



Background analysis for a Temporary Measure (State aid) aimed at restructuring the Dutch Dairy Sector

Roel Jongeneel, Huib Silvis, Co Daatselaar and Walter van Everdingen



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The crisis in the EU milk market has affected the Dutch dairy sector. In a response, the Dutch government is considering a state aid-funded Temporary Measure aimed at restructuring the sector. This study provides a background analysis for this measure. The macroeconomic situation of the dairy market and the impacts of the market conditions on the Dutch dairy farm sector are assessed. It concludes that the changes in markets and policies have negatively affected profitability and contributed to an imbalance in the structural change.

Key words: milk market crisis, Dutch dairy sector, profitability, structural change

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P.O. Box 29703, 2502 LS The Hague, The Netherlands, T +31 (0)70 335 83 30,
E communications.ssg@wur.nl, <http://www.wur.eu/economic-research>. Wageningen Economic Research is part of Wageningen University & Research.



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Preface

The crisis in the EU milk market has negatively affected the profitability and structure of the Dutch dairy sector. In a response, the Dutch government is considering a state aid-funded Temporary Measure aimed at restructuring the sector. It commissioned Wageningen Economic Research (formerly LEI Wageningen UR) to make a background analysis for this measure.

This study has been carried out by Roel Jongeneel, Huib Silvis, Co Daatselaar and Walter van Everdingen and was reviewed by Krijn Poppe, Program Manager Agriculture and Food of Wageningen Economic Research.



Prof.dr.ir. J.G.A.J. (Jack) van der Vorst
General Director Social Sciences Group (SSG)
Wageningen University & Research

1 Introduction

1.1 Background

The EU dairy sector is facing a crisis, which also affects Dutch dairy farmers. Low milk prices have negatively affected dairy farm profitability. At the same time, the structural adjustment in the Dutch dairy sector has slowed down: the reduction in the rate of farm exits was below normal levels and in contrast with the pattern observed in several other EU Member States. Now the Dutch government would like to consider a temporary support programme aimed at restructuring the dairy sector.

The Ministry of Economic Affairs has requested Wageningen Economic Research to provide a background analysis with respect to such a temporary measure. This analysis is requested because the proposed measure would imply state aid to the Dutch dairy sector, which is only allowable in case a number of criteria are satisfied. This research should provide insight into this matter.

Farm exit and dairy cow herd reduction scheme

In order to further support the Dutch dairy sector in the current milk crisis period, and facilitate structural change and adjustment in the Dutch dairy cow herd, the Dutch government is considering a support scheme. This scheme would compensate farmers that stop or reduce milk production (by offsetting dairy cows) with an amount of €450-650 per dairy cow (LU), with a ceiling of €15 thousand (or eventually €20 thousand) per dairy farm. Since such a support scheme is a form of state aid it should satisfy the legal requirements for such aid.

1.2 Research objective

The research objective of this study is to analyse the situation in the Dutch dairy sector, with a special focus on the impact of the crisis in the milk market and the structural adjustment in the sector. The following research questions are addressed:

1. What is the macroeconomic situation of the dairy market?
2. What are the impacts of the market conditions on the Dutch dairy farm sector in terms of:
 - a. profitability
 - b. structural change

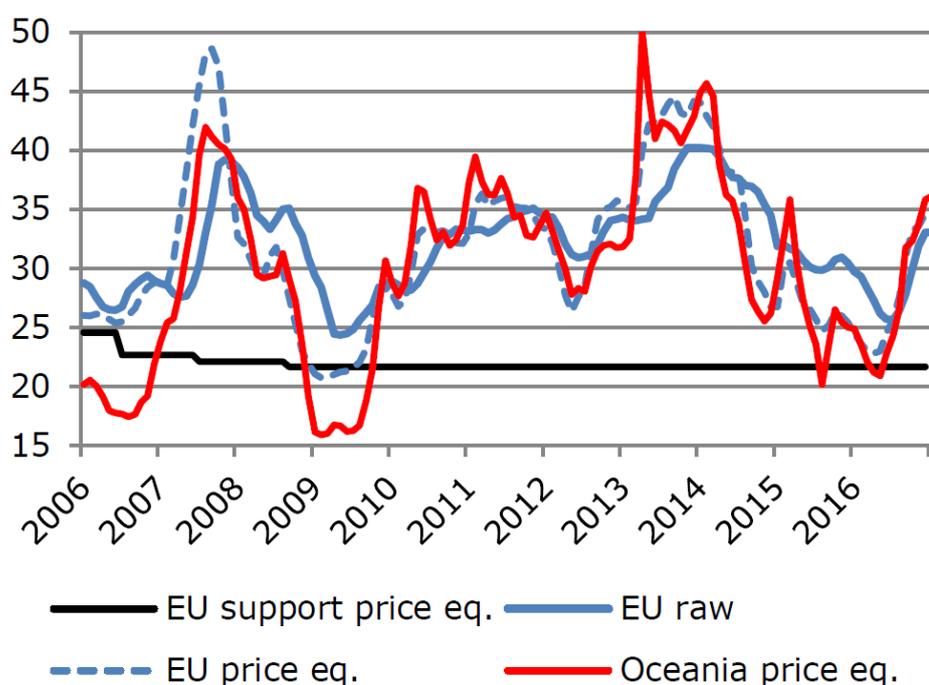
1.3 Outline of the study

The remainder of this study is organised as follows. Chapter 2 provides an overview of the macro economic situation on the EU dairy market, especially the recent period of low milk prices. Chapter 3 focuses on the specific situation of the Dutch dairy sector, and how it is affected by the recent market conditions. Chapter 4 provides some concluding remarks.

