SUFISA

SUFISA DANISH DAIRY REPORT
AN EXTENDED SUMMARY

June 2018

AARHUS UNIVERSITET

SDU

Martin Hvarregaard Thorsøe & Egon Bjørnshave Noe

"In practice we have a market system, where 97% of the milk is sold locally and the remaining 3 % determines the price of all of

"When you are in a sector with these fluctuations you need equity as a buffer to manage"

This project has received funds from the EU's Horizon 2020 research and innovation programme under Grant Agreement No 635577. Responsibility for the information and views set out in this report lies entirely with the authors

Introduction

The purpose of this report is to investigate the policy requirements and market imperfections, and their implications for the resilience of Dairy production in the Region of Southern Denmark, as part of the EU-funded Horizon 2020 project, SUFISA (Sustainable finance for sustainable agriculture and fisheries). This executive summary has been derived from a much larger report, which is available from: http://www.sufisa.eu/publications (project reports).

The case study is carried out at a time when the Danish farming is undergoing significant structural development and in the midst of a financial crisis. In many ways the Danish farming can be considered as very successful and efficient, producing high yields with a low carbon footprint pr. product. However, currently Danish farming is in a significant financial crisis, which is evidenced by an unusually high rate of bankruptcies among farmers. Furthermore, a large share of farmers have a significant income problem as around 40 % of all dairy farms operate with both a high debt and a deficit on the annual accounts and therefore farmers cannot be considered economically sustainable. The crisis is partly caused by a huge debt of Danish farming amounted to 370 billion DDK (~€50 billion), which is the highest debt pr. farmer in the EU and it has particularly been generated by property investments. Prior to 2009 there was an overinvestment in farmland and the gradual build-up of a soil price bubble, which burst in 2009 and subsequently the soil price has decreased by more than 40 %. The low commodity prices, particularly for pork and dairy make it even harder for the farmers to exit this vicious cycle as investments have been carried out based on more favourable market expectations. The crisis in Danish agriculture is a huge problem for many small-scale rural banks that have provided loans for farmers, and a number of these have gone bankrupt and left the rural communities in despair, hence the farming crisis has an impact beyond farm level.

Data collection and methods

The key approach taken in the analysis has been to put the farmers at the centre of the research, in order to get their perspectives on the key issues that need to be considered. Initially, a media analysis was conducted (which covered national, regional and specialised media from 2005 to 2016), as well as a desk-based analysis of market conditions and regulations (sources reviewed included: academic publications; government and policy documents; market research and consultancy reports; industry reports and NGO documents), supplemented with 21 expert interviews. Following analysis of the resultant data, two focus groups (FGs) were held with dairy farmers at two locations in the region of Southern Denmark, in addition two individual interviews were conducted with organic producers who deliver their milk to German dairies. Subsequently, a survey among dairy producers in on of Southern Denmark and poultry producers in Denmark was carried out in the winter of 2017 and spring of 2018. The following contains first a general description of the case of dairy farming in the region of southern Denmark, including a section describing the policy and regulatory conditions, market conditions and financial conditions. Each section first contain a general description based on documents and expert interviews and secondly a description based on the farmers perspective based on the focus group interviews, workshop and

surveys. Finally, the summary includes a description of farmers' strategies and the intuitional arrangement that are employed to manage these conditions.

Dairy production in the region of Southern Denmark

Region of Southern Denmark is characterized by extensive rural areas and a high proportion of agriculture (65 %). In the western part of the region there is a high prevalence of sandy soils that are mostly suitable for grazing and the area therefore features a high share of organic dairy farmers, as organic dairy farming requires grazing. Furthermore, it is one of the areas in Denmark that has the highest concentration of organic farmland. Farming plays an important role in the regional economy, as agriculture, forestry and fisheries account directly for around 3.4 % of the employment in the region. The most common agricultural products of the region are industrial crops, such as corn, wheat, grass and barley for feedstuff as well as pigs, poultry, pelts and milk. In the region there is a large production of corn used for biogas production in Germany, which has increased the price of farmland. The Region of Southern Denmark borders with Germany and it is a region that traditionally has a high influx of ideas from the south, for instance, there is a high concentration of biodynamic farmers organised around the cooperative dairy "Naturmælk".

Historically dairy production is one of the most important sectors of Danish agriculture, and an important export commodity. Although Denmark only produces around 3 % of all dairy produced in the EU. The turnover of the Danish annual export of dairy products was around 13,5 billion DDK in 2015 (€1,8 billion), which is about 20% of the annual Danish export of agricultural commodities. Danish dairy products are primarily exported to Germany, China, United Kingdom and Sweden. 65 % of the exported dairy products is cheese, whereas powder, concentrate and butter account for 15 % and 11 % respectively. The Danish dairy production is highly concentrated in the western part of the country due to a high prevalence of sandy soils which provide relatively poor conditions for arable crops, but which are suitable for grazing (Kristensen, Aaes, & Weisbjerg, 2015). Furthermore, in particular in the Region of Southern Denmark there is a high concentration of organic dairy producers, which is in fact the highest in the country.

