

"New Challenges in the international trade of European cereals"

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Abstract

Since the mid 1990s and particularly 1998, the international trade of cereals faces new challenges in the European Union due to low world price levels and low volatility of world prices faced on the export market while higher volatility of domestic milling wheat price, increased forwarding risks, increased market segmentation, and the difficulty to implement traceability and guarantee "non-GMO" foodstuffs.

These changes also open up perspectives for value creation, requiring new knowledge and skills in a trading service.

Objective

The objective of the paper is to raise and assess new trading risks faced by traders in the European cereals sector in identifying perspectives for value creation.

Focus is put on financial risks, co-ordination risks along the agri-food chain.

The paper presents 1/ theoretical and empirical considerations, 2/ methodology and data, 3/ results and 4/ conclusions that are inferred in order to adapt knowledge and the organisation of international trading to the new environment.

Theoretical and empirical considerations

The liberalisation of the Common Agricultural Policy (CAP) from 1992 increased domestic price instability during most the 1990s in the European Union (Thompson et al, 2000). But, price volatility strongly decreased since 1998 because the US government loan program have led US and world prices to go down to 30 year lows after five consecutive high supply of grains from 1996 to 2000 (USDA-ERS, 1999-2000; TFC Commodity Charts, 2000-2001). Since 1998, prices are also at historic lows in the European Union (EU-Eurostat, 1999-2000; Euronext Paris, 2000-March 2001). Analysing the exports of cereals from Rouen, the major EU cereal harbour, Hautin (2000) noticed changes in the type of shipments with smaller lots. Figures 1 to 5 show prices of grains in the EU and in Chicago (ONIC 1991-2001; TFC Commodity Charts, 2000-2001).

Competition among international firms trading grains is heating up. Major international players include Cargill, Toepfer International whose major shareholders are ADM (Archer Daniels Midland Co.) and SIGMA (French cereal co-operatives), Louis-Dreyfus, Glencore, Tradigrain and Bunge. The major European trading firms are SIGMA and Soufflet. The Swiss André was an important company before stopping its European business in March 2001 and asking for legal protection of bankruptcy proceedings at its head office in Lausanne, Switzerland.

Methodology and data

The Delphi method is used through interviews with traders in the European cereal sector at major international trading companies.

A survey was done to reach the objectives in order to know the following items:

- What are the new risks faced in trading cereals from the European Union?
- How is it possible to manage such risks and constraints?
- What suggestions and key factors of success can be inferred in order to open new perspectives for value creation?

Some comparative statistics are computed in order to understand traders' remarks about volatility of milling wheat and corn prices on the EU domestic market. They mainly purchase milling wheat in order to export it outside the EU.

The average value of the milling wheat price volatility, expressed in Euro per metric ton, is computed in order to compare its value in the early 1990s (from July 1991 to June 1995) to its value in the late 1990s and early 2000s (from July 1995 to May 2001). The volatility is measured monthly by the difference between monthly price and the average price of the corresponding campaign (from July 1 to June 30 for milling wheat). Any difference is taken in absolute value, i.e. is set to be positive in order to avoid compensations among positive differences when prices go up and negative difference when prices go down.

Further, the average relative values of the price volatility expressed in % are analysed. Relative value of the price volatility is computed in divided the price volatility by the average price of the corresponding campaign.

Similar measures are computed for EU domestic corn in order to compare prices and volatility in the early 1990s (from July 1991 to September 1995) to the late 1990s and early 2000s (from October 1995 to April 2001). Note that for corn, every campaign runs from October 1 to September 30.

Main data come from the Office National Interprofessionnel des Céréales (ONIC) in Paris.

Forty companies were contacted. Twenty of them answered interviews and discussions have been done to improve the study.

Results

Results show new risks or risks that have changed:

1. financial risks induced by lower market prices and lower volatility for cereals on international markets, but higher volatility of EU domestic milling wheat price;
2. increase in the number of trading risks (logistics, commercial and financial risks), in the European Union due partly due to the new reform of the CAP "Agenda 2000" and the full application of the GATT agreements;
3. market segmentation risks that traders are managing in creating new marketing tools toward customisation of products and services to add value;
4. GMO risks along the cereals chains: the feasibility of the "non-GMO" guarantee of foodstuffs and traceability is assessed.

These changes also open up perspectives for value creation, requiring new knowledge and skills.

1. Lower market prices and lower volatility for cereals on international markets, but higher volatility of EU domestic milling wheat price

Large trading companies report that they are currently suffering from weak margins, of about 1% to 2% of sales turnover. Pressure on the margins is all the stronger since world market prices of cereals have been weak since 1998, as shown on figures 3 and 4. Further, their volatility is currently low, particularly compared to the big jumps in 1996.

Prices of grains traded on international markets fell strongly (by at least 30%) in 1998 with supply crisis. For instance, high levels of production have swollen heavy existing stocks in the exporting countries, mainly the USA whose agricultural policy has favoured corn and soybean production. Other factors have reduced demand:

- the Asian crisis in 1998,
- repeated announcements have been made of decelerating American growth, following the risk of overheating due to a rise in inflation, in turn controlled by a raising of interest rates,
- limited European demand is due to a weak Euro and decelerating growth in Europe. Because prices are listed in dollars and the Euro has depreciated by 30% compared to the dollar in less than two years, invoices are high in European currency. Thus, European purchasers limit their orders, all the more so since they anticipate a rise in the Euro compared to the American dollar.