2 Macroeconomic situation of the dairy market

2.1 Dairy markets in turmoil

The European Union's (EU) dairy market seems to be slowly emerging from its recent 'dairy crisis', when EU farmers were faced with overproduction and the lowest commodity prices since 2009. World dairy markets have been in turmoil during 2015 and 2016, after historically high prices in 2013 and 2014 (see box: Origins of the dairy crisis). Market conditions have improved since the spring of 2016, when prices for EU dairy products started to recover (Figure 1). However, it is unclear how the milk price will evolve during the remainder of 2017. According to the latest medium-term outlook of the European Commission (December 2016) for 2017, a milk price of €31.40 is expected, which is lower than the value during the first months of 2017. The projected price for 2017 is about 9% below the medium-run average price of €34.20 (2010-2014).



*Note: The milk price equivalent is based on butter and SMP prices
Source: DG Agriculture and Rural Development*

Figure 1 EU and world milk prices (€/100 kg)
Source: European Commission

Box: Origins of the dairy crisis

The recent EU dairy crisis was caused by a collision of economic factors and political events that worked together to cause a crash in EU commodity prices. In 2013 and 2014, global dairy commodity prices had surged to record high levels as a result of ongoing droughts in California and Australia and China at the same time that China was making record dairy purchases. As a result, EU dairy farmers invested in new dairy production capacity in anticipation of the end of the quota regime on 1 April 2015. By 2014, EU dairy production was already in overdrive, despite the still existing quota limitations.

In August 2014, the Russian imports ban on EU agricultural products eliminated a major EU export market and badly affected dairy markets in Finland and the Baltic states. In 2015, when China stopped purchasing large quantities of skim milk powder, higher EU production and lower demand put a significant downward pressure on dairy commodity prices. As a result, farmers were faced with both large super-levy bills for the final quota year 2014-15 as well as the need to pay off loans for their production investments. The European Commission has tried to soften the blow to farmers by allowing EU Member States (MS) to spread repayment of the super-levies over a three-year period.

2.2 Exceptional measures applied to EU dairy sector

In response to the low milk prices in 2015 and the first part of 2016, the EU launched two crisis measures (one in September 2015 and one in July 2016) amounting to funds of two times €500m (close to €35 per dairy cow). The funds were made available for several measures such as conditional adjustment aid, extension of public intervention and private storage schemes, advance payments, and a milk production reduction scheme.

Box: EU crisis measures

On 18 July 2016, the European Commission presented a €500m Seven-Point Solidarity Package for agriculture¹ for European farmers, in which €150m was reserved for a voluntary dairy production reduction scheme and €350m were awarded to MS. Twenty-five MS then used part of these funds to implement additional measures for the dairy sector.

The EU's Common Agricultural Policy (CAP) already offers tools for removing some commodities from the market to stabilise prices. The CAP allows the Commission to organise Private Storage Aid (PSA) schemes for skim milk powder (SMP), butter, and cheese and for intervention storage schemes for SMP, which can be expanded in volume and extended in time.

By September 2016, the Commission had authorised SMP intervention volumes to 335,000 tonnes (on top of 29,000 tonnes from 2015), while 87,000 tonnes of SMP (in addition to 52,000 tonnes in 2015), 144,000 tonnes of butter and 53,000 tonnes of cheese were taken off the market through PSA. At the end of 2016, approximately 8,300 tonnes of SMP PSA and 11,800 tonnes of butter of PSA had been released to the market. In December 2016, the first tender for selling SMP from intervention back to the market was opened but yielded only 40 tonnes of product sold. Subsequent tenders have all failed to attract interested buyers. The Commission has also tried to use food aid as a way to use excess commodities.

In March 2016, the European Commission announced a €30m refugee milk aid package.² The plan to use dairy supplies to feed migrants came about as tens of thousands of refugees were trapped during the winter of 2016 without food or shelter on the EU's southern borders. However, MS failed to agree on the details for such a measure to feed these migrants. Eventually, after the winter, MS agreed to use remaining money from the previous year's €500m crisis package for a programme to help needy children in Syria. The EU also sponsors a domestic dairy programme called the School Milk programme in MS to use intervention stocks.

¹ http://europa.eu/rapid/press-release_IP-16-2563_en.htm

² http://europa.eu/rapid/press-release_IP-16-1103_en.htm

2.3 Latest dairy market developments

The EU raw milk price gained more than €7/100kg in 5 months to reach €33.05/100 kg in December 2016, 8% above the previous year and close to the 2011-2015 average milk price. The rise in the EU milk price is driven by (USDA, 2017):

- the seasonal decline in EU milk collection
- the 3.7% reduction in milk production in the last quarter of 2016 compared to 2015 because of lower prices, less favourable weather conditions, lower forage availability and the scheme for voluntary milk production reduction
- the lower milk collection in South America, New Zealand and Australia
- a sustained increase in the EU demand, estimated at 1.5% above 2015 (+1.5 million t of milk equivalent), in particular for cheese, butter and whole milk powder (WMP)
- remunerative prices for butter
- a strong world import demand for cheese.

This dynamic demand for products with a high proportion of dairy fat led to a strong increase in EU butter prices which reached a record level of €4,300 EUR/tonne in the last week of December. By contrast, the SMP price remained stable, around €2,000-2,100/tonne, because of large stocks and low global demand. The milk price equivalent, based on SMP and butter, reached €34.60/100 kg in December 2016, still more than 1 cent above the raw milk price/kg.

