THE CONSTRUCTION OF AN EU-25 MILK PRICE INDEX (MPI)

IMPLICATIONS AND EXTENSIONS ON THE EU DAIRY INDUSTRY

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ABSTRACT

The objective of this paper is to present an EU-25 members milk price index (MPI) and illustrate the interactions among the dairy markets of all these European countries. The methodology used in order to construct the MPI mainly derives from a weighted average of all EU-25 milk prices. Perhaps the most crucial decision for the creation of this index concerns the determinants of the weights incorporated in this model. The route followed in this research takes seriously into consideration each country's annual milk production as it is an objective feature that can allocate countries into different levels and demonstrate the various impacts they cause into the MPI. In addition, it is attempted a general historical approach of the EU dairy market conditions since they have been formulated through the Common Agricultural Policy (CAP). In the future, EU policy framework will suffer several changes such as the abolition of several quotas and interventions which control the milk prices within EU. Dairy experts in conjunction with financial risk managers suggest that these price fluctuations and volatility within EU dairy markets should be tackled more efficiently with dairy risk management. The paper concludes into an EU-25 milk price index taking into account all the milk prices of the 25 EU countries, weighted on each country's milk output. The MPI can be used as a benchmark for producers, milk processing companies, investors and analysts.

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1 Acknowledgements

Driven from this paper, since it is my last piece of academic work, I feel the need to express some thoughts. Several people claim that being a student is also a profession like all the rest in our society. I would add that it is a profession which does not provide direct compensation except for knowledge and future career expectations. Additionally it requires constant parental and family support.

Hence, I want to sincerely thank my parents for their endless support and protection. Additionally, I want to express my gratitude to the Dutch Dairy Board for the useful information regarding the data. Moreover, I am very pleased and thankful having collaborated with Mr. Huisman for all his insights and valuable guidance.

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2 Introduction

2.1 EU dairy markets

EU dairy markets are not only significant among European countries but also worldwide for many reasons. The most prominent feature is that milk is produced in every single EU member country without any exceptions, thus contributing by 14% in the total agricultural output. The EU is a leading participant in the global market. Many rural areas get an eminent character through dairy farming and are strongly depended on it. Special mountainous areas are heavily based on dairy sector and their development stems from farming. The total milk production is estimated around 45 billion at a farm level and 120 billion in the processing industry. Except for the high quality of EU dairy products, there is a wide variety of yogurts, ice creams and cheeses where many of them are exclusively produced in Europe. Consequently, it is of vital importance to describe some of the characteristics of EU dairy markets but in this paper from the pinpointing mainly on the prices and how they are determined.

Dairy markets, in contrast to most of the other markets in EU, function under the Common Agricultural Policy (CAP)[1]. The main objective of CAP was to stabilize dairy markets by regulating the mechanisms which influenced the supply and demand. The result was explicitly reflected on the dairy prices. Among its tools to establish a market with common prices were the intervention purchasing, the aid for private storage (APS), the export refunds and any form of quotas.

The intervention purchasing involves an intervention price where the local intervention agencies have to buy all the production that fulfills the quality standards. The APS is referred to all those dairy products which are able to be stored. These are skimmed milk, cheese and butter. The rationale behind APS is to provide the suppliers with an option to store their production for duration of 90-210 days and deliver it in the future. The above technique is applicable in the case of seasonal imbalances between supply and demand. In case of export refunds, producers export their production outside of the community in a prescheduled rate. In this way, European dairy products become more

[1] CAP is a framework which was signed in 1958 in Rome by the first six countries forming the European Economic Community (EEC)

competitive and attractive to non European countries and at the same time avoid any risks from the side of the exporter. The last method of CAP launched in 1984 is the supply quota. Supply quota was introduced as a potential tool to offset the growing supply and the EU consumption. The existence of milk surplus in EU led to the enforcement of this action. The subsidies of milk production caused increased production and therefore deteriorated WTO's targets via increased EU prices compared to these of the rest of the world. Milk farmers and big milk processing firms both are eligible to these quotas which, in plain words, are restrictions is milk production. Lawbreakers are fined extremely harshly up to the point of 115% of the milk price. In most countries it is possible for producers to sell or rent their quotas. The only exceptions occur in Italy and France. In EU dairy markets there are individual dairy farmers but the biggest volume of milk delivered has been processed from big companies which usually take the form of cooperative supplier and processor of milk. Some of them are the following: Danone, FrieslandCampina, Arla, Unilever, Nestle, Parmalat, Muller, Lactalis, Bongrain, Milcobel and others. From the perspective of country's production, the countries with the biggest volume of milk production are the following: Great Britain, Denmark, Netherlands, Germany, France and Poland.

2.2 EU dairy markets in future

So far we had some insights into the EU member countries about their dairy markets. But EU keeps extending and including more members, thus, it would be wise to examine some facts about the countries that have been recently joined EU and about those that will potentially enter in future. The existing EU countries examined are Slovakia, Hungary, Poland, Bulgaria, Romania, the Czech Republic, Estonia, Latvia, and Lithuania. Russia, Ukraine and Belarus are expected to be future members of EU. All the above countries represent a market of 270 million consumers and consequently they constitute a wide market with various opportunities. It is remarkable that nearly all the biggest foreign dairy companies have heavily invested in plants and operate in those markets. Some of the companies which have an active role in the area are Danone, Arla, Nestle, FrieslandCampina, Bongrain, Lactalis, and Müller. The above mentioned foreign firms play a crucial role in the local dairy market of the area. On the first hand, they process a large proportion of milk and develop the whole sector by investing in new technologies (R&D, product development) and marketing techniques. On the other hand, vertical integration is a point where foreign companies invest and aim to improve the quality of milk.

The benefits of an extended EU dairy market are several as we will point below.The EU-27 offers the opportunity to develop the whole dairy market with larger and more efficient farms, an integrated regulatory framework overcoming barriers and extra costs added in milk prices. The competition of an open market will drive into improved quality, eliminated speculation and cartel phenomena. From every aspect, East European countries offer a challenging opportunity in EU dairy markets. It is impressing the fact that the EU-15 dairy market is expected to grow by 10-12% from 2007 to 2012 while for East European dairy markets the growth rate reaches the 25% for the same period.

The situation in dairy markets has deteriorated since the middle of 2008. After the peeks in food prices of 2007, prices have dropped significantly influencing the income of farmers and milk producers. Thus far, the intervention from EU has controlled efficiently dairy prices within the community but the situation in future will deviate from the present. Specifically, the EU milk sector will undergo far-reaching liberalization in the short term future. Judging from the upcoming prepositions, the milk quotas will cease to exist till the year 2015. Consequently, the EU milk prices will be determined based on global market factors. Additionally, there is an explicit trend of big milk companies to operate in fields far from their traditional involvement. A sonorous example is the merger of “Royal Friesland foods” with “Campina”. The message is clear: The emerge of global milk sector which will determine global milk prices according to international supply and demand will be the transitory step of EU dairy markets.

So far, the role of the market regulator in EU was played by the EU itself since it controlled milk prices by the intervention policies and the milk quotas. But with the forthcoming liberalization there will be an urgent need for dairy risk management and hedging of milk prices across the sector. A powerful tool offering a solution against risk is the economies of scales. In a highly competitive environment, firm‘s expansions offer the advantage of reduced marginal cost.

Across the ocean, in Chicago Mercantile Exchange (CME) there are traded future contracts for many types of dairy products[2]. The development of dairy risk management provides with important offsetting alternatives against spot price fluctuations.

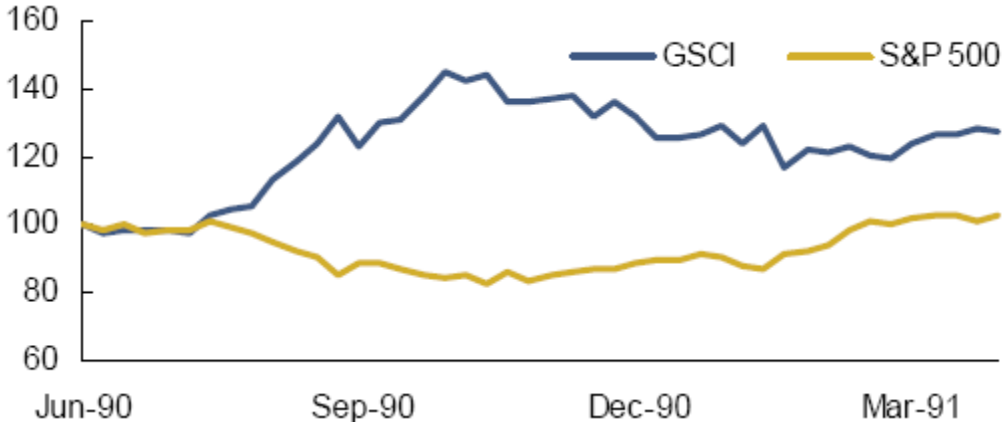
[2] Fluid milk, BFP milk, nonfat dry milk & Cheddar cheese

2.3 Research question & paper objective

This paper aims to provide with part of the information required to analyze and interpret the historical EU milk prices and the way that are determined or influence side issues. The incentive is to build the fundamentals that dispose EU milk prices which can be used implicitly or explicitly as a benchmark from dairy companies, investors, institutions or analysts. The direct goal of this research is to construct an indicative EU-25 milk price index (MPI) containing milk price of several European countries. This milk index will be created in order to demonstrate the correlations among the producing countries and explain all the price movements based on the individual production of the countries'. In addition the MPI will be a suitable tool to draw various conclusions about the historical and present dairy market conditions as well as try to forecast and predict the future price movements.

Moreover, after the development of commodity futures indices we observe higher returns compared even with stocks and bonds. An indicative 5 year comparison of Dow Jones AIG Commodity index with S&P 500 displayed that the former returned 10,6% while the latter only 2,6%. Obviously, higher returns are attractive for investors but asset managers show a preference over commodities for numerous reasons. Among them are the higher level of diversification that they offer in combination with a hedge against inflation and offset against event risk. Commodities are real assets and not financial, therefore, they benefit from an increased inflation since the demand for goods during such periods increases driving their prices higher. For this reason their correlation is negative with financial assets and offer high diversification benefits. Also, another advantage of investing in commodities is that they provide a high hedging degree against financial distresses. At the past and during several periods of financial crisis (Gulf 1990) commodities had outperformed equities. Therefore, investments in commodities have became more and more popular the recent years.

Figure 1. Goldman Sachs Commodity Index returns Vs. S&P 500 returns



Sourse: Goldman Sachs, Bloomberg Financial Markets

3 Literature Review

3.1 Dairy industry description

The approach followed in this paper, that is the construction of the EU-25 MPI is innovative for the dairy sector and generally for the scientific society. Therefore, there is not any literature written describing how EU prices can be collected and incorporated in such a model that would be considered as an index. Consequently, we will follow an alternative route and we will include all the scientific articles and research describing EU milk prices. Specifically, we will reproduce the reports of the authors which have primarily analyzed the way that EU milk prices are determined, the potential correlations among them, the major mechanisms which regulate and control milk prices and the extensions followed by the milk prices analysis. Such extensions may refer to the fluctuations of prices known as volatility and the risk management opportunities.

The paper of Declan O' Connor, Michael Keane and Edel Barnes "The policy and trade challenges of managing price risk in the EU dairy industry" is a very accurate introduction of the EU dairy market. It

describes the regulatory framework of the EU dairy industry, the current policy in the EU and compares some facts of EU with the global dairy trade. Additionally, it refers to the EU and the risk management tools in contrast with the US risk management approaches. In conclusion, the authors of the article introduce the recent private market developments in dairy price risk management.

In the article above, it is stated that the policy adopted by the EU has isolated EU dairy prices from the fluctuating global prices. Unavoidably, EU dairy participants have had a minor interest to rely into price risk management tools. The increase in volatility of milk prices will lead into risk and uncertainty. There are various ways to deal with risk. In earlier times, diversification within and outside of agriculture was the most commonly used technique. In future it is expected that these methods will be replaced by expansion strategies offering reduced marginal costs as a result of the economies of scale. Competition reforms the markets and the dairy participants seek to seize the opportunities for a competitive advantage. Other approaches used to cope with risk are risk pooling, contracting, insurance and private financial markets. In CME are traded various dairy future contracts including as underlying assets milk and cheese.

The regulatory framework described is the Common Agricultural Policy (CAP). Dairy markets are a subset of agriculture therefore should be described by CAP. The CAP was composed by a number of Articles. Article 39 explains how the agricultural markets would be stabilized. The market stabilization was based into a system of market interventions. Amongst them are the import levies and the export subsidies. The former aims into protection and the latter into development of the dairy markets. Some forms of these interventions are the following. Intervention purchasing that shows the obligation by the side of the national intervention agencies to buy all the output that meets the required quality standards. This measure is only applicable in case that the dairy products are storable. Since milk is perishable, this intervention refers to butter and Skimmed Milk Powder (SMP).

Another feature of the intervention policy described in Article 39 is the aid for the private storage (APS). Any seasonal imbalance between supply and demand should be offset by the APS. The storage allows producers to store their production from 90 to 210 days in the case of butter. Similarly, milk cannot be into this category since it is not storable. At the end of the storage period the producer receives a fixed amount scheduled in advance. The difference between APS and intervention purchasing is in that the latter the ownership of the goods remains into the producers and provides them with the discretion to offer their production at the end of the storage period.

One of the most important measures of CAP is the supply quota. According to quotas, milk producers are not allowed to produce unlimited quantities of milk due to an imbalance of EU consumption and output of milk. This is one of the most imperative factors that at the moment determines and controls EU dairy prices. Alternatively, export refunds assist the exporters of dairy products to export goods out of the community. They have the form of subsidies which encourage the trade of the EU dairy products abroad in a prefixed rate. Consequently, the risks are eliminated for the exporters and any attempts of EU trade expansion are smoothened.

The outcome of such a policy mentioned is astonishing. There is a comparison between global dairy prices with EU dairy prices from year 1990 to 2008. As it is shown in both tables 1a and 1b, EU SMP and butter are characterized by a higher mean and a lower standard deviation. EU dairy prices are steadily higher than worlds. Also, the volatility expressed from the standard deviation is reduced for the EU dairy products.

