The Journal of Peasant Studies

ISSN: 0306-6150 (Print) 1743-9361 (Online) Journal homepage: http://www.tandfonline.com/loi/fjps20

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To cite this article: Jan Douwe van der Ploeg (2018) Differentiation: old controversies, new insights, The Journal of Peasant Studies, 45:3, 489-524, DOI: 10.1080/03066150.2017.1337748

To link to this article: https://doi.org/10.1080/03066150.2017.1337748

The Journal of Peasant Studies, 2018
Vol. 45, No. 3, 489–524, https://doi.org/10.1080/03066150.2017.1337748

Differentiation: old controversies, new insights

Jan Douwe van der Ploeg

There is a long-standing debate about the nature, impact and significance of processes of differentiation in driving agricultural development. This contribution discusses three ways in which such processes have been conceptualized: modernization theories that put markets centre stage, Marxist theories that focus on class, and Chayanovian approaches that highlight the dynamics within farming families. The empirical evidence for testing these concepts is normally derived from agricultural censuses. This paper uses a different database that covers all Dutch farms between 1980 and 2006 and enables us to follow the changes on individual farms. Examination of this data reveals that the actual processes of differentiation that have occurred in this 25-year period differ greatly from the classic conceptualizations. It also challenges the conventional wisdom that agricultural development is mostly driven by larger farms.

Keywords: class differentiation; market-driven differentiation; demographic differentiation; time series analysis; modernization; Dutch agriculture

Introduction: contrasting theories

There are many theories that aim to explain the processes of agrarian change and rural development. Roughly speaking these can be classified into three different blocks, each linked to a specific epistemic community (and, more generally, to specific and contrasting socio-political programmes). Each block identifies different drivers, which it claims are the triggers and movers of agrarian development and change. They are all also highly prescriptive, in that they specify the trajectory that change and development will (or should) follow. Each block sees differentiation as a key issue, but conceptualizes it in very contrasting ways (for a schematic summary see Table 1).

A first block can be identified around the keyword 'modernization'. Theories belonging to this approach interpret agrarian and rural development as basically driven by markets and technologies. Agricultural producers are assumed to follow the logic of markets and to make full use of the opportunities offered by new technologies (Timmer 1988; Brink 1990; Bartolini and Viaggi 2013). Yet in many locations, both spatial and temporal, agricultural producers refrain from doing so. This block explains this 'failing' as being due to institutional barriers, imperfect markets and/or farmers' lack of entrepreneurial spirit.

There is a normative aspect to this way of thinking insofar as its adherents argue that agriculture *should* be modernized and primary producers *should* become agricultural entrepreneurs whose decisions are guided by market logic. Relative factor prices (that is to say of land, labour and capital) shape whether agricultural growth occurs through intensification (the 'Asian model'), scale enlargement (the 'American' model) or a combination of the two (the 'European model'). Theoretically, an overall stagnation (the 'African drama') is

Table 1. A schematic overview of the wider theoretical frameworks.

	Market-driven differentiation	Class differentiation	Demographic differentiation
Wider theoretical framework	Modernization theories	Marxism (especially Leninism)	Chayanovian approaches
Mutual relations between direct producers	Competition	Exploitation	Reciprocity
Nature of differentiation process	Central, unilinear, selective	Derived, inevitable, irreversible	Cyclical, indeterminate
Driving forces	Markets, technologies, agricultural policies	Commoditization, capital accumulation, class struggle	Emancipatory aspirations, collective memory, market opportunities
Nature of driving forces	External to agricultural sector	General (partly external and partly internal to agriculture)	Internal to agriculture, farming families and family farms
Central actors	Agricultural entrepreneurs	Agrarian capitalists, small farmers and salaried workers	Peasants
Location of growth potential	Mostly, if not exclusively, in large farms	Exclusively in large, capitalist farms	Everywhere, but especially among small farmers

also possible. This would be due to institutional patterns that distort the functioning of agricultural and food markets (including those for the main factors of production) and/or an inadequate supply of technologies that correspond with the existing relative factor prices (Hayami and Ruttan 1985). It is argued that in such situations technological and institutional change (including the opening of new markets and/or the enlargement of access to existing markets) needs to be induced. Once agrarian growth is triggered, it will necessarily occur through a process of differentiation. The framework of modernization theories basically sees this differentiation as *market-driven* (Barberis and Siesto 1993). The direct producers (i.e. the 'agricultural entrepreneurs') are posited as being engaged in fierce mutual competition, which also has been represented as a 'treadmill' (Marsden 1998). Since in the long run the exchange relations between town and countryside (or, more specifically, between industry and agriculture) will alter to the detriment of the countryside, an ongoing enlargement of farms is required (especially when the price of labour shows long-term upward tendencies). Consequently, new technologies are needed and entrepreneurs need to apply them before others, in order to obtain the relative benefits (higher incomes, enlarged savings, attractive price differentials and, sometimes, more subsidies) that will allow them to further develop their farms. At the other end of the spectrum there are farmers who are unable or unwilling to apply new technologies, enlarge production and follow the market in a coherent way. These farmers necessarily become marginalized and quit, presumably to join the ever-growing ranks of urban workers.

The notion of market-driven differentiation forms the backbone of classification schemes that underlie agricultural policies to promote ongoing modernization (van der Ploeg et al. 2009). These schemes simultaneously *guide* and *justify* such modernization policies. Farms are typically classified into three categories: small, medium and large (this might be on the grounds of acreage, economic size, turnover and/or capital

investments). This classification also provides the basis for identifying farms as being 'economically viable' and 'economically unviable'. Other conceptualizations focus on the farmers themselves. They are represented as being distributed along a dimension that goes from traditional to modern. Ideologically tinted versions categorize farmers as laggards, 'in-between' farmers or progressive developers. For quite some time the Netherlands used a classification scheme that referred to 'stayers' (those likely to stay in farming and able to 'move' into the future) and 'leavers', whose destiny was to stop farming. In between there were those who just tagged along: they had either to follow the road taken by the 'stayers' or share the fate of the 'leavers'.[1] These schemes informed a broad range of agricultural policies that were, by definition, highly selective (van der Ploeg 2003).

The concept of market-driven differentiation seems to match closely with the main developmental trends that have occurred where the family farm is the dominant land–labour institution. In such situations, differentiation appears to be a permanent and linear process that is as inevitable as its economic drivers are dull (as Marx would argue, according to Bernstein 2001).

Class differentiation is a widely accepted catchphrase for a second block of theories rooted in the Marxist tradition and, more specifically, in its Leninist variant (Lenin 1982 [1899]; Bernstein 2010a; Wegren 2011). Whilst differentiation is 'central' in modernization theories (agricultural development *occurs as* a result of the disappearance of small farms and ongoing growth of large farms), in Marxist/Leninist approaches it is a 'derived' phenomenon. It *stems from* processes of commoditization and capital accumulation which subsequently *result in* class differentiation. Generally speaking it is thought that existing differences among agricultural producers will unfold over time through the formation of two antagonistic classes: agrarian capitalists, who control large and growing slices of land, and proletarianized workers, who have lost the land they previously tilled. Here, concentration of land operates as the main mechanism for the accumulation and centralization of capital and for the development of productive forces (Bernstein 2010b). This framework conceptualizes relations between farmers as exploitative rather than competitive. This view has also been applied to situations where class formation is incipient: large farmers are assumed to exploit small farmers (which is the beginning of the former getting richer and the latter getting poorer). This tradition presents class differentiation as a process that is historically unavoidable, although the rhythm, length and even direction of these concrete historic processes can vary considerably (as discussed extensively by Kautsky 1974 [1899]). Class differentiation can take different roads. 'Accumulation from below', for instance, means that better-off peasants develop into capitalist farmers. 'Accumulation from above' occurs when feudal landowners change into capitalist farmers. Both 'roads' are seen as processes internal to the agricultural sector: endogenous processes, as it were. They are also seen as inevitable and necessary (for a detailed discussion see Byres 1982, 2009).

Class differentiation was thought to lay the foundations for socialist forms of production in the countryside. It was the inspiration for different forms of agricultural policies that aimed at de-peasantization. The notion of class differentiation is also coherently associated with the assumption that large-scale agricultural enterprises are more efficient than small-scale farms. They allow for internal divisions of labour, are able to reach levels of

[1]Cousins (2013) discusses similar classification schemes currently used in Southern Africa where 'stepping up', 'hanging in' and 'dropping out' are the keywords.

productivity (of both of land and labour) that greatly exceed those of small farms (see e.g. Sender and Johnston 2004) and are considered to be more able to provide sufficient food surpluses to the large and growing metropolises (Bernstein 2014). This model sees smallholders or peasants as, at best, temporary allies of the working class in its struggle for socialism.

A third block of theories is often grouped together under the historically delivered concept of *demographic differentiation*. This key phrase distinguishes a conceptualization that sees differentiation as neither linear nor irreversible but primarily a cyclical process, driven more by factors internal to the farm unit than by external ones (Chayanov 1966 [1925]; Shanin 1982). The typical example is the small family farm operated by a young couple. As their children grow up and participate in the labour process, the farm expands (also creating savings that might later help the youngsters to start up by themselves), and at the end of this cycle a relatively large farm has emerged. However, when the parents retire or die the farm is divided into small units, one for each of the children: the enlarged farm is replaced by several small ones. Here differentiation is cyclical (in a step-by-step transition from small to large, and then back to small again) and driven by the logics of demographic relations that are internal to the family. Hence, this is demographic differentiation (or family-cycle driven differentiation). Of course, demography (or the balance between mouths to be fed and arms that can carry out the work) is a *pars-pro-toto*: it is just one of the many internal balances that govern the development of the farms and their differentiation. This approach sees the development of the productivity of both land and labour as driven by the same balances (van der Ploeg 2013). Boserup (1970) showed that the demography-driven differentiation thesis can also be applied at higher levels of aggregation and can even explain the rhythm of agricultural growth at the national level.

This specific view on differentiation is part of a far wider theoretical approach that understands development as a multi-directional process that is shaped and negotiated at the interfaces between external factors and internal ones (that often coincide with macro-micro interactions) (Long 2003). Thus, development processes are as much (co-) shaped by actors operating at the micro level (peasants, farmers, workers, traders, etc.) as constituted by those operating at the macro level (politicians, state agencies, banks, agro-industries, etc.). Historically, this approach is strongly associated with, if not rooted in, the pioneering work of Chayanov. Chayanov perceived his work as belonging to the Marxist tradition although Leninists disagree with this. They claimed Marxism for themselves – in an exclusive way. This created a long-standing, far-reaching, and two-sided controversy. Two-sided because it was about (1) what empirically happened in the countryside and (2) whether or not these empirical processes contributed to the construction of socialism. Many empirical studies on farming and rural life, especially from agronomists, anthropologists, historians and rural sociologists, fit into this Chayanovian tradition (see e.g. Long 1984; Netting 1993; Roessingh 1976), whilst other scholars have developed and strengthened its theoretical dimensions (Georgescu-Roegen 1960, 1971).

A key difference between the Chayanovian, Leninist and modernization approaches resides in the significance they attribute to the commons, to communities and to reciprocity. To take reciprocity: in the Chayanovian approach reciprocity is an important mechanism that shapes the relations between different actors (and between actors, objects of labour, instruments, farms, etc.) in ways that differ from commodity relations, creating a development potential that is outside the reach of markets (Sabourin and Haubert 2007). In modernization theories reciprocity primarily represents an institutional pattern that hinders the functioning of the markets (notably, but not only, the labour market) – a hindrance

that should be removed through inducing institutional change. In Leninist theory reciprocity is, at best, an indication of the exploitation of poor farmers by richer ones and/or an expression of the backwardness of the peasantry.

From an epistemological point of view, the three approaches are mutually exclusive, especially since they outline different key drivers of agrarian change and development, and conceptualize the processes of differentiation in contrasting ways. However, in practice, these differently shaped processes of differentiation might very well co-exist in, e.g., small-farm communities, and thus contribute to contradictory and heterogeneous dynamics. Chayanov (1966, 245) noted the possibility of co-existence (and co-evolution), and this was subsequently highlighted in empirical research of Deere and de Janvry (1981) on Peruvian peasants and in Shanin's work (1972, 1982) on polarization and cyclical mobility in Eastern Europe.