The majority of grains have world market levels that are at a historical low. For example:

- wheat is worth approximately \$2.50 a bushel, generally, in relation to \$3.5 to \$4 and \$5 or even \$6 dollars a bushel in 1996-97 as shown on figure 3;
- corn, which is mainly used as a source of energy in animal feeds and which is also included in many manufactured products (food products, paper pulp, adhesives...), is worth approximately \$2 a bushel as compared with \$3 dollars generally and even \$5 dollars a bushel in 1996-97 as shown on figure 4;
- soybeans are worth approximately \$5 a bushel as compared to nearly \$9 a bushel in 1997 as shown on figure 5;
- soybean oil is worth approximately 0.16 US dollar per pound against approximately \$0.24 to \$0.28 per pound between 1994 and 1998.

Further, the volatility of world prices of many raw materials on export markets has decreased. From 1991 to 1997, world cereal prices had stronger volatility than during the 1998 - April 2001 period. In 1996, world cereal prices doubled and were very volatile. But over the past few months, prices have varied little. Companies thus have fewer opportunities for increasing their margins in traditional trading because they cannot take advantage of high fluctuations that do not exist. However, the US dollar - Euro volatility is high. At its launching on the 4th of January 1999, the Euro rose from \$ 1.1675 to \$ 1.185. Then, it has declined during the year 1999 and was worth \$ 1 for €1 at the end of December 1999. It went down to \$ 0.823 on the 26th of October 2000, that was an 18 % decrease from the 1st of January 2000 and a 30 % decrease from the 4th of January 1999.

Lower volatility implies lower risks and lower opportunities of taking advantage of price fluctuations when one may hold private information about expected harvests world wide.

Several international trading companies cannot benefit from their information network. So, their margin is reduced.

On another side, on the EU domestic market where traders purchase milling wheat, traders face slightly higher volatility from July 1995 to May 2001 than from July 1991 to June 1995 as shown on table 1, figures 1, 6 and 8. Statistics are significant at 5% to show that:

- EU milling wheat prices have decreased from 154 to 123 Euros per metric ton ;
- the price volatility has increased by 2.36 Euros per metric ton;
- the relative price volatility has increased by 1.88 %.

So on the domestic milling wheat market, EU exporters face increasing volatility of prices leading to larger risks.

But, the move is very different for EU domestic corn, whose price volatility has decreased from the early 1990s (from July 1991 to September 1995) to the late 1990s and early 2000s (from October 1995 to April 2001), as shown on table 2, figures 2, 7 and 9. Statistics are significant at 5% to show that:

- EU corn prices have decreased from 175 to 137 Euros per metric ton ;
- the price volatility has decreased by 3.20 Euros per metric ton;
- the relative price volatility has decreased by 1.26 %.

Thus, the price weakness and low volatility of world cereal prices have led to weaker margins for the traditional trading of undifferentiated raw materials. Even though new communication and information technologies (NTIC) may contribute to improving effective B to B relations, the execution of contracts must be managed more skilfully to preserve margins that have become weaker.

2. Increase in the number of risks to be managed in the European Union

The trader's profession consists in managing risks by buying goods in places of surplus production and transporting and selling them in markets where demand exceeds local capacity. Trading agricultural raw material involves many risks:

- those related to the raw materials themselves: logistics involving the non-respect of delivery dates, risks of quantity when it is difficult to collect the goods, risks of quality not conforming to contract specifications. Logisticians and specialists in quality control manage this type of risk.
- commercial risks: those concerning countries, counterparts, export licenses from the EU, export subsidies from the UE.
- purely financial risks: price fluctuations, interest rate variations, exchange rates, those related to operations to hedge risks. Financial tools, such as forward or futures contracts, options, swaps... can be used to hedge these price fluctuation risks.

In a sector with weak margins and little recourse in the event of customer non-payment, the risk of loss is very significant and contributes to increasing the risk of bankruptcy.

These risks are changing:

1 / Evolution of risks related to raw materials

Goods are less often commodities, i.e. undifferentiated products, but are increasingly products or ingredients sold directly to manufacturers and adapted to the specificity of their trade. The final price includes an increased share of costs for quality, related to the observance of specifications, as well as logistic costs, related to lower volumes.

2 / Increase in the commercial risks of exporting from the EU

It is not enough to find a solvent customer to export from the European Union. Starting this year, the risk of non-delivery of export licenses by the European Commission has worsened. Indeed, following 8 years of negotiation, the Uruguay Round was completed on April 15, 1994, by the signature of GATT agreements in Marrakech. These agreements have been fully applied since the July 1, 2000. Whereas the European Union exported 34.1 million tons of cereals in 1999-2000, these agreements limit subsidised cereal exports from the European Union to third party countries to 25, 280 million tons from 2000-2001 to 2005-2006, that is, a reduction of 26% compared to last year.

Authorised cereal exports break down as follows:

- 14,438 million tons for wheat and its derivatives (flour),
- 10,843 million tons for cereals intended for animal feed.

Export subsidies theoretically compensate for the difference between the price on the world market (measured by prices for "Soft Red Winter Wheat" (SRW) quoted in Chicago) and the price in the EU. In 1999, these export subsidies rose from 14 and 32 Euros per metric ton, that is, from 92 FF to 256 FF per metric ton. The fall of 7.5 % in the intervention price of cereals, i.e. minimum prices in the EU on July 1, 2000, will bring European prices closer to very depressed world levels. In the European Union France is the principal cereal exporter.

Therefore cereal operators will have to adjust their practices: reduce their costs and find new outlets on the domestic market. International trading companies will have less to export with export subsidies, hence a loss of earnings.