In 2017, several factors could weigh on the milk and dairy product prices:

- the upcoming seasonal peak in EU milk collection
- the sizeable dairy herd at the end of 2016, indicating the potential for increasing production
- 2017 EU milk deliveries are expected to be 0.6% above last year
- the continuous increase in US supply
- an expected recovery in milk collection in New Zealand
- the accumulated SMP stocks.

On the other hand, relatively low feed prices support dairy farmers' margins. Milk production in grass-fed systems is very much influenced by grass developments but there is little information at this stage on upcoming pasture conditions.

2.4 Main issues and uncertainties

After the EU system of milk quotas ended, total milk production has increased in some member states, most notably Germany, Ireland, the Netherlands and the United Kingdom. The end of milk quotas will lead to a concentration of production in the European Union after an adjustment period as production align more closely to the world market. However, this has occurred simultaneously with low global milk prices, which may put additional pressures on producers, leading to a more severe transition in some countries.

As regards trade, the cessation of the Russian Federation embargo on several dairy products from major exporting countries is expected to end in 2017. The continuation of the ban could affect trade flows and international dairy prices, in particular the market for cheese.

China's role as a key importer of many traded dairy products is a key uncertainty in the future developments of world dairy markets. China's domestic milk production has continued to increase, along with investments in processing capabilities. If China resumes imports at 2014 levels, this would have a significant impact on the markets for milk powders. On the other hand, China could become further self-sufficient, supplying much of its demand for dairy products domestically, although current low prices do reduce the attractiveness of investments in dairy processing.

As seen in recent years, unusual weather events, such as the particular strong 2014-15 El Niño, can have a major impact on dairy markets through their impact on feed grains or pasture conditions.

3 Impacts of the milk market crisis on the Dutch dairy sector

3.1 Introduction

The crisis at the EU milk market affects the Dutch dairy sector in two ways. On the one hand the low milk prices affect the profitability of the dairy sector as well as farm incomes. On the other hand it turns out that the structural adjustment has been slowed down by the changes in the market and policy environment. In this chapter these impacts are further assessed.

3.2 Evolution of the cost of milk production

Figure 2 provides an estimate of the evolution of the cost of milk production. As the figure shows, although costs have increased since 2010, they started to decline in 2014.



Figure 2 Cost of milk production (total and cost attributed to milk), 2006-2016

Source: Wageningen Economic Research

Figure 3 provides further information on the evolution of different cost components (based on data of very specialised dairy farms). Since 2014 most cost categories are declining, including feed and manure disposal. The costs associated with the milk quota showed a decline of €4/kg of milk in the period 2014-2016. The (unpaid) labour costs per unit of milk show a steady decline over time, which reflects the ongoing structural adjustment and scale increase.

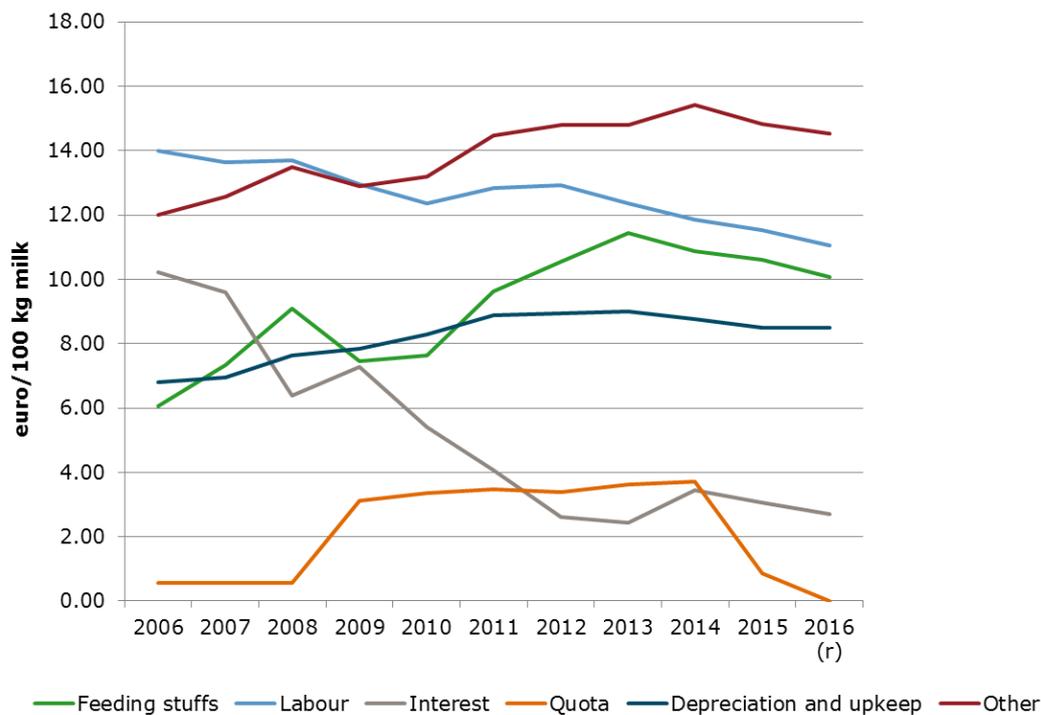


Figure 3 Evolution of different cost components (euro/100 kg milk) on specialised dairy farms
 Source: Wageningen Economic Research

To determine dairy farm profitability, the evolution in the cost of milk production needs to be combined with the evolution of farm revenues (milk and other outputs) (see next section).

