Expensive sugar

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The structure of and movements in the price of sugar

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Summary

The price industrial bulk users are charged for sugar has increased since 2011. Sugar prices have increased by about 50 percent in a two-year period and are considerably higher than the minimum price that had prevailed for many years. Moreover, the price movement is diametrically opposed to the movements in the world sugar price. The European quota system would appear to have resulted in a structural sugar supply deficit. Sugar prices are also being forced upwards by the concentrated national sugar markets, high barriers to switching to other suppliers, importing sugar and entry to the market, as well as the lack of substitutes.

This research aims to explain the pricing and price structure of sugar supplies to Dutch industrial users.

The available information can be used to make an estimate of the price structure of sugar. During the period in which European sugar prices have increased the Dutch sugar producer's profit-sharing bonus for its members has also increased. In contrast to 2009/2010, when the members' bonus amounted to about € 90 at the then market price of € 482 per tonne of sugar, in 2011/2012 the bonus had increased to € 252 at the market price of € 690 per tonne of sugar. The mark-up (members' bonus and other profit) was between 26 and 51 percent in the period from 2006/2007 to 2012/2013, and has increased since 2009/2010. The increasing European sugar price is not due to increasing production costs, but can be explained by the competitive conditions in the market.

In recent years Europe has consumed about 16.8 million tonnes of sugar a year, whilst the average production quota has been 13.3 million tonnes. The gap between European consumption and production can be filled by importing sugar and drawing down on stocks. European companies may import 3.5 million tonnes of sugar, tariff-free, from the ACP States (a group of African, Caribbean and Pacific states). However, in practice just 49 percent of this amount has actually been brought onto the market. European sugar producers maintain relatively limited stocks. It will be virtually impossible to bring additional supplies from stocks onto the market in the coming years. Sugar supplies can also be increased by European Commission interventions: for example, a European Commission intervention in the 2011/2012 campaign brought a total of 1.05 million tonnes of extra sugar into the market. However, these additional supplies do not appear to be sufficient to avoid a deficit.

The supply side of the European sugar market is highly concentrated. Seven Member States have one sugar producer that accounts for the Member State's entire production quota. The Netherlands is one of these Member States: Royal Cosun is the sole sugar producer to have been allocated the Dutch production quota. Many Dutch industrial bulk users procure their sugar from suppliers near their factory. As many sugar producers have already divided their entire quota between their existing customers, industrial bulk users cannot readily switch to another supplier. Moreover, it is a moot point whether a sugar producer at a greater distance from the industrial bulk user's factory will be able to quote a better price than the user's existing supplier in view of the higher transport costs. Industrial bulk users are offered few realistic options for switching to another sugar producer.

Royal Cosun, with 6 percent of the European sugar quota, is one of the mid-sized producers in the European sugar market. The supply side of the European sugar market is also concentrated: four producers jointly produce more than 60 percent of Europe's in-quota sugar.

The large gap between European consumption of sugar and the production quota results in higher prices. In theory, other market factors should enable industrial bulk users to exert procurement power to counter the producers' selling power. However, industrial bulk users have little or no procurement power in the European sugar market: the high barriers to switching to other suppliers, importing sugar and entry to the market place industrial bulk users in a much weaker negotiating position than sugar producers, who do not need to be concerned about extra competition on the entry of a new producer, customers switching to a new supplier or the procurement of supplies outside the European Union. In the absence of realistic sugar substitutes, in conclusion, industrial bulk users are unable to replace the sugar they use in their products with other sweeteners.

A comparison with the price movements in another market also offers a means of explaining the price movements in the sugar market. This might offer an insight into the drivers behind the sharp increase in the European sugar price during the past few years.
The US sugar price, in analogy with the European price, is higher than the world market price. However, and in contrast to the European sugar price, the US sugar price does move with the world market price: the two prices are closely correlated. The US sugar market responds rapidly to changing market conditions, even though the market is governed by a production quota and import tariffs. The most important difference from the European sugar policy is that the US production quota is set annually on the basis of import and consumption forecasts. The European production quota has remained unchanged for many years. The European and US sugar markets also differ in the manner in which their imports respond to movements in the market price. An increasing gap between the European market price and world market price would be expected to result in increasing sugar imports. However, this market mechanism has failed in recent years: European sugar imports exhibit virtually no response to increasing European sugar prices. In the USA, increasing (or decreasing) market prices do result in higher (or lower) sugar imports. This indicates that the European Union experiences difficulty in influencing sugar imports and adjusting imports rapidly to absorb movements in European sugar production.

Although cereals, in analogy with sugar, are governed by Europe's Common Agricultural policy the European cereal price is correlated closely with the world cereal price and is actually at a comparable level. Consequently, price movements in the benchmark cereals market are markedly different from those in the European sugar market. This difference may be due to the fact that cereals are not governed by a production quota and that Europe is a net exporter of cereals but a net importer of sugar. The manner in which contracts are concluded in the two markets also differs. Cereal contracts are concluded via the exchange, worldwide brokers, online trading forums, local collectors and by other means. Sugar contracts, conversely, are usually concluded following bilateral negotiations. The market mechanism for cereals is better developed and, as a result, the market responds to price movements more rapidly.

Contents

1 Introduction

Sugar prices have increased more rapidly than sugar production costs since 2011. What are the reasons for this development? This research carries out a critical review of the price structure of sugar and the market structure to seek possible explanations.

Background

Sugar is both an important consumer product and an ingredient for the sugar-processing industry, including soft drinks, ice cream, bakery and confectionery manufacturers. About 30 percent of the sugar produced in the Netherlands is sold directly to consumers via the retail channel. The remaining 70 percent is supplied to the sugar-processing industry.

Consequently, variations in the price of sugar have an impact on a broad spectrum of the Dutch economy. An increase in the price of sugar as a consumer product exerts a direct effect on the consumer price index – the index employed as a measure of inflation – and, as an ingredient of many other products, also exerts a significant indirect influence on inflation. Self-evidently, higher confectionery prices following an increase in the procurement price of sugar also contribute to inflation.

Sugar prices have been increasing since 2011: within the space of two years European sugar prices have increased by about 50 percent to € 728 per tonne in the 2012/2013 campaign, well above the European minimum price of € 632 per tonne that had prevailed for many years. This rapid increase is giving cause to concern about the resultant impact on inflation and on the competitive strength of the sugar-processing industry: non-European competitors have access to sugar available at prices that have tended to decrease rather than increase since 2011. What, then, is the explanation for this remarkable increase in European sugar prices, which is diametrically opposed to the movements in the world sugar market?

Definition of the question to be answered by this research

This research focuses on gaining an understanding of and explaining the pricing and price structure of sugar supplies to Dutch industrial users. For this reason the emphasis of the research is placed on the Dutch market, although the European context also needs to be taken into account in view of the stringent European sugar policy. Consequently, the research focuses on the pricing of sugar in the Dutch market as viewed against the background of both the European and world sugar markets.

There are several potential economic explanations for the increase in the price of sugar since 2011. In a competitive market the market price reflects the cost price structure. For this reason the first hypothesis to be tested is that the price movements reflect higher production costs. The second hypothesis relates to the changes in the market structure. The European sugar industry would appear to be undergoing a process of consolidation and the associated concentration of sugar production: for example, all Dutch sugar is now produced by one concern, Royal Cosun. This consolidation may have an influence on pricing. The third potential explanation relates to the institutional integration of the sugar market, namely the control of the sugar market by the

sugar policy regulations. This policy is implemented at a European level and, consequently, is a European issue. This research examines the influence of the European regulation of the market on sugar pricing, but does not address the question as to whether the policy is in need of reform. This research is primarily of an analytical nature: what is the explanation for the movements in sugar pricing as experienced by industrial users?

Research method

The approach to this research is substantiated by the identified potential explanations for the movements in the price of sugar.

The first issue to be addressed is the *pricing process* in the sugar market: how are sugar prices determined? How do sugar producers and industrial sugar users conclude their contracts and what is the influence of these contracts on sugar prices? This report makes use of applied economic research into the sugar market and information obtained from interviews of industrial parties. The analysis also extends to a critical analysis of sugar prices in the various segments of the sugar market. It makes the maximum possible use of the available sugar price statistics.

The second part of this research reviews the *relationship between the production costs and the price of sugar:* what is the explanation for the price structure of sugar? This study makes use of cost price studies, information available from annual reports and information obtained from interviews. The research also makes use of a benchmark to review the relationship between the production costs and market price.