3 / Changes in purely financial risk management

Trading on futures markets can prove very risky if control procedures are not rigorous on the positions taken. Exceptional losses on unauthorised operations can be caused by a single trader, such as, for example, that generated by Nick Leeson at Barings for \$1.3 billion or the loss of \$1.8 billion on copper by Sumitomo. It is now possible to be protected from a trader who carries out unauthorised operations, for example in trying to correct his errors. Indeed, the American insurer, Chubb & Son, has launched on the French market an insurance contract covering losses incurred by unauthorised trading operations. Maximum coverage is set at \$100 million with exemptions of \$10 to 25 million. However, the payment of insurance premiums to guarantee losses on unauthorised operations is very costly. Trading desk managers usually prefer to eschew that approach. They may have in place an effective system of surveillance and ensure that monitoring measures are implemented for the prevention and control of transactions made by traders. So, trading desk managers prefer vigilance to insurance and must be aware of trading risks on every market used by their work team.

Trade developments generate an overall increase in risks. However, they open up new opportunities, that are sources of value for whomever can benefit from the fact that:

- bringing European prices closer to world levels will open up European export opportunities without export subsidies (restitution), when these world levels rise again;

- market segmentation is accelerating with industrial customers demanding products and services that are ever more customised;
- consumer demand is growing for a guarantee of foodstuffs that are not genetically modified, and new distribution channels need to be organised.

3. Market segmentation: towards a "customization" of products and services to create value

The profession of trader is changing. Markets organised by governments, where price is the decisive criterion, hardly exist any more. Large contracts negotiated with Russia, China, North African countries (for example wheat export to Egypt, Tunisia, Algeria, Morocco, barley to Libya) and the Middle East have disappeared. Some agreements may be negotiated to finance export credits.

More and more, new markets related to the liberalisation of economies emerge with primarily private companies. These operators want to satisfy more specific needs, with qualitative requirements differentiated in smaller batches. Markets are more segmented. In the Mediterranean Sea, grains are transferred onto cargo carriers weighing 25,000 tons or less.

Operators are often processors of agricultural raw material:

- for cereals, these are millers, starch manufacturers, malt processors, manufacturers of animal feed;
- for oil seeds, from which are extracted oil and an oil cake that is rich in proteins, the operators are grinders and manufacturers of animal feed;
- and so forth.

The trader must bundle together batches of a specific quality from a physical and technological point of view, but the goods are not of a standard quality. He wants to meet purchaser specifications where needs are related to the use of the products and thus to the properties of the goods. Traceability requirements go along the same line.

The entire logistic chain is affected by this segmentation into smaller batches that are individualised as well. Ships of lower capacity, from 2,000 to 5,000 tons, are adapted to carrying these smaller batches.

The capacity of a trader to satisfy specific customer needs provides a chance to create value and therefore customer loyalty. It becomes a question of personalising the product and services offered to customer preference.

4. Feasibility of the “non GMO” foodstuffs guarantee and traceability

The question of batch segmentation for non genetically modified material remains a challenge for professionals in most food distribution channels, in particular because of limits to testing and the industrial surcharges explained below. Organising the traceability of products may be the answer.

To be specific, French regulations define an organism that is genetically modified as “an organism whose genetic material has been modified in a manner not carried out by natural multiplication and/or recombination”. In the case of transgenic plants belonging to the GMO category, the transfer of genetic inheritance from one organism to another is carried out by introducing a DNA sequence comprising one or more “useful” genes, giving a desired characteristic, such as resistance to disease or insects. Let us point out that part of the debate is not only centred on the useful gene itself, but also on another gene, called the “marker” gene, that is resistant to a specific antibiotic, introduced to facilitate locating transgenic plants having absorbed a “useful” gene. All the cells of the plant include this new genetic inheritance with the “useful” and the “marker” genes. Therefore, seed producers seek to eliminate the “marker” gene.

In the article, the expression GMO, genetically modified organism, refers to genetically modified plants, i.e. transgenic plants. According to the definition of the International Standards Organisation (ISO 8402), traceability is “ability to trace the history, the use of an article or process, or similar articles or processes, by means of a registered identification procedure”.

Consumers worry about food safety. Retailers drawing up specifications when they buy products processed by food manufacturers take their expectations into account. The latter in turn pass along these requirements to suppliers of raw materials and thus to trading companies. It is generally a question of being able to guarantee the absence of genetically modified organisms (GMOs). Since April 10, 2000, every foodstuff containing more than 1% of GMO for one or more ingredient is subjected to a labelling obligation to mention “product containing GMO”. In practical terms, semolina processors ask for less than 0.1%, in order to have a safety margin and guarantee their product as GMO free.

Guaranteeing the absence of GMO at a level of 1% or 0.1% poses two practical problems:

- detecting a genetic construction that the analysing laboratory is not familiar with,
- sampling reliability for analyses.

Very often, laboratories are familiar with the genetic construction (i.e. the DNA sequence) that they are looking for: in such a case, current techniques are sufficiently powerful to detect the presence of one gram of seed in 1 kg, that is, a detection rate of 0.1 %. In contrast, when analysing laboratories are unaware of the genetic construction they are looking for, they cannot detect this structure, even when it is present in more than 1% of the given sample. Indeed, the weak point of detection by techniques for DNA analysis is that it is necessary to know before hand what one is looking for. Such a concept presumes that the laboratories are informed of genetic constructions of all the varieties authorised for production and marketing. At the beginning of 1998, a consumer journal revealed divergences among laboratories. Thus,

according to the laboratory, both positive or negative results were obtained based on analysis of the same product. Varying results were explained by the techniques used by the different laboratories: for example, the type of sampling, the weight of the sample (varying from 100 mg to 2 g), the intensity of crushing, the levels of temperature employed during the analysis - all affected the sensitivity of tests. Therefore, to correct this situation, the authorities set up a national network for detecting GMOs, made up of five French laboratories that also work with national (AFNOR) and international (European Committee for Standardisation CEN, ISO) standardisation centres. This network aims to standardise methods for detecting GMOs, in order to obtain concurring results among laboratories.