3.3 Profitability in the Dutch dairy sector

As Figure 4 shows, the raw milk price follows a seasonal pattern, with relatively high prices in autumn and lower prices in summer. On top of this there is the movement of the milk price as a result of the developments at the world market (see previous section). Since the end of 2014 the farm gate milk price has strongly declined, reaching its depth in the summer of 2016. Since the last quarter of 2016 there is a quick recovery of the milk price, which continued in the first months of 2017, but then levelled off. As Figure 4 also shows, the feed price has been relatively stable since 2014.

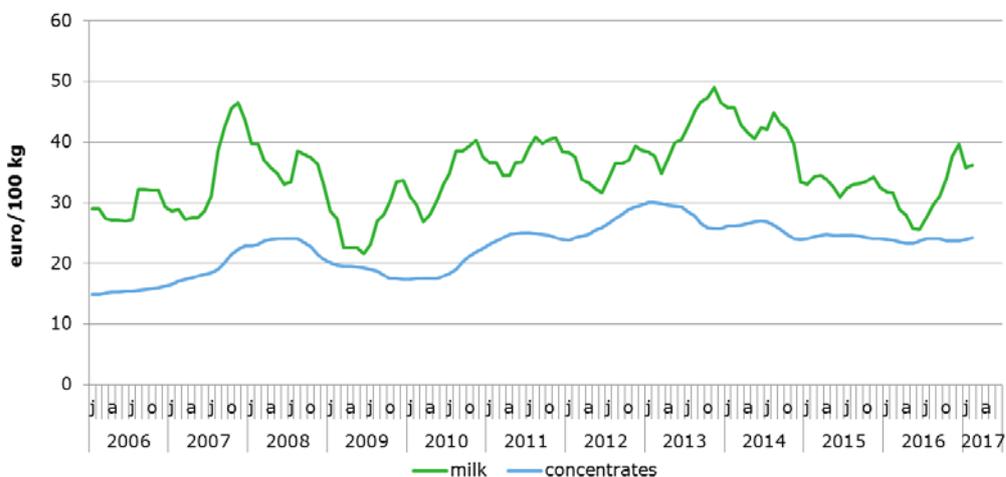


Figure 4 Dutch raw milk price and feed price evolution
 Source: Wageningen Economic Research

The low milk prices had a depressing impact on dairy farm profitability (Figure 5). The gross margin of milk production has been lower than the long-term average since mid-2015 and remained negative during 2016, reaching the lowest amount of minus €564/dairy cow in October 2016.

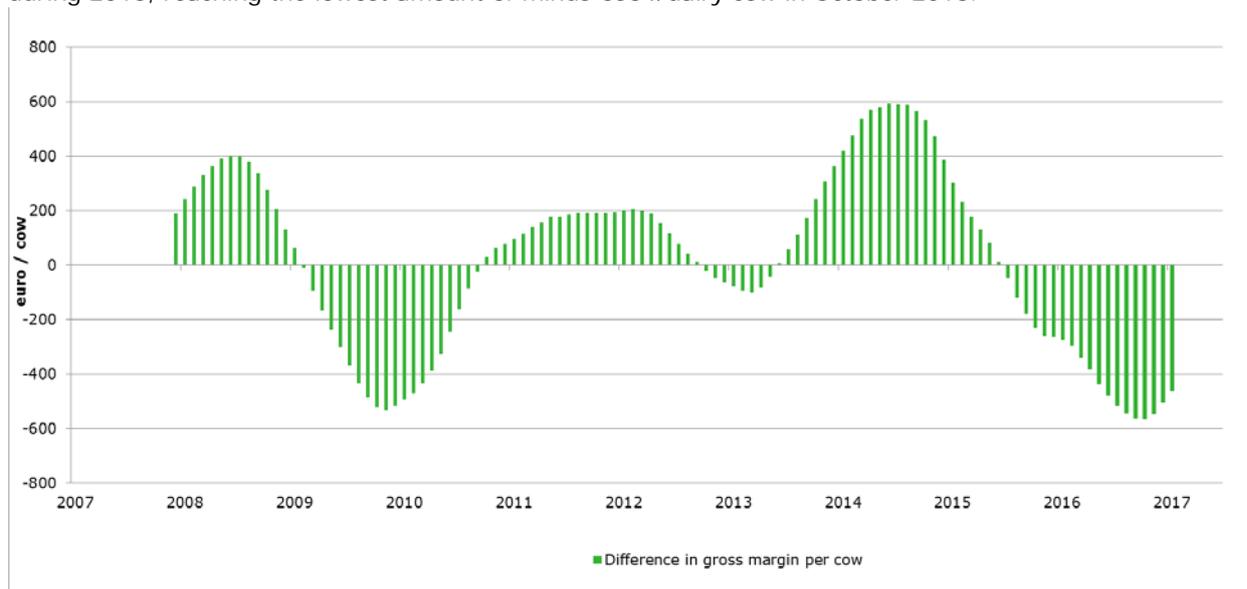


Figure 5 Evolution of the difference in gross margin of Dutch dairy farms per cow (12-month moving average minus long-term average (2007-2016))

Source: Wageningen Economic Research

The negative difference in gross margin also had its impact on farm profitability, as this is reflected in the farm income evolution (see Figure 6). Dairy farm income for 2016 has been estimated to be €16 thousand per unpaid labour unit. This is significantly lower (-40%) than the income level achieved in 2014. The income evolution is influenced by the assumptions made for the calculation. Because of the abolition of the milk quota in 2015, over the period 2009-2015, the quota value has been depreciated (at the time of quota abolition the value of these rights vanished to zero). This created a downward impact on farm income ranging from €15-20 thousand per unpaid farm labour unit. Without this quota abolition-adjustment effect, farm income would have been substantially higher in the period before 2015, while also the decline since 2014 would have been much stronger.