Table 1.a

	World	**EU**
Jan 1990- Dec 2008	SMP	SMP
Mean	1646.45	2183.72
Standard Deviation	536.36	310.84
Coefficient of Variation	32.58	14.23

The current EU policy does not account into private aid storage for cheese in conjunction with the disposal aid for butter, ice cream and pastry. Export refunds have been reactivated in January 2009 as a direct response to the world deteriorated situation though it cannot be considered a permanent measure.

Table 1.b

	World	**EU**
Jan 1990- Dec 2008	Butter	Butter
Mean	1513.65	3096.66
Standard Deviation	538.41	301.72
Coefficient of Variation	35.57	9.74

One of the characteristics of the EU farming is that it is not homogenous. That means that there are large scale inequalities among the size of farms within the EU members. One indicative example mentioned is the one of Denmark and Poland. The former country's annual milk production per farm is around 20,000 kg while at the same time the Danish annual milk production per farm is around 860,000 kg. The EU average annual milk production of 105,000 kg is by far out of comparison with the USA's and New Zealand's that are 1,097,466 and 1,211,749 kg respectively. The above comparison highlights that EU dairy sector has to increase severely in size in order to be competitive enough to the global milk farming.

The authors clearly mention that US dairy sector is much bigger that the EU dairy industry. It is feasible that this feature has led in the development of risk management in dairy sector. The Risk Management Agency (RMA), a part of the U.S. Department of Agriculture, is activating into finding market-based risk management solutions for producers to hedge against any business risks. Additional aim of RMA is to stabilize the economy of US agricultural producers. It also supports the development of agricultural risk management by sponsoring relative seminars and programs.

New Zealand is a leader participant in the global dairy market. It holds the 40 % of the global dairy trade which classify the country among the giants of the sector. Fonterra Group is the leading processor of milk within the country, holding 95% of the circa. Due to client's requests about a more efficient risk management, the company shaped an internet-based trading platform named globalDairyTrade which allows the company to deliver its products. The contribution to dairy risk management is that it offers 3 types of contracts varying in the maturity period giving the flexibility to traders to tailor their needs and adjust them into their individual cases. The first contract involves a short spot deal which allows shipping for the product during the third month after the trading date. The second contract extends the shipping period into 4 months after the trading event and the third contract doubles the initial shipping period from three into six months. Fonterra intends also to offer

these contracts for Skim Milk Powder (SMP) AND Anhydrous Milk Fat (AMF). It is remarkable the fact that the currency used for the above transactions is not the home currency of New Zealand but US dollar.

The EU risk management approaches are not as developed as in New Zealand. In fact they are in an initial phase which is mainly composed of proposals (Dairy Industry Newsletter 29/6/2008). So far there are three promoters (RMX, LIFFE and European Milk Exchange BV.). The Dutch bank Rabobank has already started working to the direction of launching a futures market for dairy products in Europe. The exact products are not yet specified but it is considered as most wise and secure choice to begin the futures market with standardized milk.

Germany‘s commodity trading market RMX is working in the same direction as Rabobank and is considering the prospect to introduce a dairy product future market. European Milk Exchange B.V in the Netherlands, corresponding to the demand for further market transparency in dairy industry, states that it is a matter of time to sign the new milk contracts which will offer protection against volatile milk prices.

The authors claim that future markets offer an advanced price transparency to the supply chain and works in favor of the efficient markets hypothesis. On the other hand, especially in emerging countries there has to be settled an index price which may be problematic due to the fact that the integrity of these prices is often debatable. The other drawback is that it does not provide the same degree of protection to all the industry participants. The futures are very likely to concern commodities like SMP and butter and exclude raw milk which is the principal output of farmers.

After having a sufficient description of the dairy markets in the past and the policies applied, it is time to have an overview of the current situation in dairy markets. The paper of Commission of the European Communities, “Communication from the Commission to the Council-Dairy Market situation” (2009) illustrates many of the current dairy factors such as prices, market developments and EU policies. The whole situation of EU milk and dairy prices compared also with world milk prices is summarized in the figure 2.

Figure 2. EU Milk Prices and CAP supports

Moreover, it is clearly acknowledged that the milk production has been decreased due to the quotas. Total milk output within EU has been approached as 4% below of the milk quotas but at the same time international milk supply has moved into the same direction. International prices have been dropped because of some increase in production by major suppliers like USA, New Zealand and Australia and also from global economic crisis which led to a decrease in demand.

International food prices have been significantly increased above EU intervention level during 2007 but during the second half of 2008 prices have decreased below the intervention level followed by a feeble US dollar. In this point, the commission used actions to stabilize the EU prices and avoid any further drop. The striking fact is that the significant decrease in milk prices and dairy commodities (-31% milk, -49 % SMP) since the end of 2007 did not lead into a similar drop in consumer prices (-2%). There are numerous reasons for the continuation of this phenomenon but the authors conclude that EU dairy supply chain is not efficient because of the asymmetry, magnitude and postponement in the downward correction of consumer prices. An improvement in the efficiency of dairy supply chain seems to be indispensable for the further enhancement and stimulation of its competitiveness.

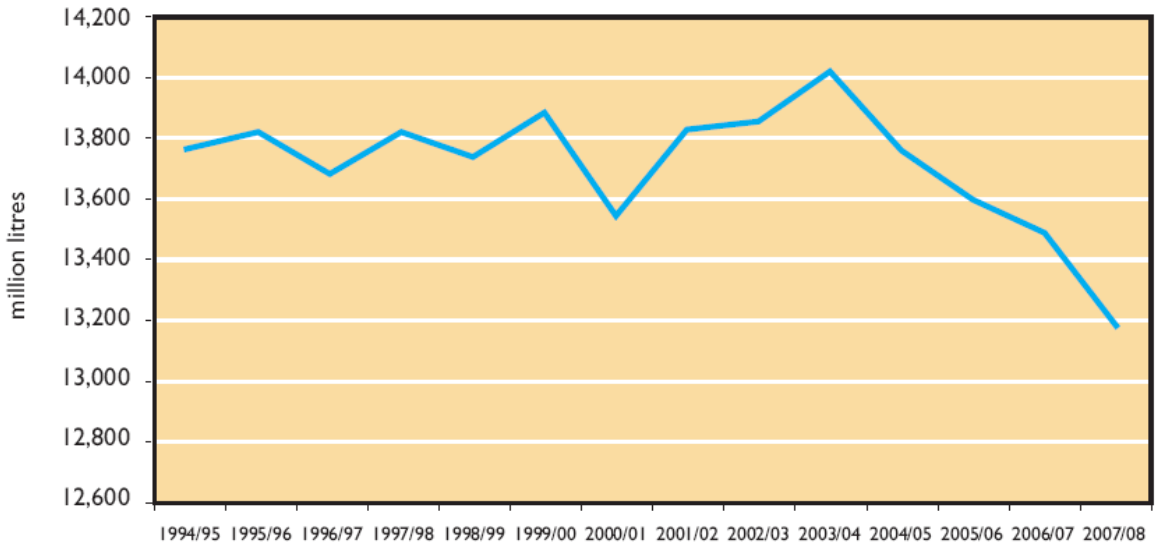
The report to the EU Council finds useful to clarify and distinguish the short and long term horizon in the consideration of the dairy market situation. In a short term period, the effects of the financial distress affect the dairy markets as well. In 2009 there has been shown a decline in output while in 2010 it is expected a slight improvement stemming from an increase in demand. The intervention stocks for 2009 and 2010 as well as the export refunds are anticipated to mitigate the EU dairy

market conditions. In the light of global economic recovery, we expect a long and even medium term improvement and re-achievement of balance in the EU market. The Commission taking under consideration the urgent require for straight measures has decided to apply a supportive policy. This policy includes an earlier (for two months) private storage aid for butter and the reintroduction of the export refunds for all the dairy commodities. Last attempt is the intervention purchase for butter and SMP. The actions taken from the EU Commission cost approximately EUR 350 million and the total amount of the refunds and costs followed by these policies in case of extensive use of the measures is anticipated to reach the EUR 600 million.

3.2 Dairy farming trends

After having a detailed insight on the EU dairy market situation and the mechanisms controlling the prices, we will now examine whether there are any factors affecting the milk supply. The paper of DairyCo, "factors affecting milk supply" introduces several factors that influence the milk supply in UK. The authors define as milk supply, the sum of the milk delivered to dairies and the milk used for on-farm processing. This milk supply is the product of the number of cow times the average milk yield. Numerous factors affect both the yield and the number of cows but the most significant is considered to be the dairy farmer's confidence. As a matter of fact, the UK annual milk production has been declining (figure 3)

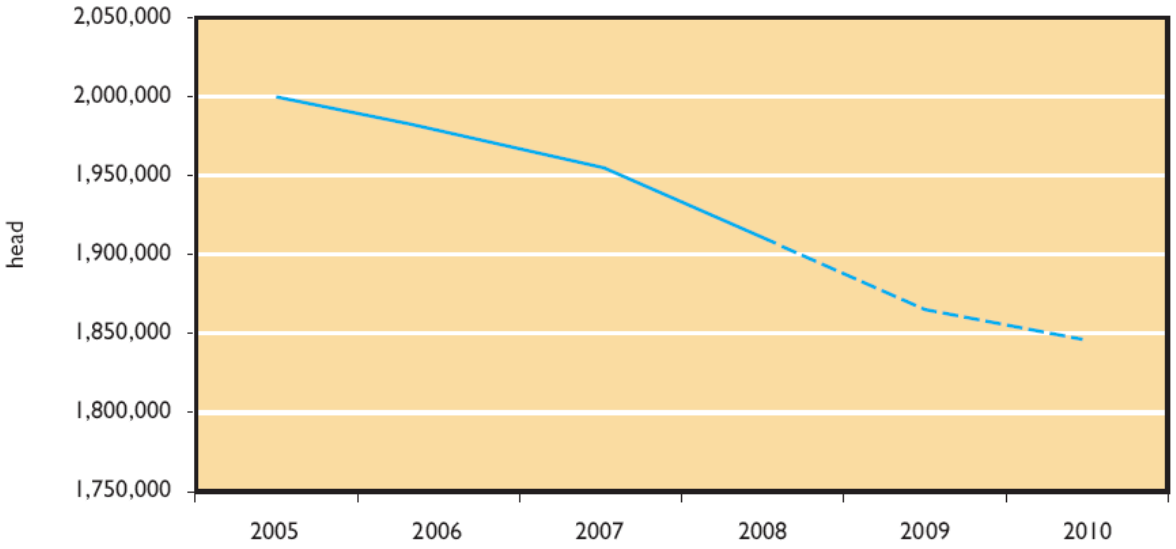
Figure 3. UK Annual Milk Production



Source: DairyCo

as well as the number of milking cows has been declined over the last years and is expected to keep dropping in future (figure 4).

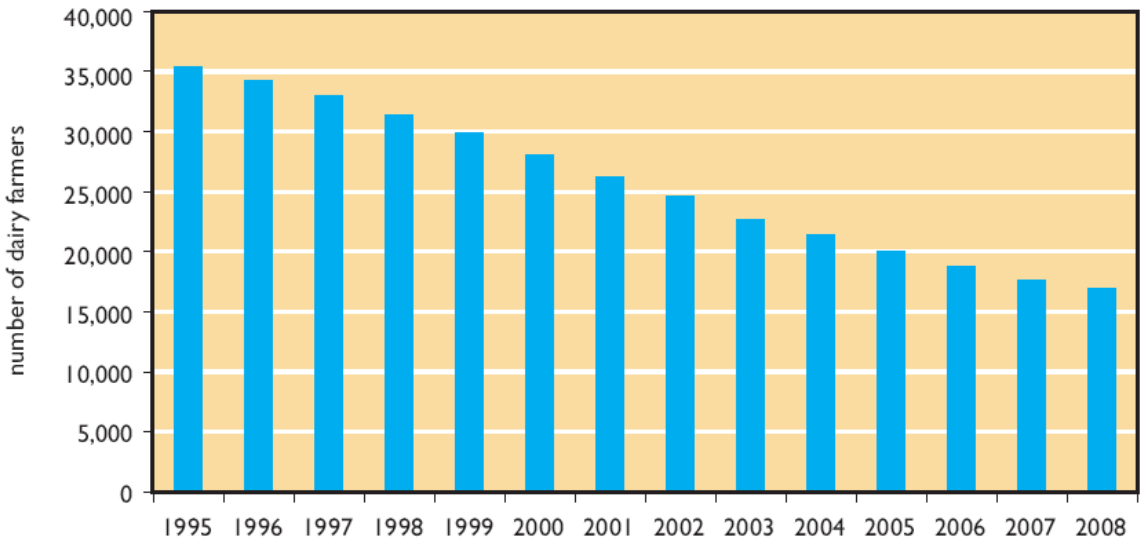
Figure 4. UK Cow Numbers



Source: DairyCo

The mitigation of this decrease recommends a replacement of 25%-30% annually. The number of cows is reduced because of the slaughtering of bovine due to tuberculosis. During the year 2007-2008, 16,192 dairy cattle were slaughtered as a consequence of tuberculosis. An explicit effect on the reduction of the national cows in the herd stems from the massive exit of the farmers from the dairy industry (figure 5). Concretely, there is a 20% “loss” of the cow population in the milk supply.

Figure 5. Number of Dairy Farmers in UK



Source: DairyCo

This decrease of number of cows is partially mitigated from a constant amplify of the average yield per cow. The average yield per cow has increased due to the extension of cow's life and some crossbreeding with animals of high milk predicted transmitting ability. Even the weather influences the yield per cow by affecting the forage quality via the condition and weight of the cow's body. As the author mentions above, maybe the most important factor which determines the total milk supply is the farmer's confidence. According to the author this is not easily quantified but we can say that profitability and farmgate prices as well as input costs and regulation frameworks pose some of the most heavily weighted parameters of their confidence. Also the availability combined with the costs for replacements and any kind of labor investment around the milking procedure will inevitably play a crucial role into the farmer's intentions and confidence. Finally in this paper it is highlighted that volatile milk prices combined with increased input costs will lead into raised uncertainty and unwillingness by the farmers' side to invest and prolong their activities.