The third issue concerns the *relationship between the market structure and price movements*. This part of the report examines the impact of the degree of competition in the market on the price movements and makes use of insights obtained from economic theory and empirical literature.

The contents of this report

The first chapter, Chapter 2, begins with a pricing analysis. The chapter reviews price movements in the sugar market and the size of the sugar market. Chapter 3 discusses the sugar price structure on the basis of a review of the production costs and a comparison with price movements in comparable markets (the benchmarks). Chapter 4 continues with an analysis of the market structure. Chapter 5 compiles the findings from the previous chapters and arrives at conclusions on the main question to be addressed by this research: what is the explanation for the movements in sugar pricing as experienced by industrial users?

2 Pricing in the sugar market

European sugar prices have increased sharply as compared to world sugar prices since 2011, which have actually fallen while European prices have risen. The pricing in the two markets differs to an extent such that the markets would appear to be for two completely different products. These differences are due to the European sugar policy and the trend towards the concentration of the European sugar producers.

Prior to an examination of the pricing and price structure of deliveries of sugar to industrial bulk users it will prove worthwhile to examine sugar price movements (Chapter 2.1). The three geographical markets are of importance as they all, to a greater or lesser extent, exert an influence on the price of sugar supplied to industrial users. These markets are, in order of decreasing size, the world, European and Dutch markets. This Chapter includes a discussion of the size of these markets (Chapter 2.2). The Chapter concludes with a review of the functioning of the wholesale markets (Chapter 2.3) and the European sugar policy (Chapter 2.4).

2.1 Price movements

The divergences between the price movements in the various geographical sugar markets are shown in Figure 2.1. The price movements in the European and world sugar markets differ greatly, both in terms of the absolute prices and the timing of price adjustments. The prices in the European sugar market are more stable than the prices in the world sugar market. The prices in commodity futures markets are, in general, relatively volatile as the pricing is influenced by weather and crop forecasts. The influence of the European sugar policy, which is intended to provide sugar beet growers and sugar producers assurances for price stability, is also apparent from this figure. The contrary trends exhibited in the sugar prices in the various markets is particularly striking: there is no correlation between the European and world sugar prices, which is unusual for relatively homogeneous products such as sugar. The price information substantiates the proposition made by one of the interviewed market parties, who stated that the European and world sugar markets behave as though they were markets for completely different commodities.

The world market price shown in Figure 2.1 is the price on the London sugar futures market. The European price is based on the information that European sugar producers submit to the European Commission. SEO calculated the Dutch sugar price on the basis of information obtained from in-depth interviews conducted with a number of sugar-processing companies. The sugar processing industry usually concludes annual contracts for sugar supplies, as a result of which the sugar price is adjusted in increments.

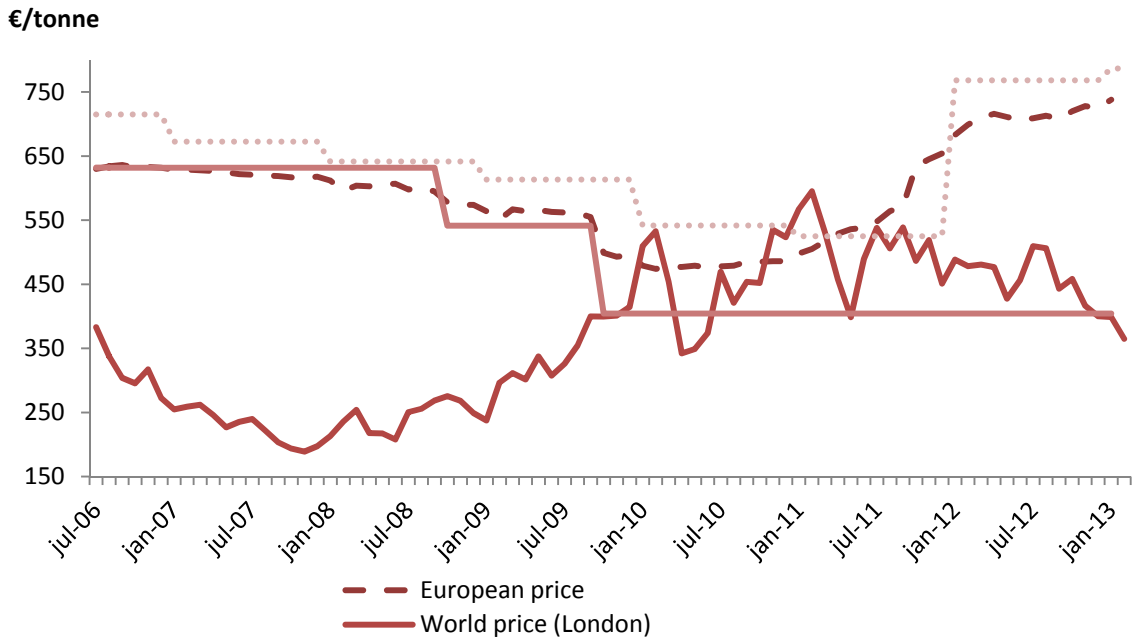
Figure 2.1 indicates that the Dutch sugar price is usually higher than the European price. The market parties interviewed for this study stated that this difference is due to the manner in which the European price data are compiled. The European Commission collects data from the sugar producers. The market parties state that the price data submitted by the sugar producers also include intercompany transactions between the producers' factories or subsidiaries. Intercompany

transactions will not take place at prices in line with the market and they will lower the average sugar prices these sugar producers submit to the European Commission.

Figure 2.1 also shows the European Commission's reference price. The reference price, which has been reduced in a number of increments since 2006, serves as the minimum sugar price.

Prior to September 2009, the minimum price was effective in keeping the European sugar price at a high level. However, following the reduction of the minimum price this floor price is no longer of relevance to the market. The European price was comparable with the world market price during an almost two-year period after October 2009. However, from October 2011 onwards the prices have become largely decoupled.

Figure 2.1 Decoupling of European sugar prices and world sugar prices



Source: SEO Economic Research, based on European Commission figures received from the HPA and information from interviews with a number of parties.

This report contains an economic analysis of the explanatory factors behind the identified price movements. The analysis begins with the production of sugar, the functioning of the sugar wholesale markets and the European sugar regime.

2.2 The various sugar markets

2.2.1 The world sugar market

Sugar is a product which is produced and consumed all over the world. Brazil is the largest sugar producer (32.7 million tonnes in 2010), followed by India (28 million tonnes in 2010/11) (Galen *et al.* 2011; OECD-FAO, 2011). Both these states produce the majority of their sugar from sugar cane. In 2009, world sugar production amounted to a total of 160 million tonnes (Galen *et al.* 2011).

The world sugar market is divided into two segments, a free market segment and a regulated market segment. A number of large states, such as the USA and China, and the European Union conduct a protectionist sugar policy with tariff barriers designed to protect domestic production. About 68 percent of world sugar production is destined for 'domestic' consumption.[1] The remainder is exported. Sugar is traded on two futures markets. White sugar futures contracts are traded on the London Futures Exchange, LIFFE, and raw sugar contracts are traded on the New York Intercontinental Exchange, ICE. Price movements on the futures market reflect the ratio between supply and demand for the free market segment of the world sugar market.

2.2.2 European sugar production

The European Union introduced a sugar policy in 1968 that was designed to protect the European market and create one market (see Box 2.1). Solely sugar beet is cultivated in Europe. The crop harvested in the 2011/2012 marketing year yielded almost 18.7 million tonnes of sugar, equivalent to about 10 percent of world sugar production.

Box 2.1 The European sugar regime in a nutshell

The European sugar policy was implemented in the nineteen-sixties with the intention of creating a stable market for producers and consumers. The European Commission controls the production of sugar with production quotas and simultaneously guarantees sugar beet growers a reasonable income by specifying a minimum beet price. The European Commission also employs Tariff Rate Quotas (TRQ) to protect the internal market from external production. The European Commission achieves this by imposing import tariffs, with exceptions for a number of states, and by restricting maximum imports of sugar. Europe permits tariff-free imports from a number of preferential trading states, the Less Developed Countries (LDC) and ACP States (a group of African, Caribbean and Pacific states). Chapter 2.4 discusses the institutional background and structure of the European sugar policy in more detail.