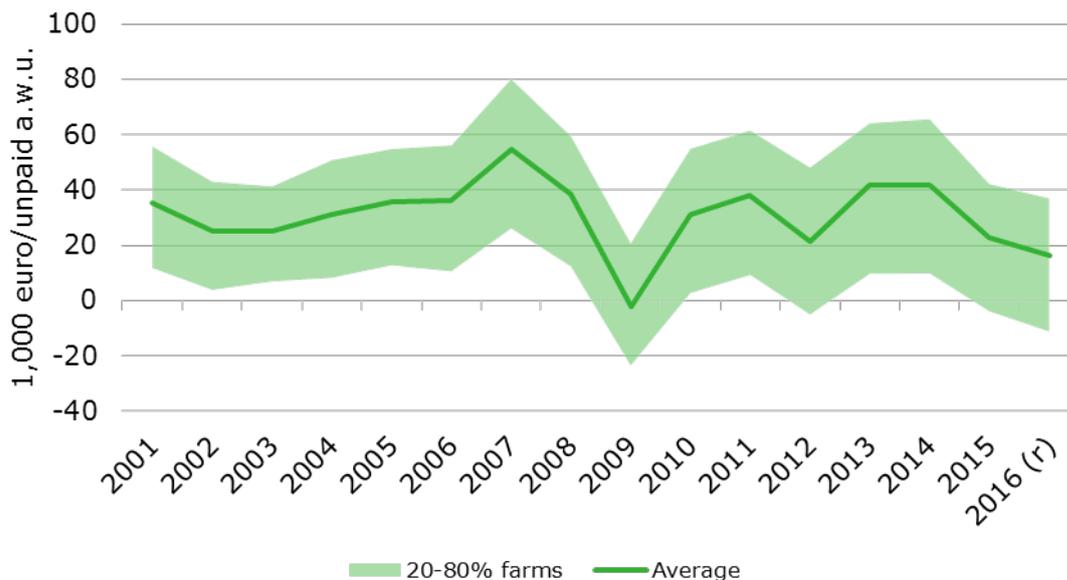


Figure 6 Family farm income per unpaid agricultural work unit (average and 20 and 80 percentiles)

Source: Wageningen Economic Research

The relatively low milk price had a negative impact on the cash flow and liquidity position of Dutch dairy farms, as is reflected in Figure 7. About 75% of the dairy farms had a negative cash flow in 2016. About 20% of the dairy farms had to renegotiate their financing arrangements with banks. The dairy sector performs worse than Dutch agriculture in general.

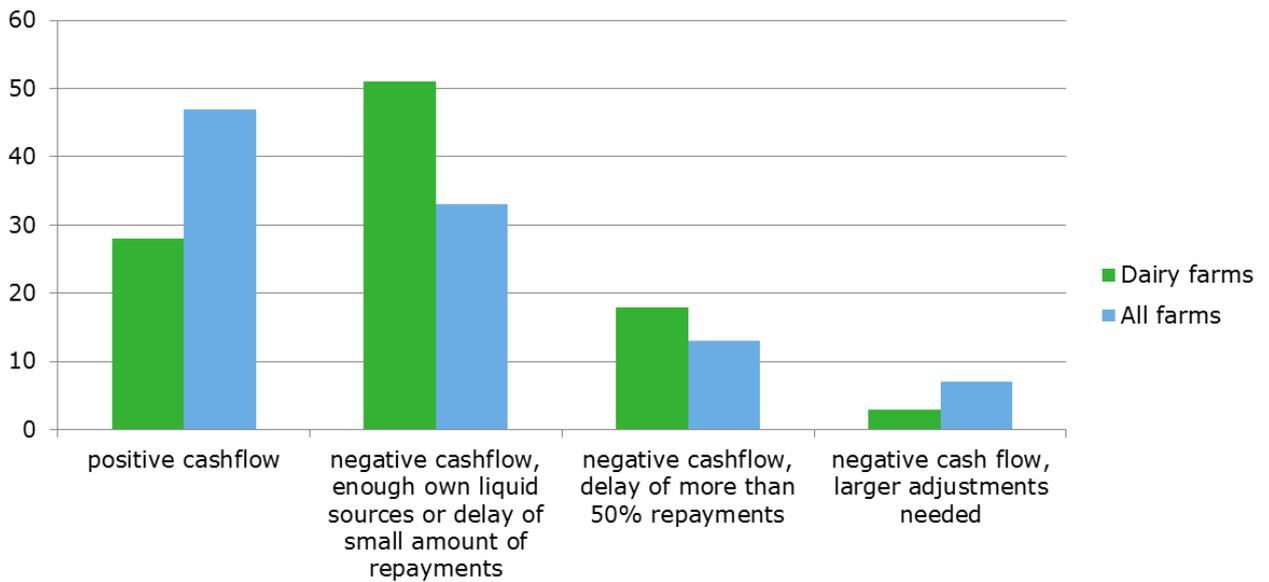


Figure 7 Liquidity position of Dutch dairy farms and Dutch agriculture in 2016

Source: Wageningen Economic Research

3.4 Structural change

Since 2000 the number of farms with dairy cows has declined by 40% to a level of 17,900 in 2016 (Figure 8). The dairy farm population consists of specialised dairy farms and other, non-specialised dairy farms. The decline in the number of specialised dairy farms for the same period was 30% and less strong than the decline in the non-specialised (other) dairy farms (decline -77%). The degree of specialisation has increased due to this divergence in farm decline rates. While in 2000 about 87% of the dairy cows was kept at specialised dairy farms, this share has increased to 95% in 2016. In 2016 the average herd size per dairy farm was 97 dairy cows.

