.

High added value systems with high stocking rates will have to adapt. It means finding more land to spread manure or other outsourcing some of the livestock to other farms, in other landscapes. Further going towards hyper-specialized farming on dairying for example (Lenormand *et al.* 2021).

The future SFS paying will not be up to the level of support of the CAP. Those that are the most dependent on the CAP, beef and sheep systems are starting to seek more remunerating orientations (including in the uplands) with more demanding land use as a result if they feel they will not be able to fit in the future scheme.

In the medium-term there will be a clearer emergence of a two-speed land market linked to a two speed Welsh agriculture. One focused on production, bidding high, income focused working on volatile market, another functioning by opportunity less demanding in terms of land use and seeking other objectives maybe less dependent of markets – with other more benevolent actors -. They will compete for the same finite supply of land thus maintaining land values to buy or rent, because the incentive is to expand.

The access to land of the farming sector to new entrant is still extremely complex (Williams 2015) and focused on high added value productions and with specific paths or by opportunity limiting the new entries particularly on more diversified and alternative agro-ecological and lower added value systems.

An agro-ecological management calls for a long-term vision of the farming system in line with biological processes (e.g. carbon building, soil structure, hedge quality…) or farms business cycles, requiring to think about the ways to foster a more sustainable development of environmentally sustainable farms (Devienne 2019), this conflicts with the current situation where the land value remuneration and the control of the landowner are favoured in a short-term vision for a large part of the market. A situation which is set to get worse.

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ENDNOTES

1. Common Agricultural Policy payments were until 2020 based in euros (before conversion), thus the choice of €2018 for the model, constructed in 2019.

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997 **APPENDIX 1: LOCATION OF THE 2 STUDY AREAS IN WALES AND GENERAL CHARACTERISTICS. BY**
998 **THE AUTHOR ON DIGIMAP, FROM ORDNANCE SURVEY DATA.**

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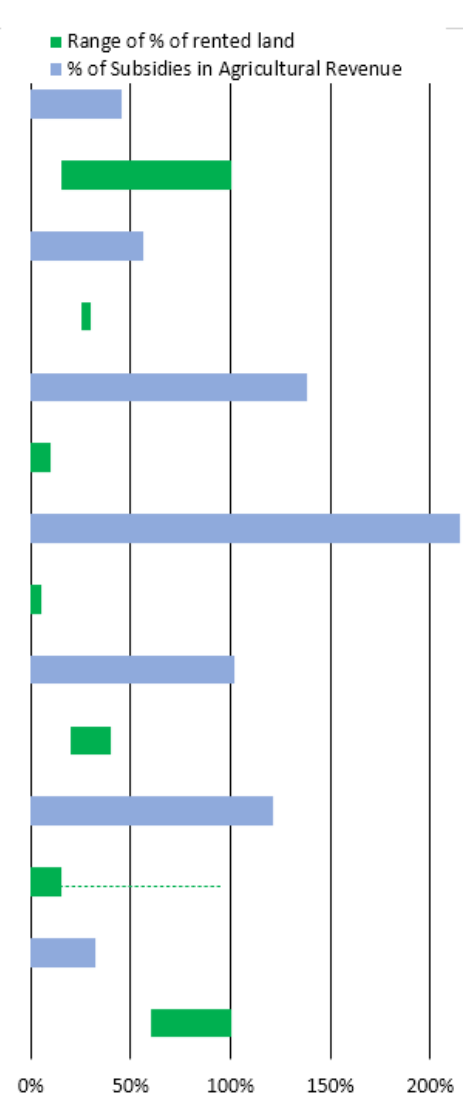
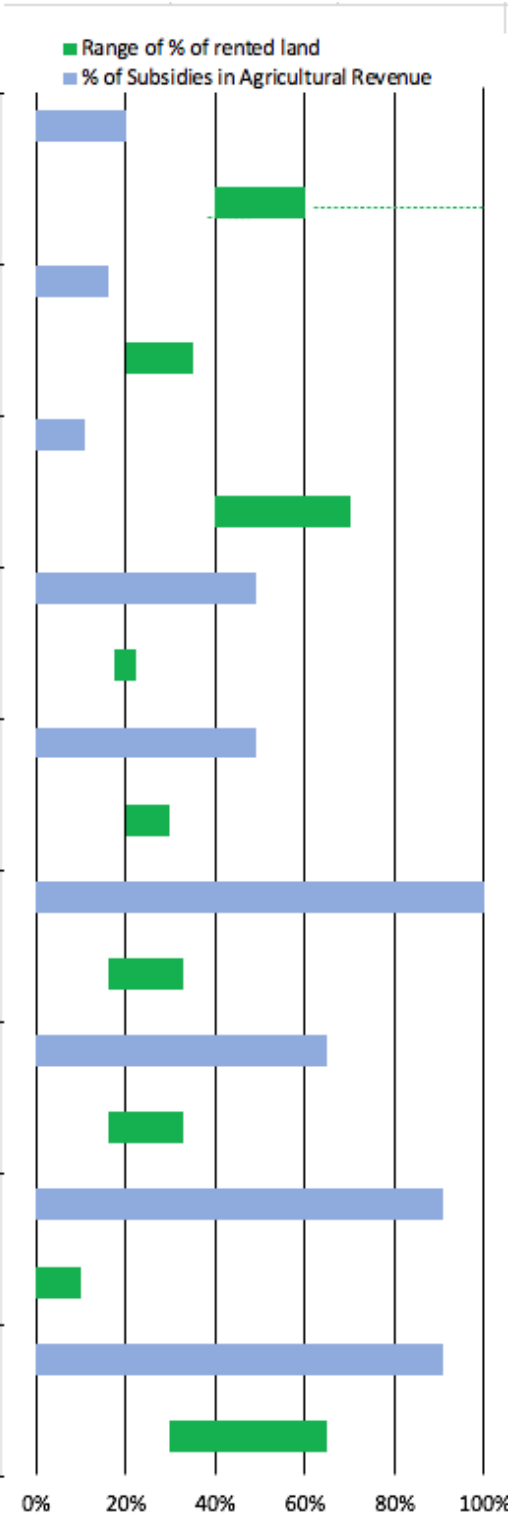
APPENDIX 2, BALA AREA FARM GROUPS (BY AUTHOR FROM FIELDWORK):