In the sections that follow I will explore whether these contrasting approaches to differentiation adequately explain and represent the real-life processes that are currently occurring in the Dutch countryside. In order to do so, new methods and new (previously unutilized) data are needed.

From theories to statistical representation

With a few exceptions, the concrete processes of differentiation have been mostly understood and analysed through, as well as represented by, statistical data derived from agricultural censuses. An agrarian census precisely records the number of farms and their main characteristics (e.g. acreage, number of animals, crops, family size) *at a particular moment in time*. What it does *not* do is register the history of the farm unit (i.e. document the web of historical relations in which the farm and farming family are embedded). This might seem to be an irrelevant detail, yet, as I argue throughout, this is far from the case. History is 'slotted into' agrarian censuses: it is constructed through aggregate comparisons. Normally, an agricultural census takes place once every 10 years. By comparing the new data with previous data, we obtain a rough impression of the overall development of the agricultural sector. It is a rough impression because the two censuses represent two 'frozen' moments in time and lack the information that tells us about the movements that interlink the two. We can draw an analogy with studying the hydrology of a river or creek. We may have much information about the situation at point X and at another point Y, located 10 kilometres further downstream. But these two snapshots do not tell us whether there are tributaries joining the main river or departing from it. Nor do we know if there are subterranean sources feeding the creek and/or leakages that cause water losses (this applies especially to smaller creeks).[2]

All this is very analogous to farming statistics. Like a river, which (usually) gets bigger as it flows downhill, farming statistics tell us that farms tend to get bigger over time, but not about the processes and peculiarities involved.

Comparisons based on agricultural censuses (usually over quite long time periods) nearly always seem to show the following trends[3]:

[2]In the analytical language that is used later in this paper: we do not know about inflow of farms, about outflow, or about the nature of the 'continuous' stream. Some real-life examples (about such rivers and creeks) are described in van den Dries (2002).

[3]The proverbial exception can be found in the impressive work of Austrian rural historians who analysed time series that go from the 1930s to the 1960s and show complex, differential development trajectories rooted in, and reproducing, different farming styles (Garstenauer, Kickinger, and Langthaler 2010; Langthaler, Tod, and Garstenauer 2012).

(1) a reduction in the total number of farms;
(2) an increase in the average farm size;
(3) a decrease in the number of small farms;
(4) an increase in the number of large farms; and, possibly,
(5) a concentration of land among large farms.[4]

Census data are almost always interpreted – especially in modernization theories – as clear evidence of the persistency and unavoidability of differentiation processes. Agricultural development, it is claimed, occurs inevitably and inexorably as a selective process in which the small farms lose and the larger ones win. It appears to embody 'social Darwinism' *par excellence*. In this respect several observers even talk of an 'iron law' (Maris and de Galan 1963, 133; Maris and Rijneveld 1963, 6).

In a next step, the dynamics observed in *the sector as a whole* are translated to the level of *individual farms*. This leads to claims that small farms will *inevitably* disappear. Only large farms have the capacity to develop further. Consequently, recommendations are made to transfer the resources of small farms to the large and expanding ones so agriculture can blossom and flourish. Thus, the combined censuses are *read* in a way that confirms differentiation to be a persistent, unilinear, unavoidable and selective phenomenon at the level of the agricultural sector as a whole. Following on from this, the findings are *translated* to the level of individual farms.

I argue that both this particular reading and the subsequent translation are wrong: not just a little bit wrong but fundamentally wrong. The consequences of this institutionalized misreading (and the subsequent translation) have been, and are, far-reaching. Let me start with the 'translation'. From a methodological point of view this is an example of the *fallacy of the wrong level*. What applies at one level (e.g. the agricultural sector as a whole) cannot be translated uncritically (i.e. in a one-to-one way) to another level (e.g. individual farms). When looking at the sector as a whole, observations 1 to 5 (above) may very well apply. However, this does not mean that they necessarily apply to individual farms. The observations (1 to 5) are summaries of aggregate trends. This means, theoretically speaking, that alongside a segment of small, disappearing farms, there might well be another segment of small farms that are being developed. The same may hold true for large farms: alongside large, expanding farms there might be another segment of large farms closing down. It is the interrelations between these different segments within the size categories that give the (average) data that emerge from the censuses and their comparison.

Equally important, but somewhat more complicated, is the issue of 'reading' the censuses. Yes, the number of farms may decrease and the average farm size might increase. All five of the trends mentioned above might well hold true. But does this really (and necessarily) support the 'structural' pattern specified by modernization theory? Theoretically speaking it is possible that the same aggregate observations apply even if different developmental trajectories are followed. It is quite possible that some small farms 'disappear' not as a result of going out of business but because they develop and become medium-sized farms. Yet the very nature of agricultural censuses means that they are incapable of documenting such a *through-flow*, which also cannot be reconstructed through comparisons. Equally, some medium-sized farms might develop and appear 10 years later as large farms. Then (for reasons to be discussed later), some large farms may well close down in the 10-year period between censuses, and their resources (mostly

[4]Theoretically, (4) and (5) might also occur as a consequence of the merger of medium/large farms.

land but also buildings and machinery) are freed up and bought by small and medium farms as part of their development and movement into the next size category. All this is development, but when compared to 'structural development'[5] as postulated in modernization theory, it is '*inverted development*' in which growth and development do not occur 'at the top' but rather take place 'at the bottom'.

Individual censuses and comparisons between them tell us nothing about whether agricultural development occurs through structural or inverted development, or as a complex combination of the two.[6] Both processes of development (as well as the combinations) generate aggregate trends that could appear completely identical in agricultural censuses: both structural and inverted development can lead to the same set of empirical observations.

It is even harder to try to discern from census data whether or not there is something resembling 'demographic differentiation' (of the Chayanovian type), as there is a complete absence of any reference to the history of farms and, especially, the history of farming *families*.

In order to know which developmental patterns underlie census data, we need to use other data and other methods: methods that are able to trace the trajectory of single farms through time. We need time series databases, which record and show, through longitudinal analysis, the historical trajectory of farms. By and large there is a nearly complete absence of time series data. With a few exceptions, such databases simply don't exist.

For reasons deeply hidden in the past,[7] the Netherlands has developed a unique database that covers all the farms in the country and shows their development year to year. This time series database combines the yearly inventories (called 'the May Countings') of each and every productive unit in Dutch agriculture. It allows for a marvellously detailed view of the things that have remained the same and those that are changing – at the level of individual farms and, if aggregated, at the level of the agricultural sector as a whole. Thus, trends observed at the macro level can be traced back to the micro level, whilst it is also possible to check how the rich heterogeneity in the fields impacts upon overall trends in the sector as a whole.

To date this data set (known as the 'mutation database', in which the word mutation refers to the year-to-year changes at the level of single farms)[8] has not been used for a systematic diachronic analysis of differentiation processes in Dutch agriculture.[9] Today's greatly expanded computational capacity gives us the possibility to manage very large databases. With indispensable financial support from the Agricultural Committee of the European

[5]For an extended discussion on, and critique of, this concept see van der Ploeg (2003, especially chapter 6) and POLDEP (2016).

[6]Edelman and Seligson (1994) also argue that census data are inadequate for monitoring real-life trends in the countryside.

[7]Niphuis (2002) comprehensively documents the history of this database. Its roots are located mainly in the agricultural crisis of the 1930s and in WWII. The regulation of production and support for farms required detailed and regular inventories. During WWII this combined with the supply of Germany and the occupying forces. Participation in the counting was (and still is) legally obligatory. The database serves two objectives, statistics and administration, and is the basis on which government support for individual farms is calculated. Thus, issues of privacy have always been a delicate aspect of this database. It also explains why it is unique. In most other countries, statistics and administration are carefully separated. Statistics are obtained with censuses (mostly every 10 years), whereas administration is largely delegated to farmers' unions and/or independent agencies.

[8]The data set is managed and maintained by the Central Bureau of Statistics (CBS) and the Farm Accountancy Agency (LEI).

[9]Partial analyses, using smaller components of the database, have been carried out by Reinhard et al. (1995), van der Ploeg (2003) and Boere et al. (2015).

Parliament (COMAGRI),[10] a research team in the Netherlands has undertaken a systematic inquiry into the differentiation processes that have occurred in Dutch agriculture. This analysis covers four periods – 1980 to 1990, 1990 to 2000, 2000 to 2006[11] and the whole 1980–2006 period – and covers two distinct subsectors – all farms with grazing animals and all arable farms.[12] In the first year (1980) there were 71,540 farms with grazing animals, and 16,723 arable farms. At that time the 'subsector' of farms with grazing animals was by far the most important one of the Dutch agricultural sector as a whole.

The following sections outline the main findings from the analysis of this time series database. In order to give sufficiently detailed insights into the nature of the database and the applied methods, I will first limit the exposition to one decade (1980–1990) and to farms with grazing animals before widening the analysis.

Inflows, outflows and through-flows

Census data and the standard way of analysing and interpreting them persistently indicate a decrease in the number of small farms. What they do not (and cannot) show is that this reduction is the *net* result of contrasting processes (see Figure 1 which only shows inflows and outflows; the through-flows will be added in the next section). While some small farms do indeed close down, other small farms are being created anew and many others are continued. These will include farms that are developed so much that, in the next census, they are registered as medium-sized farms. That is through-flow. These different movements imply that the lack of prospects that is normally ascribed to small farms is at odds, at least partially, with their real dynamics.

Figure 1 summarizes the development of the number of small farms with grazing animals during the 1980–1990 period. Small farms are defined here as those that fell within the 10 to 50 NGE size category in 1980.[13] The figure shows that out of a total of 51,303 of such small farms, 36,156 (around three quarters) were continued during the next decade. It is important to note that we are talking here about *farms* – not about *farmers*. The farm is continued. This does not exclude an intergenerational change. The farm might well have passed, in this 10-year period, from father and mother to one of their children. The inter-generational change within the family is the key mechanism for

[10]I was asked by COMAGRI to elaborate an historical analysis of 'structural development' as a contribution to the debate on how the common agricultural policy can support a twenty-first century European model of agriculture. The funds that they made available permitted access to and analysis of the database. The results of this analysis can be found in POLDEP B (2016).

[11]Currently, the 'May counting' is completely digitized. However, since 2006 the yearly information is no longer added to the time series database and the Ministry of Economic Affairs (previously the Ministry of Agriculture) is currently considering completely abandoning the time series database.

[12]For practical reasons, horticulture, intensive husbandry and a range of minor productive specializations are not included.

[13]NGE (Netherlands Size Unit) was a measurement unit (related to standardized net value) used to assess the economic size of farms. The unit is recalculated every now and then in order to reflect economic changes. Previously the sbe unit was used, and current agricultural statistics use the SO unit (Standard Output). In 1980 one dairy cow represented 0.83 NGE, and a hectare of permanent grassland 0.70 NGE. Thus, a 15-hectare farm with 25 dairy cows (which in the 1980s typically represented a small farm) totalled some 33 NGE (without counting calves and heifers). Due to changing price regimes, a dairy cow equalled 1.63 NGE in 1990, and a hectare of grassland 1.26 NGE. To control for the effect of such changes this paper also includes analyses based on physical data (such as the number of, and change in, hectares).