Moreover, tests are carried out on 100 mg to 2 g of products extracted from a sample of 3 kg taken from a 25-ton truck. It is quite possible to miss a seed on a hundred or a thousand coming from a transgenic plant. To get samples that are representative of large lots may be very difficult and costly in order to manage risks of any fortuitous presence of GMO, for example because of unexpected pollination of non-GMO plants by transgenic pollen.

Only the installation of separate, independent production channels (GMO and non-GMO) will make it possible to produce reliable labelling. However, there is an additional cost involved to separate and store non-GMO and doubtful products in separate silos. Moreover, industrial procedures for processing products in continuous flows do not allow for the easy separation of batches. The surcharge is very significant. However, until now, operators have not been able to convince consumers that they should pay a premium to guarantee the presence of less than 1% of GMO material and thus to cover this additional cost.

Moreover, current regulations are often incoherent, whether in the USA or the EU:

- for example, the USA authorises the "Starlink" transgenic variety of corn by Aventis for animal consumption, but not for human consumption. It is almost impossible to avoid errors of destination, such as the one observed last October;
- as another example, France authorises the consumption of transgenic corn of type BT11 insofar as the presence of GMO is clearly indicated on the product label, but it does not authorise the *production* of this corn.

The traceability of products is a possible response to the imperfections of current tests, or surcharges related to technological processes. Traceability is about the follow-up of all agricultural and industrial practices for a given product. Traceability should cover everyone from seed-producers who sell to farmers, to food retailers who sell to the ultimate consumers. Today, this traceability makes it possible to set up a non-GMO channel, insofar as pollen from plants resulting from transgenic seeds cultivated in most countries of the world do not fertilise plants from areas known as "GMO free".

For plants that are strictly autogamous, i.e. those which are naturally self-pollinating, there is no environmental risk, theoretically speaking. For allogamous plants, that is different. An allogamous plant requires pollen of another plant in order to be fertilised; its seeds are formed by cross-fertilisation. Fortunately, studies undertaken on an allogamous plant like rape showed that pollen seldom drifts more a few hundred meters.

Consequently, it is not enough to declare that "GMO plants should be prohibited in the European Union" to solve the problem. Product traceability is a realistic solution in many

cases. It mitigates the failures and unreliability of current detection procedures; it guarantees agricultural and industrial practices throughout the channel. In all cases, installing traceability of material flows requires solid co-ordination of the participants in the agri-food chain. IT can facilitate this implementation. However, traceability is expensive. Until now, the consumer has not agreed to pay this "non-GMO guarantee" that he has been asking for.

EU consumers think that the setting up of transgenic plants benefits only multinational companies, which have created them. EU consumers do not perceive any environmental advantage due to some decrease in the use of pesticides. Above all, they are afraid that their health might be at risk with transgenic plants. EU consumers are shocked by consecutive food crises, mainly by the bovine spongiform encephalopathy (BSE disease also called "mad cow disease), but also by dioxin problems with poultry and now the foot-and-mouth disease (FMD) which has been detected in pigs, sheep and cattle. So, EU consumers want to protect themselves in avoiding GMO stuff in food: "prevention is better than cure". They accept GMOs in medication because medicine brings relief and cure. A new generation of transgenic products, like nutraceuticals providing desirable attributes for better food under the guarantee of legal health claims, might modify their current opinion in favour of GMO products. To reach that goal, communication efforts are required among participants throughout the food chain, including consumers.

Conclusion

Trading agricultural raw material is becoming more complex. Risks have changed, requiring new procedures and skills to open up new opportunities:

- reducing cereal exports subsidised by the European Union by 26% involves a loss of earnings for trading companies in Europe since activity will decrease. Moreover, it is not possible to cover the risk of non-delivery of a license to export on term markets. However, prices of raw materials in the EU tend towards parity with prices on world markets, as is already the case for oil seeds (soybeans, rape oil...). That situation creates opportunities to promote European products in the rest of the world.
- the segmentation of markets requires a more-detailed knowledge of customer requirements to make suppliers satisfy these requests. Managing the portfolio of suppliers and customers becomes essential. Industrial provisioning implies increasingly sharing the costs of logistics and quality, including the costs of traceability. These developments open new opportunities to create value for whomever can adapt to the more customised needs of manufacturers by proposing a more differentiated offer of products and services.
- the "non-GMO" food guarantee will be better implemented by the traceability of products throughout the chain than it will be by simply multiplying detection tests. It becomes a question for all participants of an agri-food chain, including consumers, to get to know each other better and to co-ordinate in order to maintain confidence in the goods exchanged - an essential point when carrying out transactions. It seems that only a new generation of transgenic products bringing desirable attributes for better food with the guarantee of health claims might modify EU consumers' opinion in favour of GMO products in the forthcoming years.

Developments towards ever more specialised knowledge also have consequences on the organisation of trading teams. International trading companies will find it beneficial to

distinguish the risk on managing prices (risks that are purely commercial and financial) and the risk of managing raw materials. On the one hand, experts in finance, who use adapted tools, such as term contracts and options, manage price risks. On the other hand, risks related to raw materials are managed by logisticians and quality specialists who manage specifications that are coherent among the participants of a given agri-food chain.