	Outputs	Specialisation	Farm Characteristics: Farm Organisation	Renting type	Type of Landscape
Bala - Upland	Dairy	Spring Calving Upland, 500 cows, Low Input Low Output for Dairy, Grass based	Entrepreunarial (Joint-venture or Sharefarming)+ **(Support farm)**	Stable Agreement but expensive (+ more precarious	⌣⌣
Bala - Upland	Beef and Sheep	Large over 200 heads, Some Lowland Breeds, Finishing, Low Input Traditional	Family or Estate farm (with staff)	Mix, some precarious land, some stable, moderate prices.	Strip ⌣◠▲
Bala - Upland	Beef and Sheep	Medium sized around 100 heads, Some Lowland Breeds, Low Input, Finished Lambs and beef stores	Family farm	Opportunity Stable land, cheap.	⌣ or ◠ (▲)
Bala - Upland	Sheep	Large Rough Mountain Farm, Mountain Breed, Stores producer. Very Low Input.	Family farm	Precarious land to help recently. Moderate price.	▲▲
Bala - Upland	Beef and Sheep	Small or Very Small, Lowland Breeds, Low input. Finished lambs and stores.	Family farm	Opportunity Stable land, cheap.	⌣ or ◠
Bala - Upland	Support Farm	Former B&S, Heifers rearing for other dairy farms. Grass based. Medium inputs.	Family farm	(if whole farm, stable cheap) Precarious lease and moderate price.	⌣◠▲
	Poultry	Former B&S, Integrated hen farming, high inputs, some sheep kept (possibly beef)	Family farm	(if whole farm stable, cheap) Precarious lease and moderate price.	⌣ or ◠



1019 **APPENDIX 3, SOUTH-PEMBROKESHIRE AREA FARM GROUPS (BY AUTHOR FROM FIELDWORK):**

	Farm Characteristics				
	Outputs	Specialisation	Farm Organisation	Renting type	Type of Landscape
Pembrokeshire	Dairy	Spring Calving, 300 Cows, Low Input Low Output for Dairy, Grass based. Smaller acreage Greater Output.	Family at Core (with staff) + **(Support farm)**	(Long term stable, medium price lease) Additional land high priced, precarious.	◠◠
	Dairy	200 Cows Medium Sized, All year round, relatively High Output High Input. Crops.	Family at Core (with staff)+ **(Support farm)**	High price precarious and Opportunity moderate precarious	◠ or ◠
	Dairy	Large over 500 Cows, High Input High Output High Yield, Crops and high land use intensity.	Family at Core (with staff)+ **Support farm**	High price precarious and Opportunity high priced precarious	◠ or ◠
	Organic Dairy	100-200 Cows, Medium sized, increased acreage and crops vs reduced inputs, lower yield.	Family Farm	Opportunity, Moderate price, stable lease.	◠◠
	Dairy	90 Cows, Small, Low input low output for dairy. Grass Based.	Family Farm	Opportunity, Moderate price, stable lease.	◠
	Beef	Small, Stores Producers under 100 heads, Grass based. Low input.	Family Farm	Opportunity, Cheap lease, relatively stable.	◠
	Beef	Small finisher, under 100 heads, Grass based. Low input. Crops.	Family Farm	Opportunity, Cheap lease, relatively stable.	◠ or ◠
	Beef and Sheep	Large Beef and Sheep, over 200 heads, finish all rapidly with crops.	Family at Core (with staff)	Mix of Oppurtunity cheap lease, precarious and stable.	◠◠
	Organic Beef and Sheep	Small organic, under 80 heads, less output less input.	Family Farm	Opportunity, low price, stable lease.	◠◠



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