Danish dairy farming is undergoing a significant structural development that has resulted in a general increase in the number of cows per farm, from a national average in 1982 of 52 to 126 in 2014 on average, and this figure is even higher for the region of Southern Denmark. In general, Danish dairy farmers have higher capital investments in their production facilities, but also higher yields pr. cow and lower environmental impact compared with their competitors in the EU and the world market (SEGES).

The total Danish dairy production has been relatively stable since the 1930'ties at around 5000 Mkg, however, there has been huge changes to the dairy production system. In the 1930'ties the population of Dairy cows was at its largest of about 1,7 million, but today this has decreased to about 500.000 heads in 2015. The dairy productivity has doubled from 1900 to 1970 and more than doubled since the 1970'ties reaching an annual average of 9000 kg milk pr. cow in 2010. In the

beginning of the 1990'ties a largescale conversion to organic dairy production was initiated and today around 10 % of the Danish dairy production is organic. The development has been driven by a number of different factors. Compared to other countries, Danish organic farming policy is unique because organic farming has been supported and developed as an industry, whereas many other European countries have supported organic farming as an agro-ecological measure (Daugbjerg & Halpin, 2010). It has always been a political ambition to develop organic farming on market terms, and several measures to enhance sales and the commercial potential of organic products have been implemented. Organic production was formally institutionalised with the organic law of 1987, enabling production audits by the state, research funding, marketing support, extension and conversion support (Daugbjerg & Halpin, 2010). Since 1996 more than 50 million DKK has been spent annually on research and development of organic food production. According to ICROFS, this research has contributed to the solution of some of the challenges faced by the industry because it has been jointly planned with the different market actors (Kledal & Halberg, 2012). Furthermore, organic farmers have aspired to be an alternative to the existing food production, which has resulted in creativity and innovation to develop and implement novel sales networks and market niches (Kjeldsen & Ingemann, 2009). Examples include the successful e-commerce box-scheme "Årstiderne," delivering organic produce to 45,000 families in Denmark and Sweden (Årstiderne, 2014), many small successful farm-shops, and more recently the Food Communities (fødevarefællesskaberne), a consumer initiated and organised box-scheme that has spread to more than 15 localities in Denmark (Thorsøe & Kjeldsen, 2015).

"With the dairy I can sell my milk at a high and stable price, and that is what it is all about that I can make money"

Historically the Danish dairy industry has been important in the development of the Danish agricultural sector and the organisation in cooperatives was first adopted by the dairy sector to enable foreign trade with dairy products, primarily for the German and British markets. Traditionally the Danish dairy sector has been composed of a large number of small scale dairies, around 1500 in 1900, but structural development has reconfigured the dairy sector significantly and today the sector is composed of 28 dairies (of which Arla is by far the largest) operate 54 production facilities (Mejeriforeningen, 2016).

Policy and regulatory conditions

Dairy production is conditioned by various types of policy and regulatory interventions that are both developed at national and at EU level.

Denmark along with Ireland and the United Kingdom both joined the EC in 1973. The Common Agricultural Policy (CAP) lays the foundation for the European agricultural policy, and it has been changed on several occasions. The late 1970's and early 1980's marked the beginning of a new area for the EC policies as food security no longer has the same focus. At European level the productivist policies are questioned due to their cost and the massive overproduction that have now become the result. As a result, a quota system was implemented in 1984 that for instance put a ceiling on the dairy production. The CAP was reformed initially in 1984, where milk quotas were introduced, in 1988 where an expenditure sealing was imposed on the European Council, but most significantly with the MacSharry reform in 1992. In the MacSharry reform the CAP policy was fundamentally

changed by abolishing price support in favour of income support in the form of direct payment. Today the CAP policy provides direct income support for Danish dairy producers, in its two pillar program, 1) the direct support package and 2) the rural development program. In Denmark the CAP program is managed by the AgriFish Agency.

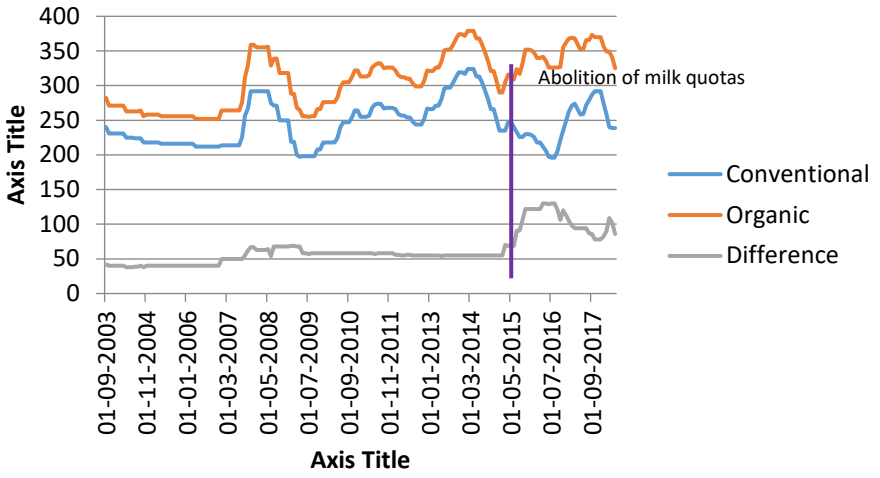

Figure 1: Development of the conventional and organic milk price, respectively. Own calculations based on (FarmtalOnline, 2016).