3.3 Laspeyres Index Methodology

Up to this point, we have had some insights about the EU dairy markets but not for the index itself. There has been some literature concerning the price indices and we will present a synopsis of the paper of Balk, " A method for constructing price indicies for seasonal commodities" where it is stated that most statistical offices use the formula of Laspeyres (1) in order to calculate price indices.

$$\sum_{\alpha} w_{\alpha}(P_{\alpha i}/P_{\alpha 0}) \qquad (1)$$

The numerator stands for the price of the commodity α in month i while the denominator is the price of the commodity α in the base year 0 while w represents the value of the commodity during the base year 0. As it is mentioned by the author the use of this formula in case of seasonal commodities is not the most suitable. The problem lies in the case we have no information about the price of the commodity α for some months. Additionally, the author criticizes the use of a fixed base year weights and claims that we receive an over or under estimation of the real price movement.

On the other hand Helen Robert in "Laspeyres and his Index" also points the drawbacks of Laspeyres indicies. One of them is that it overstates the rise in prices. Although, Laspeyres method is usually used to calculate various indices and even approach one of the most frequent definition of inflation which is the increase of the general price level. Since the 1800's there was a big debate on whether we should prefer arithmetic over geometric averages and if we should weigh indexes judging from quantities or not. As we already mentioned from the previous paper, Laspeyres is using the first period quantities for the weights. There is also Paasche's formula which takes the last period quantities for the formation of weights and understates the price increases. Both Paasche and Laspeyres are in favor of arithmetic mean instead of geometric mean. The overall conclusion highlighted by the author is that most widely used formula for price index is the one of Laspeyres. Even CPI index is a modified laspeyres index that still faces the prospect of the substitution from geometric means.

4 Milk Pricing: Case of FrieslandCampina

FrieslandCampina is the world's largest diary co-operative company and the product of the merger between Friesland and Campina in December of 2008. The firm functions with 16,000 member farmers and 21,000 employees and carries a heritage and knowledge of 130 years. The company's history and the long term targets for sustainable performance both assure that FrieslandCampina is a modern firm with respect to tradition and past achievements. Therefore, and since this paper evolves on how EU prices are determined, it would be productive to have as an example or driver this company's pricing policy since indicated below it is not adopted arbitrarily.

To begin with, we have to mention that the company has formed and developed a milk price model. This price model contains of a guaranteed milk price, which is nothing but the average of milk prices paid from its peer companies in Denmark, Germany, Belgium and the Netherlands with respect to competition and last a bonus based on the performance and profits of the company.

The guaranteed milk price is a monthly fixed amount, paid to the member farmers, which indicates absolutely no relation to the company's performance. It is in fact a weighted average of milk prices collected from several European dairy companies (Arla foods Denmark, DOC Kaas, Milcobel, Bel Leerdammer and Cono Kaasmakers) in respect to each company's milk production. These calculations are based on the latest milk prices charged by the companies and expectations for the imminent results. The individual farmers receive an amount which may be higher or lower than the guaranteed price. This difference between the guaranteed milk price and the individual payments exists due to surcharges of FrieslandCampina as well as the sum of levies. In the case of individual farmers payments there also seasonal corrections such as summer levies and autumn surcharges.

The performance bonus milk price is delivered annually to the farmers and is connected to the profitability of the company. The total amount shared by the farmers represents the 25% of the net profits and is distributed to each farmer proportionally to the value of the milk delivered in respect to the financial statements. These two components of milk pricing in conjunction recommend a fair and transparent method of milk pricing while giving more incentives to the farmers in order to strive for the company's sustainable growth.

The case of FrieslandCampina offers two conclusions. One is that the company awards the farmers that cooperates with by adding premia and enhancing their annual income. Another is that the milk pricing of the company towards to its farmers is based on a benchmark. This benchmark in case of FrieslandCampina is the weighted average of the prices charged by some competitive firms from other countries. This fact reinforces our interest and verifies the intention for the requisite of the MPI which can clearly be a major potential milk pricing tool for more companies and a reliable benchmark.

5 Data Sources

5.1 Dataset

The construction of the milk price index (MPI) primarily demands as prerequisite the existence of a historical milk price series enough to guarantee reliable results and conclusions. Therefore, a relatively long term horizon is ideal for such an analysis. But, there are objective difficulties when collecting past data. The most important obstacle is that before the establishment of euro, each country had its own currency which complicates our methodology since it is preferred to translate prices into one currency. Our data display monthly milk prices in Euros or primarily translated into Euros by the provider, for the sake of a simplified methodology.

Since 2001, fifteen member countries of EU adopted a common currency so it seems an ideal starting point for our data collection. On the other hand, two years later in 2003, EU expands into 25 countries with the inclusion of some East European countries. We found more productive and useful to include data from year 2003 for the following reasons. First, we gain in diversification by adding more countries in our analysis and second, the drawback of two less years included is partially offset by the addition of ten more countries. As mentioned above there have been some alterations in the EU dairy market after the inclusion of the new countries and there will be even more in future.

5.2 Data conclusions

The initial idea was to create an index that would include the biggest EU milk processing companies but their reluctance to cooperate and contribute mainly with their data about the annual milk production led into an alternative scheme of an index containing EU countries instead of private dairy companies. The countries included in our analysis are the following. Italy, Finland, Sweden, Portugal, Denmark, France, Netherlands, Germany, Spain, Austria, Ireland, Belgium, United Kingdom, Greece, Luxembourg, Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia, Slovakia. The Dutch Dairy Board provided the support and valuable information of the data concerning the monthly milk prices and annual milk production of EU countries mentioned above whose initial provider of the relevant data is the Eurostat and the DairyCo.

Furthermore, from the data collection we conclude that the countries with the highest level of production within EU-25 are Germany, France, UK, Poland, Netherlands and Italy. On the other hand, the countries with the highest milk prices within the EU-25 are Malta, Cyprus, Luxembourg, Finland, Italy and Denmark. Additionally, we observe tremendous deviations in milk prices among the EU-25 countries. The most remarkable example is the one of Malta and Latvia. The average milk price of Latvia counts approximately for the ¼ of the Maltese milk price. The widest inequalities though, occur in the case of annual milk production. In that case, Malta's annual milk production stands approximately for the 0.16% of the German annual production. Specifically, Malta is the country that barely even produces milk. According to the market rules this is not abnormal since is also the country with the highest milk prices. The paradox in our dataset lies into the fact that the country with the lowest milk prices, that is Latvia, cannot be even categorized among the top producing countries. Consequently, except for the production, there must be more factors affecting the milk price.

6 Methodology

6.1 MPI Methodology

The objective of this study is to build a milk price index of EU-25 countries. This index will be in fact a weighted average of the milk prices collected from all European countries. The most critical decision though, given that milk prices cannot be a subject for amendment for the assembly of the index, is the determination of the weights that each price will represent. It is of vital importance because the weights must clearly illustrate the influence and contribution of each country's milk pricing into the entire index. Consequently, a careful selection of the characteristic that will differentiate the participation of each single price component is essential and will affect the index. It is essential to display the influence each country's average milk price gives in the milk MPI.

In this analysis, we will determine the weights based on each country's aggregated milk production. Milk output is a relatively accurate and objective measure of each country's portion on the total milk produced within the whole EU as a market. Specifically, each country's weight will be equal to the volume of milk produced divided with the sum of the milk production of all EU-25 members. Once the production is relatively stable in a short-term basis, the weights will consist of annual milk production but the observations of our index will be in fact monthly prices since we will realize that among months can be seen a significant fluctuation of milk prices. The calculation of the index is summarized in the following five steps.

- **Step I**: Collect and present all the essential data for the MPI. That would be the EU-25 milk prices and the milk production of the EU-25 respectively. Note that the prices are reported into a monthly basis while the milk output into annual.

- **Step II**: In this step all we need is to calculate the weights. These have to be representative of each country's contribution on the MPI. The weights will be determined by dividing each country's annual milk output with the aggregated milk production of all EU-25 members on

an annual basis. This ratio can assure the precise consideration and in some way assessment of each country with all the rest.

- **Step III**: After having determined the weights, the next step will be to multiply the monthly prices with the weights so that the outcome will be a weighted monthly milk price for every single country of the index. The formula used for the calculation of the weighted prices matrix is the following:

$$MPI = \frac{\sum_{i=1}^{n} w_i x_i}{\sum_{i=1}^{n} w_i}$$

Where:

*x_i, stands for the milk price

*w_i stands for the weights

- **Step IV**: Since the observations displayed on the index should be the weighted milk prices for the total amount of the countries included, the subsequently step is to calculate the sum of the weighted monthly milk prices. Therefore, we receive a new column in Microsoft Excel which contains weighted monthly milk prices from the countries included in our analysis. This is in fact the preliminary version of the MPI, namely the Milk Price Weighted Average (MPWA).

- **Step V**: Once we have calculated the final index prices of the MPI, the last alteration left in order to complete the index and illustrate it on a graph is to consider a base year and set it as a benchmark, to modify the results we received in the fourth step. The above amendment is followed because we want to calculate an index and illustrate the price movements on a base year.

The programs and tools used in our research to calculate the MPI as well as the summary statistics and the return on the MPI are the Microsoft Excel and the EViews.

6.2 Analysis of MPI

Once the index will be determined, there will be an additional calculation of the summary statistics in order to obtain a more in depth insight about the characteristics of the index. Some of the statistics are the mean, the maximum, the minimum, the standard deviation the examination for kurtosis, skewness and Jarque- Bera statistics.

Moreover, there will be a calculation concerning the return on index. Returns on an index depend on the volatility of the individual commodity. In case we had included more goods in our index, then the returns on this index would also depend on the correlations among the commodities. The returns of the MPI are calculated by implementing the formula LN(P/Po) which represents the logarithm price changes. Additionally, we will include a graph of the returns as well as descriptive statistics in combination with a histogram for normality. All indexes comprise a set of figures in order to assess relative price movements for microeconomic and macroeconomic purposes. This index is built to indicate some benchmark. This benchmark, in the case of the MPI, will allow investors to place their capitals on the index given its volatility. Therefore, we need to calculate the volatility of MPI. Based on the Returns on Milk Price Index (ROMPI), we calculate the standard deviation[3] of our dataset so that we estimate the monthly volatility. The rule known as square root of time allows to convert volatilities towards different time horizons and in this case we will annualize volatility. Remember we want to annualize monthly observations, therefore we have to multiply the standard deviation calculated with the square root of twelve. The outcome is the annualized volatility which can facilitate the comparison of MPI with further indices from stock markets and further commodities.

Additionally, this paper examines the existence of any seasonal pattern. Frequently in commodities, seasonality is responsible for the price determination in repetitive cycles throughout the year. This can be observed for several years or the during the entire analysis of a commodity's trade. Normal or expected fluctuations in demand or supply of certain commodities arise per annum and recommend such patterns. Therefore, we will include a seasonally adjusted MPI which will point out these

[3] We calculate the standard deviation(σ) by using the buit-in STDEV function of Microsoft Excel

seasonal patterns and normalize the MPI for the periods of these seasonalities. Also, it will stress the non-conformity before and after the occurrence of the global increased prices.

Furthermore, we will investigate whether this model is described by random walk (unit root) mean reversion (stationary). There is suspicion for the existence of mean reversion. The allocation of MPI as random walk model would imply that any shocks in milk prices would be permanent so that prices would exrail its path in long time. The most useful outcome derived from a mean reversal model is that future returns can be possibly approximately forseen from historical returns since prices tend to follow a trend over time. The procedure involves to model prices with a mean reverting stochastic process. Looking at a time series over a few months or even a few years is enough to provide with the existence of mean reversion. It is very likely that the assessment to represent prices with a mean reverting stochastic process is based both on empirical scrutiny of that price over time, as well as some theoretical argumentation.

In this study, following the paper of Kausik Chaudhuri, "Mean Reversion in Stock Prices: Evidence from Emerging Markets", we will conduct a unit root root test in EViews. We will test the null hypothesis (h_0) of existing unit root (random walk), against the alternative hypothesis (h_1) of not existing unit root (mean reversion). We will apply the augmented Dickey-Fuller test, both with and without trend, and also the Phillips Perron test in order to receive double checked results in the one per cent level. Furthermore, we perform a simple linear regression on the MPI to determine whether there is a significant relationship between current period's milk prices(S(t)) and previous period's milk prices($S(t-1)$). Therefore, we will run the regression $S(t) = b_1 + b_2 * S(t-1) + e(t)$ (2) in order to estimate the coefficients b_1 and b_2. Afterwards, we will plug these values into the formula $S(t) = S(t-1) + a*(mu - S(t-1)) + sigma*e(t)$ (3), where "a" represents the speed of mean reversion and "mu" the mean price level both extracted by the following formulas $b_2=1-a$ and $b_1=mu*a$. Concluding, we will report the t-statistics and p-values estimated by the regression in order to test the significance of the model.

7 Results

The MPI prices as well as the MPWA are available in table 18. Additionally, the milk price index is presented in figure 6. The model presented in this paper can be mainly described by mean reversion. Mean reversion is the tendency of a stochastic process to move around and return to the average (mean) over a long period. Both tests of Dickey-Fuller and Phillips Perron verify the suspicions for the existence of mean reversion. Specifically, table 2 demonstrates the results of both tests in a level of one per cent. Both tests reject the null hypothesis (h_0) of random walk at a one per cent level in favour of mean reversion for the MPI prices.

Table 2. Mean Reversion Tests

This table reports augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests for the random walk hypothesis for the MPI. Both tests conclude that the null hypothesis of random walk MPI is rejected. Therefore, MPI is Mean Reversal.
* t-Statistics with p-values in accordance in the parenthesis.

	Dickey - Fuller		Phillips- Perron	
	No Trend	*With Trend*	*No Trend*	*With Trend*
MPI	-3.530030* (0.0002)	-4.098741* (0.0016)	-3.527045* (0.0141)	-4.094550* (0.083)

Additionally, the results of the regression verifies the finding of mean reversion. Specifically, we have estimated the parameters as shown in table 3. The t-statistic for the slope (b_2) is significant at the level of .05, t-stat=28.29, p-value=1,07974E-39. Thus, we reject the null hypothesis and conclude that there is a positive significant relationship between current period's milk prices(S(t)) and previous period milk prices($S_{(t-1)}$). On the other hand, the intercept (b_1) has a p-value > .05 expressing non significance. Furthermore, from r-squared we conclude that 92.1% of the variability in S(t) can be explained by $S_{(t-1)}$. Following the formulas, the speed of mean reversion (a) equals to .04 and the mean price level equals to 103.93 while the formula (3) is converted into $S(t) = 4.21 + 0.96*S_{(t-1)} + sigma*e(t)$.