During the period 2000-2006, the rate of farm number decline was about -4.5% per annum (in this period among others the aftermath of BSE and FMD played a role). In the period 2006-2012 this rate declined to -2.9% per annum. In the four-year period 2012-2016 the dairy farm number decline further levelled off to -1.0% per annum. It is estimated that as a result of this during the period 2012-2016 about 1,400 dairy farms that could have been expected to exit the dairy business did not do so. The slowdown in structural adjustment is most likely the result of several forces, such as the increasing uncertainty with respect to the value of land and, later, the expected introduction of phosphate quota in 2018. The decline in farm profitability and related reduction in borrowing capacity of farms played a role, as well as the unfavourable labour market opportunities outside agriculture (unemployment), the low interest rate and changes in the Dutch nature policy (reduced purchases of land; increasing role of provinces).

The slowdown in farm exits can be interpreted as having a negative impact on the farm restructuring and related issues such as dairy production efficiency and long run farm viability (requiring the exploitation of economies of scale), while it also contributed to the expansion of the total Dutch dairy cow herd. As Figure 8 also shows, since 2012 the number of dairy cows has increased from about 1.5m to more than 1.75m in 2016 (+17%), leading to an increase in the milk supply in a period of already low prices.

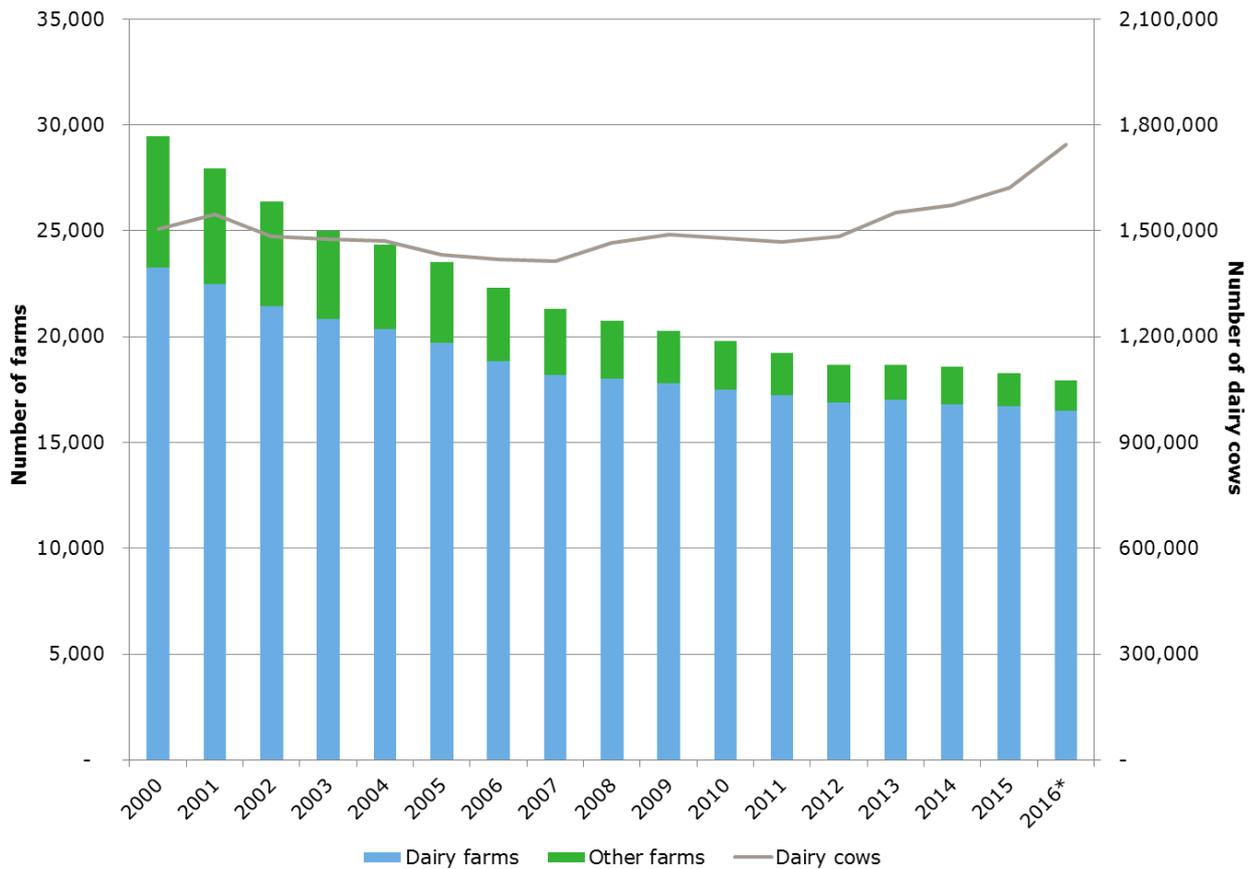


Figure 8 Structural change in the Dutch dairy sector
 Source: Netherlands Statistics, Wageningen Economic Research

3.5 Key challenges facing Dutch dairy and structural imbalance

The Dutch dairy sector faces a number of challenges, which are partly similar to those faced in other Member States, but are partly unique. Table 1 provides a brief summary of the main challenges (dairy herd, milk market crisis, structural imbalance) and the policy responses by the Dutch government to address these challenges. There have been policy responses addressing the environmental and milk market challenges. With respect to the imbalance in the structural change in the Dutch dairy sector no targeted support measures have been implemented. It can be argued, however, that the measure to support the termination of dairy farming businesses, which has been taken by the Dutch government as part of the EU's exceptional measures to address the milk market crisis, also addresses the structural imbalance (see details below). To enhance this action, the Dutch government considers to complement the existing measures with a dairy farm and dairy herd reduction measure.