As of April 1st 2015 the EU abolished its quota policy, thereby liberalizing the dairy production and significantly influencing the dairy price, see figure 1. The abolition of milk quotas has been one of the most significant policy changes for Danish milk producers in recent years, as producers are no longer limited in their production by a quota system, but rather by the capacity of their farms (Arla, 2016). The abolition of milk quotas has had a different impact on the organic and conventional milk market. The supply of organic milk was fairly stable the years preceding the abolition, but decreased suddenly by the end of 2014. This decrease is attributed to the fact that a number of organic producers converted their production to conventional to increase their production once the quotas were abolished. However, as prices for conventional milk decreased and prices for organic milk increased, the organic production has again increased to more than what it was before. Furthermore, a number of the conventional producers who converted to conventional production have once again applied for conversion to organic production and therefore this production is expected to increase further in the future.

For the past 200 years the agricultural production in Denmark has gradually been intensified and new areas have been included in the agricultural production (Bjørn, 1988). The intensive agricultural production has resulted in a number of environmental issues, during the 1980ties the regulatory response was a series of action plans to limit nutrient leaching (NPo, 1985; AP-I, 1987; AP-SUS, 1991; AP-II, 1998; Ammonia-AP, 2001; AP-III, 2004). From the mid-1980s these action plans consisted of general regulatory instruments such as, standardizing the timing and limits of fertilizer application, introduction of mandatory catch crops and introducing general norms, for instance, harmony regulation that specifies a

required acreage for a certain number of livestock. From around 2007 the WFD introduced a fundamental change to the development of policy targets. Previously targets were based on a politically approved goal of nutrient reduction, but in the WFD policy targets are based on an assessment of the ecological conditions and the objective is that the ecological conditions should have a "good ecological status" by 2027 at the latest. This policy objective implies a huge challenge for the agri-environmental management. The whole approach to the environmental planning has been restructured as the regulatory regime has previously been dominated by general policy instruments are now replaced with a regulatory regime characterized by policy instruments that spatially differentiate the effort depending on local conditions, such as ecological status of recipients and nutrient leaching at field scale.

Traditionally private ownership has been the dominant form of enterprise in Danish agriculture, which has also been protected by the agricultural law that details the legitimate owners of agricultural properties. The law was revised in 2012 and 2015in order to attract investment capital into the field of agriculture. Hence, the new and updated version of the agricultural law enables new forms of ownership, such as ownership by non-farmers, liability companies or pension funds. Similarly, requirements for the farmer to take residence on the farm are abolished along with the restrictions on the maximum farm size. The changes in the agricultural law indicate a more fundamental shift in the regulatory perception of farmers, hitherto, it has been an important objective of the law to maintain "family farming" by limiting the structural development and the access to farmland by non-farmers. However, gradually this has changed so that today the major concern is to ensure that the conditions for farming resemble the conditions for any other industry. Hence, the understanding of agriculture as a particular form of rural culture with an inherent value that is worth protecting has gradually been replaced by an understanding of agriculture as an industry like any other.

The governance of the regulatory condition is also something that preoccupies farmers, as they find themselves in a sector, which is undergoing significant changes in these years. Regarding the contemporary market conditions farmers' particularly note three aspects that are important in their decision-making:

1. **The agricultural law:** The changes in the agricultural law enabled the entrance of new norms of capital and ownership. Farmers appear as quite ambivalent about the new possibilities for the entrance of financial capital to the agricultural industry. On the one hand the new investors are seen as "destructors of the peasant culture", on the other it is seen as completely indifferent, because it is just money and the financiers will always need a farmer to manage their properties and are in need of new capital, independent on its origin. Hence, the question is how farms should be organized in the future as the old image of a farm with a family, is not seen as the future, but it is difficult to see what should replace it.
2. **The image of farmers:** The image and status of farmers as a regulatory object is also a central point of concern. The whole debate revolves around the status farming vis-à-vis other types of activities in the countryside. The

central question is whether Denmark is an agricultural "production country" or not. For some farmers who live in proximity to areas of high biological value this is a matter of farm survival, as regulation of production may impose too many restrictions on the farming practice to still be viable. The comments reflect another concern for the farmers, they have to continue farming even though they observe that some of the activities they do are out of sync with the rest of society. At the same time, the farmers are also a bit apathetic towards the rest of society and its perceived lacking and simplistic understanding of the value and conduct of farming. The biggest concern is that the public image is embedded into regulation that is correspondingly simplistic.