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Table 1 – Wheat price and its volatility at Rouen-France from July 1991 to May 2001

	Wheat price	Volatility of wheat price	Relative volatility of wheat price
Average value from July 1991 to May 2001	135.55 Euros/ton	1.41 Euro/ton	2.10 %
Average value from July 1991 to June 1995	154.38 Euros/ton	0.00 Euro/ton	0.98 %
Average value from July 1995 to May 2001	122.82 Euros/ton	2.36 Euros/ton	2.86 %
Difference in average value between the periods 1991 - 1995 and 1995 - 2001	31.57 Euros/ton	- 2.36 Euros/ton	-1.88 %
Variance from July 1991 to June 1995	371.96	15.73	0
Variance from July 1995 to May 2001	156.41	17.8	0
Statistics to test : Ho: No difference of average values between the 2 periods versus Ha: Different values	10.0	3.10	5.66

Table 2 – Corn price and its volatility at Bayonne-France from July 1991 to April 2001

	Corn price	Volatility of corn price	Relative volatility of corn price
Average value from July 1991 to April 2001	153.93 Euros/ton	5.28 Euros/ton	3.39 %
Average value from July 1991 to September 1995	175.34 Euros/ton	7.07 Euros/ton	4.09 %
Average value from October 1995 to April 2001	137.06 Euros/ton	3.87 Euros/ton	2.83 %
Difference in average value between the periods 1991 - 1995 and 1995 - 2001	38.28 Euros/ton	3.20 Euro/ton	1.26 %
Variance from July 1991 to September 1995	516.5	39.7	0
Variance from October 1995 to April 2001	194.5	19.2	0
Statistics to test : Ho: No difference of average values between the 2 periods versus Ha: Different values	10.67	3.12	1.94