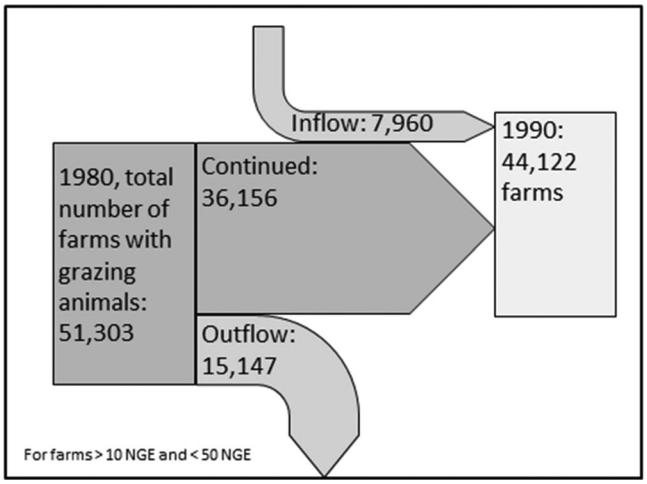

Figure 1. Inflows, outflows and continuity among small-scale farms (10–50 NGE) with grazing animals between 1980 and 1990.
Source: Author's elaboration of 'mutation database' provided by CBS/LEI (as for all tables and figures in this contribution).

continuation. The continued farms 'still'[14] existing at the end of this period do not necessarily have to be farms with grazing animals. A certain number may have changed their productive structure (by shifting to specializing in, say, horticultural production).[15] Nor did all of the continued 36,156 farms show up, in 1990, as small farms. Some grew enough to become classified as medium-size farms.[16]

Figure 1 also shows the number of small farms that stopped functioning as a farm: in total, 15,147. Echoing the statistical rationale: they stopped being a small farm equal to or larger than 10 NGE. To be sure, most of these farms closed down completely. They went out of existence and their resources were sold to other farmers and thus added to other farms. But there were others that did not stop operating but which slipped below the lower threshold of 10 NGE. This might have been due to an actively organized decrease in farm size, or to the regular redefinitions of the unit of economic size (NGE). Either way, 15,147 small farms with grazing animals stop being a small farm of at least 10 NGE. They represent the outflow.

Finally, there is an inflow of 7960 farms. This refers to the birth of new farms of more than 10 NGE.[17] In 1980 they either did not exist or were too small to fall within the 10–50

[14]The language used in most discourse on agriculture has a strong normative component. Typically the notion of small farm(s) is nearly always accompanied by the word 'still', sublimely reiterating the conviction that small holdings are on the brink of disappearance.
[15]Changing to more intensive cropping schemes or to intensive husbandry are widely used methods to enlarge a farm that is small in acreage. The physical size stays the same, but the economic size is increased. The opposite also occurs. Changing over from, say, dairy farming to mono-cropping maize is a form of de-activation (and considerably reduces the economic size of the farm).
[16]As a matter of fact, 5823 of these small farms changed their productive specialization and/or passed the upper threshold. Hence, the figure of 36,156 continued farms refers to those small farms that (a) had grazing animals in 1980 and (b) still existed in the year 1990 (in whatever form).
[17]Theoretically it is possible that some large farms were split and passed through heritage to the next generation. As explained in note 26, this has rarely occurred.

NGE size category. They were thus either created anew between 1980 and 1990 or developed out of a farm that was smaller than 10 NGE that subsequently grew to exceed the 10 NGE threshold. Bock and de Rooij (2000) and Safiliou-Rothschild et al. (2002) offer qualitative insights into these processes.

Inflow and through-flow are important processes, not only from a quantitative point of view but also, and especially, from a theoretical point of view. Without inflow, the overall reduction in the number of farms would have been far larger and this would have impacted strongly on employment levels and on the agricultural contribution to the regional, rural economy. Theoretically, the phenomenon of inflow is important because it reveals that, at least for the actors concerned, small-scale farming is not an obsolete phenomenon. The hegemonic scientific and agro-political discourses might represent small-scale farming as a dead-end road, but in real life things can be seen quite differently. A small farm can be *made* viable (as has been demonstrated in farming style studies – for a synthesis see van der Ploeg 2003). It might be operated in an 'economical' or low-cost way, thus rendering the same income as a farm twice as large (Evers et al. 2007; Kamp and de Haan 2004; van der Ploeg 2000). A small farm might well be taken over by the next generation (Bruin 1997). It can also form an attractive part of a livelihood that embraces other economic activities (as has been shown in studies focussing on pluriactivity: see Kinsella et al. 2000; Ventura 2013). Finally, a small scale-farm can be the starting point for developing a larger farm.

Figure 2 further details the complexities that occur *during* the 10-year period between two censuses. Whereas Figure 1 focuses on economic size, Figure 2 illustrates the physical size of the land holding, in hectares. Another difference is that it also specifies through-flow and changes to other productive specializations. On the whole, Figure 2 confirms the analysis elaborated so far. The same sub-processes (decrease, increase, inflow, outflow, through-flow and change in productive specialization) also emerge when physical size is taken as the point of departure.

Inflows, outflows and through-flows are not solely limited to small farms. A second important finding is that these phenomena are encountered in all size categories. Figure 3 presents the data for medium, large and very large farms (those which in 1980 had 50–100 NGE, 100–200 NGE and 200–400 NGE, respectively) and for all farms with grazing animals grouped together (fourth quadrant).

Figure 3 reveals a highly dynamic situation: within one and the same productive sector (farms with grazing animals), we find continuity, discontinuity (or outflow) and the entrance of newcomers who construct new farms (inflow). *These phenomena occur in all size categories*. Although outflows are proportionately highest among small farms, they also exist in all the other categories (see also Table 2). Equally, there is also an inflow into all size categories.

Figures 1 and 3 represent a story that is definitely at odds with 'classic' peasant societies as depicted in 'classic' peasant studies. Depending on inheritance patterns and other factors, the number of farms was supposed to either remain roughly the same or, when farms were divided amongst brothers, to grow in number (and decrease in size) at more or less constant rhythms. Apart from periods plagued by war, famine or deadly epidemics, substantial and continuous reductions in the number of farms would rarely occur. In this respect, the epoch of 'agricultural modernization' (which started in Europe more or less in the mid-1950s) marked a major change: from then onwards the absolute number of farms started to decrease and this decrease became a seemingly permanent phenomenon.

The finding that the categories of medium, large and very large farms experience an outflow of comparable magnitudes has considerable theoretical significance. Whilst the

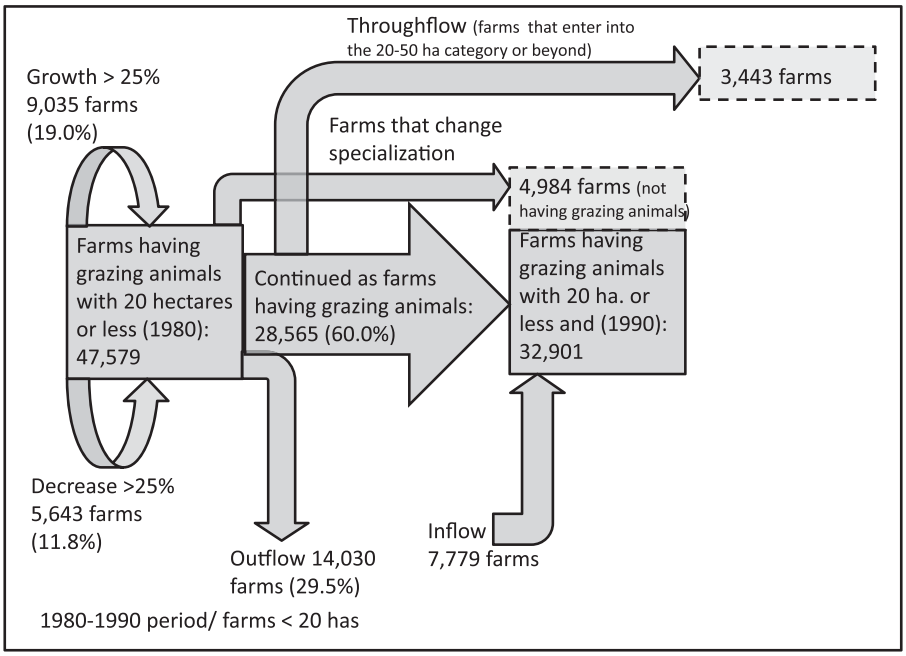

Figure 2. Growth, decline and continuity: farms with grazing animals with 20 hectares of land or less (1980–1990).

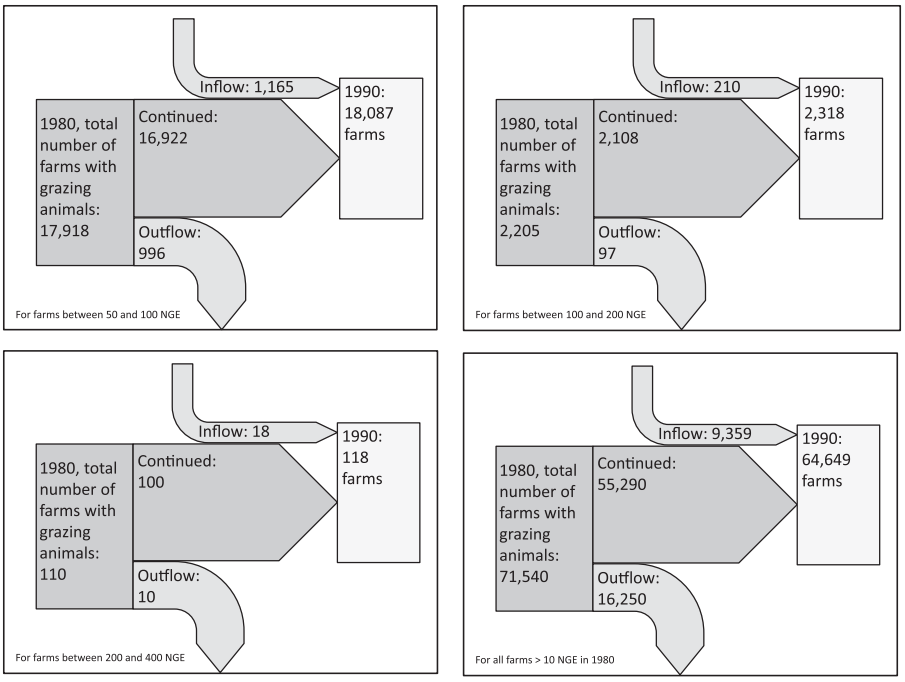

Figure 3. Growth, decline and continuity: the number of farms with grazing animals in different size categories (1980–1990).

Table 2. Differential development trends for different size categories (farms with grazing animals; 1980–1990).

Size category	10–50 NGE	50–100 NGE	100–200 NGE	200–400 NGE
Continuity (%)	70	94	96	91
Outflow (%)	30	6	4	9
Inflow (%)	16	7	10	16
Overall trend (%)	–14	+1	+5	+7

standard reading of censuses suggests that large farms are a ticket to economic success, the time series analysis suggests that there is no automatic security attached to it. The inflow data for large and very large farms are intriguing and probably of significant theoretical interest as well. To create a farm in the 200–400 size category from scratch implies a very high capital investment and probably indicates the entry of external capital into the agricultural sector (that is, it points to a kind of class differentiation). Fieldwork shows that quite often this is indeed the case (see note 37 toward the end of this paper). Mostly, though, it is about farms being expropriated (to allow e.g. for urban expansion, infrastructure or nature reserves) and which are rebuilt elsewhere.

Growth and contraction

Figure 4 introduces some data on growth and contraction. In hegemonic discourse a decrease in farm size is considered to be an indication that the end is near: decrease is just the first step in an irreversible process towards farm closure. In real life, though, things might be different. Sickness, the construction of new buildings, a reorganization of the financial structure or even the intergenerational turnover of the farm can all imply a temporary contraction of the farm (after which a return to the original situation, or beyond, is possible).

Figure 4 shows that, on the whole, contraction is not at all unusual. More than one in six farms with grazing animals reduced their operational size by more than 25 percent during the 1980s. This contraction was not limited to just small farms, as the hegemonic view would have us believe, but was equally present among the other size categories. Remarkably, contraction (i.e. a decrease of > 25 percent) was most pronounced among very large farms (200–400 NGE): almost a quarter of them contracted by more than 25 percent or closed down between 1980 and 1990.

Substantial growth (an increase of more than 25 percent in economic size between 1980 and 1990) can be found within all size categories. Surprisingly, the percentage of farms growing by more than 25 percent in economic size was highest among the small farms (17.8 percent), followed by medium-sized and large farms (15.7 and 12.4 percent, respectively). The growth rate was lowest in the category of very large farms (200–400 NGE; 11.8 percent). This clearly refutes the commonly held view that growth is mostly, or solely, concentrated among large and very large farms.