3. **Representation of farmers in the regulatory process:** Farmers also express their distrust towards the agricultural regulation. Farmers direct this distrust towards the scientific basis of the environmental management and a sense that they are not recognized in the regulatory process. Farmers are concerned that the regulation changes overnight and that important regulatory decision will be taken by public officials. However, it is also argued that justice will prevail in the end if farmers stick together and argue based on facts.

Market conditions

In the past 5 years, conditions on the milk market have changed considerably. In the wake of the financial crisis the farm gate milk price has dropped to less than 200 DKK øre pr. kg, which is well below the costs of production for many producers. However, the prices increased again to record height in 2014 where the farm gate price for milk was 379 DKK øre pr. kg. and again dropped below 200 DKK øre pr. kg following the abolition of the milk quotas. Abolition of milk quotas and the emergence of a more volatile milk market, influenced by various world market events such as political crisis or natural disasters. Furthermore, the abolition of the milk quotas coincided with an import ban from Russia following the Ukraine crisis and a Chinese import stop of milk powder. Danish dairy farmers are highly dependent on the export markets as about 2/3 of the production is exported, and therefore the Danish dairy price was very influenced by these world market events. In addition, economists predict that the world market milk prices are expected to continuously decrease due to technological development, such as automation, breeding and increasing efficiency. Therefore, an important market condition for Danish dairy producers is a decreasing world market milk price and a more volatile market situation.

The Danish sector is composed of 28 dairies that operate 54 production facilities (Mejeriforeningen, 2016). Most of these are geographically located in the western part of the country. The multi-national Arla foods, which was established in 2000 in a merger between the Danish MD Foods and the Swedish Arla, is by far the largest dairy and one of the largest dairies in the world. Currently Arla operates in 7 countries and in 2015 the turnover was €10,3 billion (Arla, 2016). Most of the dairies are organized in the Dairy Association, and umbrella organization that manage standards and represent the dairy sector in policymaking.

Farmers in Denmark have been accustomed to fairly stable commodity prices due to the EU quota system and as a result they have invested in modern high-tech production systems. However, the quota abolition has also implied that Danish dairy producers are increasingly exposed to volatile world market prices. This is challenging because the producers have a high debt, which implies a high share of fixed costs that are difficult to meet when it is impossible to up and downscale production, hence producers must plan on a long timescale and depend on a high production and a steady cash flow. Therefore, it is no option for Danish producers to reduce production in times of poor prices, but the only option available is to increase efficiency, cancel reinvestments and increase production. For the single farmer this is entirely rational, but for the Danish and European dairy sector it is problematic, because it further increases production and thereby puts a pressure on the prices. Volatile prices are not an issue if producers have sufficient liquid funds in times with low prices, however, overinvestments, poor loans and lack of savings has been a huge problem for many dairy producers. Hence, in the last couple of years Denmark has witnessed the highest rates of bankruptcies since the 1980'ties, and particularly dairy farmers have been among the ones that have been hit the hardest.

The growing difference between organic and conventional producers is another notable feature, which can be attributed to an expanding domestic and German organic market and therefore a higher demand for organic milk internationally. But also the fact that a number of organic dairy producers converted their production to conventional when the quotas were abolished in 2015 thereby creating a regional void (Vidø, Schou, & Zobbe, 2015). A notable feature of the internal Danish milk market is that consumers only purchase fresh milk, as UTH milk is largely unavailable in shops, an important condition as it has almost prevented competition from foreign dairies, which are unable to handle the logistics of delivering fresh milk to the Danish market. Furthermore, when the milk has to fresh in the supermarkets, the distance to the dairy increasingly imply a costly friction for the dairies.

In the past 10-20 years the Danish food system has been influenced by several new tendencies and it is becoming increasingly differentiated. The new and emerging food trends offers opportunities for adding value to the dairy production. First, it is worth noting that the Region of Southern Denmark is very near to the German market and there has been a long tradition for organic production within the region. The dedicated organic dairies in Denmark, including the company "Naturmælk" in the Region of Southern Denmark very diverse, producing a range of different products out of the milk including, fresh milk, butter and various types of cheese for different market segments. Second, there is an increasing focus on food as the material context of new experiences and communities. For instance, in a coordinated yearly event Danish organic dairy producers let out their dairy cows, attracting around 200.000 spectators on 70 different organic farms, during a day (Økodag, 2014). Third, there is an increasing focus on local food and origin has become an important factor in consumers' decisions to purchase particular products, reflecting a growing interest in 'food from somewhere'. Fourth, taste and gastronomy have become prominent new tendencies, following the onset of the new Nordic Food Cuisine in 2004, which is based on the virtues of "taste", as well

"in 1989 the milk was sold at 2,89 (DKK) today it is 2,5 it is declining, other costs are not"

as local, seasonal and traditional products of the highest quality (The Nordic Council of Ministers, 2012).