Table 1 Summary of challenges and policy responses with respect to the Dutch dairy sector.

Challenge	Policy response	Comments
To achieve a balanced herd evolution, ensuring that the total dairy herd fits in the environmental regulatory requirements (e.g. phosphate ceiling).	Phosphate Production Reduction Decree implemented in 2017. From 2018 and onward this measure will be replaced by a system of phosphate quota.	This is primarily an environmental challenge (following from the EU Nitrate Directive). The dairy cow herd has to be adjusted to the level of July 2015 minus 4%.
The milk market crisis, which is mainly due to developments outside the EU, but aggravated by the increase in milk supply in the EU, to which the Netherlands also contributed because of their more than proportional milk supply increase	Measure to support the termination of dairy farming businesses. Businesses	This policy response has been part of the set of exceptional measures taken by the EU and its Member States in order to rebalance the milk market.
Structural imbalances due to diverging investment and disinvestment patterns in recent years	are eligible for a premium for each animal that they are prepared to terminate or reduce the dairy	

As has been discussed above, the rate of dairy farm exits has declined since 2012, while at the same time the number of cows per dairy farms steadily increased. This signals diverging investment (farm expansion and farm scale increase) and disinvestment (farm exits) patterns, that deviate from what has been usual in the Netherlands. The usual pattern, at least since the imposition of the milk quota in 1984, has been that investment and disinvestment patterns balanced in such a way that the impact of farm scale increase was more than compensated by the number of farm exits, implying a gradually declining dairy cow herd with a more or less stable aggregate milk supply (thanks to an increasing milk yield per cow).

The unique characteristic of the Dutch situation is that, even though the milk quota has been abolished since April 2015, the developments of dairy farm expansion on the one hand and dairy farm exits on the other hand remained connected. The main reason for this is the need for a sustainable dairy sector, staying within the environmental regulatory conditions which effectively constrain the evolution of the Dutch dairy herd. In all other Member States there is not such a binding environmental constraint, at least at national level (there are regions within some Member States where environmental regulations constrain milk production). What the Netherlands has in common with other EU Member States is that they all are negatively affected by the milk market crisis.

As Table 1 shows the environmental challenge has been addressed by a targeted environmental policy response (Phosphate Production Reduction Decree; see Jongeneel et al. (2017) for further details). The response to the milk market crisis has been the measure supporting the termination of dairy farming businesses, implemented in 2017 as part of the EU's package of exceptional measures to address the crisis in the EU dairy and pig sectors. Most Member States have taken such measures, that are in a number of cases (e.g. Finland, Hungary, Poland, Portugal, Hungary) complemented by additional measures, funded from national budgets (state aid support).

It should be noted that the Phosphate Production Reduction Decree imposes constraints on the dairy herd size of farms, which especially impact on dairy farms that have recently (since July 2015) expanded (e.g. made investments in new stables). Farms exiting the dairy business, contribute to the required reduction in the Dutch dairy herd. As such farms exiting the dairy business reduce the required effective shrinkage rate of the farms that recently expanded and invested. These future-oriented farms which recently invested face particular difficulties because of their increase debt service obligations (see Appendix 1), while at the same time the low milk price reduced their profitability and the Phosphate Production Reduction Decree requires them to reduce their herd size. In this context the decline in farm exists that has been observed creates a spill-over impact on the structural evolution of the Dutch dairy sector as a whole.

A state aid funded measure supporting farm exits could help to address the imbalance described above. Irrespective of the recent market developments (extremely low farm gate raw milk prices), the expected impact of an induced increase in dairy farm exists did not happen (see Box: Low milk prices and dairy farm exits in the past). Rather the opposite happened: the rate of dairy farm exists slowed down and deviated from the normal longer run trend, as has been observed for decades (including the period preceding the EU milk quota).

Box: Low milk prices and dairy farm exits in the past

Also during the past there have been periods with relatively low milk prices, although the milk price declines as they have been observed in 2009 and 2016 are extreme. In 2009 (and also in 1996), however, no slowdown in the rate of farm exits has been observed. In that sense the observed slowdown in farm exits is also rather unique from an historical perspective. It is probably the combination of market circumstances, the abolition of the milk quota in April 2015 (which was severely restricting farms in choosing their optimal milk output level), and the policy uncertainty (environment), which led to the divergent farm strategies.

Since 2012 the slowdown in farm exits has led to a situation that an estimated of 1,000 to 1,500 more dairy farms are in business than otherwise would have been the case. The Measure to support the termination of dairy farming businesses, aims to lead to the termination of 1,000 dairy farms (with an average herd size of 60 cows) or about 60 thousand dairy cows. The state support scheme aims to add a further number of dairy farm exits and associated reduction in the milk supply.

4 Concluding remarks

4.1 Macro-economic situation

The European Union's (EU) dairy market seems to be slowly emerging from its recent 'dairy crisis', when EU farmers were faced with overproduction and the lowest commodity prices since 2009. World dairy markets have been in turmoil during 2015 and 2016, after historically high prices in 2013 and 2014. Market conditions have improved since mid-2016, when prices for EU dairy products gradually started to recover. This recovery is continuing during the first months of 2017 although there is uncertainty with respect to the evolution of the milk price during the remainder of 2017. According to the EU's latest medium-term outlook an average 2017 milk price of 31.4 euro per kg is expected, which is below the value achieved in the first months of 2017 and is also about 9% below the medium run 5-year average milk price (2010-2014) associated with the period before the milk crisis (2015).