Table 3 adopts a slightly different angle, focusing solely on *continued* farms. Even after this correction the overall picture remains the same: very large farms grew less and contracted more often than farms in other size categories did.

Figure 5 uses physical units of measurement (as in Figure 2), with size categories expressed in hectares and the expansion and contraction defined as the relative change in acreage. In these terms the medium-sized farms (between 20 and 50 hectares) were the most likely to expand (25.3 percent of the group). As farm size increased this percentage went down: 20.8 percent of the large farms (between 50 and 75 hectares) expanded their

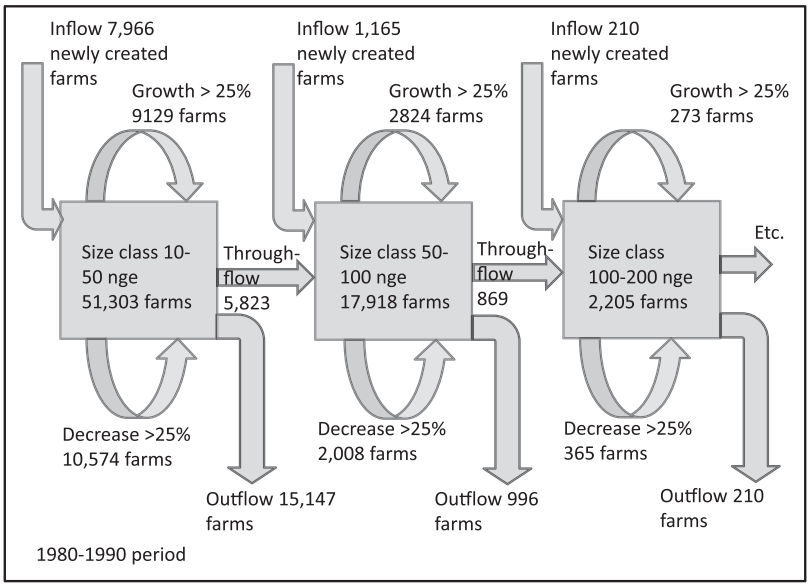

Figure 4. Growth and contraction among different size categories (farms with grazing animals; 1980–1990).

land holdings and 17.3 percent of very big ones (> 75 hectares), a share that was even lower than that of the small farms (19.0 percent). When focussing on contraction a similar pattern comes to the fore: 11.9 percent of small farms decreased their acreage by more than 25 percent; for medium farms this was 8.3 percent. And then the figure goes up again: 10.5 percent for the large farms and 18.1 percent for the very large ones.

If the agricultural sector is represented as a pyramid, with many small farms at the bottom, then a layer of medium farms and a small layer of large and very large farms on top, we can draw two empirically justified and related conclusions:

(1) There is considerable dynamism in the pyramid as a whole, but there is considerably more dynamism at the bottom and in the centre than at the top.
(2) Alongside considerable levels of contraction and outflow at the bottom, there is decrease and outflow at the top as well (together amounting to 31.4 percent of the very large farms). This decrease and outflow 'at the top' is compensated for by the through-flow of small farms into medium-sized ones, and of medium-sized farms into large and very large farms.

Table 3. Growth and contraction among different economic size categories of continued farms with grazing animals (1980–1990).

Size category	10–50 NGE	50–100 NGE	100–200 NGE	200–400 NGE
Continued farms that grew (%)	45	48	40	37
Continued farms that reduced in size (%)	55	52	60	63

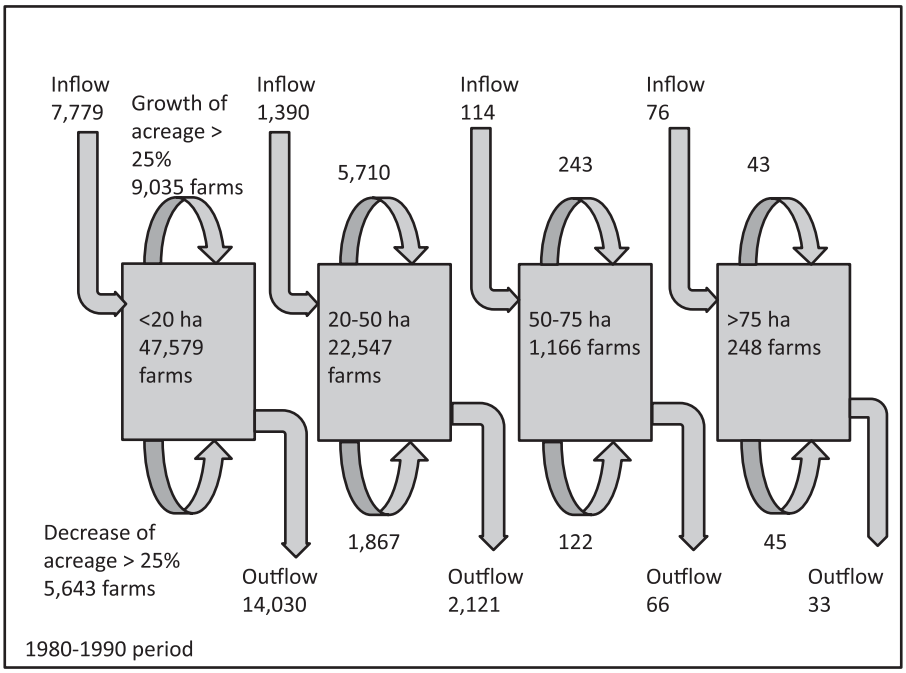

Figure 5. Growth (> 25%) and contraction (> 25%) of continued farms with grazing animals, in physical terms (1980–1990).

Later, I will discuss the theoretical significance of these movements and relate them to the different conceptualizations of differentiation processes. Before doing so I will, however, assess their relevance.

The significant contribution of small farms to agricultural development and growth

Some farms grow, while others decline or even close down. This, as we have seen, occurs in all size categories. This does not imply, though, that the *overall* effect is neutral. Although growth and contraction occur among all size classes, the overall impacts are highly uneven. This is illustrated in Table 4, which again refers to farms with grazing animals that existed in 1980 and kept functioning at least until 1990 (earlier referred to as 'continued farms'). The cells in Table 4 show the absolute contribution (both positive and negative) to overall growth (at the level of the agricultural sector as a whole) made by the different size categories. This contribution is measured in NGEs[18] and can be negative and/or positive. As Table 4 shows, the 50–100 NGE size category (that is, the medium-sized farms) *together* realized, in the 1980–1990 period, a total growth of 132,793 NGE. Yet at the same time the total contraction in this category amounted to 111,882 NGE. Thus, this category of farms made a *net* contribution to overall agricultural growth of + 20,911 NGE: far more than any other size category.

The table also shows that the resources being 'liberated' through the contraction of small farms (166,848 NGE) are not re-allocated exclusively among large and very large

[18]Even if the total acreage remains the same, an increased stocking density (more animals per unit of land) and/or a shift towards more intensive cropping schemes will result in economic growth (i.e. in a quantitative increase in the total NGE).

Table 4. Total contribution to overall agricultural development for different size categories of farms with grazing animals 1980–1990.

Size category	10–50 NGE	50–100 NGE	100–200 NGE	200–400 NGE
Total growth in NGE	+175,195	+132,793	25,076	+2319
Total contraction in NGE	–166,848	–111,882	–33,821	–4253
Net change (+/–) in NGE	+8347	+20,911	–8745	–1934

farms. The expansion of large and very large farms (25,076 plus 2319 NGE – see Table 4) is far less than the decrease in the small farm category. Contraction in the small farm category is more than compensated for by the growth realized within the same category. To phrase it differently: there is no substantial shift of resources from the bottom of the pyramid towards the top. The resources that become available primarily (although not exclusively) circulate in the lower regions of the pyramid.

Table 5 extends the time horizon to cover the 1980–2006 period. The table again assesses the net contribution (i.e. growth minus contraction) from different size categories (using farms' status in 1980 as the baseline for classifying farms into size categories) on the same basis as Table 4. It shows that, for instance, the large farms of 1980 (with an economic size of 100–200 NGE) *together* contributed 37,979 NGE to the total growth of Dutch agriculture during the period that ran to 2006.

By comparing the different size categories, Table 5 clearly shows that during this extended 1980–2006 period, *small and medium farms contributed far more to the overall growth of Dutch agriculture than the large and very large farms did*. This points to one of the intriguing mysteries of the agricultural sector and to one of the main contradictions inherent in agricultural policies that promote modernization. These policies aim to support large farms because these are assumed to be the ones that will realize further growth and contribute most to the overall development of the agricultural sector. Ironically, the real situation is exactly the opposite: *the biggest net contribution to overall development has been delivered by what were (initially) small*

Table 5. The net contribution made to total agricultural growth by different size categories of Dutch farms with grazing animals (1980–2006).

Size category (departing from the 1980 situation) in nge	Net contribution to total growth in 1980-2006 period (measured in nge)
Small (< 50 nge)	175,416
Medium (50-100 nge)	258,913
Large (100-200 nge)	37,979
Very large (200-400 nge)	3,237
Mega farms (>400nge)	119

and medium farms. Some of the (initially) large and very large farms also grew, but due to their low numbers (and their relatively high levels of contraction and outflow) their overall contribution to agricultural development has been only modest. On the other hand, the *individual* small and medium farms possibly grew far less, but due to their sheer number, in aggregate this impacts very strongly on the sector as a whole. At the level of the single farm, growth and/or contraction might appear to be microscopic alterations, but due to the large numbers involved, this translates at the aggregate level into significant 'landslides'.

When relating Table 5 to the agricultural policies in place at that time, one cannot but conclude that agricultural policy was 'betting on a lame horse'.

On social and economic logic

Differentiation theories (of whatever type) distinguish between what they term 'upward' and 'downward' movements. Upward movements are associated with the enlargement of the farm (modernization theories), with becoming a capitalist farmer (Leninist theories) and/or with becoming a rich farmer (the Chayanovian approach). Downward movements represent the mirror side: closing down the farm, becoming a rural worker, or being reduced back to being a poor farmer.

The main problem with the available approaches to differentiation is that they specify, in an *a priori* way, both the drivers and the consequences of differentiation processes – and assume a linear and deterministic relation between the two. Thus, in modernization theory the dynamics of markets and technology development necessarily translate into upward movements for large farmers and downward movements for smaller farmers. Those in between are forced to choose between these two roads. In the Leninist model, class dynamics necessarily move the better-off farmers to the position of capitalist farmers, whilst their opposites cannot escape the fate of becoming proletarians. In Chayanovian theory (at least in the first, classical, version) being a rich farmer came with having more children, more land, better yields and more property, and then, when the old man passed away, the farm was divided and the children became small and poor farmers again (after which they would develop their farms, thus repeating the cycle).

The analysis of the data so far clearly demonstrates that the assumption shared by the market-induced differentiation thesis and the class-based differentiation thesis – that large farmers are the ones engaged in upward tendencies and smaller farmers *necessarily* suffer downward tendencies (summarized as the conventional view in Figure 6)[19] – does not withstand empirical scrutiny. Not all small farms suffer from marginalization and/or proletarianization. Some, indeed, do – but others develop their farms: they show an upward movement. The same is true of large farms: some grow and expand further, while others decrease the farm size or even close down.

Empirical reality (as reflected through time series databases and time series analysis) shows that the categories of small and large farms both show upward as well as downward trends.[20] The quantitative interrelation between the two might differ for the different size categories – just as it might change over time – but the fact is that upward and downward

[19]Figure 6 is inspired by Shanin (1972, 76), who grounded his analysis on empirical material collected by Chayanov. It is remarkable that it can be applied equally to a situation located so far away in both time and space. Shanin also coined the associated concept of 'social logic'.

[20]This is also shown in the research of Ernst Langthaler and his team (Langthaler, Tod, and Garstenauer 2012; Garstenauer, Kickinger, and Langthaler 2010).