In effect, consumption of organics in Denmark has increased continuously for the past 30 years and today accounts for an 8 % market share, which has exceeded Danish production capacity for several food items, and has been accompanied by a growth in the import of foreign organic products (Thorsøe, 2015). In particular the demand for organic food is driven by a focus on health and animal welfare (Christensen, Olsen, Kærgård, & Dubgaard, 2014). Organic milk is the one of the most successful organic products in the Danish food market, where 25 % of the retailed fresh milk is organic and it is also a popular product in other European countries accounting for a market share of about 10 % in countries like Holland, Belgium, Finland and France (Willer & Lernoud, 2014).

Regarding the contemporary market conditions farmers' particularly note four aspects that are important in their decision-making:

1. **Value-chain dynamics:** There is a general consensus that the structure of the retail sector and the asymmetric power relations between dairy farmers and downstream actors is problematic for the farmers. Hence, farmers feel that they are in a vulnerable position, particularly farmers who are producing products with an added value like organic milk due to the mark-up added by the supermarkets. This mark-up is added as a percentage thereby magnifying the initial difference in price proportionately. Furthermore, among all focus group participants there is a concern that the dairy will not be able to pay the farmer a sufficient price for their produce. This is not just seen as a function of the organization of the retail sector, but it is also seen as a function of the world market.
2. **Production dynamics:** The recent market changes, where the dairy price has become much more volatile is also a great concern for the farmers. One of the major concerns is the unpredictability of the milk market, which makes it difficult to make proper budgets. The current crisis is not just seen as an issue due to the quota abolition, rather the current situation is a function of a longer series of deregulation on the dairy market. Hence, farmers do not explain the current situation as a problem with the dairy, but rather with general conditions at the dairy market. In fact, the farmers are generally quite happy with their dairy.
3. **Marketization: T**he marketization has followed the gradual liberalization of the milk market and the globalization of the value-chains have had some important implications for Danish producers. Particularly, producers feel squeezed in the dairy market where they find themselves in a place where commodity prices have been declining, while other expenses have not and therefore they are in a constant battle to reduce the costs of production to stay afloat. Simultaneously, there is great frustration with the liberal market, as it tends to award other actors than dairy producers. The volatility in market prize has some quite important implications for the producers, for instance the requirements for self-finance has increased as

it is needed to manage the fluctuations. Particularly for dairy producers this is challenging, due to the huge investments and long settlement time.

4. **The paradox of farmers' market orientation:** All in all, the focus group participants are also a bit apathetic about trying to change the current situation. For instance, farmers generally observe the market developments from a liberal point of view and then interfering in the "natural market dynamics" is necessarily seen as a bad thing. On the other hand, the farmers are quite frustrated with their precarious position in the value-chain of the liberal market economy, exemplified by their discontent with the retailors, speculators and financial institutions. They are also quite protective of their colleagues who have gone bankrupt and argue that they have fallen victims of "unlucky timing of investments" or "banks that are not playing fair". Hence, there is a paradox in how the participants explains success, as a good management strategy and failure, which is either a distributed responsibility or poor financial decision-making on an individual basis. Hence, this liberal worldview of the farmers also produces a blind spot in terms of understanding the dynamics of the free market.

Financial conditions

The ability to obtain loans for investment in development of the production facilitates is an important framework condition for farmers. Historically, personal ownership has been institutionalized as the dominating form of ownership in Danish agriculture, although the proportion of private ownership has decreased a bit in recent years, still around 85 % of Danish farms that are privately owned. The conditions for refinance with this form of ownership is quite different from other forms of ownership (Olsen & Pedersen, 2014). Unlike shareholder companies where capital can be obtained by issuing new bonds, private companies are very sensitive to changes of the asset value and large investments (Olsen & Pedersen, 2016). Furthermore, when ownership changes, for instance during succession, the entire property value is usually refinanced by loans. Therefore, huge sums are extracted from the agricultural sector in each succession and the system has resulted in the build-up of a large debt. During the past 20 years this debt has increased, following the build-up of the soil-price bubble, see above. This investment boom has only been possible because Danish farmers generally have a good access to investment capital at a low interest rate compared with other European countries due to a well-functioning financial industry. Historically, loans have not been provided based on a particular business model, but according to the equity of the loan taker. Hence, farmers with sufficient equity, for instance generated by increases of farmland value, have been able to obtain loans for whichever investment they saw fit.

Furthermore, 86% of the loans for agriculture are loans with variable mortgage rate and 61 % are without repayment. This means that many farmers are in vulnerable position, as they would experience financial difficulties if the interest rate increases. Although, many farmers are no longer reinvesting thereby producing

new debt, the sector is still in a vulnerable position. The current loans are configured with a large share of short-term adaptable interest loans, as 172 billion DDK of the real-estate mortgage (total = 276) is interest free. This makes the entire agricultural sector very vulnerable to increasing interest rates.