Figure 1 - Price of milling wheat at Rouen (France) from July 1991 to May 2001

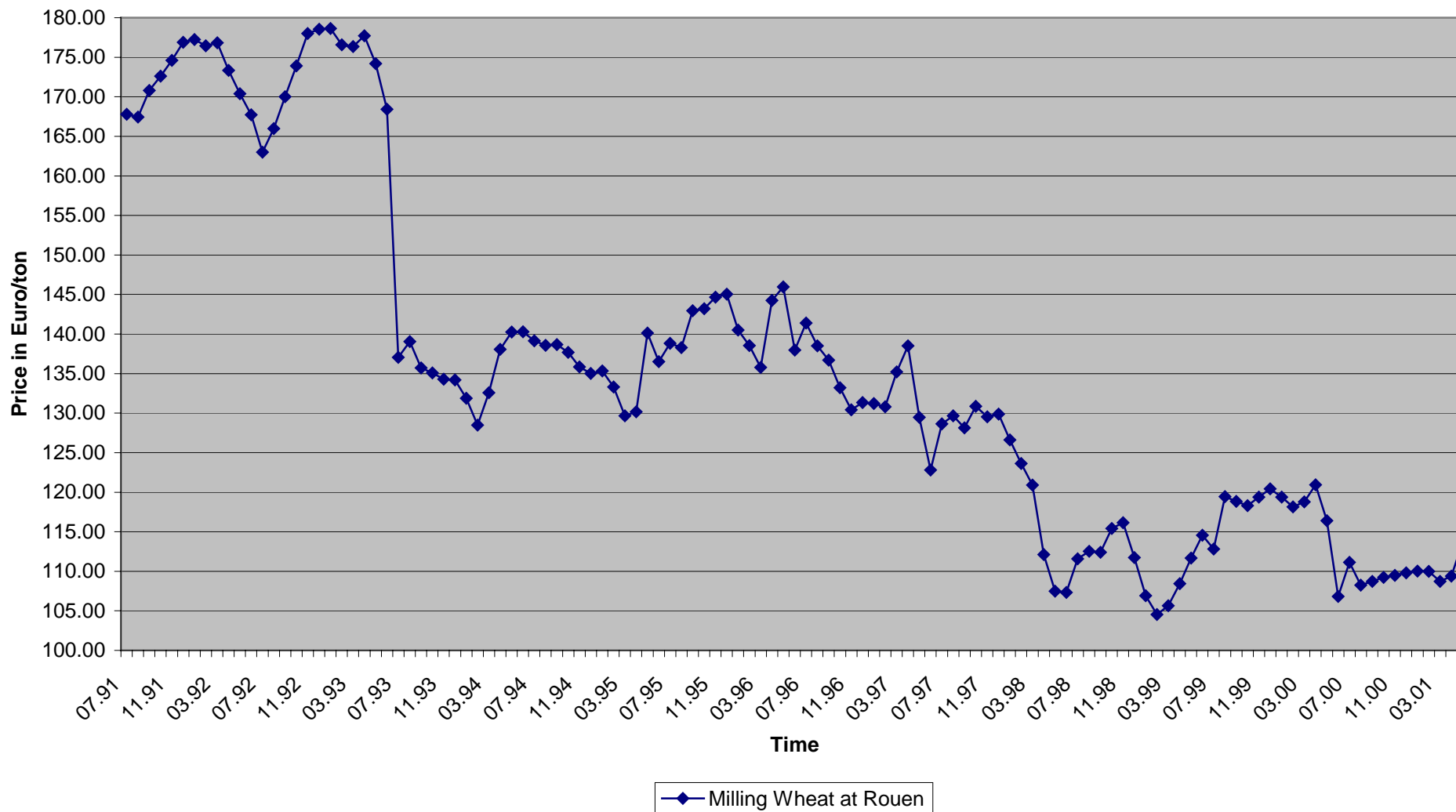


Figure 2 - Price of corn at Bayonne (France) from July 1991 to April 2001

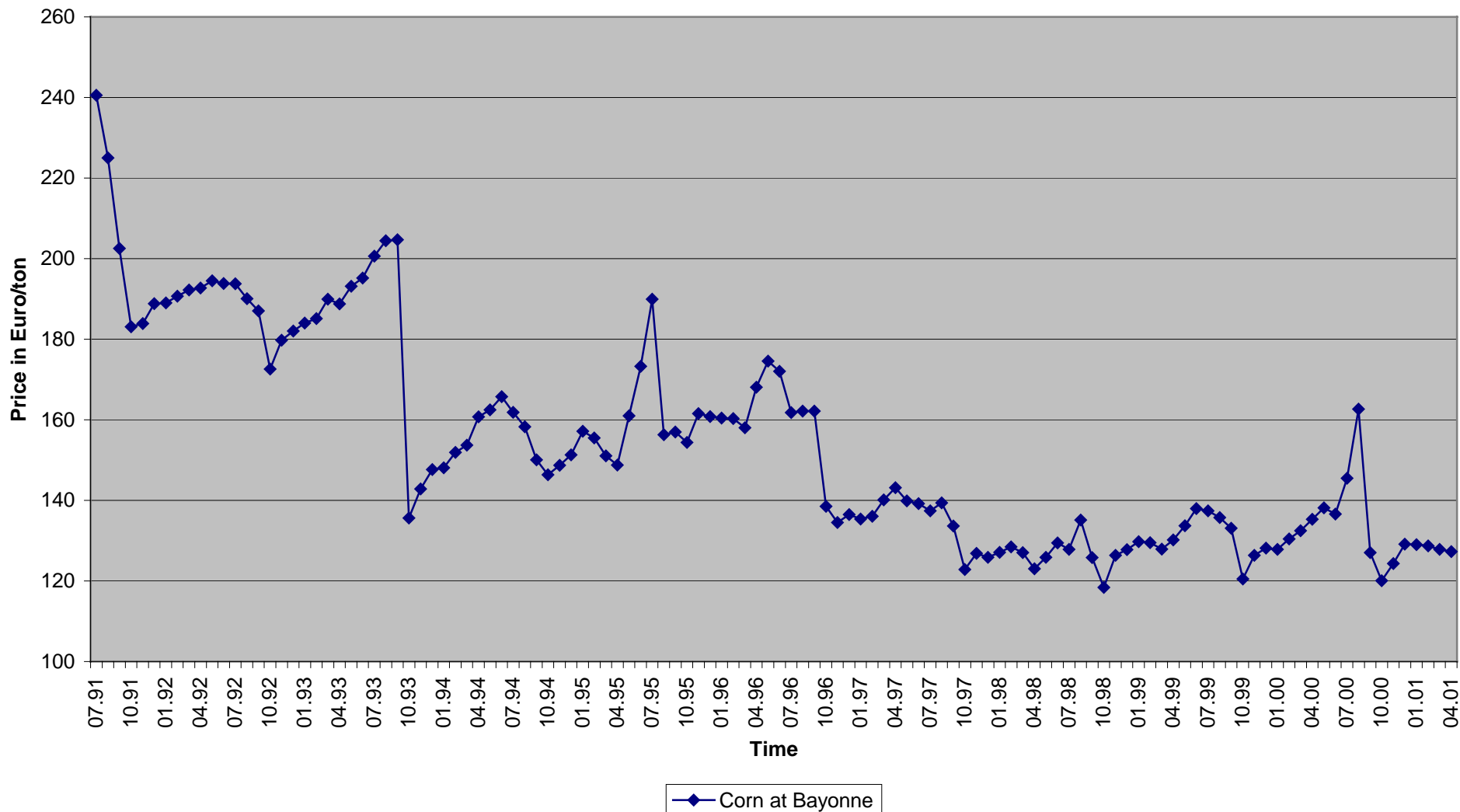


Figure 3 – World price of wheat at Chicago from 1993 to 2001 in US cents per bushel



Source: TFC Commodity Charts, by North American Quotations, Inc., 1999-2000-2001. "Trading charts." Available at <http://www.futures.tradingcharts.com/>

Figure 4 – World price of corn at Chicago from 1993 to 2001 in US cents per bushel



Source: TFC Commodity Charts, by North American Quotations, Inc., 1999-2000-2001. "Trading charts." Available at <http://www.futures.tradingcharts.com/>

Figure 5 – World price of soybeans at Chicago from 1993 to 2001 in US cents per bushel



Source: TFC Commodity Charts, by North American Quotations, Inc., 1999-2000-2001. "Trading charts." Available at <http://www.futures.tradingcharts.com/>

Figure 6 - Volatility of milling wheat price at Rouen (France) from July 1991 to May 2001