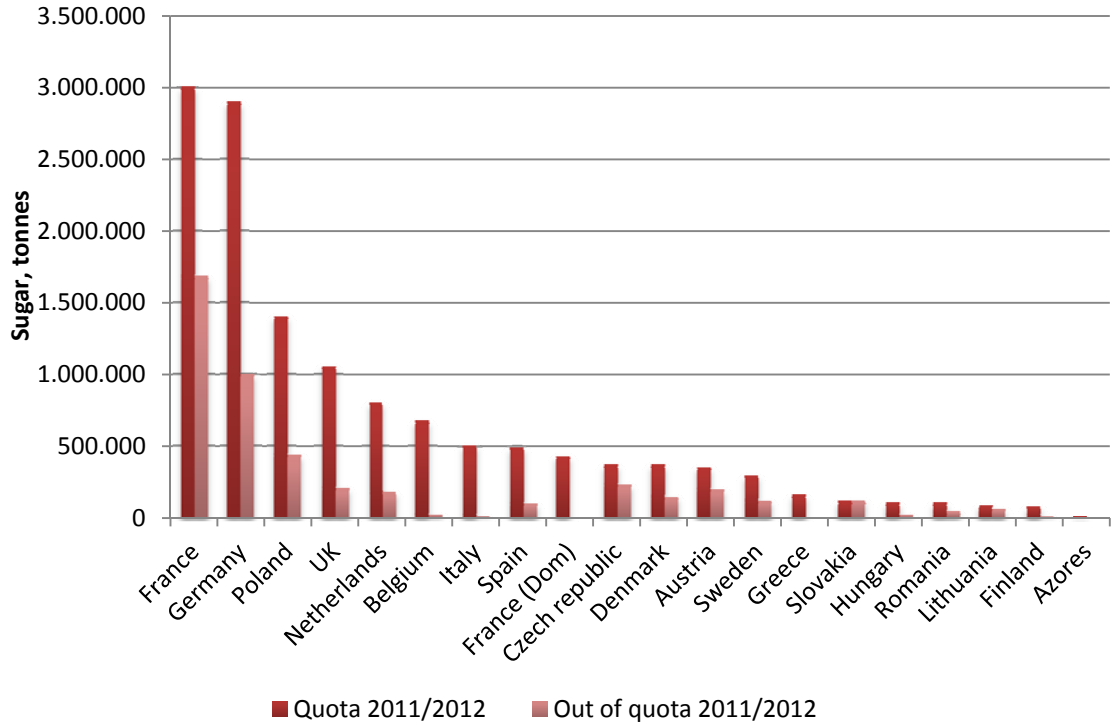
European sugar production can be divided into quota sugar and out-of-quota sugar. More than 13.3 million tonnes of the European production is quota sugar. France, Germany and Poland jointly account for 55 percent of the production of the EU quota sugar. The Netherlands produces 6 percent of the quota sugar (see Figure 2.2).[2]

The production quotas that the European Commission imposes on each EU Member State have remained stable in recent years and almost all Member States produce the maximum permitted pursuant to their quota. The quantity of sugar produced in excess of the quota can fluctuate widely from year to year due to variations in the harvest, which can be larger or smaller than forecast.

About 70 percent of the total sugar produced in the European Union is supplied to the sugar-processing industry. The remaining 30 percent is supplied to consumers via the retail channel (EU, 2006).

1 Europe is regarded as one market.
2 Data for the above and other EU Member States over a number of years are enclosed in Table 5.1 in Annex A.

Figure 2.2 Three Member States jointly produce 55 percent of the European quota



Source: SEO Economic Research, on the basis of European Commission figures.

In recent years European sugar production has not been sufficient to meet European demand for sugar (see Table 2.1**Fout! Ongeldige bladwijzerverwijzing.**). However, out-of-quota sugar may not be sold on the market without permission (see Chapter 2.4). The gap between the demand for sugar and the quota sugar supply needs to be filled by importing sugar.[3]

European imports of sugar

As explained in more detail in Chapter 2.4, a maximum of 3.5 million tonnes of tariff-free sugar may be imported from ACP States (a list of the ACP States is enclosed in Annex B). However, the interviews revealed that in practice this maximum is not utilised. This is also confirmed by the figures published by Agrosynergie (2011). No more than 49 percent of the total tariff-free import quota was utilised in 2010/2011 (see Table 2.2).

The import options available pursuant to the CXL quota were, in contrast, utilised virtually in full.[4] Brazil is the largest supplier of CXL quota sugar, and exported 334,054 tonnes of sugar to the EU in 2010/2011. A total of almost 423,000 tonnes of sugar was imported from all CXL States in this same period (Agrosynergie, 2011). However, these imports are not sufficient to fill the current gap between the European consumption and supply of sugar.

[3] However, Europe also exports more than one million tonnes of white sugar a year, the majority of which is used in other products.

[4] This quota is applicable to States including Brazil, India, Cuba and Australia.

Table 2.1 The total European production of sugar and isoglucose is usually greater than European consumption

Quantity of white sugar and isoglucose (× 1,000 tonnes)	2009/2010	2010/2011	2011/2012	2012/2013*
European Quota production	13,956	13,835	13,998	13,768
Of which isoglucose	679	689	685	691
European Out-of-Quota production	4,663	2,896	5,585	5,328
Of which isoglucose	21	48	55	50
Total European production	18,619	16,731	19,583	19,096
Of which isoglucose	700	737	740	740
European consumption[5]	16,426	17,213	16,867	16,835
European exports (quota sugar)	1,118	1,183	1,235	1,235
European imports (quota sugar)	2,996	4,095	3,989	3,562
Dutch Quota sugar production[6]	805	805	805	805
Dutch Out-of-Quota sugar production	169	88	178	177

Source: SEO Economic Research, based on figures from the European Commission (2012a). * Estimate. European figures for the EU 27. The import and export figures are inclusive of sugar processed in products.

Table 2.2 Imports from ACP States pursuant to the Preferential EPA-EBA Agreement sugar

		2009/2010			2010/2011		
(White sugar, tonnes)		Maximum	Allocated	%	Maximum	Allocated	%
Non-ACP		Nk	51,840		Nk	63,380	
ACP	LDC	Nk	290,773		Nk	365,735	
	Non-LDC:						
	Central Africa	10,186		0.0%	10,186		0.0%
	West Africa	10,186	47	0.5%	10,186		0.0%
	SADC	166,081	298,968	180.0%	174,632	263,930	151.1%
	EAC	12,908	410	3.2%	13,572	14,959	110.2%
	ESA	544,712	421,555	77.4%	572,756	577,433	100.8%
	Pacific	181,571	100,300	55.2%	190,919	136,600	71.5%
	Cariforum	454,357	304,782	67.1%	477,749	360,297	75.4%
Total[7]	*ACP non-LDC*	*1,380,000*	*1,126,061*	*81.6%*	*1,450,000*	*1,353,218*	*93.3%*
	ACP total	*3,500,000*	*1,415,214*	*40.4%*	*3,500,000*	*1,718,953*	*49.1%*
	ACP + non-ACP		*1,467,054*			*1,782,333*	

Source: Agrosynergie (2011), Table 64

5 This indicates the quantity of sugar consumed according to the European Commission. It is certainly conceivable that the demand for sugar is in excess of this consumption: however, the actual demand for sugar is not known.