The current financial crisis is in many respects a double crisis for Danish farming; loans have become more expensive, while the value of their property has decreased. Therefore, many farmers are stuck with production facilities and loans they cannot repay, but are also unable to sell. However, this general tendency also masks a huge variation among farmers, as the farmers that have the highest solidity still have very cheap access to capital, whereas credit access is much more expensive for the farmers who have low solidity. In general, the costs of obtaining loans has increased and for some farmers there are also increasing difficulties in getting access to loans, hence it is also difficult for the sector as a whole to invest in production facilities to the same extent that the production facilities are worn down. The high share of private ownership makes the agricultural sector particularly vulnerable to decreasing asset prices as the solidity cannot be improved with a capital emission (Vidø et al., 2015).

The ownership structure has huge implications for the price of finance in financial markets. Following the financial crisis, the interest level has generally been low for Danish farmers. The low interest meant that solvent farmers have very low finance costs. However, due to the decreasing soil prices and the consequent loss of equity, many farmers experience increasing costs of finance. According to bankers and finance experts, the reason for these increasing finance costs is the finance regulation that was implemented in the wake of the financial crisis, most notably the Third Basel Accord. The accord attempts to regulate how banks manage the risks of a running a bank, by imposing requirements for differing levels of reserves for different forms of bank deposits and other borrowings. Furthermore, the value of farm land has now been classified as an “uncertain asset”, and therefore it is not a type of asset that Danish banks prefer too much of in their portfolio because it increases their finance costs (Olsen & Pedersen, 2014). The implications of the Third Basel Accord are that banks have now become much more reluctant granting loans for the agricultural sector. Furthermore, the finance costs now vary much more between different groups of farmers, depending on their equity.

Structurally the Danish dairy sector, as any other commodity producing sector, is under pressure from a declining terms of trade, hence, commodity prices on the world market are in a long-term perspective expected to gradually decline, while prices for production factors are generally not declining to the same extend (Zobbe, 2014). Therefore, to remain in farming farmers must adapt their production, most often this is ensured by increasing productivity to make up for the decreasing terms of trade. In the period between 1950-2000 Danish farmers increased their productivity with the same rate as the declining terms of trade, which meant that the farmer’s income could be maintained. Furthermore, Danish farmers increased their productivity more than other comparable countries.

However, from around 2000 the productivity gradually declined one of the reasons may be an easy access to finance until 2008, that did not discourage farmers from making unprofitable investments (Zobbe, 2014). Dairy farmers income has been relatively good in 2013-2014, which is attributed to the high world market prices at the time, however, in the aftermath of the financial crisis many farmers have had a difficult time finding finance for productivity improvements, due to the general difficult credit access (Olsen & Pedersen, 2014). Therefore, in the past 15 years Danish farmers have been on a roller-coaster ride, before the financial crisis most investments would be funded, but today it is much more difficult to make investments, and the number of these has decreased significantly.

In relation to agricultural markets agricultural economists have noted that "volatility is here to stay" (Vidø et al., 2015). Hence, contemporary farmers cannot shy away from the financial markets, but must modify their behaviour according to these markets. This has also gradually changed the focus of the farmers, being profitable is no longer just about managing the fields, but increasingly also about acting in financial markets.

In the past 10 years, benchmarking tools have become increasingly important in farmer's assessment and bankers assessment of the farm, and an important planning tool. Development of tools is based on a national database of farm accountancy data administered by SEGES. Benchmarking analysis enables the farmer to compare his production with the production on a number of parameters. In particular, the cost of production for one kg of milk has become a central single measure of the farmers' performance, which is used in their engagements with the banks. Arguably, there are a number of factors that influence the costs of production, that are unrelated to the farmers immediate performance and the banks make various attempts at distilling the good performers from the poor performers. Most banks have particular goals for the production costs that farmers must meet to become eligible for loans and financial support. Our analysis further indicates that apparently there is currently a mismatch between what bankers expect to be a sustainable production price and what many farmers are able to deliver and expects. Apart from this simple financial measure the bankers include various sources of information in their decision-making, for one thing a number of key performance indicators such as, LTV, rate of return, liquidity, solidity and positive momentum in the farm economy. As a rule of thumb, investment plans should yield an interest of about 10 % of the equity, which is a very high figure, when comparing to historic data where the equity has yielded an interest of about 3 % on average in the period 2000-2012. In the same period the average interest rate was about 4,5 %, hence the yield of investments in agriculture has been significantly lower than low risk stock bond investments (Kærgård, 2014).