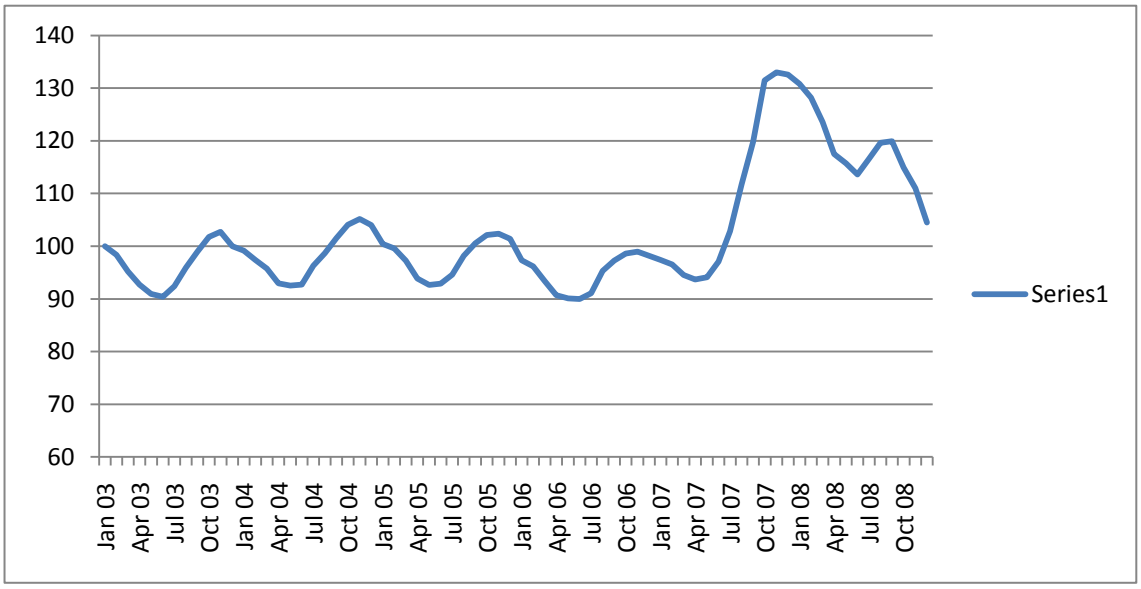
Table 3. Regression Output

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept (b1)	4,216416677	3,492584692	1,207248227	0,231458789
X Variable 1 (b2)	0,959433454	0,033909829	28,29366789	1,07974E-39

It is commonly known that global prices met a peak due to rise in oil prices, stemming initially from droughts and the extensive use of biofuels in developing countries followed by phenomena of speculation. Consequently, the price spikes are something very normal according to the international increase of prices.

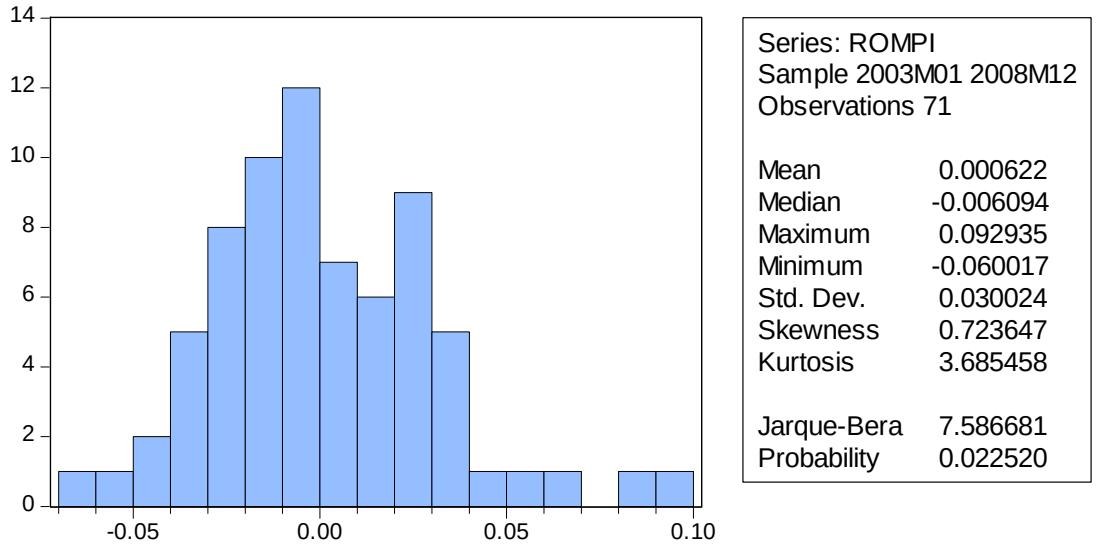
Additionally, having applied the method of square root of time, described above, we calculated the annualized montly volatility of MPI for the period 2003-2008 and it is equal to 10,4 % while the brent oil's annualized volatility for the same period was 35,3%. Oil's volatility is approximately three times higher than MPI while S&P 500 for the same period has an monthly annualized volatility of 14,77%.

Figure 6. The MPI



Returns on MPI are not normally distributed since Jarque - Bera statistic is too high (Pvalue< 0.05[4]). This is easily identified from the histogram (figure 7) where the distribution has other shape than a "bell". Additionally, our model is characterized by a slightly positive skewness and a kurtosis of 3.68 which means that the tails of the distribution are fatter than the normal[5]. Moreover, the mean of the returns is marginally positive while the median slightly negative. A further description for the summary statistics is disposed in figure 7.

Figure 7. Histogram & Summary Statistics (ROMPI)



As a matter of fact, the returns on the MPI shows low volatility which is expressed through the standard deviation. Therefore, judging also from this figure, investors would generally try to invest on the MPI. Besides, commodities except for its low volatility they are also suitable for inclusion in a portfolio because of their negative correlation with the stock and bond markets offering high diversification benefits and sometimes high returns. The minimun of returns is -0.06 and the maximum 0.09 and we can clearly explain the higher maximum due to the increased global prices from the middle of 2007. All these outcomes derive from the analysis within this certain period between 2003 and 2008 including the inernational upward prices. In case these spikes were excluded, then the returns on the MPI would also be differentiated. Specifically, as universal prices influence the MPI prices, returns also increase radically and while milk prices slide again to the normal values,returns drop substantially (figure 11).

[4] We assume that the level of significance is 5%.
[5] The value of Kurtosis for normal distribution equals to three and for Skewness is zero.

Last, we mentioned in our methodology to test for seasonality in the MPI. Well, seasonality is present here since there are certain periods that prices are regularly high and correspondingly low within a year. Specifically, figure 9 clearly points that during June and July of year, that is summer, we receive the lowest MPI prices while during winter, milk prices meet their peak. There is an agricultural explanation of milk price seasonality which stems from the following fact. Cows that have been calved in the winter or autumn give their maximum production from the end of season's grass or silage which has a decreased potential yield compared to spring grass. Therefore, farmers need to provide their herd with auxiliary concentrated supplements which bring on the surface additional costs for autumn and winter period compared to spring and summer seasons. Consequently, this additional cost accompanies the autumn-winter mik prices. This phenomenon is widely known as seasonality and we will calculate an adjusted for seasonality MPI (figure 8) in order to receive smoothened seasonal price effects and pinpointed unanticipated price movements.

Figure 8. MPI Seasonally adjusted

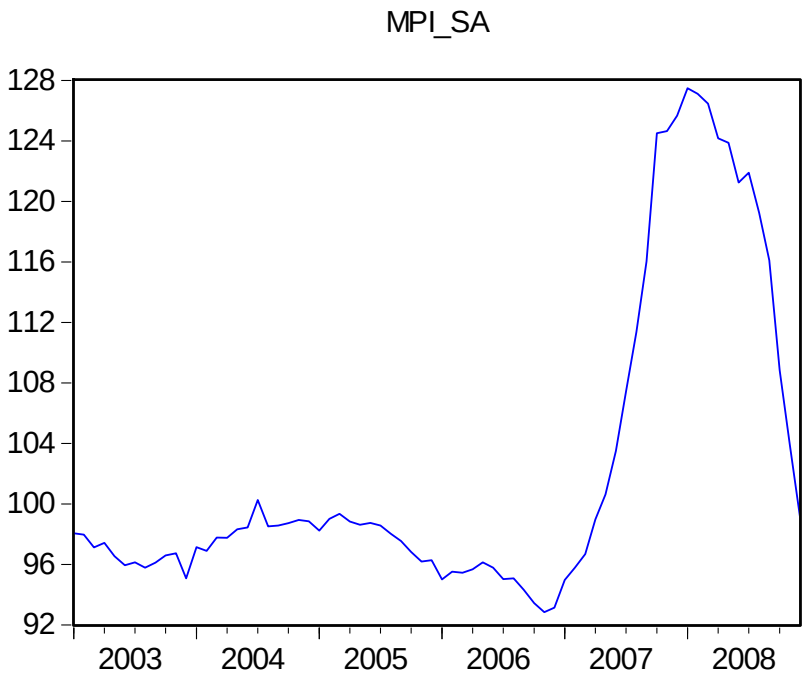
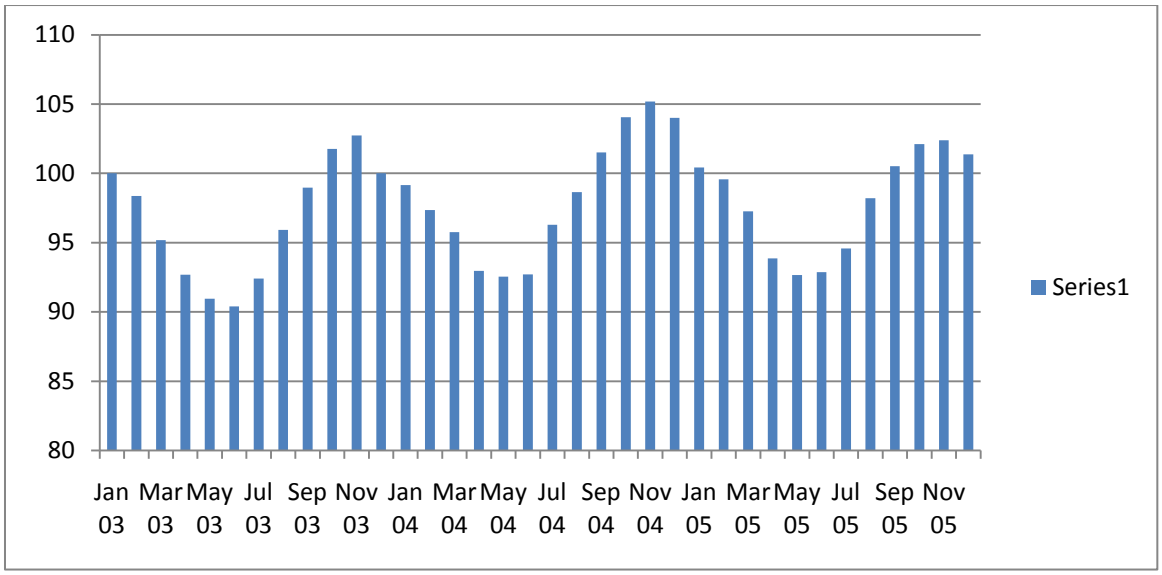


Figure 9. 2003-2005 MPI



8 Conclusions

The objective of this study, which was the construction of an EU-25 Milk Price Index (MPI), has been achieved. This index is built in such a way to assure that it takes into consideration each single country's contribution by incorporating the annual volume produced via the weights into the weighted average formula containing though, monthly milk prices of all EU-25 countries. As a commodity index, MPI has a relatively low annualized volatility of 10,4% which in combination with its negative correlation with equities offers significant diversification benefits. Furthermore, MPI can be used as a benchmark for comparisons and future price predictions and expectations. Additionally, it may serve further future research and amendments. Soon, EU dairy markets will transit from the phase of protectionism applied through the intervention policies and quotas introduced by CAP into a liberated and fully competitive environment. Controlled milk prices will be replaced by high volatility and uncertainty within the dairy markets, therefore producers have to comply with the conditions and rules of global competition. Dairy Risk management, except for the US dairy markets will also play a pivotal role for the control and hedge against the risks evolved. Primarily, the development of risk management tools, such as futures, requires a spot price indicator where one can be based on and deliver those contracts. In order to create some future index for dairy products we need primarily to have a constant spot price overview of the dairy markets and then based on it to build accordingly a futures index that will be able to account for future dairy prices always taking into account the spot prices. This benchmark can be approached or even entirely described by the model presented in this paper.

9 Appendix

The appendix attached below provides with all the outcomes of the Excel spreadsheets and the EViews calculations. Specifically, we enclose tables and figures concerning the MPI and the way we extracted these results. The tables in the appendix contain the monthly milk price data from all EU-25 countries from years 2003 till 2008. Additionally, the tables include the annual production of all EU-25 for the same period and the sum of production. Furthermore, we have added all the weights of MPI and the MPWA, the final prices of MPWA, MPI and ROMPI as well as a graphic demonstration of the trend analysis of the index and the returns that one would achieve if he would invest his funds on the MPI.