6 The Netherlands has not received an isoglucose quota.

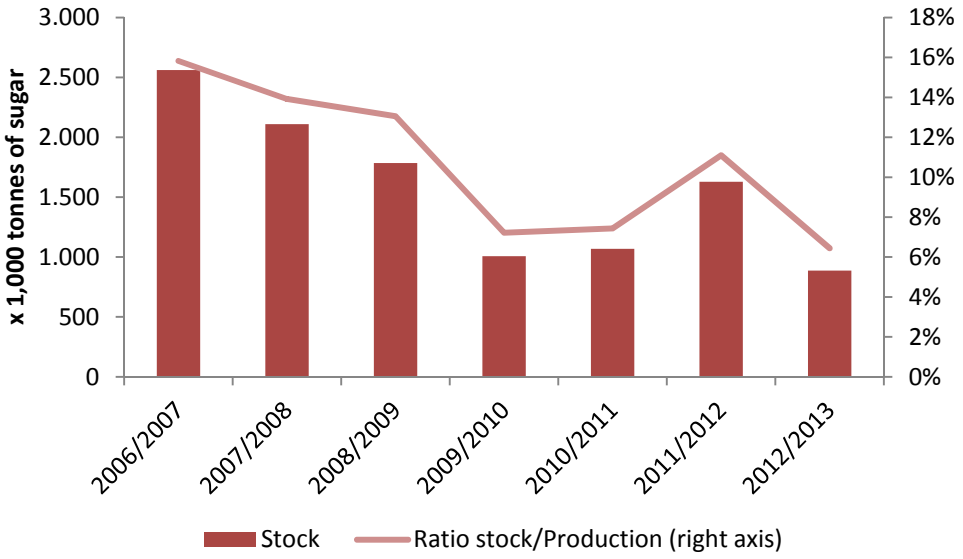
7 The limits for both Total ACP non-LDC and ACP total may not be transgressed, although individual regions within these two groups may produce sugar in excess of their specific limit: see, for example, the percentages in excess of 100 percent for ACP non-LDC (EC, 2013a)

The role played by European sugar stocks

In years in which the demand for sugar exceeds sugar production and imports the gap can be filled by drawing down on sugar stocks. European sugar producers retain part of their annual quota sugar production in stock. They can then sell this quantity one year later on top of their quota for that year. However, European sugar stocks have fallen in recent years (see Figure 2.3) as the demand in each of the years was in excess of the quota sugar supply and the stocks were drawn down to make up the deficit. In 2006/2007, the ratio of sugar stocks to the production of quota sugar was 16 percent, but had fallen to no more than 6 percent in 2012/2013 (EC, 2012a). The European stock/production ratio is significantly lower than in, for example, the USA: the ratio of US stocks to production has averaged 21 percent in the period from 2005/2006 (USDA & FSA, 2013).

The sugar stocks can, in theory, compensate for a shortfall in European sugar production. However, the potential quantities currently available are insufficient to reconcile the supply of sugar with demand.

Figure 2.3 The already low stocks have been drawn down even further



Source: SEO Economic Research, based on figures from the European Commission (2012a). The figures for 2012/2013 are provisional estimates

Intervention by the European Commission

The last measure available for the reconciliation of sugar supply and demand – when imports of sugar are inadequate and the drawdown from stocks is insufficient to close the gap – is an intervention by the European Commission. The European Commission can decide to implement this measure when it forecasts a deficit in the market. This measure can then, as reviewed in Chapter 2.4, be implemented by adopting one of two approaches: by means of a tendering procedure for the reclassification of out-of-quota sugar into quota sugar or by means of a tendering procedure for a reduced import tariff.

This measure was implemented in the 2011/2012 campaign, when a total of 1.05 million tonnes of extra sugar was brought into the market by means of

- out-of-quota sugar reclassification into quota sugar tenders, 650,000 tonnes of sugar[8];
- a reduced import tariff tender, 399,014 tonnes of sugar.[9]

Conclusions on the European sugar market

The European sugar market currently has a structural supply deficit, as the combination of the production quotas and imports (corrected for exports) is inadequate to meet the European demand for sugar. This is primarily due to the fact that no more than half of the foreseen quantity of sugar supplies from the preferential trading partners in the ACP States is actually imported. The European Commission's interventions are yielding a substantial extra supply of sugar and the producers' stocks are being drawn down. However, at present these fail to increase the supply of sugar to an adequate extent and the deficit continues to exist. The very low stock levels give cause for concern, as virtually no sugar from stocks can be brought onto the European sugar market to increase supplies.

2.3 How are the wholesale markets performing?

Sugar can be traded on a marketplace or without the mediation of the marketplace, i.e. directly between the sugar producer and customer (also referred to as Over-the-Counter, or OTC). A distinction is occasionally made between OTC contracts that are concluded bilaterally between producers and procuring parties and with mediation by brokers. These brokers are also active in the Dutch market, although the proportion of bilateral contracts concluded directly between producers and customers is not known.

A distinction that is made for exchanges divides the markets into spot markets and futures markets. Contracts concluded on the spot market coincide with the physical delivery on the product. Contracts concluded on futures markets relate to deliveries at later date for a price specified at the time the contract is concluded. A contract concluded on the sugar futures market can, for example, arrange for the delivery of 50 tonnes of sugar in 6 months' time. A distinction can also be made in the manner in which the contract is exercised, i.e. either physically or, in analogy with many other commodity futures markets, financially.

The important exchanges for the sugar market are based in London (white sugar) and New York (raw sugar).

Futures contracts serve primarily to cover price risks (hedging). Buying or selling sugar in the future purchases long-term certainty about the procurement cost or selling price. Derivatives of this nature as employed by agricultural produce markets are a natural continuation of the production of the relevant produce.[10] Futures contracts also offer opportunities for speculation

8 In the previous year the amount was 526,000 tonnes of sugar (EC, 2012a).
9 EC (2012a).
10 The formation of the Chicago Board of Trade as a futures market was directly related to the storage and sale of cereals.

on future price movements, although the scope is largely determined by the conditions attached to the option.

The Dutch sugar industry procures most sugar directly OTC from the producer. Many industrial customers state that they adopt this approach for concerns about the scarcity of sugar supplies due to the European production ceiling: they do not want to run the risk of missing out. For this reason customers wish to obtain assurances for deliveries from the annual production cycle in good time before the beginning of the campaign. Virtually no alternative supply channels are available, as internal European imports and exports are relatively limited.

The lack of competition is in part manifested by the limited availability of contract variants. Customers usually procure their supplies on the basis of an annual contract. Over the course of the years the organisation of the production chain has become closely tailored to the annual sugar beet production cycle: for example, the sugar processing industry often also supplies its customers (such as supermarkets) on the basis of annual contracts. This results in a form of hedging that covers the processing industry's supplies and price risks.

The interviews revealed that derivatives play virtually no role in the sugar market. Solely large industrial users with production facilities in various Member States conclude multiannual contracts whereby cross-border supplies of sugar are also procured. These contracts offer the companies more opportunities to hedge their risks. However, as the contracts are linked to the deliveries on a 1-to-1 basis the scope for speculation and arbitration is extremely limited. Moreover, as the sugar producers own all storage facilities the storage of sugar cannot serve as a 'lubricant' for the market. The sector's logistics are based on the just-in-time principle: the producer supplies the sugar at the precise time it is needed by the customer. The sugar producer then bears the primary responsibility for the transport and storage of the sugar, which further enhances the vertical integration of the production chain.

2.4 The European sugar policy

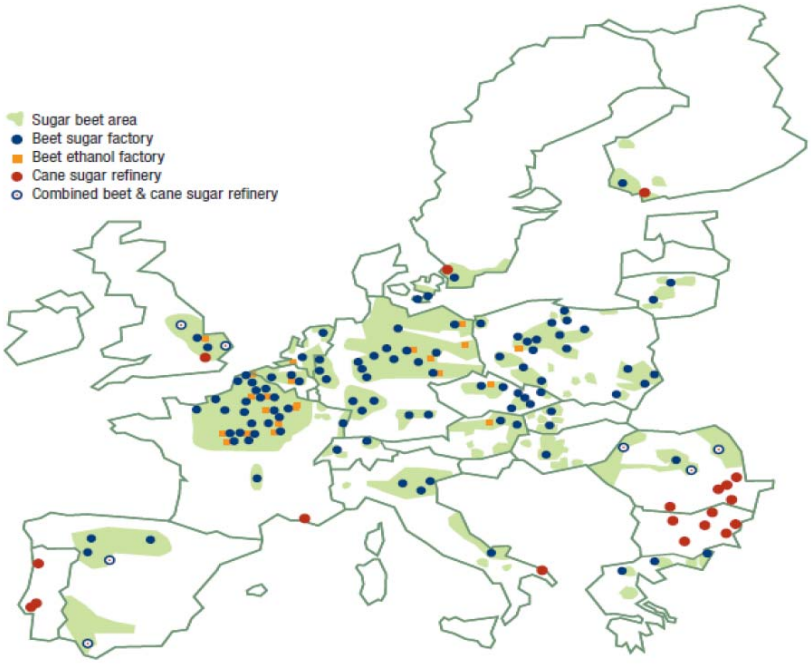
The Common Market Organisation of Sugar (CMO Sugar) was introduced in 1968. The objectives were to promote agricultural productivity, provide assurances for a fair standard of living for growers, stabilise the market, assure the availability of sugar supplies and guarantee consumers reasonable prices (NEI 2001). The European Union's sugar quota system governs sugar, isoglucose and inulin syrup.