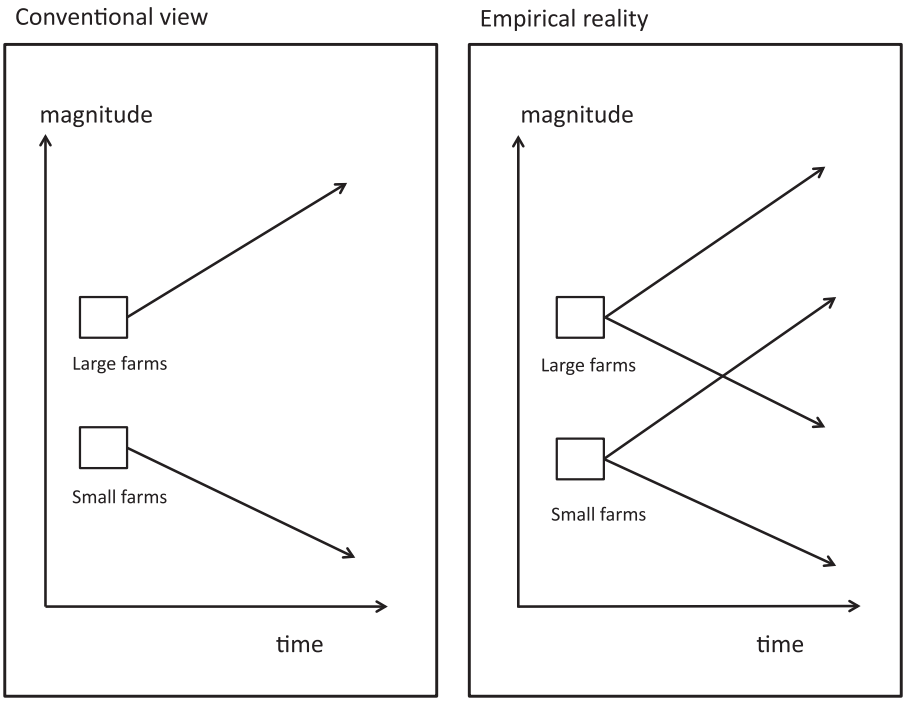

Figure 6. Unilinear and differential trends.
Source: Author's elaboration following the example of Shanin (1972, 76).

tendencies are encountered in *all* size categories: *size* (be it physical or economical) *does not determine future development trends*. This finding falsifies both the market-induced and the class-based differentiation theses.

Following the pioneering work of Shanin (1982, 1990), it might be argued that empirical reality (as summarized in Figure 6) clearly points to an ordering principle that runs parallel to 'economic logic' and which is able to trigger countertendencies. This is 'social logic'. Whilst the economic logic summarizes the 'dull compulsion' of the markets, social logic is derived from driving forces located outside the economy. These might be the balances entailed within the farming family (the demographic balance, the balance between drudgery and satisfaction, etc.), it might also be farmers' emancipatory aspirations of having their own farm and autonomy, the prospect of developing a 'beautiful farm' (van der Ploeg 2008) where the work can be done 'gently' (Zuiderwijk 1998), or the desire to construct a secure foundation point for one's children (van der Ploeg and Ye 2016) or to maintain the patrimony of the family (Arensberg and Kimball 1948).

Small farms are often created and developed as a result of strong emancipatory drives. This has been the case throughout history and they are still important drivers in agriculture today (although the entry barriers are getting ever higher and small farmers face increasing difficulties, especially when they seek to develop their farms). Farming is considered by many people an attractive job, offering independence and daily contact with nature. The farm also functions as attractive *domus*, where work and living can be combined. Beyond that, it is a good place for children to grow up. These features were all highlighted in the many meetings and events that took place in the recent International Year of Family Farming (van der Ploeg 2016). But there are more profane drivers as well. In times of crisis

and (urban) unemployment, the inflow of people into the agricultural sector (and thus the construction of new farms) grows and the outflow (associated with the ending of farms) will diminish. Recently, the prospects of organic farming and new institutional arrangements such as Community Supported Agriculture have also started attracting young people into the agricultural sector: they are exploring, using, or even creating new niches and new opportunities that enable them to turn even a small property into a thriving asset (Milone 2015; Morel 2016).

There are many ways to make an entry into farming. These include: reclaiming ancestral farm land that has been abandoned or underutilized (a common strategy in Portugal, Italy, Spain and Greece since the financial crisis of 2008); the use of savings obtained elsewhere; the combination of farming with another job outside the farm and investing part of the external income into farm development; labour investments (for instance, farmers building their own stables and sheds and/or improving soil quality); and multifunctionality (undertaking multiple economic activities with the same set of resources, specifically the land) (Bowler et al. 1996; Laurent et al. 1998; Laurent and Remy 1998; Milone 2009).

'Social logic' can also work the other way around. Stress, a burdensome workload, chronic disease or accidents can make continuity impossible. Then the farm is necessarily closed. Demographic processes are also important. In contrast to the past, most farming families in Europe now only have a few children, reducing the probability of having a successor. This is magnified since taking over the farm is no longer the strongly felt social obligation that it once was: now it is a choice. Another important demographic factor relates to couples having their offspring earlier. For a farming family this implies that when the children have grown up they cannot immediately take over the farm (or start to work in it). Instead, they have to find another job and only when their parents retire (after, say, 10 or 15 years) can they take over the farm – if they still want to. The, albeit belated, entrance of divorces within farming communities is another mechanism through which 'social logic' has an impact.

The 'social logic' of farming can function in different ways: It can be a strong force that drives people to further develop the farm, or it can lead them to quit – and this applies equally to small and large farms.

The same applies to the 'economic logic' of farming. While normally understood as the driver that makes large farms develop further and small farms lag behind, we have to allow that 'economic logic' can also work in the opposite way. Through continued and economically driven growth, farms might get 'over-dimensioned': too big for a son or daughter to take over, or involving more financial obligations than it can meet in times of low market prices (Clausen 2016). Entrepreneurial decisions can, in hindsight, turn out to be wrong. Badly calculated projects, bad advice, labour processes that are reduced to monotonous and boring routines, animal diseases and/or unexpected events elsewhere in the value chain can all negatively affect the farm – they are all part of the game. In short, a lot can go wrong within the 'economic logic' of farming, and this can contribute to the downward trends in the right-hand illustration in Figure 6.

Social and economic logic are neither 'external' nor completely 'internal' to farms and farming families. They are interpretive schemes ('calculi') that help to actively translate the contextual circumstances, changes, opportunities and threats into courses of action that guide the development of the farm.

Both social and economic logic tie the processes of farm decision-making to a broad set of contextual elements and overarching processes that put their imprint on society, and on agriculture especially. But they do so in complex and non-linear ways. Processes of class

formation might occur and move small farmers to the margins (obliging them to work much of the year for others). But the same processes might also induce a strong longing for autonomy among youngsters, leading them to try to build up a small farm (and appearing as an 'inflow' in our statistics). The same applies for markets: they may push farms to expand but they may equally destroy farms (especially those that expanded quickly – as is occurring frequently in the current crisis).

There are many ways in which social and economic logics can interact, intertwine, strengthen and/or oppose and weaken each other. When aligned (i.e. mutually reinforcing each other) they can generate very strong social forces.

If, for instance, the search for autonomy and well-being (a social logic typical among peasant populations) is combined with a step-by-step and self-propelled development of the farm (the typical economic logic of peasants with access to at least a minimal level of resources), the outcome might be a sturdy process of development and a considerable level of resilience that can see them through even very difficult periods (van der Ploeg 2008). If, on the other hand, the wish to be different ('better off') than other agricultural producers is central to the social logic, and the economic logic centres on substantial and accelerated expansion (partly or wholly funded with credit), this might well lead to disappointment or calamity (Eizner 1985). This is especially the case when there is considerable volatility in the markets. Then farm closure cannot be discounted.

Different farming styles emerge at the crossroads of social and economic logics. These styles are different simultaneous responses to the environment in which the farm is operating and different ways through which farming families express and materialize their objectives and aspirations. The higher the coherence between the two, the more successful and resilient these styles will be.

The heterogeneity of agriculture, and more specifically the simultaneity of upward and downward movements, of inflows and outflows, in all size categories, is the result of these richly chequered interactions between social and economic logic.

Sisyphus's labour

In the previous sections we encountered two sets of outliers that deviate from the way agricultural development is thought to occur: large farms being decreased in size and small farms actively developing (see Figure 7). In this section I probe deeper into these two sets of outliers, using data from the quarter-century between 1980 and 2006.

These outliers structure the processes of growth and development – at the farm level – in ways that deviate from the dominant pattern. This makes these outliers into critical test cases for assessing the validity of differentiation theses. They show that growth and development do not necessarily follow just one, prefigured trajectory (as claimed in the main blocks of literature), but can instead follow different and mutually contrasting trajectories (Saccomandi 1995). When focussing on the nature and dynamics of these different trajectories a range of relevant dimensions emerge (van der Ploeg, Saccomandi, and Roep 1990; Saccomandi and van der Ploeg 1995). These dimensions are summarized in Table 6, and help us to compare different trajectories for growth and development and to assess the singularity of each of them.

The processes of growth and development can be moulded, at the farm level, in highly different ways. This implies that there is no single yardstick that goes from 'no-growth' to very high levels of growth, let alone that such a yardstick would coincide with a hierarchy that goes from bad to good (or, for that matter, from generating no additional income to significantly increasing income). Growth can be proportional to the existing farm size, occurring

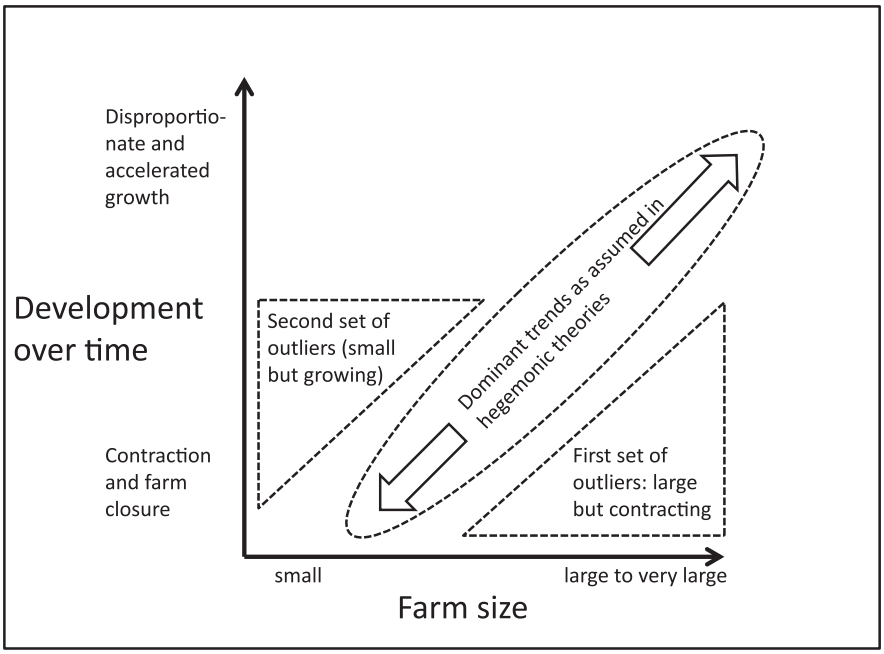

Figure 7. 'Structural development' and the 'outliers'.

in a step-by-step way, and be oriented toward e.g. a further unfolding of multifunctional activities, thereby resulting in more autonomy. But a diametrically opposed approach can also be adopted. Growth can be disproportionate, occurring as a series of ruptures, resulting in more system dependency and worsening relations with the locality. It is equally possible that no quantitative growth is shown but that the relations between the family and the farm are redefined, keeping different options for the future open. The direction all depends on the decisions taken within farming families and on the pressures exerted upon them by the surrounding 'technico-administrative task-environment' (Benvenuti 1982).