Table 4. EU-25 Monthly Milk Prices in Euro (2003)

	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jun 03	Jul 03	Aug 03	Sep 03	Oct 03	Nov 03	Dec 03
Italy	35,91	35,61	35,61	35,12	34,95	34,95	34,95	34,95	34,95	34,95	34,97	34,99
Finland	36,46	36,24	33,08	32,98	32,86	32,70	35,29	36,88	38,85	39,53	39,74	39,82
Sweden	33,49	33,70	33,19	33,45	33,33	33,47	33,12	33,36	34,98	34,98	34,49	33,83
Portugal	33,78	33,63	33,49	32,64	31,79	31,63	31,72	31,47	31,67	34,02	34,38	34,46
Denmark	34,54	34,34	34,12	33,58	32,66	32,10	31,96	31,94	32,92	33,08	30,26	30,24
France	32,05	31,25	29,30	27,65	27,67	27,40	29,14	30,68	32,27	32,93	32,92	31,19
Netherlands	30,61	30,04	28,82	28,82	29,14	29,14	29,60	34,58	34,58	34,85	35,19	32,91
Germany	30,90	30,60	29,80	29,06	28,42	27,70	27,75	28,16	29,73	31,47	31,93	30,74
Spain	28,71	28,58	28,18	28,21	28,03	28,10	28,10	27,91	28,13	29,37	30,11	30,64
Austria	31,47	31,20	31,08	29,73	28,01	27,93	27,25	27,48	28,69	30,41	31,18	32,49
Ireland	28,10	26,55	25,42	25,01	25,22	25,13	25,13	28,01	29,35	30,89	31,92	29,86
Belgium	29,78	28,79	26,80	25,41	24,34	24,39	25,00	26,27	27,88	29,35	29,83	29,46
United Kingdom	26,14	25,61	24,75	23,74	21,79	22,84	25,26	26,33	26,83	27,28	27,80	27,05
Greece	33,95	34,28	34,18	34,46	34,49	34,39	34,47	34,55	34,50	34,60	34,50	34,47
Luxembourg	35,33	33,80	32,06	31,03	30,24	29,18	29,67	30,93	33,51	35,49	35,82	35,33
Czech Rep.	24,80	24,59	24,32	24,08	23,95	23,84	23,37	23,04	23,14	23,56	23,66	23,55
Estonia	17,78	17,54	17,59	17,43	17,54	17,74	17,74	17,56	18,26	19,9	20,85	22,2
Cyprus	36,39	36,13	36,14	37,02	36,41	35,99	36,53	36,47	36,9	37,38	37,75	37,75
Latvia	13,63	13,91	13,83	13,73	13,32	13,13	13,15	13,24	12,98	13,3	13,66	14,31
Lithuania	15,40	15,50	15,00	11,20	11,00	13,60	13,00	13,20	13,30	13,50	16,10	16,40
Hungary	29,15	28,60	28,46	28,37	28,11	26,21	25,81	26,20	27,13	27,72	27,12	25,78
Malta	41,73	41,22	43,06	42,78	41,85	41,76	39,69	40,38	40,42	41,34	40,82	40,25
Poland	17,70	17,10	16,40	16,33	15,50	14,80	14,60	14,90	15,00	15,30	16,20	16,60
Slovenia	30,12	30,01	29,82	29,60	29,40	28,82	28,86	28,51	29,04	29,54	29,78	29,69
Slovakia	22,28	22,12	21,79	21,38	21,32	21,08	21,10	21,01	21,23	21,49	21,72	21,79

Source: Dutch Dairy Board

Table 5. EU-25 Monthly Milk Prices in Euro (2004)

	Jan 04	Feb 04	Mar 04	Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04
Italy	34,99	34,99	34,99	34,99	34,99	34,99	34,99	34,99	34,99	34,99	35,17	34,87
Finland	35,73	35,56	32,50	32,34	32,05	32,83	36,57	37,34	38,67	37,44	37,59	35,79
Sweden	33,08	32,71	32,18	31,55	31,68	31,52	31,23	31,26	32,58	32,69	32,70	32,20
Portugal	34,66	34,35	33,12	32,92	32,75	32,60	32,60	32,34	32,65	33,84	34,20	34,42
Denmark	30,21	30,20	30,20	29,02	31,18	31,07	31,07	30,79	31,59	31,46	31,49	29,06
France	33,08	32,18	30,78	28,49	28,44	28,29	30,45	32,75	33,67	33,75	33,90	33,34
Netherlands	29,63	28,14	26,57	26,04	26,04	26,04	30,47	31,84	31,95	32,14	32,36	31,71
Germany	29,98	29,08	28,86	28,28	27,99	27,78	27,87	28,42	29,69	30,99	31,50	30,52
Spain	30,62	30,67	30,67	30,98	30,28	30,21	30,03	30,42	30,78	31,25	31,56	31,63
Austria	30,73	30,08	30,11	28,84	27,85	27,98	28,10	28,14	29,01	30,76	31,57	31,58
Ireland	29,35	28,01	27,70	27,29	27,49	27,49	27,80	28,32	30,07	31,30	31,50	30,17
Belgium	30,86	29,56	28,36	27,07	26,44	26,10	26,61	27,59	29,61	31,06	31,48	31,35
United Kingdom	27,11	27,61	27,53	25,78	24,76	25,03	26,80	26,62	27,56	27,27	27,19	27,99
Greece	34,53	34,66	35,10	34,96	35,00	35,00	34,99	35,01	36,71	39,71	36,75	36,82
Luxembourg	34,38	32,34	31,56	31,11	30,27	29,62	30,07	30,47	32,52	34,56	35,11	35,27
Czech Rep.	23,51	23,38	23,50	23,77	24,33	24,61	24,79	24,72	24,99	25,48	25,86	26,51
Estonia	21,07	22,33	25,03	24,74	24,45	24,25	24,04	24,53	24,48	23,83	23,86	24,61
Cyprus	37,65	37,75	37,38	40,53	40,43	40,35	39,06	40,67	40,77	39,35	39,47	41,72
Latvia	14,72	16,28	17,53	17,81	17,57	17,75	17,80	17,98	17,98	17,91	17,70	18,23
Lithuania	15,21	15,05	15,25	14,98	15,81	16,96	16,66	16,62	17,81	18,61	19,29	20,29
Hungary	23,33	23,44	24,41	24,70	24,65	24,34	24,13	24,32	25,21	26,24	26,70	26,73
Malta	40,43	39,94	41,72	41,45	40,55	40,46	40,32	39,95	39,36	39,36	38,44	37,91
Poland	16,40	16,00	16,30	16,50	16,90	17,80	18,70	19,10	19,70	23,40	24,70	25,50
Slovenia	29,53	29,40	29,29	28,68	28,51	27,64	27,47	27,45	27,71	28,13	28,53	28,04
Slovakia	22,31	22,45	22,76	22,82	22,26	22,61	22,68	22,61	22,87	23,35	23,88	24,43

Source: Dutch Dairy Board

Table 6. EU-25 Monthly Milk Prices in Euro (2005)

	Jan 05	Feb 05	Mar 05	Apr 05	May 05	Jun 05	Jul 05	Aug 05	Sep 05	Oct 05	Nov 05	Dec 05
Italy	34,34	34,34	34,34	33,57	33,57	33,57	33,57	33,57	33,57	33,57	33,57	33,57
Finland	34,35	33,98	31,17	31,02	30,68	31,31	34,93	36,07	37,74	38,27	38,41	36,70
Sweden	31,63	31,39	31,38	29,14	28,94	28,81	28,11	28,36	29,06	29,47	28,53	28,80
Portugal	30,20	30,20	28,50	27,94	27,60	27,29	27,15	27,50	28,50	29,20	29,40	29,40
Denmark	29,03	29,02	29,01	28,72	28,75	28,75	28,70	28,69	28,70	29,75	29,89	30,05
France	32,16	31,57	29,98	27,79	27,35	27,89	29,47	31,92	32,61	32,38	32,29	32,22
Netherlands	28,31	27,97	26,23	26,27	26,27	26,27	26,44	31,80	31,80	31,80	31,81	29,27
Germany	29,53	29,15	28,82	27,90	27,44	27,26	27,36	28,03	28,77	29,69	30,19	29,51
Spain	31,61	31,24	30,81	30,48	30,23	29,84	29,76	29,71	30,07	30,04	30,04	30,28
Austria	31,02	30,28	30,17	28,77	27,85	27,71	27,68	28,27	28,77	30,55	31,71	31,66
Ireland	29,45	28,83	27,80	27,39	27,18	26,98	26,88	27,39	28,32	30,69	30,48	29,66
Belgium	29,44	28,33	27,75	26,07	25,84	25,49	25,47	26,80	27,78	29,23	29,60	29,70
United Kingdom	26,04	25,82	25,90	25,36	24,76	25,03	27,05	26,71	28,30	28,88	28,26	27,73
Greece	37,04	37,24	37,00	37,12	37,02	35,00	36,86	35,12	35,26	35,51	35,76	34,71
Luxembourg	33,19	31,99	30,75	29,19	28,43	28,00	28,40	29,78	31,15	32,53	33,30	33,47
Czech Rep.	27,05	27,40	27,60	27,05	26,81	26,84	26,36	26,88	27,20	26,91	27,28	27,49
Estonia	25,80	25,81	25,98	25,55	25,32	25,21	25,04	25,11	25,22	25,26	25,32	25,35
Cyprus	39,86	39,86	39,16	38,92	37,90	39,18	40,32	40,32	40,5	40,79	43,2	41,14
Latvia	18,85	18,63	19,02	19,95	20,23	21,97	21,85	21,91	22,25	22,89	23,56	23,31
Lithuania	20,60	20,90	20,90	19,90	18,90	18,37	17,90	18,24	19,29	20,48	21,05	21,30
Hungary	26,86	27,29	26,89	25,86	24,63	24,29	24,09	25,56	24,66	24,99	25,46	25,55
Malta	38,62	38,75	37,29	37,45	32,84	33,31	33,54	33,77	34,24	34,71	32,42	32,19
Poland	25,60	26,20	25,40	24,00	23,73	23,96	23,57	23,82	24,97	25,28	25,40	26,91
Slovenia	26,44	26,59	26,50	26,25	26,03	25,88	25,46	25,58	25,88	26,42	26,54	27,00
Slovakia	25,07	25,57	25,40	24,29	24,33	24,38	23,85	23,89	24,37	24,04	24,45	25,15

Source: Dutch Dairy Board

Table 7. EU-25 Monthly Milk Prices in Euro (2006)

	Jan 06	Feb 06	Mar 06	Apr 06	May 06	Jun 06	Jul 06	Aug 06	Sep 06	Oct 06	Nov 06	Dec 06
Italy	32,28	32,28	32,28	32,00	32,00	32,00	32,00	32,00	32,00	32,00	32,00	32,00
Finland	35,60	35,47	32,58	32,38	31,95	32,70	36,38	37,38	38,90	39,60	39,93	38,26
Sweden	28,39	28,86	28,38	28,54	28,04	27,70	27,52	27,98	29,07	29,43	29,77	30,16
Portugal	29,20	29,20	26,90	26,50	26,50	26,20	26,20	26,40	26,40	27,40	28,60	29,10
Denmark	30,16	29,74	29,76	28,95	28,42	28,02	27,62	27,88	28,95	29,36	29,65	29,24
France	30,84	30,26	28,46	26,16	26,17	26,87	28,35	30,60	31,45	31,28	30,36	30,48
Netherlands	27,64	27,64	25,73	25,44	25,44	25,29	25,49	30,92	30,92	30,78	30,78	27,66
Germany	27,25	26,75	26,45	26,30	26,15	26,32	26,35	26,70	27,45	28,00	28,00	27,75
Spain	30,32	29,56	29,45	29,16	29,04	29,02	29,10	29,13	29,60	30,06	30,43	30,57
Austria	30,70	30,64	30,05	29,15	28,14	28,06	28,21	29,05	29,72	31,00	32,00	32,72
Ireland	28,11	27,70	26,98	26,46	26,46	25,74	25,30	27,70	27,70	27,70	27,70	29,10
Belgium	28,35	27,54	26,73	25,67	25,38	24,91	24,86	26,30	27,60	28,57	29,27	29,01
United Kingdom	26,49	26,24	25,29	24,29	23,83	23,60	24,23	25,26	26,47	27,20	27,41	27,02
Greece	35,33	35,46	35,39	35,22	34,71	34,55	34,56	34,54	34,54	34,96	35,03	35,21
Luxembourg	31,83	30,18	29,92	28,57	28,56	27,98	28,52	29,69	31,26	32,55	33,50	33,36
Czech Rep.	27,56	27,63	27,36	27,16	27,00	26,62	26,01	26,83	26,11	26,40	26,82	27,20
Estonia	24,63	25,02	24,54	24,31	24,15	23,93	23,74	23,94	24,02	24,46	24,82	24,38
Cyprus	41,12	40,85	40,57	40,57	40,33	40,28	40,48	38,90	38,88	40,55	40,86	41,11
Latvia	24,02	24,09	23,99	23,95	23,55	23,25	22,77	22,61	22,82	23,19	23,70	24,02
Lithuania	21,65	21,47	21,54	20,48	19,66	19,12	18,12	18,61	19,52	20,80	21,60	21,79
Hungary	25,40	24,80	24,15	23,06	23,15	22,28	21,64	22,08	22,20	23,70	25,19	25,63
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	26,62	26,41	25,87	25,16	24,94	24,00	23,93	24,56	24,61	25,48	26,66	26,81
Slovenia	26,78	26,55	26,77	26,01	26,03	25,81	25,54	25,80	26,41	26,92	27,21	27,27
Slovakia	25,11	25,11	25,28	24,78	24,61	24,29	23,73	24,18	24,74	25,30	26,22	27,06

Source: Dutch Dairy Board

Table 8. EU-25 Monthly Milk Prices in Euro (2007)

	Jan 07	Feb 07	Mar 07	Apr 07	May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
Italy	32,80	32,80	32,80	33,16	33,16	33,16	33,16	33,16	35,16	37,65	37,43	38,00
Finland	36,60	36,65	33,71	33,50	33,32	34,00	37,70	38,64	40,24	42,82	42,96	40,95
Sweden	29,30	29,36	28,44	28,32	28,63	28,00	28,20	29,72	31,88	36,08	39,01	38,69
Portugal	29,10	29,10	28,20	27,50	28,10	28,10	28,30	30,30	35,00	37,40	39,40	39,40
Denmark	29,11	29,24	28,98	28,86	28,18	27,65	27,95	29,83	32,77	36,89	40,24	40,10
France	30,44	29,93	28,42	26,34	26,28	27,21	30,86	32,47	33,65	37,80	37,97	36,90
Netherlands	27,73	27,93	26,03	26,34	26,34	27,40	25,60	37,36	41,32	45,09	40,00	42,73
Germany	27,05	27,15	27,15	27,40	27,50	29,10	31,85	35,00	37,00	40,50	41,00	40,80
Spain	30,41	30,25	30,04	29,73	29,97	31,32	32,90	36,20	40,63	42,98	44,64	45,10
Austria	31,40	31,31	30,68	29,97	29,51	29,82	31,63	32,93	37,08	38,75	42,00	42,53
Ireland	28,30	27,18	25,64	27,29	29,76	32,64	34,50	38,50	42,30	44,60	45,40	43,25
Belgium	28,10	27,78	27,51	27,36	28,63	32,71	35,85	38,48	40,57	43,20	43,20	42,15
United Kingdom	26,41	25,69	25,41	24,99	24,96	26,07	28,32	29,70	32,28	37,00	37,08	35,25
Greece	35,20	35,27	35,09	35,23	35,37	36,26	36,70	38,09	40,58	44,10	45,84	46,36
Luxembourg	31,75	30,21	29,81	29,51	30,36	31,60	33,31	37,06	41,25	45,67	46,42	45,97
Czech Rep.	27,32	26,90	27,03	27,08	26,90	26,57	27,06	28,24	29,95	33,38	36,35	36,96
Estonia	24,63	24,25	24,69	24,72	24,75	24,71	25,62	26,22	27,95	30,75	31,57	32,96
Cyprus	41,00	40,90	40,48	41,00	40,63	41,72	40,40	40,40	41,90	42,23	43,26	43,52
Latvia	23,92	24,03	23,68	24,06	24,12	23,84	23,83	25,43	27,45	30,07	32,39	33,88
Lithuania	21,79	22,28	22,01	21,70	21,24	20,37	20,80	21,19	24,18	30,08	33,34	33,28
Hungary	30,81	26,45	26,63	26,98	26,54	26,04	26,56	26,61	28,43	31,51	32,59	33,64
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	26,49	26,52	26,62	26,94	27,26	27,02	28,09	28,84	30,90	33,47	35,69	36,70
Slovenia	27,29	27,14	27,10	26,74	26,46	26,23	26,55	27,05	28,40	29,54	31,58	32,29
Slovakia	30,38	27,45	28,24	27,77	27,57	27,15	27,75	27,82	28,91	30,90	32,68	31,94