"Historically it is a challenge that the yield is lower than the market rate, it is a sign of disease"

Regarding the contemporary financial conditions farmers' particularly note three aspects, that are important in their decision-making:

1. **The financial gaze:** Generally, the farmers recognize that the financial conditions for Danish farmers are much better than for other European

farmer. Furthermore, the Danish financial institutions have had an important role in shaping the course of Danish farming, but at the same time the financial sector has been an important factor for creating some of the equity problems that Danish farmer face today, but farmers do not feel the banks take on their share the responsibility for these issues. There is a widespread perception that the role of the financial institutions has changed quite a lot following the financial crisis. Farmers feel that the financial sector has gone from one extreme to the other. At some point the banks could not lend enough money to farmers, but now they say it is completely the opposite. Hence, farmers feel that they are in a vulnerable position as they are at the mercy of financial actors whose rationales are somewhat opaque, this is a big source of uncertainty and frustration. Farmers feel that they are pawns in a game they do not quite understand, but they have realized that the banks do not act with their best interest in mind.

2. **Investment behaviour:** The apathy of the farmers in relation to the banks also sparks some reflexion on the investment behaviour of the farmers. The focus groups converged in the consensus that the farmers are generally quite optimistic in their investment behaviour, sometimes perhaps too optimistic. However, apart from justifying their investments on the grounds of a need for structural development and investments in new technology that emphasize growth, there are also a number of practical and pragmatic reasons for investment behaviour that are often overlooked.
3. **Succession:** The focus groups also reveal that farmers are quite conscious about the difficulty of selling their farms at a decent price or finding a successor due to the structural development. The previous investments by Danish dairy farmers have some significant implications for the ability of the farm to continue in operation in the future and there is a frustration that so much capital has left the agricultural sector. One of the key issues is the trouble of young people to enter farming due to the requirements posed by the financial sector.

Farmers strategies and institutional arrangements

Farmers understand their strategies in a number of meanings and there is a great variance between strategies, particularly in relation to the perspectives for succession. Hence, there are multiple in play and each individual farmer does not consider all these aspects and combine them in different ways.

1. **Production strategy:** The most dominant response of the farmers to meet the current market conditions is “diluting” the costs of production by increasing efficiency, increasing the scale of operation and cutting costs. However, farmers are well aware that diluting costs will not necessarily address the underlying causes of the challenged economy. Other farmer’s note that a number of successful cases have demonstrated that supermarkets have also realized that they may gain a profit by emphasizing

products with unique qualities. There has been a change within the Danish farming sector when it comes to products with an added value, and the farmers that engaged in these kinds of activities are no longer perceived as "longhaired hippies", but they are now more seen as an innovative vanguard. Direct sale and diversifying is another strategy that farmers often mention to ensure the farm economy. Although direct sale of milk is not an option for many, due to the required skills and technology there are a number of other approaches to direct trade. For instance, to exchange fodder crops like roughage and grain directly with neighbouring farmers in years of excess thereby circumventing the retailor and therefore save the charge redistribution. Diversifying, for instance via farm tourism or growing potatoes are other approaches. Farmers carry out these activities to distribute the risk between different activities and to ensure that there will be enough activities for the parents if they have a hair to take over the farm.

2. **Internal organization:** The farmers in the focus group talk about how they attempt to adapt the internal organization of the farm to manage the market volatility, as this for many is a major concern. Some of the organic farmers in one of the focus groups for instance mention that for them it is about creating something resilient by managing the fluctuations. Other farmers present similar arguments when they talk about increasing self-sufficiency and avoiding contractors to do the work as a means to reduce expenses and thereby avoid the market risks. Hence, an effort is carried out to ensure reduced expenses, for the purchase of fodder and other external input on the farm and to ensure an alignment between the production facilities, acreage and other resources on the farm.
3. **Structural reorganization:** Structural reorganization is particularly a theme in relation to succession. The traditional generational change is by many not an option, due to the lack of a successor, and those who have a successor may be unable to find an investor. Only a few of the interviewed farmers planed for a traditional succession, but farmers also consider a number of other options. This is quite interesting, as farmers do not envision the coming generation of farmers to adhere to the same mode of production as the current generation. In fact, all the farmers we have talked with during our interviews expect that new models for succession and ownership have to be developed. Farmers observe a number of challenges. For instance, the structural development, which has created a landscape of very large production units, is another challenge for the succession. Furthermore, a particular challenge for Danish farmers is the recapitalization of the entire production facilities in each succession, which causes instability and difficulty finding a successor. Rather than a traditional succession, the farmers believe that the future will bring new forms of ownership sustaining farming. One of these strategies is lease holding rather than ownership, in that way a young farmer can get started without a huge capital investment. Many of the dairy farmers therefore

consider the share milking model which is widespread in New Zealand as an option for future Danish farmers.

Key points

Within the Region of Southern Denmark dairy production has deep historical roots, is deeply embedded in the identity of the region. Furthermore, there are many specialized dairy farms in the region and a range of actors supplies the farmers with various inputs and knowledge networks.