Prior to 1968, the European Union was a net importer of sugar, but following the introduction of the CMO Sugar the European Union became a net exporter (NEI 2001). The frequently subsidised exports of sugar from the European Union resulted in a reduction of world sugar prices, as a result of which the WTO imposed pressure on the European Union to reform the system. The European Union amended the quota system in 2006. The European Union is currently once again a net importer of sugar (USDA 2011).

In 2006, the European Union – under pressure from the WTO – decided to reduce its sugar production. The objective of this reform of the sugar policy was to locate the production of the

European Union's sugar in the areas where the conditions are most favourable. The Member States could sell (part of) their quota to the European Commission. This reduced the total production quota and increased the concentration of the production in locations offering optimum conditions for the cultivation of sugar beet.
Figure 2.4 shows the European regions where sugar beet is cultivated. The sugar factories are often in the direct vicinity of the cultivation regions as this reduces the transport costs. The regional concentration has resulted in some Member States becoming net exporters within the European market. These are the 'surplus' Member States, such as the UK, France, Belgium, the Netherlands, Germany and Poland. Other Member States produce sugar but are, on balance, importers within the European market. These are the 'deficit' Member States, such as Portugal and Spain (Agrosynergie 2011).

Figure 2.4 Production of sugar within the European Union



Source: Agrosynergie (2011)

The European sugar policy consists of the following elements.

Production quota

The sugar policy pivots on the restriction of the total sugar production by the allocation of production quotas. Pursuant to this approach each Member State may produce a maximum quantity of quota sugar. Each Member State determines how the quota it has been allocated is divided between its various sugar producers. The sugar producers in turn set a quota for the sugar beet growers by determining the acreage they may sow (OECD 2007).

On the introduction of the CMO Sugar in 1968 the original production quotas were set as the production per Member State (NEI 2001). The 2006 reform also extended to the reduction of the European Union's total production quota, which was set at 13.3 million tonnes of sugar and

0.69 million tonnes of isoglucose as from 2008/2009. The Netherlands is entitled to produce 0.8 million tonnes of sugar and 0.2 million tonnes of isoglucose (EC, 2012a).

The former sugar regime made a distinction between two categories of quota sugar, A-sugar and B-sugar, and one category of out-of-quota sugar, C-sugar. The difference between A-sugar and B-sugar lay in the different levies imposed on both categories, although both were governed by the same rights for sales on the European sugar market differed. C-sugar could only be exported to the world sugar market (NEI 2001). The distinction between A-sugar and B-sugar lapsed with the reform in 2006, and the sole distinction made on the supply side is now between in-quota sugar and out-of-quota sugar.

In the current regime the use of out-of-quota sugar is limited to the following options (USDA 2012):

- Exports to a maximum of 1.35 million tonnes per annum;
- Sale for the production of biofuel or for other industrial purposes;
- Carry-over as part of the quota for the following year;
- Release on the European market subject to a levy of € 500 per tonne of sugar.

Minimum prices

The European sugar policy protects the sugar-producing parties by guaranteeing them a minimum price for their sugar, but also imposes the obligation on them to pay the growers a minimum price for their sugar beet. The sugar producers also pay the European Commission a levy of € 12 per tonne of sugar. This levy was originally introduced to finance the sugar policy. Subsequent to the 2006 amendment of the quota system the minimum price for the growers has been reduced and the minimum price for raw and white sugar has been replaced by a reference price that is lower than the original minimum price. These prices have been stable since 2008/2009, at a minimum price of € 26.29 per tonne of sugar beet, a reference price of € 404.40 per tonne of white sugar and a reference price of € 335.20 per tonne of raw sugar. The European Union takes action once the European market price falls to 85 percent of the reference price (EC, 2012a).

Tariff Rate Quota (TRQ)

The European Union sets the tariffs and quota for sugar imports. The import tariff levied by the European Commission is intended to protect the internal market from external competition. The current import tariffs amount to € 419 per tonne of white sugar and € 339 per tonne of raw sugar (EC TARIC 2013). There are a number of exceptions to this tariff, with different reductions of the import tariff and maximum import volumes by country of origin.

- Tariff-free imports per annum (EC, 2013a):
    - 3.5 million tonnes of sugar from African, Caribbean and Pacific States (ACP States) and the Less Developed Countries (LDCs);
    - 157,000 tonnes of sugar from Albania, Bosnia and Herzegovina, Serbia, FYROM and Croatia;
    - 396,000 tonnes of sugar for industrial purposes and biofuel *erga omnes* (for everyone);

  - 10,000 tonnes of sugar from India.
- Imports at a reduced tariff (EC, 2013a):
  - 334,000 tonnes of sugar from Brazil at a reduced of tariff of € 98 per tonne;
  - 254,000 tonnes of sugar *erga omnes* (for everyone) at a reduced of tariff of € 98 per tonne;
  - 10,000 tonnes of sugar from Australia at a reduced of tariff of € 98 per tonne;
  - 69,000 tonnes of sugar from Cuba at a reduced of tariff of € 98 per tonne;

The aforementioned quotas are maximum quantities and do not guarantee that the European production will actually be supplemented with these potential imports. For this reason the European Commission prepares a balance sheet prior to each marketing year (from 1 October to 30 September) which list the forecasts for the production, import and export of sugar. The objective of this balance sheet is to provide assurances for the reconciliation of supply and demand. A number of options are open to the European Commission when the supply and demand are not sufficiently reconciled.

When a surplus is forecast then the European Commission can withdraw quota sugar from the market or grant export refunds for the sale of the surplus outside Europe. When quota sugar is withdrawn from the sugar producers then the European Union can impose an obligation on the sugar producers to carry forward a percentage of their quota, with or without financing, to the quota production of the next year. The European Union can also decide that preventive withdrawal is necessary: an obligation is then imposed on European sugar beet growers to reduce the acreage they sow for the coming year (Agrosynergie 2011 and EC 2012a). Intervention is another form of withdrawal, in which the national intervention agency buys sugar from the sugar producers (NEI 2001).

The last remedy available to the European Union in the event of a surplus is to grant an export refund for the sale of the sugar over the European tariff barriers. This was frequent prior to the reform of the sugar regime in 2006, when the European Union was a net sugar exporter. The objective of the export refund is to sell surplus sugar – produced in excess of the quota – on the world market at a competitive price. The amount of the export refund was determined via a weekly tender. Each week exporters could bid for an export refund and the export quantity governed by the refund. All bids were evaluated by the Sugar Management Committee on the basis of the current world sugar price, forecast movement in the price and forecast total demand for export refunds. Approved export refunds never exceed the maximum refund, which is equal to the EU minimum price plus the storage levy plus the 'free on board costs' minus the world market price (NEI 2001). Following the conclusion of the Agricultural Agreement of the Uruguay round of the GATT negotiations the total quantity that may be exported is subject to restrictions and has been limited by the WTO to 1.374 million tonnes of sugar (Domènech *et al.*, 2008). This is larger than the export maximum set by the European Union. No export refund tenders have been opened since September 2008 (Gudoshinikov, 2010).

The European Union can respond to a deficit on the European market by implementing the following measures. The EC can open a tendering procedure for the reclassification of out-of-quota sugar into in-quota sugar and open a tendering procedure for additional sugar imports at a reduced import tariff (reduced tariff tenders). The EC can also increase the tariff-free quota per State or *erga omnes* (for everyone).

When the EC opens a tendering procedure for the reclassification of out-of-quota sugar into in-quota sugar it proceeds as follows. First, the European Union draws up a forecast of the deficit in the market. Next, the European Commission estimates the potential quantity of sugar that can come into consideration for the tender, i.e. the quantity of out-of-quota sugar that is still available. The European Union then determines a reduced tariff and the maximum quantity. All registered sugar producers may submit a tender for a maximum quantity of sugar that is specified in advance. Bids may be submitted during an approximately two-week period. The European Union then divides the maximum additional quota between the producers, although not necessarily in accordance with their bids (EC tender 2013).

When the European Commission opens a reduced tariff tendering procedure all recognised sugar traders may submit a bid. Sugar traders are recognised sugar traders when they have imported sugar at the regular import tariff for more than one year. The sugar traders submit their bids by issuing a price and the quantity of sugar they wish to import. The European Commission determines the quantity and the tariff for the reduced tariff import quota (MO productschappen 2013).