Source: Dutch Dairy Board

Table 9. EU-25 Monthly Milk Prices in Euro (2008)

	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08	Sep 08	Oct 08	Nov 08	Dec 08
Italy	38,00	38,00	37,58	38,09	38,09	38,09	39,59	39,59	39,59	38,59	38,09	35,78
Finland	42,15	41,92	38,95	38,84	43,42	44,17	47,98	49,00	50,63	51,17	51,10	49,08
Sweden	37,87	37,53	38,15	35,72	35,50	33,62	35,38	37,23	38,16	36,43	34,08	31,90
Portugal	39,40	39,50	38,70	38,70	38,40	34,90	34,80	35,50	34,80	35,10	33,10	33,00
Denmark	39,84	39,58	38,77	36,47	34,98	32,44	35,53	38,87	39,56	38,47	36,50	35,03
France	40,93	40,22	38,51	33,61	33,46	34,31	35,89	37,69	38,77	34,38	34,21	33,62
Netherlands	38,97	38,83	36,29	35,78	34,50	32,21	32,52	37,99	37,45	37,13	36,44	32,95
Germany	38,50	37,00	35,30	34,00	34,00	32,80	33,60	34,10	33,40	31,80	29,80	27,80
Spain	44,71	42,63	40,42	38,62	37,69	37,14	36,93	36,67	35,94	35,41	35,02	34,08
Austria	42,46	42,02	41,52	40,88	39,34	38,19	37,16	37,08	38,08	38,09	36,27	34,93
Ireland	41,09	40,67	39,64	35,52	34,29	32,85	33,57	33,88	33,26	33,98	33,98	33,71
Belgium	39,50	37,58	36,32	34,65	32,43	30,35	30,06	30,09	29,46	29,06	27,65	27,21
United Kingdom	33,54	32,54	31,41	30,69	30,28	30,66	31,80	31,74	33,20	33,79	31,71	26,90
Greece	46,34	45,26	44,28	43,80	42,88	43,15	42,95	42,89	42,72	41,85	41,26	40,98
Luxembourg	42,66	41,74	39,27	37,46	36,44	35,96	36,04	36,66	37,50	37,92	35,99	34,12
Czech Rep.	37,54	38,30	37,45	35,71	33,90	34,26	33,41	31,62	30,74	29,31	27,55	25,46
Estonia	33,46	33,61	33,55	31,18	29,16	28,89	28,13	28,06	28,44	27,81	27,53	26,40
Cyprus	49,46	48,96	48,90	48,40	48,73	48,54	48,32	50,47	50,75	50,88	51,05	51,07
Latvia	34,05	34,19	32,06	28,46	26,70	25,70	25,69	25,28	25,53	25,45	24,94	23,58
Lithuania	33,11	32,21	29,25	26,12	24,07	23,17	22,96	22,71	23,72	23,86	22,75	21,48
Hungary	36,87	35,80	34,53	33,48	32,42	32,28	33,09	31,93	31,57	29,27	28,09	26,76
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	34,30	33,80	33,22	32,43	31,46	30,73	31,14	30,32	29,46	27,16	25,78	24,02
Slovenia	33,41	33,54	33,30	32,92	32,78	32,37	32,42	32,42	32,95	33,28	33,30	33,04
Slovakia	35,22	35,22	35,61	33,87	33,44	33,28	32,32	31,61	31,24	30,45	27,99	27,30

Source: Dutch Dairy Board

Table 10. EU-25 Annual Milk Production (1000 tones)

	2003	2004	2005	2006	2007	2008
Italy	10.750,10	10.727,58	10.975,00	10.989,11	11.061,75	11.285,91
Finland	2.471,69	2.448,90	2.433,20	2.413,00	2.355,60	2.310,90
Sweden	3.253,00	3.275,00	3.206,00	3.130,27	2.985,86	2.986,62
Portugal	1.951,93	2.010,11	2.061,21	1.983,76	1.968,63	2.021,69
Denmark	4.658,80	4.568,40	4.597,80	4.627,20	4.618,60	4.656,00
France	24.667,25	24.452,40	24.675,38	24.366,69	23.425,69	24.516,32
Netherlands	11.074,96	10.904,66	10.845,53	10.994,74	11.128,36	11.620,46
Germany	28.533,32	28.244,73	28.452,95	27.994,97	28.402,77	28.656,26
Spain	6.636,59	6.575,60	6.561,30	6.377,50	6.319,70	6.339,90
Austria	3.229,90	3.137,30	3.113,70	3.146,70	3.155,10	3.195,90
Ireland	5.397,20	5.307,10	5.100,06	5.271,78	5.267,80	5.129,50
Belgium	3.127,00	3.120,00	3.082,00	2.917,00	2.943,00	2.892,00
United Kingdom	15.019,80	14.643,30	14.573,90	14.348,05	14.073,00	13.722,11
Greece	767,80	762,20	761,30	763,80	774,00	768,90
Luxembourg	267,11	268,54	269,71	268,07	274,24	277,67
Czech Republic	2.725,38	2.675,00	2.812,70	2.767,13	2.784,23	2.801,32
Estonia	611,00	651,90	670,00	691,50	691,80	693,60
Cyprus	162,34	151,22	147,31	148,63	144,10	152,26
Latvia	783,10	784,00	806,80	812,10	838,40	832,10
Lithuania	1.788,70	1.841,70	1.853,60	1.884,60	1.931,20	1.879,12
Hungary	2.030,69	1.894,61	1.928,74	1.844,07	1.842,25	1.840,49
Malta	40,02	41,99	41,47	41,02	40,59	39,91
Poland	11.892,00	11.822,00	11.923,00	11.982,00	12.096,00	12.425,00
Slovenia	664,40	650,40	659,03	642,26	666,47	653,68
Slovakia	1.142,00	1.079,00	1.099,83	1.091,74	1.074,65	1.057,30
SUM OF PRODUCTION	**143.646,08**	**142.037,64**	**142.651,52**	**141.497,69**	**140.863,79**	**142.754,92**

Source: Dutch Dairy Board

Table 11. Milk Price Weights based on the annual production

	2003	2004	2005	2006	2007	2008
Italy	7,48%	7,55%	7,69%	7,77%	7,85%	7,91%
Finland	1,72%	1,72%	1,71%	1,71%	1,67%	1,62%
Sweden	2,26%	2,31%	2,25%	2,21%	2,12%	2,09%
Portugal	1,36%	1,42%	1,44%	1,40%	1,40%	1,42%
Denmark	3,24%	3,22%	3,22%	3,27%	3,28%	3,26%
France	17,17%	17,22%	17,30%	17,22%	16,63%	17,17%
Netherlands	7,71%	7,68%	7,60%	7,77%	7,90%	8,14%
Germany	19,86%	19,89%	19,95%	19,78%	20,16%	20,07%
Spain	4,62%	4,63%	4,60%	4,51%	4,49%	4,44%
Austria	2,25%	2,21%	2,18%	2,22%	2,24%	2,24%
Ireland	3,76%	3,74%	3,58%	3,73%	3,74%	3,59%
Belgium	2,18%	2,20%	2,16%	2,06%	2,09%	2,03%
United Kingdom	10,46%	10,31%	10,22%	10,14%	9,99%	9,61%
Greece	0,53%	0,54%	0,53%	0,54%	0,55%	0,54%
Luxembourg	0,19%	0,19%	0,19%	0,19%	0,19%	0,19%
Czech Republic	1,90%	1,88%	1,97%	1,96%	1,98%	1,96%
Estonia	0,43%	0,46%	0,47%	0,49%	0,49%	0,49%
Cyprus	0,11%	0,11%	0,10%	0,11%	0,10%	0,11%
Latvia	0,55%	0,55%	0,57%	0,57%	0,60%	0,58%
Lithuania	1,25%	1,30%	1,30%	1,33%	1,37%	1,32%
Hungary	1,41%	1,33%	1,35%	1,30%	1,31%	1,29%
Malta	0,03%	0,03%	0,03%	0,03%	0,03%	0,03%
Poland	8,28%	8,32%	8,36%	8,47%	8,59%	8,70%
Slovenia	0,46%	0,46%	0,46%	0,45%	0,47%	0,46%
Slovakia	0,80%	0,76%	0,77%	0,77%	0,76%	0,74%

Table 12. EU-25 Weighted Prices in Euro (2003)

	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jun 03	Jul 03	Aug 03	Sep 03	Oct 03	Nov 03	Dec 03
Italy	2,68764	2,66522	2,66522	2,62835	2,61533	2,61533	2,61533	2,61533	2,61533	2,61533	2,61678	2,61822
Finland	0,62736	0,62357	0,5692	0,56748	0,56542	0,56266	0,60723	0,63459	0,66848	0,68018	0,6838	0,68517
Sweden	0,75841	0,76317	0,75162	0,75751	0,75479	0,75796	0,75003	0,75547	0,79215	0,79215	0,78106	0,76611
Portugal	0,45902	0,45698	0,45508	0,44353	0,43198	0,4298	0,43103	0,42763	0,43035	0,46228	0,46717	0,46826
Denmark	1,12022	1,11373	1,1066	1,08908	1,05925	1,04108	1,03654	1,03589	1,06768	1,07287	0,9813	0,98064
France	5,5037	5,36633	5,03147	4,74812	4,75156	4,70519	5,00399	5,26844	5,54148	5,65482	5,6531	5,35642
Netherlands	2,36	2,31605	2,22199	2,22199	2,24666	2,24666	2,28213	2,66608	2,66608	2,6869	2,71311	2,53733
Germany	6,13786	6,07827	5,91936	5,77237	5,64524	5,50222	5,51216	5,5936	5,90546	6,25108	6,34246	6,10608
Spain	1,32643	1,32042	1,30194	1,30333	1,29501	1,29825	1,29825	1,28947	1,29963	1,35692	1,39111	1,4156
Austria	0,70761	0,70154	0,69884	0,66848	0,62981	0,62801	0,61272	0,61789	0,6451	0,68377	0,70109	0,73054
Ireland	1,0558	0,99756	0,9551	0,9397	0,94759	0,94421	0,94421	1,05242	1,10276	1,16063	1,19933	1,12193
Belgium	0,64827	0,62672	0,5834	0,55314	0,52985	0,53094	0,54422	0,57187	0,60691	0,63891	0,64936	0,64131
United Kingdom	2,73323	2,67781	2,58789	2,48228	2,27839	2,38818	2,64121	2,7531	2,80538	2,85243	2,9068	2,82838
Greece	0,18147	0,18323	0,18269	0,18419	0,18435	0,18382	0,18424	0,18467	0,18441	0,18494	0,18441	0,18424
Luxembourg	0,06571	0,06284	0,05961	0,0577	0,05623	0,05426	0,05518	0,05751	0,06232	0,066	0,06662	0,06569
Czech Rep.	0,47053	0,46654	0,46142	0,45687	0,4544	0,45231	0,4434	0,43714	0,43903	0,447	0,4489	0,44681
Estonia	0,07563	0,07461	0,07482	0,07414	0,07461	0,07546	0,07546	0,07469	0,07767	0,08464	0,08869	0,09443
Cyprus	0,04113	0,04083	0,04084	0,04184	0,04115	0,04067	0,04128	0,04122	0,0417	0,04224	0,04266	0,04266
Latvia	0,07431	0,07583	0,0754	0,07485	0,07262	0,07158	0,07169	0,07218	0,07076	0,07251	0,07447	0,07801
Lithuania	0,19176	0,19301	0,18678	0,13946	0,13697	0,16935	0,16188	0,16437	0,16561	0,1681	0,20048	0,20421
Hungary	0,41212	0,40429	0,40229	0,40104	0,39739	0,37056	0,36482	0,37041	0,38355	0,39193	0,38336	0,36445
Malta	0,01163	0,01148	0,012	0,01192	0,01166	0,01163	0,01106	0,01125	0,01126	0,01152	0,01137	0,01121
Poland	1,46533	1,41565	1,3577	1,35191	1,2832	1,22524	1,20869	1,23352	1,2418	1,26664	1,34115	1,37426
Slovenia	0,13931	0,1388	0,13793	0,13691	0,13598	0,1333	0,13348	0,13187	0,13432	0,13663	0,13774	0,13732
Slovakia	0,17713	0,17588	0,17327	0,17001	0,1695	0,16759	0,16775	0,16703	0,16878	0,17085	0,17268	0,17323

Table 13. EU-25 Weighted Prices in Euro (2004)