4.2 Impacts of market conditions on Dutch dairy farms

The Dutch dairy sector has been affected by the EU-wide milk market crisis. In the Netherlands the crisis has two sides:

- First, the low milk prices have led to a sharp fall in the profitability and income formation of dairy farming. This is irrespective of a recently observed decline in the cost of milk production. In 2016 farm income per unpaid agricultural worker declined by 40% relative to 2014. The liquidity situation of dairy farms seriously worsened: an estimated 25% of Dutch farmers had to renegotiate terms with their credit and loan providers (banks).
- Second, the changes in the market and policy environment have hampered the normal structural adjustment of the sector. The normal structural adjustment pattern (characterised by an approximately annual 3% of Dutch dairy farms exiting dairying) slowed down to about 1%. The observed divergence in disinvestment (farm exits) and investment (farm scale expansion) patterns, combined with the need to control (reduce) the total dairy cow herd, have aggravated the tensions in the Dutch dairy sector.

4.3 Epilogue

As this background analysis has shown, since the second half of 2016 the EU milk market is gradually recovering from a milk market crisis that started during 2015. There is uncertainty about how the milk price will evolve over the remainder of 2017 and about the extent of the recovery. A state aid-funded measure supporting farmers to voluntarily terminate or reduce milk production could contribute to the continuation of the recovery of the EU milk market in 2017, as well as to long run objectives such as restoring of the market and rebalancing of structural change.

It could be argued that the milk market crisis has created an abnormal situation in the EU and in the Netherlands, which has unique aspects due a combination of general and specific factors such as a low milk price, abandonment of the milk quota in April 2015, which until then severely constrained dairy farmers with respect to their milk supply, uncertain and diverging expectations with respect to the implementation of new environmental legislation, and investment and disinvestment patterns that do not match with the macro-challenge of reducing rather than increasing the overall Dutch dairy herd.

Given this situation, considering complementary state aid support (of €550 per dairy cow, with a ceiling of €15 thousand, per farm that will stop milk production (abandoning its complete dairy herd) or reduce their dairy herd to a level below the reference level of July 2015 minus 10%) aside of the already existing measures could be a means to contribute to rebalance the situation in the EU milk market as well as with respect to the Dutch dairy sector.

Since the decline in the dairy herd that is induced by such a state aid-funded support measure will lower the herd reduction requirements imposed on other continuing dairy farms (following the Phosphate Production Reduction Decree that is applicable in 2017), the expected net impact on the expected total Dutch milk production for 2017 is likely to be negligible, as are the expected impacts on trade and competition between Member States.

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Appendix 1 Debt structure of Dutch dairy farms

The debt position of Dutch dairy farms is often described in terms of the amount of debt per kg of milk produced. In the period 2005-2010 the debt position of the Dutch dairy sector worsened, after which the situation improved. In 2005 the amount of long-term debt per kg of milk amounted €1.10/kg, which increased to about €1.25/kg in 2010 (see Figure A1). After that the amount declined, most likely because less investments were made in milk quota due to their expected expiry in 2015. As Figure A1 shows, larger farms usually have a higher debt/milk ration than smaller farms, which reflects the role of loans in financing dairy farm expansion. Moreover, it provides an explanation why, in spite of the recently low milk prices, the farm exists did not necessarily have to increase: the exiting farms, which are usually the smaller farms, have a relative high equity buffer which allows them to stay in business even in case of (temporarily) low milk prices. The larger farms are much more vulnerable to low milk prices because of their relatively high debt/milk ratios.

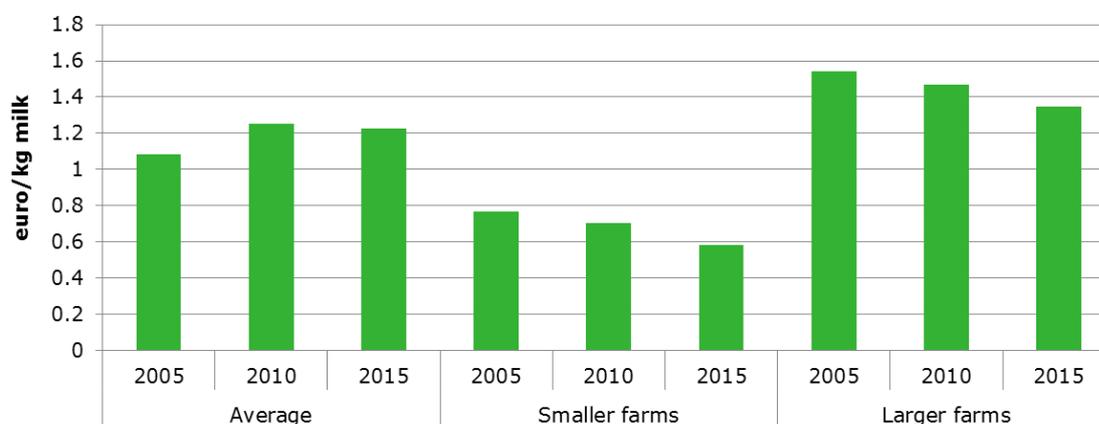


Figure A1 Long-term debts per kg of milk for different dairy farm size classes and years
Source: Wageningen Economic Research

Wageningen Economic Research
P.O. Box 29703
2502 LS The Hague
The Netherlands
T +31 (0)70 335 83 30
E communications.ssg@wur.nl
www.wur.eu/economic-research

Wageningen Economic Research
MEMORANDUM,
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