As the current sugar quota system expires in 2015, a decision will be made on the future of the sugar quota policy next June. Opinions are divided on the sugar policy. The sugar-producing parties are against the abolition of the sugar system: they doubt whether European sugar beet growers and sugar producers can survive the great fluctuations in and fall of the sugar price they expect following the abolition of the sugar quota. They are of the opinion that this will be detrimental to employment in the sector and to European food security (Aerts, 2011).

The sugar-processing parties (industrial bulk users), conversely, are opposed to the prolongation of the quota system. They are of the opinion that the current quota system is outdated and claim that the quota system maintains European prices at artificially high levels. According to the sugar processing industry, this damages the European companies' competitive position (CIUS 2012).

On 13 March 2013, the European Parliament voted for the retention of the sugar quota until 2020. This is the first step towards the prolongation of the sugar quota. The European Commission and Council of Ministers will now need to agree to the prolongation of the sugar quota. This decision will be reached in June (Nieburg, 2013).

3 Price structure

The sugar price structure reveals that the sugar producers' mark-up has increased in recent years. The increasing production costs cannot explain the increased market price. The increase is more likely to be due to the market structure and lack of competition.

3.1 From sugar beet to sugar

This Chapter reviews the industrial chain involved in the production of white sugar. As the Netherlands produces sugar from sugar beet, and not from sugar cane, the review is limited to the Dutch industrial column involved in the production of sugar from sugar beet.[11] The sugar production process is comprised of a number of steps which begin with the sugar beet grower. The Dutch sugar beet growers are members of the Royal Cosun cooperative, which has 9,708 members (in 2012). Suiker Unie is part of the Royal Cosun organisation.[12]

The sugar production process is comprised of a number of steps which begin with the sugar beet grower. The grower sows the sugar beet seeds in March and April for harvesting in the autumn. The sugar beet is harvested in September. In 2012, the sugar beet harvest was 5.8 million tonnes.[13] The harvested sugar beet is then transported to the nearest factory, where it undergoes a series of process steps (see Figure 3.1). First, the sugar beet is washed. This yields two by-products: the beet tips and washing water, and the top soil washed from the beets. These by-products are not used in the sugar production process. The sugar beet is then cut into thin slices, which are fed to a diffusion tower to leach the sugar from the flesh. The leached slices are removed from the top of the tower. This pulp is also a by-product from the sugar production process, and is used to manufacture animal feed. The raw juice extracted from the slices is discharged from the base of the tower. The raw juice is purified to remove minerals, salts and proteins to yield thin juice containing 15 percent sugar. A by-product from this purification step is lime that can be used as an agricultural fertiliser.

The thin juice passes through evaporators where it is heated by steam to boil off part of the water to yield thick juice containing about 60 percent sugar. The thick juice is then heated in pans to boil off more water and further increase the sugar concentration. If so required, raw cane sugar can now be added to the raw beet sugar: sugar producers who important raw cane sugar can mix this with the raw beet sugar to increase their sugar production. The mixture is then fed to centrifuges to separate the sugar crystals from the liquid. This process step yields the last by-product in the sugar production process, molasses, which is used as a raw material for the production of products such as animal feed, alcohol and syrup. In the final stage of the production process the sugar crystals are dried and cooled. In 2012, Suiker Unie produced

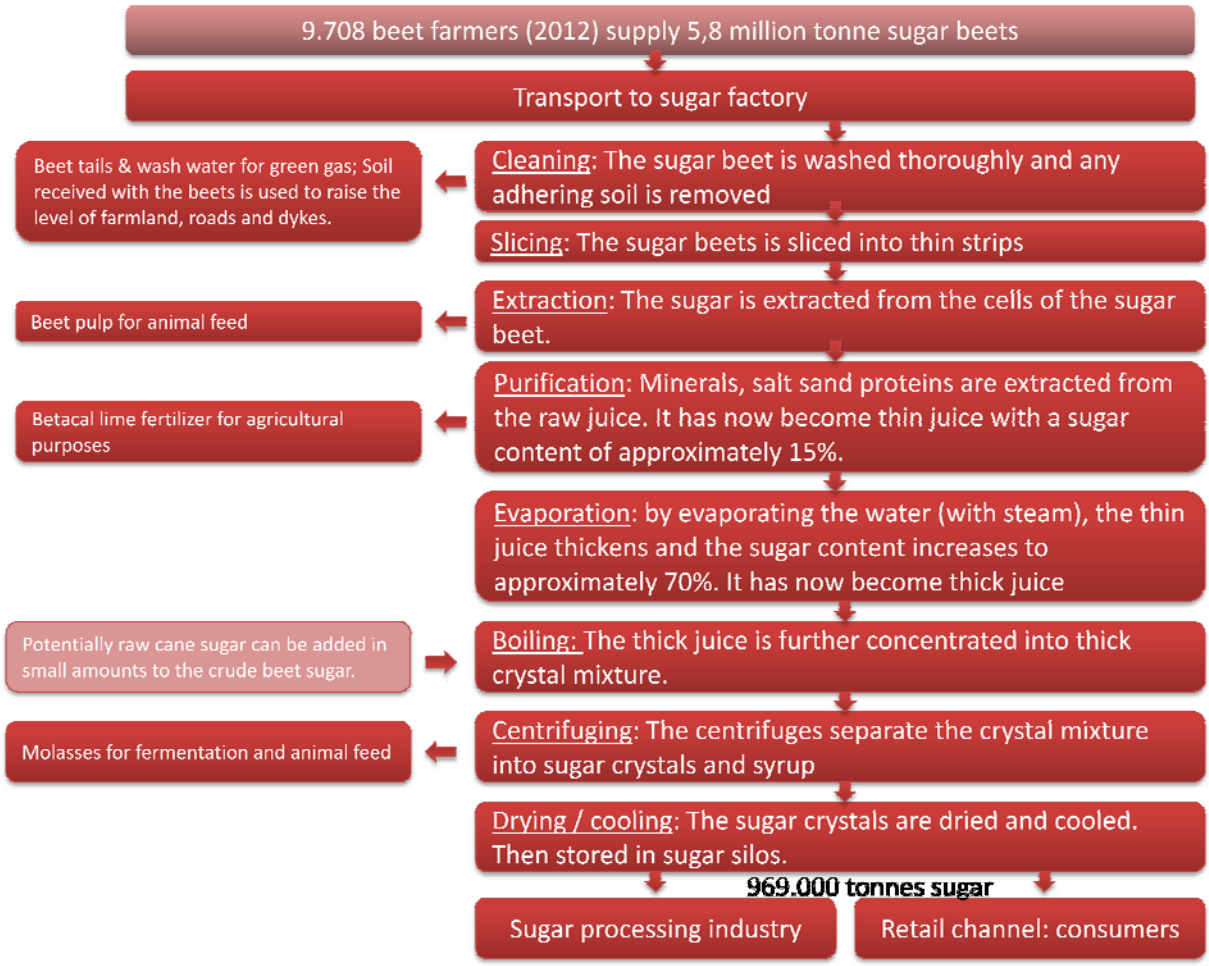
11 The steps involved in the production of sugar from sugar cane are as follows: the stems are washed and then crushed to yield juice and bagasse (fibres). This juice is filtered and concentrated by boiling off water to form thick juice. Next, seed crystals are added to allow larger crystals to grow. The mixture of crystals and liquid is separated in centrifuges to yield raw sugar and molasses sugar (Galen *et al.*, 2011)

12 Royal Cosun (2013)

13 Royal Cosun (2013)

969,000 tonnes of sugar from the crop of 5.8 million tonnes of sugar beet. The sugar end-product is then stored in silos to await transport to the sugar-processing industry or supermarkets (Galen *et al.*, 2011; Suiker Unie 2013)

Figure 3.1 From sugar beet to white sugar



Source: SEO Economic Research, based on information from Royal Cosun (2013) and Suiker Unie (2013)

3.2 Analysis of the price structure

Although earlier studies have been carried out to examine the production costs of sugar, they all date from before 2006 and the production costs determined at the time may no longer reflect today's costs.[14]

The cost price of sugar can in part be reconstructed from published information. The sugar beet price is the most important procurement price component. The basic price is set by the

[14] For example, Gohin *et al.* (2006) state that estimates based on budgets and technical data demonstrate that the production costs are close to the sugar intervention price (€ 632 per tonne) and, as a result, close to the minimum price for sugar beet. Adenauer *et al.* (2005) compared the marginal costs of the production of sugar beet and concluded that in the Netherlands these lie between € 34.80 en € 49.20 per tonne of sugar. An even older study from 2001 concluded that the processing costs amount to € 243,60 per tonne of sugar and the transport costs to € 44.10 per tonne of sugar (NEI 2001).