	Jan 04	Feb 04	Mar 04	Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04
Italy	2,64233	2,64233	2,64233	2,64233	2,64233	2,64233	2,64267	2,64267	2,64233	2,64233	2,6562	2,63358
Finland	0,61603	0,6131	0,56034	0,55758	0,55258	0,56603	0,63051	0,64379	0,66672	0,64551	0,6481	0,61706
Sweden	0,76262	0,75431	0,74206	0,72755	0,73054	0,7268	0,72009	0,72088	0,75116	0,75365	0,75388	0,7424
Portugal	0,49051	0,48612	0,46871	0,46588	0,46348	0,46136	0,46136	0,45768	0,46206	0,4789	0,484	0,48711
Denmark	0,9717	0,97126	0,97137	0,93325	1,00288	0,9994	0,99923	0,99044	1,01617	1,01188	1,01277	0,93468
France	5,69487	5,53993	5,29891	4,90468	4,89607	4,87025	5,2421	5,63806	5,79644	5,81021	5,83603	5,73963
Netherlands	2,27479	2,1604	2,03987	1,99918	1,99918	1,99918	2,33928	2,44446	2,45291	2,46749	2,48438	2,43448
Germany	5,96164	5,78269	5,73894	5,62361	5,56594	5,52418	5,54228	5,65143	5,90399	6,1625	6,26392	6,06904
Spain	1,41755	1,41987	1,41987	1,43426	1,40186	1,39862	1,39024	1,40829	1,42496	1,44672	1,46107	1,46431
Austria	0,67876	0,6644	0,66507	0,63701	0,61515	0,61802	0,62067	0,62155	0,64079	0,67938	0,6972	0,6976
Ireland	1,09664	1,04657	1,03498	1,01966	1,02714	1,02714	1,03872	1,05815	1,12354	1,1695	1,17697	1,12728
Belgium	0,67787	0,64932	0,62296	0,59462	0,58078	0,57332	0,58452	0,60604	0,65042	0,68227	0,69149	0,68864
United Kingdom	2,7949	2,84645	2,8382	2,65779	2,55273	2,58057	2,76294	2,74439	2,84129	2,8114	2,80315	2,88563
Greece	0,18527	0,18601	0,18833	0,18761	0,18782	0,18783	0,18777	0,18788	0,19699	0,21309	0,19721	0,19758
Luxembourg	0,06501	0,06114	0,05966	0,05881	0,05723	0,05601	0,05685	0,05761	0,06148	0,06534	0,06638	0,06668
Czech Rep.	0,44276	0,44032	0,44258	0,44766	0,45821	0,46348	0,46687	0,46555	0,47064	0,47987	0,48702	0,49926
Estonia	0,0967	0,10249	0,11488	0,11355	0,11222	0,1113	0,11034	0,11258	0,11235	0,10937	0,10951	0,11295
Cyprus	0,04008	0,04019	0,0398	0,04315	0,04304	0,04296	0,04159	0,0433	0,04341	0,04189	0,04202	0,04442
Latvia	0,08125	0,08986	0,09676	0,09831	0,09698	0,09797	0,09825	0,09924	0,09924	0,09886	0,0977	0,10062
Lithuania	0,19722	0,19514	0,19774	0,19424	0,205	0,21991	0,21602	0,2155	0,23093	0,2413	0,25012	0,26309
Hungary	0,31122	0,3127	0,32567	0,32946	0,32874	0,32464	0,32187	0,32445	0,33624	0,34995	0,35609	0,35659
Malta	0,01195	0,01181	0,01233	0,01225	0,01199	0,01196	0,01192	0,01181	0,01164	0,01164	0,01136	0,01121
Poland	1,365	1,33171	1,35668	1,37333	1,40662	1,48153	1,55644	1,58973	1,63967	1,94762	2,05583	2,12241
Slovenia	0,13522	0,13463	0,13412	0,13133	0,13055	0,12657	0,12579	0,1257	0,12689	0,12881	0,13064	0,1284
Slovakia	0,16948	0,17054	0,1729	0,17335	0,1691	0,17176	0,17229	0,17176	0,17373	0,17738	0,18141	0,18559

Table 14. EU-25 Weighted Prices in Euro (2005)

	Jan 05	Feb 05	Mar 05	Apr 05	May 05	Jun 05	Jul 05	Aug 05	Sep 05	Oct 05	Nov 05	Dec 05
Italy	2,64197	2,64197	2,64197	2,58273	2,58273	2,58273	2,58273	2,58273	2,58273	2,58273	2,58273	2,58273
Finland	0,58591	0,5796	0,53167	0,52911	0,52331	0,53405	0,5958	0,61524	0,64373	0,65277	0,65516	0,62599
Sweden	0,71086	0,70547	0,70525	0,6549	0,65041	0,64749	0,63175	0,63737	0,6531	0,66232	0,64119	0,64726
Portugal	0,43637	0,43637	0,4118	0,40371	0,3988	0,39432	0,3923	0,39735	0,4118	0,42192	0,42481	0,42481
Denmark	0,93567	0,93534	0,93502	0,92567	0,92664	0,92664	0,92503	0,92471	0,92503	0,95887	0,96338	0,96854
France	5,56293	5,46087	5,18584	4,80702	4,73091	4,82432	5,09762	5,52141	5,64077	5,60098	5,58542	5,57331
Netherlands	2,15236	2,12651	1,99422	1,99726	1,99726	1,99726	2,01018	2,41769	2,41769	2,41769	2,41846	2,22534
Germany	5,88999	5,81419	5,74837	5,56487	5,47312	5,43722	5,45716	5,5908	5,7384	5,9219	6,02163	5,886
Spain	1,45391	1,43689	1,41712	1,40194	1,39044	1,3725	1,36882	1,36652	1,38308	1,3817	1,3817	1,39274
Austria	0,67702	0,66093	0,65853	0,62797	0,60789	0,60483	0,60418	0,61706	0,62797	0,66682	0,69214	0,69105
Ireland	1,05289	1,03073	0,9939	0,97924	0,97174	0,96459	0,96101	0,97924	1,01249	1,09723	1,08972	1,0604
Belgium	0,63605	0,61207	0,59954	0,56324	0,55828	0,55071	0,55028	0,57902	0,60019	0,63152	0,63951	0,64167
United Kingdom	2,66036	2,63788	2,64606	2,59089	2,52959	2,55717	2,76355	2,72881	2,89125	2,95051	2,88716	2,83302
Greece	0,19767	0,19874	0,19746	0,1981	0,19757	0,18679	0,19671	0,18743	0,18817	0,18951	0,19084	0,18524
Luxembourg	0,06275	0,06048	0,05814	0,05519	0,05375	0,05294	0,0537	0,0563	0,0589	0,0615	0,06296	0,06328
Czech Rep.	0,53335	0,54025	0,5442	0,53335	0,52862	0,52921	0,51975	0,53	0,53631	0,53059	0,53789	0,54203
Estonia	0,12118	0,12122	0,12202	0,12	0,11892	0,11841	0,11761	0,11794	0,11845	0,11864	0,11892	0,11906
Cyprus	0,04116	0,04116	0,04044	0,04019	0,03914	0,04046	0,04164	0,04164	0,04182	0,04212	0,04461	0,04248
Latvia	0,10661	0,10537	0,10757	0,11283	0,11442	0,12426	0,12358	0,12392	0,12584	0,12946	0,13325	0,13184
Lithuania	0,26767	0,27157	0,27157	0,25858	0,24558	0,2387	0,23259	0,23701	0,25065	0,26612	0,27352	0,27677
Hungary	0,36316	0,36898	0,36357	0,34964	0,33301	0,32842	0,32571	0,34553	0,33342	0,33788	0,34424	0,34545
Malta	0,01123	0,01126	0,01084	0,01089	0,00955	0,00968	0,00975	0,00982	0,00995	0,01009	0,00942	0,00936
Poland	2,13968	2,18983	2,12297	2,00595	1,98338	2,00261	1,97001	1,99091	2,08703	2,11294	2,12297	2,24917
Slovenia	0,12215	0,12284	0,12243	0,12127	0,12025	0,11956	0,11762	0,11818	0,11956	0,12206	0,1226	0,12474
Slovakia	0,19329	0,19714	0,19583	0,18727	0,18758	0,18797	0,18388	0,18419	0,18789	0,18535	0,18851	0,1939

Table 15. EU-25 Weighted Prices in Euro (2006)

	Jan 06	Feb 06	Mar 06	Apr 06	May 06	Jun 06	Jul 06	Aug 06	Sep 06	Oct 06	Nov 06	Dec 06
Italy	2,50696	2,50696	2,50696	2,48521	2,48521	2,48521	2,48521	2,48521	2,48521	2,48521	2,48521	2,48521
Finland	0,6071	0,60488	0,5556	0,55219	0,54485	0,55764	0,6204	0,63745	0,66337	0,67531	0,68094	0,65246
Sweden	0,62806	0,63845	0,62783	0,63137	0,62031	0,61279	0,60881	0,61899	0,6431	0,65106	0,65858	0,66721
Portugal	0,40938	0,40938	0,37713	0,37152	0,37152	0,36732	0,36732	0,37012	0,37012	0,38414	0,40096	0,40797
Denmark	0,98628	0,97255	0,9732	0,94671	0,92938	0,9163	0,90322	0,91172	0,94671	0,96012	0,9696	0,95619
France	5,31082	5,21094	4,90097	4,5049	4,50662	4,62716	4,88203	5,26949	5,41587	5,38659	5,22816	5,24883
Netherlands	2,1477	2,1477	1,99929	1,97675	1,97675	1,9651	1,98064	2,40256	2,40256	2,39169	2,39169	2,14925
Germany	5,39135	5,29242	5,23307	5,20339	5,17371	5,20735	5,21328	5,28253	5,43091	5,53973	5,53973	5,49027
Spain	1,36657	1,33231	1,32735	1,31428	1,30887	1,30797	1,31158	1,31293	1,33411	1,35485	1,37152	1,37783
Austria	0,68272	0,68139	0,66827	0,64825	0,62579	0,62401	0,62735	0,64603	0,66093	0,68939	0,71163	0,72764
Ireland	1,04729	1,03202	1,00519	0,98582	0,98582	0,959	0,9426	1,03202	1,03202	1,03202	1,03202	1,08418
Belgium	0,58444	0,56774	0,55104	0,52919	0,52321	0,51352	0,51249	0,54218	0,56898	0,58898	0,60341	0,59805
United Kingdom	2,68612	2,66077	2,56444	2,46304	2,41639	2,39307	2,45695	2,5614	2,68409	2,75812	2,77941	2,73986
Greece	0,19071	0,19141	0,19103	0,19012	0,18736	0,1865	0,18655	0,18645	0,18645	0,18871	0,18909	0,19006
Luxembourg	0,0603	0,05718	0,05668	0,05413	0,05411	0,05301	0,05403	0,05625	0,05922	0,06167	0,06347	0,0632
Czech Rep.	0,53896	0,54033	0,53505	0,53114	0,52801	0,52058	0,50865	0,52476	0,51061	0,51628	0,52449	0,53192
Estonia	0,12037	0,12227	0,11993	0,1188	0,11802	0,11695	0,11602	0,11699	0,11739	0,11954	0,1213	0,11915
Cyprus	0,04319	0,04291	0,04261	0,04261	0,04236	0,04231	0,04252	0,04086	0,04084	0,04259	0,04292	0,04318
Latvia	0,13786	0,13826	0,13769	0,13746	0,13516	0,13344	0,13068	0,12977	0,13097	0,13309	0,13602	0,13786
Lithuania	0,28836	0,28596	0,28689	0,27277	0,26185	0,25466	0,24134	0,24787	0,25999	0,27703	0,28769	0,29022
Hungary	0,33103	0,32321	0,31474	0,30053	0,3017	0,29036	0,28202	0,28776	0,28932	0,30887	0,32829	0,33402
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	2,25418	2,23639	2,19067	2,13054	2,11191	2,03232	2,02639	2,07974	2,08397	2,15764	2,25756	2,27027
Slovenia	0,12155	0,12051	0,12151	0,11806	0,11815	0,11715	0,11593	0,11711	0,11988	0,12219	0,12351	0,12378
Slovakia	0,19374	0,19374	0,19505	0,19119	0,18988	0,18741	0,18309	0,18656	0,19088	0,1952	0,2023	0,20878

Table 16. EU-25 Weighted Prices in Euro (2007)

	Jan 07	Feb 07	Mar 07	Apr 07	May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
Italy	2,57572	2,57572	2,57572	2,60399	2,60399	2,60399	2,60399	2,60399	2,76104	2,95658	2,9393	2,98406
Finland	0,61204	0,61288	0,56372	0,56021	0,55719	0,56857	0,63044	0,64616	0,67291	0,71606	0,7184	0,68479
Sweden	0,62107	0,62234	0,60284	0,60029	0,60686	0,59351	0,59775	0,62997	0,67575	0,76478	0,82689	0,8201
Portugal	0,40668	0,40668	0,39411	0,38432	0,39271	0,39271	0,3955	0,42346	0,48914	0,52268	0,55063	0,55063
Denmark	0,95445	0,95871	0,95019	0,94625	0,92396	0,90658	0,91642	0,97806	1,07445	1,20954	1,31938	1,31479
France	5,06218	4,97737	4,72625	4,38035	4,37037	4,52503	5,13203	5,39977	5,59601	6,28615	6,31442	6,13648
Netherlands	2,19069	2,20649	2,05639	2,08088	2,08088	2,16462	2,02242	2,95147	3,26432	3,56215	3,16003	3,37571
Germany	5,45417	5,47433	5,47433	5,52474	5,5449	5,86752	6,42201	7,05715	7,46042	8,16613	8,26695	8,22662
Spain	1,36431	1,35713	1,34771	1,3338	1,34457	1,40514	1,47602	1,62407	1,82282	1,92825	2,00272	2,02336
Austria	0,70325	0,70129	0,68718	0,67128	0,66097	0,66792	0,70846	0,73757	0,83053	0,86793	0,94073	0,9526
Ireland	1,05832	1,01643	0,95884	1,02055	1,11292	1,22062	1,29018	1,43976	1,58187	1,66788	1,6978	1,61739
Belgium	0,58708	0,58039	0,57475	0,57162	0,59815	0,68339	0,749	0,80394	0,84761	0,90256	0,90256	0,88062
United Kingdom	2,63849	2,56656	2,53859	2,49663	2,49363	2,60452	2,82931	2,96718	3,22493	3,69649	3,70448	3,52165
Greece	0,19341	0,1938	0,19281	0,19358	0,19435	0,19924	0,20165	0,20929	0,22297	0,24231	0,25188	0,25473
Luxembourg	0,06181	0,05881	0,05804	0,05745	0,05911	0,06152	0,06485	0,07215	0,08031	0,08891	0,09037	0,0895
Czech Rep.	0,53999	0,53169	0,53426	0,53525	0,53169	0,52517	0,53485	0,55817	0,59197	0,65977	0,71847	0,73053
Estonia	0,12096	0,1191	0,12126	0,1214	0,12155	0,12135	0,12582	0,12877	0,13727	0,15102	0,15504	0,16187
Cyprus	0,04194	0,04184	0,04141	0,04194	0,04156	0,04268	0,04133	0,04133	0,04286	0,0432	0,04425	0,04452
Latvia	0,14237	0,14302	0,14094	0,14323	0,14356	0,14189	0,14183	0,15136	0,16338	0,17897	0,19278	0,20165
Lithuania	0,29873	0,30545	0,30175	0,2975	0,29119	0,27927	0,28516	0,29051	0,3315	0,41239	0,45708	0,45626
Hungary	0,40294	0,34592	0,34827	0,35285	0,3471	0,34056	0,34736	0,34801	0,37181	0,4121	0,42622	0,43995
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	2,2747	2,27728	2,28586	2,31334	2,34082	2,32021	2,41209	2,4765	2,65339	2,87408	3,06471	3,15144
Slovenia	0,12912	0,12841	0,12822	0,12652	0,12519	0,1241	0,12562	0,12798	0,13437	0,13976	0,14941	0,15277
Slovakia	0,23173	0,20942	0,21544	0,21186	0,21033	0,20713	0,2117	0,21224	0,22055	0,23574	0,24932	0,24364