Access to finance is currently an important issue for many Danish farmers, particularly dairy producers, as the number of loans has been reduced significantly. This is related to the current low commodity prices that make Danish dairy production economically challenging. However, interviews with bankers also indicate that some the problem is not related to lack of liquid funds in the finance sector, but uncertainty concerning the yield of agricultural investments. This again indicates that the problem for the Danish Dairy industry is twofold, first, a huge debt which is difficult which makes investments risky due to a high sensitivity to increasing interest rates, decreasing soil prices and 2) a business model that is unable to deliver sufficient yields that will compensate for the risk associated with the loans.

The current crisis has made the banks more cautious in their way of dealing with the farmers. Many farmers depend on overdraft and the banks are in a position where they must decide which farmers they will support and which farmers will have to leave farming either through a bankruptcy or by selling their property. Banks do not invest in agriculture as such, but provide capital for farmers who invest. This implies that banks have increasingly begun to observe the farmers as "capital managers" and they assess whether or not they are credible capital managers. Therefore, an important new condition for the farmers is the framing that banks and other credit and mortgage providers use to assess whether and under which conditions the farmers are credible loan takers. This leads to a number of changes: 1) Banks now take a number of factors into consideration when they make their decisions; including financial measures such as production costs pr. unit, but also a number of other measures such as management qualification, credibility ability to reflect on new ideas and reflect on proposals from outsiders. This has implied a stronger focus on skills, which traditionally have not been considered important in the collaboration with the banks like "*strategic leadership skills*", "*marital stability*" and "*management of employees*". Increasingly, it becomes important for the farmer to fulfil the image of a "*good farmer*" in the view of the banks because the structural development is pronounced and banks tend to favour the "*top 25 %*", and if a farmer is not within this category, banks are reluctant to give access to finance. 2) The businessman identity is quietly implanted in the farmers for instance using newly developed benchmarking tools. These tools are used to benchmark farmers against one another and provide the banks with a number of key figures for each farm that continuously benchmark the performance of each farmer against a national average. 3) Due to the capital intensity of the Danish farming sector, the banks are the engine of transformation in the sector and their decision to finance an investment or not is of crucial importance, not only to the individual farmer, but for the course of the entire Danish farming sector. The

"We had 65 cows, before we expanded. When I look back I think that I was happier when I just had 65 cows"

benchmarking tools are built over historic data and they are not a neutral representation of the farm but a particular view of the farms performance. This suggest that banks prefer a focus on the on the traditional strongholds of the Danish farming sector like standardized products for the world market, rather than an emphasis on a transformation to new modes of production. 4) Structural development implies an increasing focus on leadership and managing employees, therefore, there is no room for the farmers who are mainly interested in the practical aspects of farming, because the business aspect is increasingly important if farmers want to survive in farming. The volatile market conditions require a much more focused attention to the timing of investments, sales and purchasing behaviour as these aspects increasingly determine the profitability of the farmers. Furthermore, in the present situation farmers observe an equity loss and therefore it becomes increasingly pressing for the banks to manage their agricultural investments in a more active manner, because it is costly for the banks to keep farmers afloat.

Although the Danish dairy farmers are in many ways quite different in terms of ideology and production systems, their understandings of the challenges of dairy farmers under the present market, financial and regulatory conditions are quite comparable. They all appear to be caught in a paradox that their immediate survival requires them to act in a way that prevents the reproduction of the farming system they are a part of. Furthermore, they are well aware that it is the consequence of the current development, but they are unable to find a proper solution for this. Hence, a largescale reconfiguration of the Danish agricultural sector is currently taking place, in particular, within the dairy industry. A large number of farmers exit farming due to bankruptcies, forced sales or voluntarily agreements. Hence, currently an accelerated structural development takes place and concentration of the farms, in which existing farmers purchase those who exit. Furthermore, due to the changes to the regulation concerning farm ownership a number of new actors are now investing in agriculture, such as pension funds, investment funds and private persons. Furthermore, some of the larger farms experiment with different forms of ownership, for instance liability companies.

Interestingly the survey indicates that in spite of producing a commodity, which has become very volatile, the dairy farmers in the region of Southern Denmark are for the most part satisfied with their dairy. However, a large minority of the dairy farmers also consider new ways to strengthen the farm economy, for instance by diversifying, developing new partnerships and sales channels or adding value to their products as a strategy to strengthen the farm economy.

Both dairy producers are in a precarious market position, their own production have no influence on the general supply and demand on the world market. At the same time, they are very dependent on external input, but they have no influence

on the price of these inputs either. This illustrates that have become pawns in a global value chain and they are increasingly influenced by events they cannot control, like frost in Argentina or a draught in Russia. For many dairy producers, the costs of purchasing fodder is one of the most important costs and prices at the world market fluctuates significantly, therefore the producers need some strategies to manage this uncertainty and market risk. Generally, dairy farmers have better options for growing fodder for the animals on their own farm as dairy cows are able to eat grass, roughage and silage that can be produced by the farmer.

"When my son told his teachers that he had chosen to become a farmer they pity him, and they say: Oh, but what went wrong?"