European Commission and serves as the minimum price that sugar processors are to pay the sugar beet growers. Royal Cosun's annual reports offer an insight into the basic price of sugar beet. A distinction is made between the basic price of sugar beet with a sugar content of 17 percent and an extractability rate of 91.4 and the basic price of sugar beet with a sugar content of 16 percent and an extractability rate of 87. The first of these prices is higher. The basic price has fallen in the past few years: in 2006/2007 the basic price of sugar beet with the low sugar content was € 32.86 per tonne of sugar beet and in 2012/2013 € 26.25 per tonne of sugar beet.[15]

In addition to the basic price, information is also available about the members' bonus sugar beet growers receive from Royal Cosun. This bonus is based on Suiker Unie's profitability[16] and, as a result, constitutes a form of dividend payment to the members of the cooperative, the sugar beet growers. The members' bonus varies from year to year, and has increased from € 9 per tonne of sugar beet in 2008/2009 to € 32.75 per tonne of sugar beet in 2011/2012.[17]

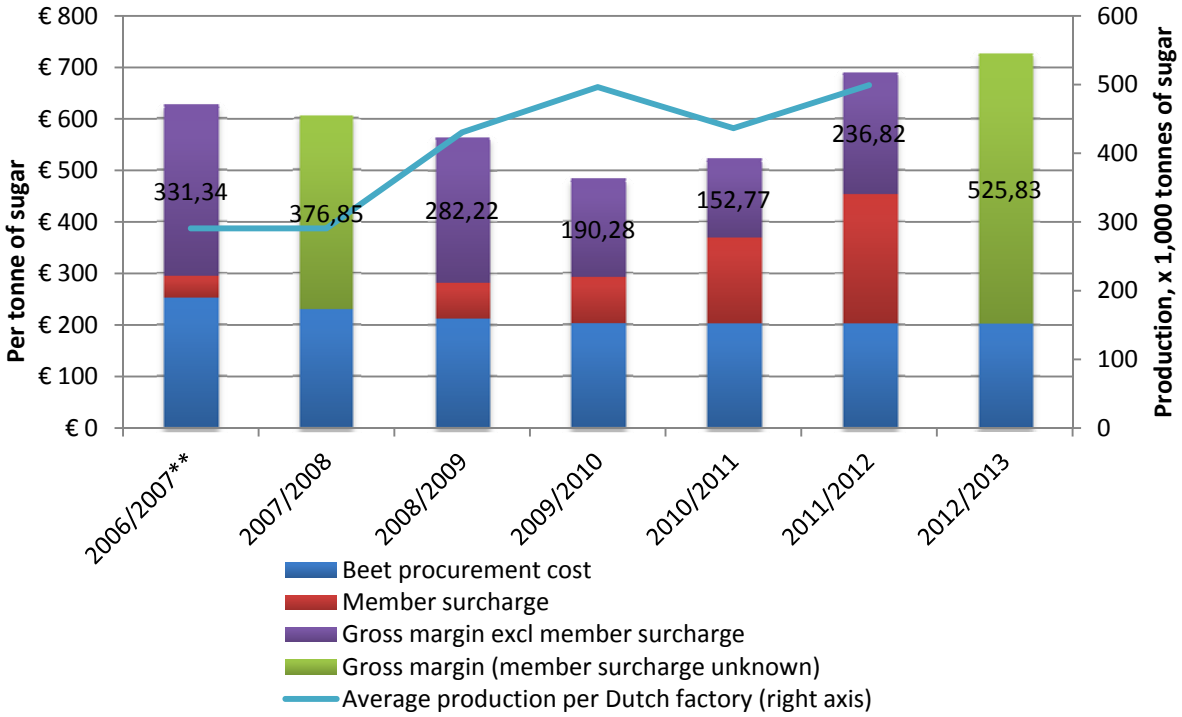
This information can be used to construct part of the price structure of European sugar in each campaign (see Figure 3.2). For the sake of completeness, it should be noted that Suiker Unie's actual selling price can differ from this price. The procurement price of sugar beet (per tonne of sugar) was about € 200 in the campaigns from 2006/2007 to 2012/2013. The difference between the selling price of sugar and the procurement price of sugar beet is the gross margin.[18] As the European sugar price is presented *ex works* this amount is exclusive of the transport costs. The gross margin needs to cover the capital, energy, payroll and other procurement costs and then offers scope for the operating result, which can be either positive or negative.

The unknown factor in the price structure is the amount of the costs to be covered by the gross margin less the members' bonus (the purple zones in Figure 3.2): the member's bonus needs to be deducted as this is as such already part of the profit.

The lowest gross margin less the members' bonus was in the 2010/2011 campaign, when € 153 per tonne of sugar was sufficient to cover the production costs (capital, energy, payroll and other procurement costs). Suiker Unie's annual reports for 2010 and 2011 reveal that the concern recorded an excellent result in these years. In view of the continuing optimisation of the production process over the years it is not plausible to assume that the production costs have increased since then. For this reason € 153 per tonne of sugar should be regarded as a conservative estimate of Royal Cosun's variable costs.[19] The concern shall in any case record an operating profit on the production of sugar in those years in which the gross margin is higher than € 153 per tonne of sugar. The full profit is not paid to the growers in the form of the members' bonus: part of the profit will be invested or transferred to the reserves to increase the concern's equity. The amount involved in this appropriation of the profit cannot be determined from the available information.

15 Royal Cosun, 2010, 2013 and EU(2006)
16 Royal Cosun, 2011
17 Royal Cosun 2011, 2013, 2008
18 Income from the sale of by-products such as molasses is not taken into account in Figure 3.1.
19 This is an overestimate of the actual cost level, as the item also includes the operating profit. The distinction between the operating profit and costs in the gross margin cannot be made on the basis of the available information.

Figure 3.2 The profitability per tonne of sugar has in any case increased from 2009/2010



Source: SEO Economic Research, based on information from various sources[20]. * The members' bonus for 2007/2008 and 2012/2013 not known. ** Solely information from Royal Cosun is included in this year, and not from CSM. CSM was sold to Royal Cosun in April 2007. For the purposes of clarification: the sugar beet price for the 2012/2013 campaign is based on the 2012 financial year. The members' bonus for the 2011/2012 campaign is based on the figures in the 2012 annual report as the bonus was paid in 2012. For this reason the members' bonus is not included in the figures for the 2012/2013 campaign. The average sugar production in 2007/2008 is not known. For this reason the level in the previous year is assumed.

This research uses the efficient costs to make an estimate of Royal Cosun's market power in sugar production. The research makes this estimate using the Lerner index (see Box 3.1).

The costs incurred in the production of one tonne of sugar amount to € 202 for the procurement of the sugar beet and a maximum of € 153 for the production costs (inclusive of the procurement of other needs). Consequently, these total average costs amount to a maximum of € 355 per tonne of sugar in recent years.
The prices of out-of-quota sugar sold to the chemical industry confirm this average level of production costs: for example, a price of between € 358 and € 389 per tonne of sugar was charged in the spring of 2013.[21] The production costs of this sugar will not be higher than the aforementioned price range.

The procurement cost of sugar beet is fairly constant and an upper limit has been adopted for the production costs. Consequently, the Lerner index is largely determined by movements in the

[20] Royal Cosun (2013; 2011; 2010, 2008), EU (2006), European Committee. The procurement price for sugar beet is based on a sugar content of 16 percent and an extractability rate of 87. It is assumed that 100 tonnes of sugar beet yields 13 tonnes of sugar. Exclusive of income from the sale of by-products.
[21] Report from the *suikerbegeleidingscommissie*, May 2013.

sugar price. The average costs have been entered in the Lerner index (see Figure 3.3). The European sugar price has also been entered in the formula.

Figure 3.3 reveals that the Lerner Index increases with the sugar price. The index was 0.51 in 2012/2013, i.e. the mark-up was 51 percent. The sugar price fell to the lowest level in 2009/2010. The members received a bonus of € 90 per tonne of sugar at a sugar price of € 482 per tonne of sugar in that year. As a result, the net margin for the members was at least 19 percent (€ 90 as a percentage of € 482). With the production cost level of € 153 per tonne of sugar this indicates that the remaining profit of € 37 per tonne of sugar was not paid out to the members. The mark-up then amounted to a total of 26 percent.