In 1980 farms between 10 and 50 NGE were defined as small farms, and farms between 50 and 100 NGE were perceived as medium-sized. One hundred NGE was accepted as the boundary between medium and large farms. Between 1980 and 1990, some farms grew by more than 100 NGE. They increased their farm size by the equivalent of at least two small farms or at least one medium farm. For an already large farm of, say, 100 NGE, this would imply a *doubling* of its economic size. According to statistical conventions this can be considered disproportionate growth (van Driel 1982, 1984). In this period, out of a total of 55,290 farms with grazing animals,[21] only 151 (i.e. 0.3 percent of all farms) grew so disproportionately. In the following decade (1990–2000) this figure increased to 2.0 percent (873 out of 42,469 farms),[22] but between 2000 and 2006 it decreased again, to 0.7 percent (246 out of 35,034 farms).

[21]These are farms that existed in both 1980 and 1990. Inflows and outflows are left out of the analysis.
[22]Of course, in this second time period, the average size was somewhat larger and a growth of 100 NGE a bit less disproportionate. However, for ease of comparing data I have chosen to adopt a fixed ceiling.

Table 6. Dimensions that describe different aspects of growth processes at the farm level.

Resources	Basically grounded on own resources (endogenous growth)	Basically grounded on resources mobilized from outside the farm (exogenous growth)
Magnitude of growth	Proportional to farm size	Disproportional
Rhythm of growth (time)	Step by step	Through big jumps
Direction of growth (1)	Intensification	Scale enlargement
Direction of growth (2)	Enlarge value added/unit of product	Bulk production (low value added/unit)
Direction of growth (3)	Regrounding on nature (agro-ecology)	Increase use of artificial growth factors
Direction of growth (4)	Enlarging multi-functionality	Further specialization
Nature of change	Continuity: organic development of patrimony	Altering the relations between land, labour and capital
Spatial dimension	Consolidating the '*domus*'	Unfolding as a network of interlinked enterprises
Risk profile	Risk aversion	Risk taking
Relation to existing resource base	Further unfolding	Rupture (drastically altering the relations between land, labour and capital)
Relation with the future	Keeping different options open	Superimpose the 'optimal farm of the future' on the current farm
Relation with politico-economic environment	Creating relative autonomy	Seeking integration with the system
Relation with territory	Building on 'terroir'	'Placeless'

Table 7. Disproportionate growth: farms with grazing animals showing a growth in excess of 100 NGE, for different periods and different size categories.

	< 50 NGE	50–100 NGE	100–200 NGE	200–400 NGE	> 400 NGE
1980–1990 (%)	0.1	0.3	1.3	7.0	–
1990–2000 (%)	0.9	1.1	1.3	33.2	–
2000–2006 (%)	0.4	0.5	0.8	5.5	17.3

Hence, disproportionate growth is a rare phenomenon and is perhaps largely limited to certain specific historical periods. But, as shown in Table 7, it is a phenomenon that is highly concentrated among very large farms, those of 200 NGE or more.

Disproportionate growth carries the danger of considerably reducing farm resilience (Darnhofer, Fairweather, and Moller 2010). It also usually requires considerable external funding which brings additional financial costs and risks.[23] The 'jump' in size usually also implies technological change (e.g. introducing automated feeding and/or milking), which considerably increases fixed costs. The variable costs will usually rise as well since having more cattle on the same acreage requires acquiring more feed and fodder

[23]In 2012 small farms (< 150,000 euro standardized output, SO) had, on average, debts totalling 191,600 euro. They were 90 percent solvent. The debts of very large farms (> 500,000 euro SO) equalled 2,788,800 euro and they were 62 percent solvent.

from elsewhere. In addition to all this, the transaction costs will also go up. Increased cost levels bring a lower margin, thus greatly increasing the vulnerability of the farm. The increased ratio of cattle to manpower probably also increases stress (in the herd, the household and the labour process). In short: disproportionate growth frequently increases the levels of risk and stress experienced on the farm.[24] In times of volatility it can bring periods of negative cash flow (Oostindie, van der Ploeg, and van Broekhuizen 2013; Dirksen et al. 2013; Clausen 2016). Equally, the ratios between the objects of labour (land, animals, etc.) and the available labour force will be greatly changed, implying that small technical problems (e.g. faulty milking robots, outbreaks of disease, a bad maize harvest, new regulatory requirements) can induce considerable frustration and stress – which is the most common form of drudgery in most of today's large and very large farms. As Eizner (1985, 63) observed in France, many agricultural entrepreneurs who achieve impressive growth consider themselves to be 'the best pupils of the class room'. They have done everything according to the modernization script, yet the benefits that were promised to follow did not materialize. Disappointment and anger were more often the outcome – the more since the alternatives developed in small farms[25] are usually not feasible in these large farms. They are 'locked in' to a set pathway.

All this translates into the remarkable fact that, on the whole, the large and very large size categories show relatively high levels of contraction. As shown in Table 7, above, seven percent of farms with grazing animals in the 200–400 NGE category realized a growth of more than 100 NGE per farm between 1980 and 1990. Yet, at the same time, 15 percent of the farms in this size category *reduced* their farm size by an equivalent amount. In the 1990–2000 period, this relation changed. Far more of these very large farms grew by more than 100 NGE – 33.2 percent – and only 12.2 percent contracted their farm size by an equivalent amount. This was partly due to policies favouring the concentration of quotas in the large size categories, and partly due to the nearly unlimited supply of credit at that time. The following period (2000–2006) once again showed more significant contraction than significant growth in this size category (14.9 versus 5.5 percent). The size category 'larger than 400 NGE', which by this time had grown sufficiently to be included in the statistical analysis, showed an even more noticeable discrepancy, with 17.3 percent growing by more than 100 NGE and 48.1 percent decreasing by more than 100 NGE.

One wonders what the underlying story is here. Normally, with the inter-generational takeover of the farm the administrative number under which the farm is registered remains unchanged. It could be that the parents keep a small piece of land around their house where they care for a few animals while most of the farm is transferred to the son or daughter. This would lead to two officially registered farms, one for the parents and the other for the son or daughter. In the statistics this intergenerational shift would show up as a huge contraction of a large farm (that of the parents) and the inflow of a new

[24]To fully understand this one has to take into account that farm enlargement (especially when it is disproportionate) today is not inspired by the search for more income, or less drudgery. It is viewed as a strategic move in the battle for the future. Since the main expert systems indicate, time and again, that only a few, very large farms will remain, some farmers (especially those who define themselves, and operate, as entrepreneurs) actively engage in this imaginary battle and consequently expand as much as possible.

[25]These include: farming economically, in order to reduce both fixed and variable costs and thus enlarge the margin; adding new economic activities to the farm to get additional income (multifunctionality); and/or combining farming with a job elsewhere (pluriactivity).

Table 8. Levels of contraction in excess of 25 percent among different-sized continued farms with grazing animals (1980–2010).

	< 50 NGE	50–100	100–200	200–400	> 400
1980–1990 (%)	20.6	11.2	16.5	24.6	–
1990–2000 (%)	18.3	10.1	10.3	17.8	–
2000–2010* (%)	40.5	36.4	23.5	34.6	54.0

Notes: *Percentages extrapolated from 2000–2006 period in order to make them comparable to the other decades; – numbers per cell too small.

large farm. In the 2000–2006 period, 25 very large farms showed a decrease (a contraction) of more than 100 NGE. The aggregate decrease of these 25 farms was 11,647 NGE – on average a contraction of 466 NGE per farm. This effectively means that, apart from a small piece of land and some animals, they were closed down. However, if we look at the inflow in this size category (14 farms in the 2000–2006 period) it becomes clear that the phenomenon of contraction in large and very large farms cannot be wholly explained by sub-divisions associated with succession. Another possible explanation, that relatively fewer youngsters are willing to succeed their parents, is also not probable. Available statistics indicate that there is more willingness to take over larger farms than smaller ones (White 2011).

Whatever the underlying reason,[26] we can see that there is both considerable growth and considerable contraction among large and very large farms. Table 8 gives more statistical details. The most probable explanation of the high and seemingly growing level of contraction is that it reflects the unease and despair (Eizner 1985; van der Ploeg 2003) that comes with such growth. High growth levels in the recent past have not brought the expected benefits, and in the present volatile environment expansion runs the risk of making farms more vulnerable. This brings 'desertion': those who are supposed to be the best agricultural entrepreneurs de-activate their farms. They reduce their farms' size, selling some of their resources in order to meet financial obligations that cannot otherwise be met and/or to create a less stressful life, and probably even obtain a higher income.

In the context of modernization and neo-liberalism, the drive to expand farm sizes is much like Sisyphus' labour. One pushes the stone uphill through relentless effort – only to see it escape and roll all the way down the hill again. A farm is developed, often in an accelerated and disproportionate way, with the aim of ensuring that the farm enterprise can face the harsh competition on the world market that is expected in the near future. But the risks are high, stress (the current form of drudgery) increases, the working days are very long (the ancient form of drudgery that still is with us, probably more than ever), income is less than hoped for, and the volatility of the market can induce periods of negative cash flow and associated hardship and stress. Thus, contraction emerges as a possible means of exit:

[26]An additional analysis of the specific mutation codes reveals that out of these very large but contracting farms (n = 25), nine were sold partly (five) or completely (four) to a third party; eight were split into smaller units; and in four there was a change in joint ownership and management. The latter two categories might involve two or more brothers and/or sisters each taking over a part of the farm, or family members leaving the farm. Two cases were due to spatial reorganization at the municipal level. Only in the two remaining cases could the contraction of the farm be explained by intergenerational change.

between 2000 and 2010 it was a choice made by more than half of all Dutch livestock farmers running very large farms. Clearly, development is not a one-way street.

The disarray in the segment of large and very large farms is probably far larger even than the data about contraction (and outflow) suggest. The farms in these size categories receive huge, now decoupled, income support. In 2014 small Dutch dairy farms (<150.000 euro SO) received, on average, 6780 euro per year as support to their income. In the same year the very large dairy farms (> 500,000 euro SO) received 53,260 euro. That is in practice as much as two incomes (the more so since these farms hardly pay any taxes at all). Hence, the farming family can live off this income support, with some left over to further expand the farm.

It is hard to explain that 80 percent of the agricultural budget of the European Union goes to 20 percent of the farms – the largest ones (European Commission 2012, 2015a, 2015b). It is also paradoxical since these large farms are repeatedly held up as being those most able to compete on the world market. It is even more paradoxical that these flows of public money have helped to create a sub-sector that is highly vulnerable (or, more accurately, that is actively constructing its own vulnerability). As early as 1976, Priebe (a former high staff member of the European Commission) introduced the notion of '*subventionierte Unvernunft*'. The sub-sector of large and very large farms that resulted from this clearly shows that this 'subsidized irrationality' is still with us. However, the counterpoint is increasingly being articulated (European Parliament 2014).

Extending the analysis to arable farming

The dairy farming sector (which makes up by far the biggest part of the 'farms with grazing animals' discussed here) fared relatively well compared to other agricultural sectors during the period under analysis. Prices were relatively high, the market was (still) protected and well regulated, and the (sometimes devastating) effects of price volatility only became apparent from 2008/2009 onwards (when the dairy market in Europe suffered its first abrupt and substantial price fall (Oostindie, van der Ploeg, and van Broekhuizen 2013; Dirksen et al. 2013). In other sectors, particularly arable farming, the situation was quite different. During the whole period prices for arable products were low, with a long-term tendency of rising prices only starting in 2008. In the period analysed here (1980–2006) prospects were rather gloomy, to put it mildly. Low prices and volatility made long-term investments very risky, and the lack of prospects might have spurred more contraction and outflow than occurred in the dairy-farming sector. This basic difference between farms with grazing animals and arable farms in the 1980–2006 period justifies a brief analysis and comparison.

Table 9 summarizes the situation in the arable farming sector for different size categories and different periods. It does so by adding together the percentage of farms that contracted their economic size by 25 percent or more, and the percentage of farms that closed down.

Table 9 shows that 'downward movements' here follow a clear U curve: They are very strong features among both small and large (plus very large) farms but are less pronounced (although still high) in the medium size categories. This shows again complex, if not paradoxical, processes of differentiation. Downward trends occur not only in the size category of small farms – they also occur almost as frequently 'at the top', although the reasons for this differ considerably.