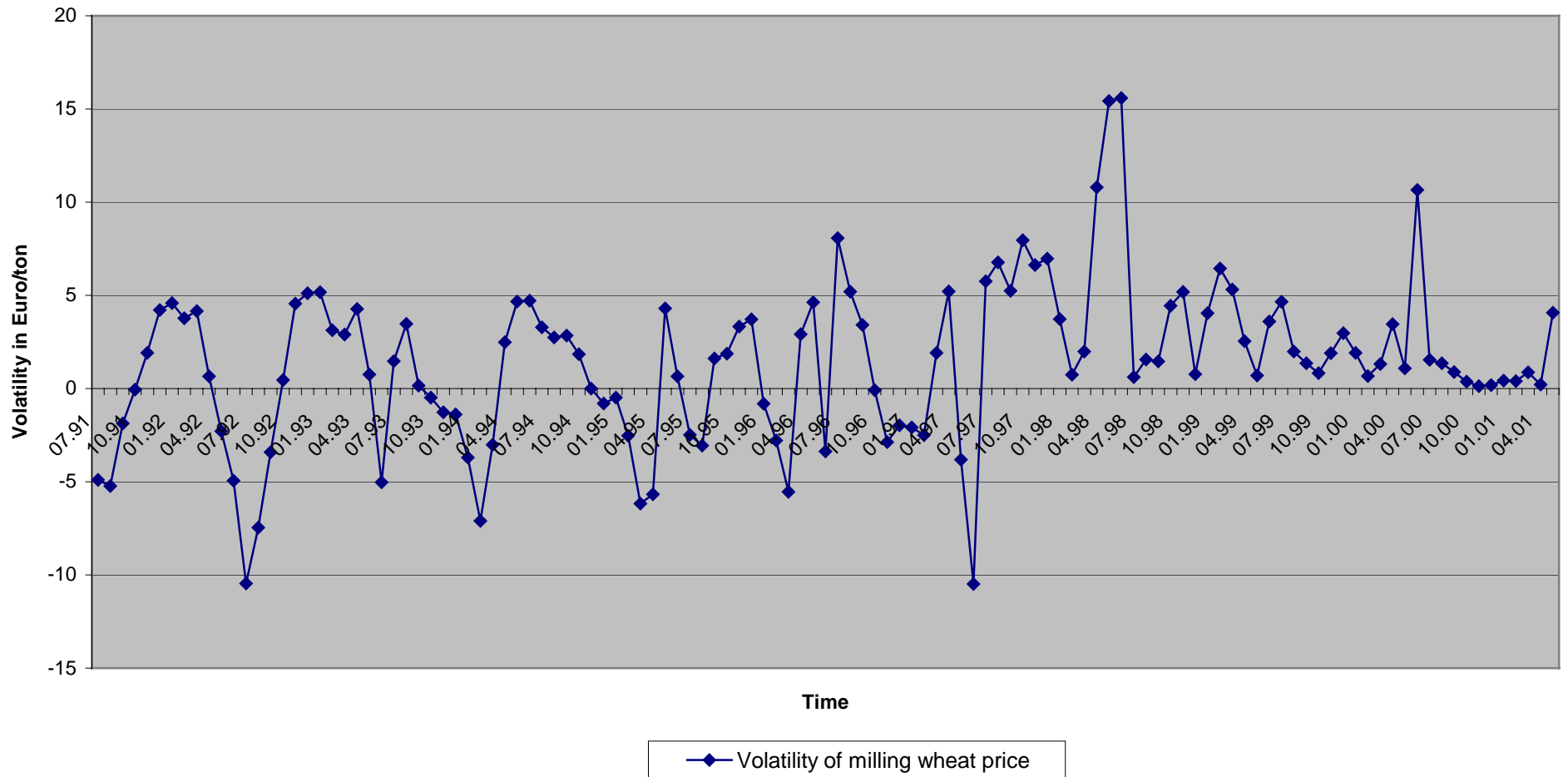


Figure 7 - Volatility of corn price at Bayonne (France) from July 1991 to April 2001