Table 17. EU-25 Weighted Prices in Euro (2008)

	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08	Sep 08	Oct 08	Nov 08	Dec 08
Italy	3,0042	3,0042	2,971	3,01132	3,01132	3,01132	3,1299	3,1299	3,1299	3,05085	3,01132	2,82869
Finland	0,68232	0,6786	0,63052	0,62874	0,70288	0,71502	0,77669	0,79321	0,81959	0,82833	0,8272	0,7945
Sweden	0,79229	0,78518	0,79815	0,74731	0,74271	0,70337	0,7402	0,7789	0,79836	0,76216	0,713	0,66739
Portugal	0,55798	0,5594	0,54807	0,54807	0,54382	0,49425	0,49284	0,50275	0,49284	0,49708	0,46876	0,46734
Denmark	1,2994	1,29092	1,2645	1,18948	1,14088	1,05804	1,15882	1,26776	1,29026	1,25471	1,19046	1,14252
France	7,0292	6,90727	6,6136	5,77208	5,74632	5,8923	6,16365	6,47277	6,65825	5,90432	5,87513	5,7738
Netherlands	3,17222	3,16082	2,95406	2,91254	2,80835	2,62194	2,64718	3,09244	3,04848	3,02244	2,96627	2,68218
Germany	7,72839	7,42729	7,08603	6,82507	6,82507	6,58419	6,74478	6,84515	6,70463	6,38345	5,98198	5,5805
Spain	1,98562	1,89324	1,7951	1,71516	1,67385	1,64943	1,6401	1,62855	1,59613	1,5726	1,55528	1,51353
Austria	0,95057	0,94072	0,92952	0,91519	0,88072	0,85497	0,83191	0,83012	0,85251	0,85273	0,81199	0,78199
Ireland	1,47645	1,46136	1,42435	1,27631	1,23212	1,18037	1,20624	1,21738	1,19511	1,22098	1,22098	1,21144
Belgium	0,80021	0,76131	0,73579	0,70196	0,65698	0,61485	0,60897	0,60958	0,59682	0,58871	0,56015	0,55123
United Kingdom	3,22398	3,12786	3,01924	2,95003	2,91062	2,94715	3,05673	3,05096	3,1913	3,24801	3,04808	2,58572
Greece	0,24959	0,24378	0,2385	0,23591	0,23096	0,23241	0,23134	0,23101	0,2301	0,22541	0,22223	0,22072
Luxembourg	0,08298	0,08119	0,07638	0,07286	0,07088	0,06995	0,0701	0,07131	0,07294	0,07376	0,07	0,06637
Czech Rep.	0,73666	0,75157	0,73489	0,70075	0,66523	0,67229	0,65561	0,62049	0,60322	0,57516	0,54062	0,49961
Estonia	0,16257	0,1633	0,16301	0,15149	0,14168	0,14037	0,13667	0,13633	0,13818	0,13512	0,13376	0,12827
Cyprus	0,05275	0,05222	0,05216	0,05162	0,05197	0,05177	0,05153	0,05383	0,05413	0,05427	0,05445	0,05447
Latvia	0,19847	0,19929	0,18687	0,16589	0,15563	0,1498	0,14974	0,14735	0,14881	0,14834	0,14537	0,13744
Lithuania	0,43584	0,42399	0,38503	0,34382	0,31684	0,30499	0,30223	0,29894	0,31223	0,31408	0,29946	0,28275
Hungary	0,47535	0,46156	0,44518	0,43165	0,41798	0,41617	0,42662	0,41166	0,40702	0,37737	0,36215	0,34501
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	2,98538	2,94186	2,89138	2,82262	2,73819	2,67466	2,71034	2,63897	2,56412	2,36393	2,24382	2,09064
Slovenia	0,15299	0,15358	0,15248	0,15074	0,1501	0,14822	0,14845	0,14845	0,15088	0,15239	0,15248	0,15129
Slovakia	0,26085	0,26085	0,26374	0,25085	0,24767	0,24648	0,23937	0,23412	0,23138	0,22552	0,20731	0,20219

Table 18. MPWA & MPI (2003-2008)

MONTH	MPWA	MPI PRICES	MONTH	MPWA	MPI PRICES
Jan 03	29,43	**100,00**	Jan 06	28,64	**97,29**
Feb 03	28,95	**98,37**	Feb 06	28,31	**96,19**
Mar 03	28,01	**95,18**	Mar 06	27,48	**93,38**
Apr 03	27,28	**92,68**	Apr 06	26,70	**90,72**
May 03	26,77	**90,95**	May 06	26,52	**90,10**
Jun 03	26,61	**90,40**	Jun 06	26,47	**89,94**
Jul 03	27,20	**92,41**	Jul 06	26,80	**91,06**
Aug 03	28,23	**95,91**	Aug 06	28,05	**95,29**
Sep 03	29,13	**98,97**	Sep 06	28,63	**97,27**
Oct 03	29,95	**101,77**	Oct 06	29,02	**98,60**
Nov 03	30,24	**102,74**	Nov 06	29,13	**98,97**
Dec 03	29,43	**100,00**	Dec 06	28,90	**98,19**
Jan 04	29,18	**99,15**	Jan 07	28,67	**97,40**
Feb 04	28,65	**97,36**	Feb 07	28,41	**96,53**
Mar 04	28,19	**95,76**	Mar 07	27,82	**94,52**
Apr 04	27,36	**92,96**	Apr 07	27,57	**93,67**
May 04	27,24	**92,55**	May 07	27,70	**94,11**
Jun 04	27,28	**92,70**	Jun 07	28,57	**97,06**
Jul 04	28,34	**96,29**	Jul 07	30,27	**102,83**
Aug 04	29,03	**98,65**	Aug 07	32,88	**111,71**
Sep 04	29,88	**101,51**	Sep 07	35,25	**119,78**
Oct 04	30,63	**104,06**	Oct 07	38,69	**131,44**
Nov 04	30,95	**105,17**	Nov 07	39,14	**133,00**
Dec 04	30,61	**104,00**	Dec 07	39,02	**132,56**
Jan 05	29,56	**100,42**	Jan 08	38,50	**130,80**
Feb 05	29,31	**99,58**	Feb 08	37,73	**128,20**
Mar 05	28,63	**97,26**	Mar 08	36,36	**123,54**
Apr 05	27,62	**93,85**	Apr 08	34,57	**117,46**
May 05	27,27	**92,67**	May 08	34,06	**115,74**
Jun 05	27,33	**92,87**	Jun 08	33,43	**113,60**
Jul 05	27,83	**94,57**	Jul 08	34,32	**116,61**
Aug 05	28,90	**98,20**	Aug 08	35,21	**119,64**
Sep 05	29,59	**100,53**	Sep 08	35,29	**119,90**
Oct 05	30,05	**102,11**	Oct 08	33,83	**114,95**
Nov 05	30,13	**102,38**	Nov 08	32,66	**110,98**
Dec 05	29,84	**101,37**	Dec 08	30,76	**104,51**

Table 19. ROMPI

MONTH	ROMPI	MONTH	ROMPI
Jan 03	N/A	Jan 06	-4,11%
Feb 03	-1,65%	Feb 06	-1,14%
Mar 03	-3,29%	Mar 06	-2,97%
Apr 03	-2,66%	Apr 06	-2,89%
May 03	-1,88%	May 06	-0,69%
Jun 03	-0,61%	Jun 06	-0,17%
Jul 03	2,20%	Jul 06	1,23%
Aug 03	3,72%	Aug 06	4,55%
Sep 03	3,14%	Sep 06	2,05%
Oct 03	2,79%	Oct 06	1,36%
Nov 03	0,96%	Nov 06	0,38%
Dec 03	-2,70%	Dec 06	-0,80%
Jan 04	-0,86%	Jan 07	-0,80%
Feb 04	-1,83%	Feb 07	-0,89%
Mar 04	-1,65%	Mar 07	-2,11%
Apr 04	-2,97%	Apr 07	-0,90%
May 04	-0,45%	May 07	0,46%
Jun 04	0,16%	Jun 07	3,09%
Jul 04	3,80%	Jul 07	5,78%
Aug 04	2,41%	Aug 07	8,28%
Sep 04	2,86%	Sep 07	6,97%
Oct 04	2,48%	Oct 07	9,29%
Nov 04	1,06%	Nov 07	1,18%
Dec 04	-1,12%	Dec 07	-0,33%
Jan 05	-3,50%	Jan 08	-1,34%
Feb 05	-0,84%	Feb 08	-2,01%
Mar 05	-2,35%	Mar 08	-3,70%
Apr 05	-3,57%	Apr 08	-5,04%
May 05	-1,27%	May 08	-1,48%
Jun 05	0,22%	Jun 08	-1,86%
Jul 05	1,81%	Jul 08	2,61%
Aug 05	3,76%	Aug 08	2,57%
Sep 05	2,34%	Sep 08	0,21%
Oct 05	1,57%	Oct 08	-4,21%
Nov 05	0,26%	Nov 08	-3,52%
Dec 05	-0,99%	Dec 08	-6,00%

Figure 10. MPI trend analysis

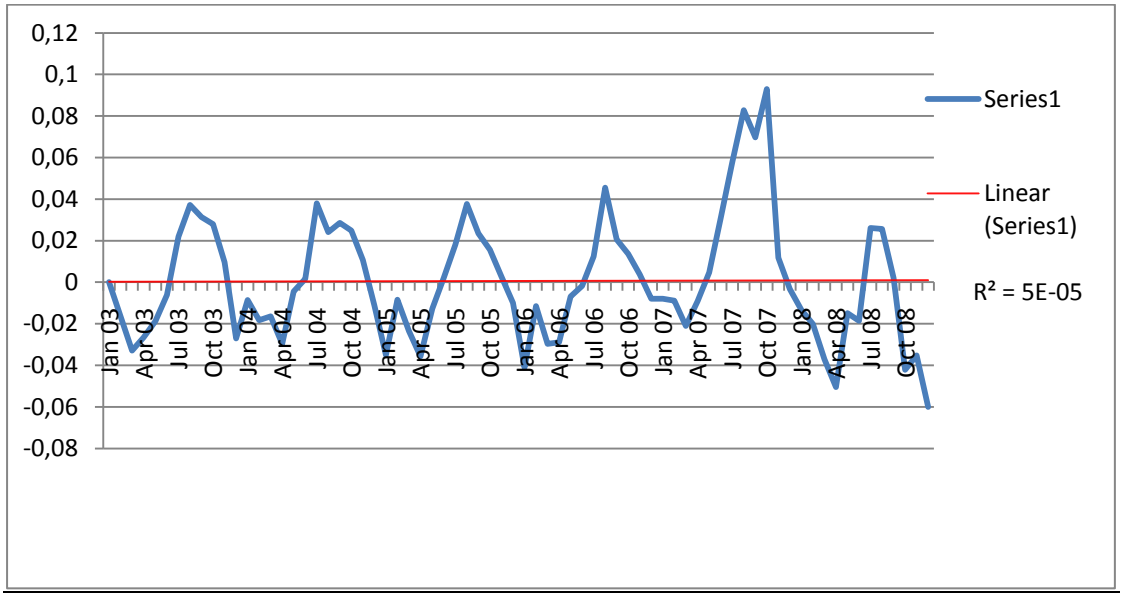
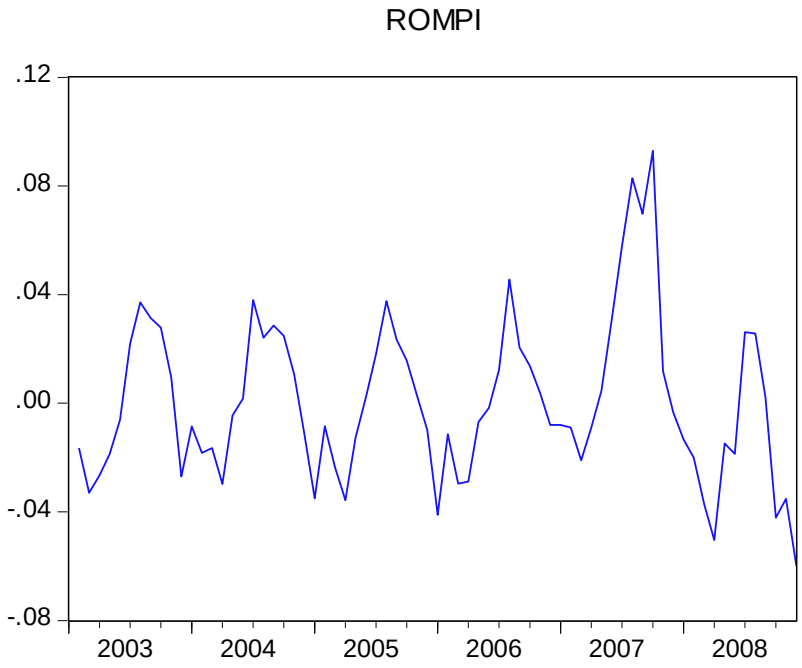


Figure 11. Return on Milk Price Index



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