If we compare Tables 9 and 10 we see that the 'downward movements' in the right-hand columns (i.e. among the large and very large farms) are more accentuated among arable

Table 9. Percentage of arable farms showing 'downward movements' (contracting by more than 25 percent or closing down), per size category, for different periods.

	< 50 NGE	50–100 NGE	100–200 NGE	200–400 NGE	> 400 NGE
1980–1990 (%)	48.5	20.1	23.4	37.7	40.0
1990–2000 (%)	61.7	29.4	25.5	32.2	46.2
2000–2006 (%)	67.2	45.6	40.6	40.7	55.7

Table 10. Percentage of farms with grazing animals showing 'downward movements' (contracting by more than 25 percent or closing down), per size category and for different periods.

	< 50 NGE	50–100 NGE	100–200 NGE	200–400 NGE	> 400 NGE
1980–1990 (%)	50.1	16.8	20.9	33.7	–
1990–2000 (%)	54.0	20.7	20.9	30.8	–
2000–2006 (%)	60.2	37.2	28.1	36.6	59.1

farms than dairy farms.[27] This might be the effect of the relative protection that dairy farms were enjoying at that time. By extension, this implies that the subsequent deregulation and volatility within the dairy sector will probably lead to an increase in farm contractions among large and very large dairy farms.

Slotting in social struggle

Alongside the subset of large but contracting farms there is another subset of outliers: the small, developing farms. As indicated in Table 11, in the 1980–1990 and 2000–2010 periods proportionately more small farms with grazing animals grew by more than 25 percent than large and very large farms did.[28] If we shift attention from the *percentage* of farms growing by more than 25 percent (as in Table 9) to the *absolute* contribution to

[27]With the possible exception of the > 400 NGE category in the 2000–2006 period.

[28]The decade between 1990 and 2000 appears to be an exception. In the previous decade total growth and total contraction on farms with grazing animals were more or less identical (+335,387 NGE – 317,742 NGE = 17,645 NGE) and the slight overall growth was equally distributed between all size categories. This 'standstill' reflects, above all, the introduction of the milk quota system. In the next decade, there was a slight increase in farm closures (from 18.4 to 19.3 percent) and a shift of quota to the remaining farms. The numbers of grazing animals other than milking cows (beef cattle, sheep and goats) stayed roughly the same. The apparent 'boom' between 1990 and 2000 (reflected in considerable growth in all size categories and a large increase in total growth of 902,203 NGE, a total contraction of 208,708 NGE and a net growth of + 693,495 NGE) is basically due to an administrative redefinition of the NGE categories. As a consequence of continued intensification (higher levels of gross value of production per hectare of land and per animal) and reduced cost levels (especially feed and fodder), it became possible to increase the value added that could be produced per object of labour (a hectare of land, a milking cow, etc.). This translates, mathematically, into these objects of labour representing a higher level of NGE. When the analysis (as entailed in Table 9 above) is repeated for size classes, expressed in hectares, and growth is operationalized as changes in acreage, the differences suggested in Table 9 disappear (see Annex 1 to this contribution). The 2000–2006 period showed that overall contraction (−414,475 NGE) exceeded overall growth (+ 192,070), with all size categories showing a net decrease in total NGE. Nonetheless, the decrease among small farms was relatively modest.

Table 11. Share of farms with grazing animals realizing a growth in NGE of > 25% (for different size categories and different periods)

	1980–1990 (%)	1990–2000 (%)	2000–2010* (%)
< 50 NGE	16.1	28.8	18.5
50–100	15.7	62.5	12.1
100–200	12.4	58.0	9.5
200–400	11.8	46.0	13.7
> 400 NGE	n.a.	n.a.	14.1

Note: *Percentages extrapolated from the 2000–2006 data to make them comparable to other decades. n.a., not applicable.

Table 12. The contribution of growing farms* to total growth** at the aggregate level (for farms with grazing animals, different size categories, different periods).

	< 50 NGE	50–100	100–200	200–400	> 400NGE
1980–1990	175,195	132,793	25,075	2318	–
[as % of total]	[52.2%]	[39.6%]	[7.8%]	[0.7%]	–
1990–2000	283,382	475,130	128,321	14,743	–
[as % of total]	[31.4%]	[52.7%]	[14.2%]	[1.6%]	–
2000–2006	55,859	64,844	56,206	11,927	3232
[as % of total]	[29.0%]	[33.8%]	[29.3%]	[6.2%]	[1.7%]

Notes: *For *all* farms that show positive growth (i.e. *not* limited to farms showing more than 25% of growth as in Table 11 above); **If the aggregate contraction of farms that reduced their size is subtracted, the net total growth remains (as reported in Table 5).

growth that this segment made (Table 12), then the contribution of small farms becomes even more pronounced. Without the substantial growth of small livestock farms, the panorama of Dutch agriculture would be very different than it is now. Although the momentum in the overall process of growth is slowly shifting towards medium and large farms (notably in the 2000–2006 period), the contribution that small farms made to overall growth is more or less the same as that of large farms (55,859 as compared to 56,206) and far greater than the contribution of very large farms (11,927).

The development and growth of (a segment of) small farms took place within a politico-economic context in which all the main agricultural institutions (the Ministry of Agriculture, the large farmers' unions, the agricultural university, the main research institutes, extension services, boards and think tanks) articulated the same message to primary producers: small farms were too small to be viable, too small to develop further, too small to be taken over and too small to have any future. In line with this script, markets, governments' policies, tax regimes, and technological research and development (R&D) were *de facto* re-moulded to materially favour large, expanding farms and hinder small ones.[29] In this

[29]Small farms receive lower prices for their produce and pay higher prices for the goods and services they acquire. Large farms often obtain the equivalent of a complete income from these differentiated prices alone. Banks are often unwilling to supply small farms with credit. Many government programmes (guaranteeing loans; interest subsidies; financial support in times of trouble) are inaccessible to small farmers. Assistance for small farmers made available at the level of the EU was not passed on to Dutch farmers. Agricultural R&D is oriented solely towards exploring the possibilities, needs and horizons of relevance of large farms. Regulatory schemes (e.g. environmental regimes) are designed

context, the development of small farms emerged (and was experienced) as a form of resistance to the conventional narrative, and became part of social struggles.[30]

From a socio-political point of view, the development and growth of small farms incontestably represents social struggle. Developing a *small* farm (as opposed to closing one down) was, and is, seen as going against the grain. It represents a deviation, a small-scale rebellion. It is doing something that the authorities of the agricultural world ridicule and strongly disapprove of. It involves taking other small farms as a point of reference (instead of the large, expanding ones), and the actors involved sometimes proudly exclaim: 'We are still here'!

There never has been, in the world of Dutch agriculture, something like a referendum on which trajectory to follow. Farmers in general, let alone small farmers, have had no formal means to vote on the direction agriculture should develop along.[31] But many of them voted, as it were, 'with their feet': they did not accept the dominant script, but followed, in a sturdy, persistent and often creative way, their own trajectory. Taken together, these many little rebellions are a form of 'everyday resistance' (White 1986). An important tool in this battle has been the constructive capacity to mould the process of farm development in ways that deviate from the official script, and in ways that match the possibilities and limitations of the small farm. In all the dimensions set out in Table 6 the small-scale farmers take positions that differ from those of the large farms (especially those that grow disproportionally). As they themselves explain: 'we farm differently and we develop and invest carefully' (Oostindie 2015, 74).

Currently, this everyday resistance is increasingly flowing into 'struggles of the third kind' (van der Ploeg 2008). This means that small farmers are collectively constructing new solutions in order to strengthen their position:

1. Building territorial cooperatives that effectively integrate landscape and biodiversity management with agricultural production, thus strengthening the economy of the participating farms (Wiskerke et al. 2003);
2. Using local arrangements for cooperation as places for experimentation and learning which provide insights that help to consolidate and further develop the participating farms (Fédération 2013; for France this is eloquently elaborated by Lucas et al. 2014);

in a way that does not harm large farmers whilst small farms bear a disproportionate burden of them. Spatial interventions to bring about improvements were oriented towards areas with a high share of large farmers. The expropriation of farmland for the creation of nature reserves mainly and deliberately takes place in areas with a high proportion of small farmers. The list could go on.

[30]This social struggle is wider than just developing one's own farm. It also occurs when farmers resist the conversion of large farming areas into nature reserves, and fight for higher prices, build new institutions that are more supportive of small farms (in the realm of e.g. cattle breeding and selection and farmer-managed nature conservation), and with the rapid and massive spread of the concept and practice of multi-functionality. The struggle for the survival and development of small farms also embraces the reproduction and further fine-tuning of the style of farming economically. As well as taking many forms, the struggle of small farmers is also occurring in many places.

[31]Through demonstrations, roadblocks and protest meetings they made sure their voices were heard. The massive protest meeting in Galgenwaard Stadion that followed the nation-wide roadblocks in the first half of 1974 was a telling sign. The ranks of small, medium and even large farmers rose up in clear opposition to the farm leaders of the time (the presidents of the official unions) who were strongly in favour of modernization and the inevitable elimination of huge numbers of farms.

3. The agro-ecological movement that helps to further develop the style of farming economically that is mostly (though not exclusively) practised by small farmers (van der Ploeg 2000; Menghi et al. 2015);
4. Constructing new markets that provide better off-farm prices (Polman et al. 2010; van der Ploeg, Ye, and Schneider 2012).

Conclusions: inverted development and differential differentiation

The agricultural sector is embedded in, and dependent on,[32] a complex set of upstream and downstream markets that have a strong tendency to channel large value flows towards external capital groups. As a matter of fact, in the period under consideration here, food-related industries increased their value 'added' far more than other industries did (van der Ploeg 2008, see especially figure 5.4). The value 'appropriated' (a term more suitable than 'added') is apparently so attractive that large industrial conglomerates such as DSM shifted their main activity from chemistry to food-related activities. Food-related industries have also become a favourite prey for hedge and private equity funds.

The subordination of agriculture to food processing industries, agri-business,[33] large retail chains and banks creates a squeeze: a permanent deterioration of the exchange relations in which farming is embedded. Together with the impact of state policies and technological development,[34] this squeeze contributes to the overall decrease in the number of farms. In the 1980–2006 period the number of farms with grazing animals recorded in the time series database used here decreased from 71,540 to 42,598. The number of arable farms also went down, over the same period, from 16,723 to 13,234.

This strong reduction clearly is an outcome of a concerted squeeze, selective policies and technological models that favour large-scale operations. However, this reduction cannot be understood as a straightforward, mechanistic effect of 'the squeeze', policies and biased technologies. There are too many intermediary factors (such as the two-sided nature of both economic and social logics operating within farming families, the emergence of new individual and collective responses, etc.) that contribute to the many empirical countertendencies discussed in this paper.[35]

When confronting theoretical approaches to differentiation with the empirical insights that emerge from the new data on which this contribution is based, one cannot but conclude

[32]The degree of dependency differs considerably. This implies that some farms, i.e. those showing a relatively low degree of dependency, have some room for manoeuvre that allows them to deviate from the script imposed by capital and the state. By contrast, the farms with a high degree of market dependency are obliged to follow the logic of the market.

[33]I understand agri-business as being located on the upstream side of farm enterprises and also including the supply of services. Food processing industries are located on the downstream side of farms.

[34]Insofar as technological development focusses mainly or solely on the needs and possibilities of large farms, whilst neglecting those of small farms, it undoubtedly contributes to the marginalization of smaller farms. Over recent decades, though, there have been some clear countertendencies. These include the miniaturization of many technologies, which often emerge from small and medium enterprises.