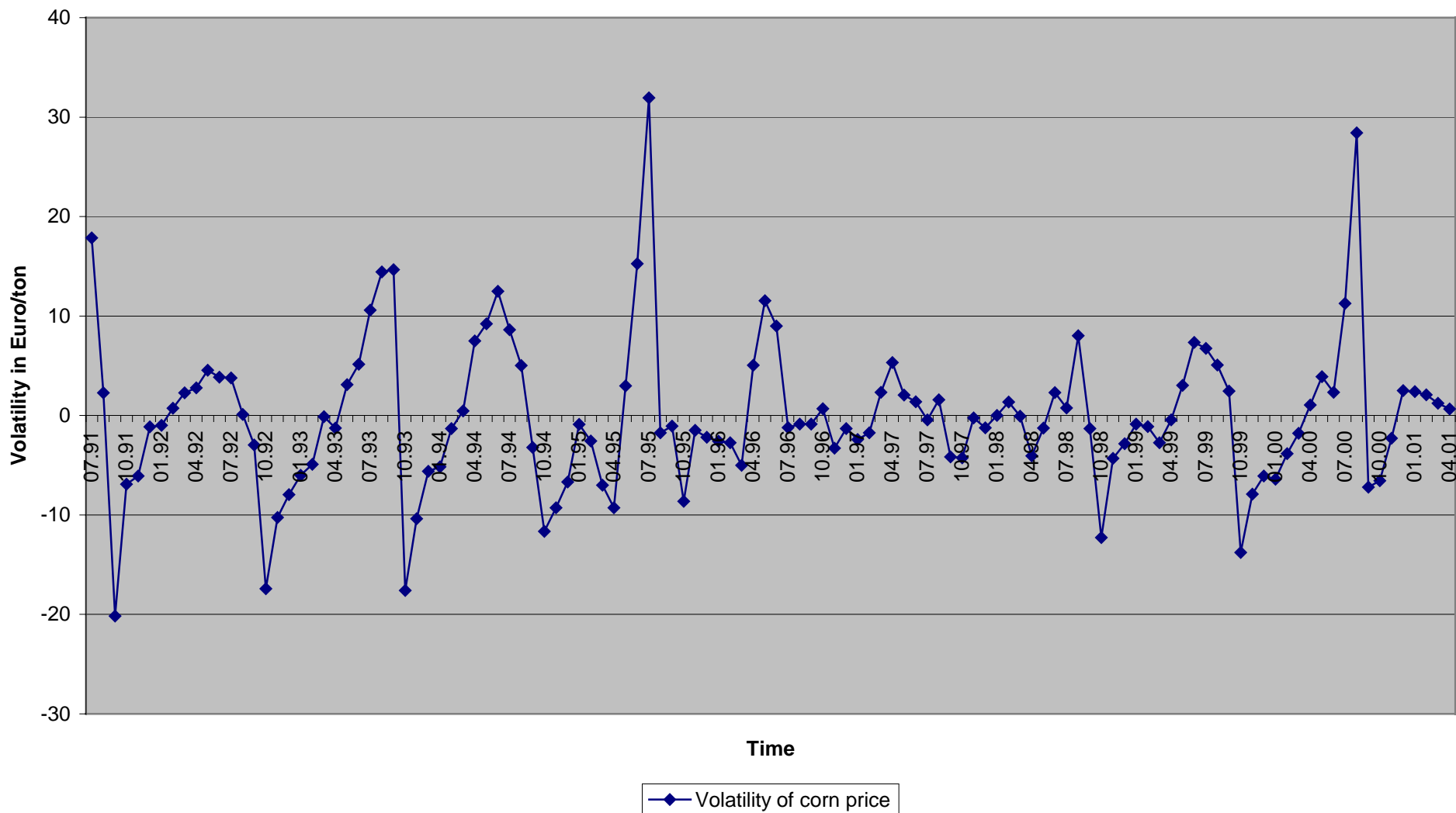


Figure 8 - Relative volatility of milling wheat price at Rouen (France) from July 1991 to May 2001

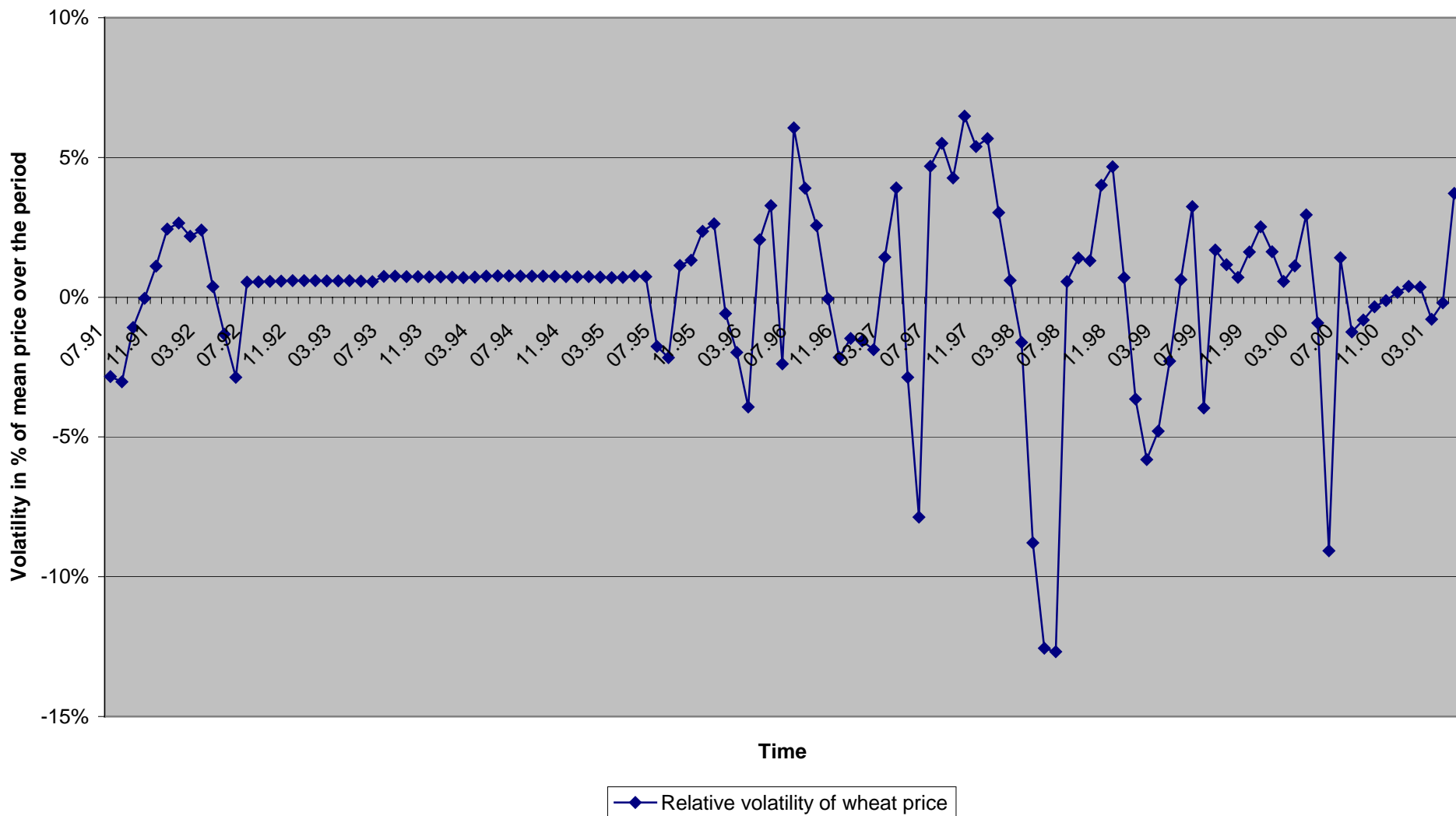


Figure 9 - Relative volatility of corn price at Bayonne (France) from July 1991 to April 2001