[35]It is seductive to ask whether the combination of a peasant-like social and economic logic (as discussed above) and the new responses emerging from social struggles could ever obtain a weight sufficient to counter that of capital, state power and historically delivered routines. That is, can the peasantries of the twenty-first century escape from the fate they have suffered over the last 70 years or so? Can the overwhelming trend of declining farm numbers be reduced or even stopped? However, this question goes well beyond the scope of this contribution.

that differentiation does not occur as conceptualized in modernization theory, class analysis and/or the Chayanovian approach. Undoubtedly there is differentiation, but it occurs in ways that are definitely at odds with the theories discussed at the start of this paper. Whilst this analysis focuses solely on the Netherlands and on recent decades, it is probably also applicable to much of Europe today. Further scholarly scrutiny would be required to verify this, and would require the availability of comparable data. The same can be said about extending such studies to other continents.[36]

Although markets and technology impact very strongly on agriculture and on the developmental trajectories of farms and farming families, there is no evidence of any market-driven differentiation, as posited by modernization theory. Throughout the period scrutinized here (1980–2006) many small-scale farms were indeed wound down or closed, but equally there are many that were continued and/or developed further. Alongside this there is an inflow as well: people establish new small farms. Overall, small farms engage more in growth and development than large farms do, and they have been, at least in the Netherlands, the main engine for the growth of the agricultural sector as a whole. Large farms (at least some of them) develop, but there is also a considerable portion that has actively reduced in size. What is important in terms of theory is that the data clearly show that there are no deterministic mechanisms. Any scheme that posits a linear relationship between structure, performance and outcomes is at odds with the multiple and contradictory movements identified in the analysis of the time series dataset. To understand these multiple movements we clearly need to incorporate the notion of agency – which is notably absent in modernization theory. The richly chequered mosaic of contrasting developments can only be understood if we include agency, operating at the micro level, within the analysis. This implies taking on board the concepts of social struggles, farming styles and cultural repertoires.

The pivotal role of agency also comes to the fore when we look at the sub-group of farms that did not grow, or barely grew, over the 1980–2006 period. Of a total of 71,540 farms with grazing animals in 1980, 3587 grew by less than 10 NGE (on average, only four NGE) and another 3662 farms decreased in size by 10 NGE or less. Thus we have a sub-group that goes against all established 'wisdom' (and the prevailing agro-political script). There farms are seemingly 'standing still' but nonetheless they 'keep existing' – even over a period as long as 26 years. Of course, this apparent 'non-growth' is far from lethargy. It is a result of agency: of the farmers' strategic capacity to mould the trajectory of their farms in such a way (see Table 6) that it fits – as well as possible – with their prospects and interests. The farm size may remain the same but if, in the meantime, the debts have been repaid and no new ones have emerged, the income may have improved considerably. It is also possible that the farm changed to organic production (or started a range of additional, multifunctional activities), thus producing a higher income from the same size farm. Living on the farm may be more important than earning from it, and this can be achieved through generating more income from pluriactivity. In short: neither 'large' farms nor 'small' farms provide any evidence to support the oft-assumed deterministic mechanics of market-driven differentiation.

What applies to market-driven differentiation applies equally to class differentiation. Although there are important pockets where salaried workers play a key role, both in the Netherlands and throughout Europe as a whole, there definitely is no accumulation from

[36]Edelman and Seligson (1994) describe how the number of small farms in the Coto Brus area in Southern Costa Rica strongly grew throughout the entire twentieth century. At the same time the number of large and very large farms decreased.

below as understood in Leninist theory. There are forms of 'accumulation from above'[37] but these occur in ways, and through mechanisms, that definitely differ from the classical unfolding of feudal Prussian landowners into new capitalist farmers.

Demographic differentiation also fails to fit with, or explain, current patterns. Without doubt there are cyclical processes. Small farms (at least some of them) develop on a step-by-step basis into larger farms and these (again, at least some of them) break down and the 'liberated' resources (land, quota, environmental space, access to networks, etc.) are redistributed (at least partly) between small and medium farms that want to develop. But these are cyclical processes that are no longer located within the family, nor do they occur within one generation (as postulated in the original work of Chayanov).

The theoretical models discussed here largely reflect the historical experiences out of which they emerged. History, however, has evolved, and differentiation now occurs in radically different ways. If we look at the empirical data we can find evidence of partial and/or new forms of market-driven differentiation, class differentiation and demographic differentiation in today's agriculture. The associated processes interact in several different ways, which carries considerable potential dangers.[38] Moreover, these forms of differentiation follow trajectories, and involve mechanisms, that differ greatly from the ones that occupy the central role in the three classical approaches. As a result these established theories are major obstacles to understanding the dynamics that shape today's agriculture.

Market-driven differentiation does exist, but has tended to result, especially in the last decade, in the demise of *large* farms. Meanwhile, small-scale farmers have found strategies, and are still developing new ones, to continue and to develop their farms. Figure 8 summarizes some of these trends and the ways in which they relate to each other. The demise of large farms (the flow on the right) implies a re-allocation of resources to small and medium farms that are subsequently being developed against all the predictions of modernization theory. The resulting flow, depicted in the bottom-left hand corner of the figure (i.e. small farms *developing*) is the outcome of rural struggles of the third kind. The flow in the top left-hand corner could be the result of several processes, or combinations thereof. Parts of it could be close to what is identified in the 'conventionalization' thesis: small farms that have developed successful new business models (e.g. organic farming) are now developing into new large farms (Best 2007). Another possibility is that these farms are realizing a sturdy, 'peasant type' of growth: step by step, diversifying (in classical, but also and especially in new, multifunctional ways), in a proportionate way, using their own resources (Rooij et al. 2014). They are unfolding organically without any major rupture, whilst increasing their autonomy (see also Table 6). From a class perspective this looks very much like 'accumulation from below' (and, indeed, it is). But, ironically, it is done by

[37]During the period analysed here, there have been several attempts to create large, capitalist farms in cattle breeding, dairy and arable farming. A few have been successful, but most have failed. These attempts often involved a transfer of capital accumulated in industry or services into agriculture. These attempts multiplied after the 2008 economic crisis, meeting with considerable resistance from farmers and from the rural population in general. The farmers feared that such mega-farms would monopolize all the developmental potential within agriculture, while rural residents feared the degradation of the quality of life in the countryside.

[38]One possibility is that an accelerated demise of large entrepreneurial farms (already visible in the contraction of very large farms, discussed above) will interact with the current form of accumulation from above, i.e. the creation of new large, capitalist, farm enterprises. A deepening financial crisis could very easily trigger such interaction, hastening the demise of highly indebted, large farms and a flow of capital to agriculture, seen as a 'safe heaven'.

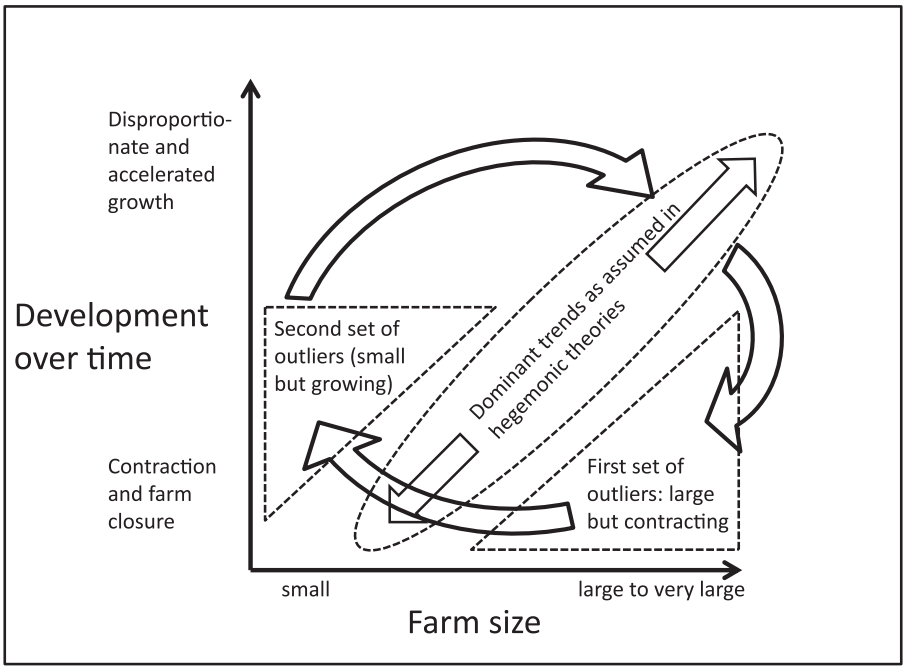

Figure 8. Rotational processes in today's agriculture.

peasants, driven by peasant logic, and it leads not to the emergence of capitalist farms but, rather, to the consolidation of (large) *peasant* farms (van der Ploeg 2008).

Figure 8 points, in synthesis, to *differential* differentiation:[39] different subprocesses (the curved arrows in the figure) intertwine, feed and strengthen each other and thus produce a complex and contradictory process of differentiation.

In this differential differentiation there is also clearly much demographic differentiation,[40] but it operates in at least two ways: it leads one segment of farms to resist and develop, and also results in other farms being closed down – mainly because the drudgery greatly exceeds the hoped-for rewards (financial and otherwise). Equally, there is also some class differentiation. But it operates in new, unforeseen ways. One of the main vectors is the current trend for creating large corporate farms at the periphery of Europe (van der Ploeg, Franco, and Borras 2015).[41] By linking spaces of poverty in Eastern Europe, the Maghreb and parts of Eastern Africa and Latin America, where land and labour are

[39]A differential is a mechanical device (used in e.g. cars) that allows a pair of wheels attached to one and the same axis to rotate at different velocities. It is an essential technology that allows cars to turn corners (as the outer wheels spin faster than the inner ones). It is a 'technology' that modern day agriculture arguably sorely needs.

[40]As indicated before, I understand 'demographic' as referring to 'social logic', social drivers, social motivations, etc., of whatever type.

[41]We only have to look at corporate farms such as EKOSEM Agrar in Russia (based on German capital, it has 18,000 dairy cows and plans to double its size) or VanguardCo in the Ukraine (owned by Ukrainian oligarchs, it is currently producing half as many eggs as the entire Dutch egg sector and recently obtained an EU export license), or Van Oers in Morrocco (originally Dutch owned and recently taken over by a French capital group) which has 1200 hectares of irrigated horticultural land and direct access to the port of Rotterdam.

very cheap,[42] to spaces of richness, with large and rich markets for food, these new capitalist farms trigger proletarianization 'over there' and contribute to the demise of very large farms 'over here'. Thus, the situation we are now facing is not 'accumulation-from-below', or 'accumulation from-above', but a new phenomenon: 'accumulation-by-detour'.

Acknowledgements

I am grateful to Paul Falkenberg, Cees van Straaten and Krijn Poppe of the Dutch Agricultural Economics Institute (LEI) who assisted in the elaboration of the data. I thank Florent Bidaud, of the French Ministry of Agriculture, who organized a seminar where I could discuss, for the first time, the ideas elaborated in this paper. I thank Sjoerd Wartena for finding a blind spot in previous versions of this text, and Nick Parrott at TextualHealing.eu for his thoughtful English editing. I am also very grateful to two anonymous reviewers who helped considerably to make this paper more transparent. I acknowledge the support of the Agricultural Committee (COMAGRI) of the European Parliament.

Disclosure statement

No potential conflict of interest was reported by the author.

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[42]It could be argued that parts of Southern Europe, notably the fruit- and vegetable-producing areas in the Mezzogiorno in Italy and Murcia in Spain, are also part of this periphery (see Corrado 2011).

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Appendix 1A. Farms with grazing animals that have increased their landholding by more than 25 percent, for all size classes, for all considered periods.

	1980–1990 (%)	1990–2000 (%)	2000–2006 (%)
< 20 ha	19.0	15.9	14.9
20–50 ha	25.3	24.6	22.6
50–75 ha	20.9	21.4	18.4
> 75 ha	17.2	19.0	19.7

Appendix 1B. Farms with grazing animals that have contracted their landholding by more than 25 percent, for all size classes in hectares, for all considered periods.

	1980–1990 (%)	1990–2000 (%)	2000–2006 (%)
< 20 ha	11.8	13.8	13.2
20–50 ha	8.3	10.2	9.4
50–75 ha	10.5	10.9	9.7
> 75 ha	49.5	17.5	11.6