Box 3.1 The Lerner index

The Lerner index, named after Abba Lerner, indicates a given company's degree of market power in a range from perfect competition to a monopoly.[22] Economic theory states that perfect competition will result in a price equal to the costs, as price consumers will switch to the competition if a higher price is charged. At the other end of the spectrum, a monopoly will by definition have no competitors and will not need to take account of the possibility that consumers switch to the competition. A monopolistic company can then command a price in excess of the production costs and, in so doing, charge a mark-up.
The Lerner index indicates the company's market power in the spectrum between perfect competition and a monopoly.

The formula for the Lerner index is:

$$\frac{p - mc}{p}$$

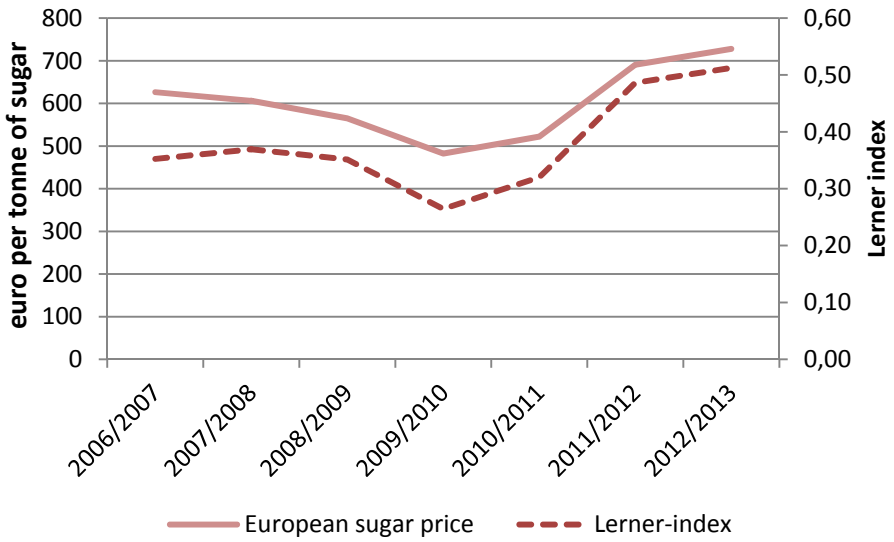
The result is an index in the range from 0 to 1. As the index approaches 0 the difference between the price and the costs becomes increasingly smaller, which is indicative of healthy competition in the market. As the index approaches 1 the mark-up becomes increasingly larger, which is indicative of market power.

Source: SEO Economic Research

Royal Cosun's mark-up was between 26 and 51 percent in the period from 2006/2007 to 2012/2013. The mark-up has increased to 51 percent since 2009/2010. This trend has taken place in a period in which the average production of each Royal Cosun factory has increased, as is shown by the curve in Figure 3.2. These increases in scale will probably have reduced Royal Cosun's efficient costs incurred in the production of sugar: an increase is, in any case, unlikely. For this reason this Section concludes that the increasing European sugar prices are not caused by higher production costs. The price structure reveals a growing profit share. This growth in the profit can be explained by the competitive conditions in the market, as shown in Figure 3.3.

22 See: Martin (2002), p. 119 and Lerner (1934).

Figure 3.3 The mark-up increases with increasing European sugar price



Source: SEO Economic Research. European sugar prices: EC information. Lerner index: in-house calculations.

3.3 Benchmark: comparison of price movements in comparable markets

A comparison with the price movements in another market also offers a means of explaining the price movements in the sugar market. This might offer an insight into the drivers behind the sharp increase in the European sugar price during the past few years. Two markets have been selected as benchmarks. The first of these is the US sugar market, which is also governed by production quotas and import tariffs. However, the performance of this market differs greatly from that of the European market. As was revealed by Figure 2.1, the price on the world sugar market fluctuates to a much greater extent than on the European market. As both markets trade in the same product and both are governed by production quotas and import tariffs, a comparison of the two offers a means of making an inventory of and analysing economic explanations for the differences in their performance.

The second benchmark market selected for this research is the European cereals market, which has been selected since this agricultural produce is governed by the Common Agricultural Policy. The objective of the European Commission's policy is to stabilise the agricultural markets and provide assurances for a fair standard of living for farmers. This has been given shape by introducing a price support system in which the European Commission can implement measures when the market prices fall or threaten to fall below the intervention price.[23] Although the European agricultural market is not governed by a quota system, the European Commission can nevertheless intervene to support prices as required, as a result of which the European agricultural market is an interesting benchmark market for the European sugar market.

[23] EC (2007), Article 47

3.3.1 Benchmark: US sugar market

The current US sugar policy dates from 2002, but is based on the Farm Bill. The United States Department of Agriculture, the USDA, employs a Tariff Rate Quota (TRQ) and has implemented a production quota. The TRQ is, in short, stable and comparable to the European Union's system. The US import tariff on sugar has been stable for many years at $ 357.40 per ton of sugar (USITC 2013). The USA is, in analogy with the EU, a net importer of sugar.

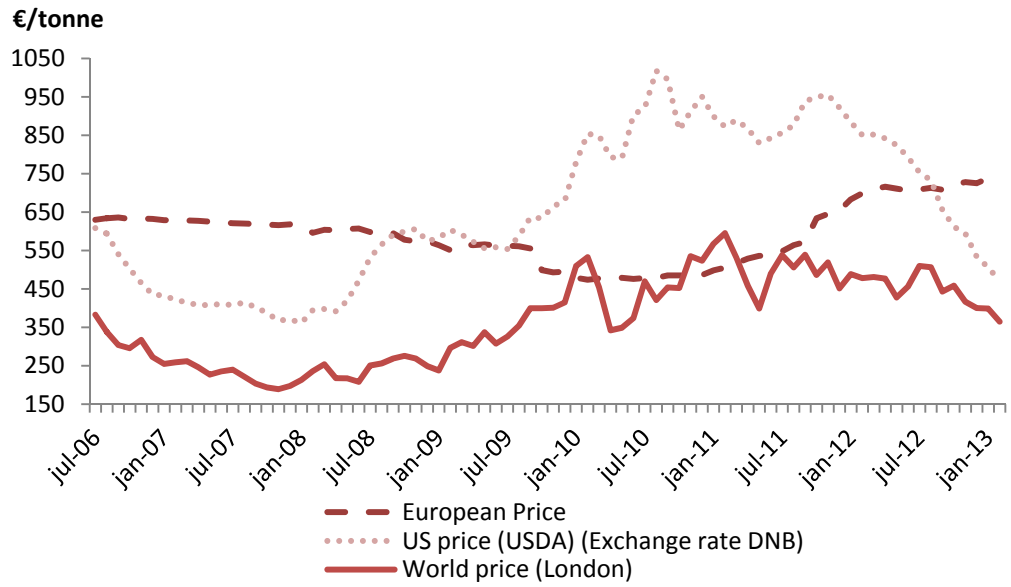
However, the US system does differ in terms of the production quota: the USDA sets this quota once a year by deducting the forecast imports from the forecast consumption, whereby the Department takes account of scope for adequate stocks. The USDA calculates the annual production quota to limit the risk of very large falls in prices (USSC 2005). Growers and sugar-producing parties may exercise their discretion in deciding how much sugar they wish to produce, but must store the out-of-quota sugar at their own expense until they have permission to sell it in the future (Sugarcane 2013).

The US minimum price system also differs from the system employed by the EU. The USDA grants non-recourse loans to producers, whereby the sugar serves as the collateral for the loan. When the loan becomes due the producers may exercise their discretion in deciding whether to repay the loan or forfeit sugar. Forfeiting sugar to redeem the loan is an economic proposition solely when the income that would be accrued from the sale of the sugar at the prevailing market price is lower than the value of the loan. The current price levels for the loans are $ 18.75/lb for raw cane sugar and $ 24.09/lb for white beet sugar (Jurenas 2013).[24]

The USDA can implement measures when the US sugar price falls below the minimum price (the effective support level) set by the USDA (currently $ 18.75/lb for raw cane sugar and $ 24.09/lb for white beet sugar). The USDA then purchases sugar for at least the minimum price and sells this sugar to the ethanol and bio-fuel industry (Jurenas 2013).

[24] lb is the abbreviation of pound, equivalent to 453.6 grams.

Figure 3.4 The fluctuation of the US and world market sugar price is much larger than the European sugar price

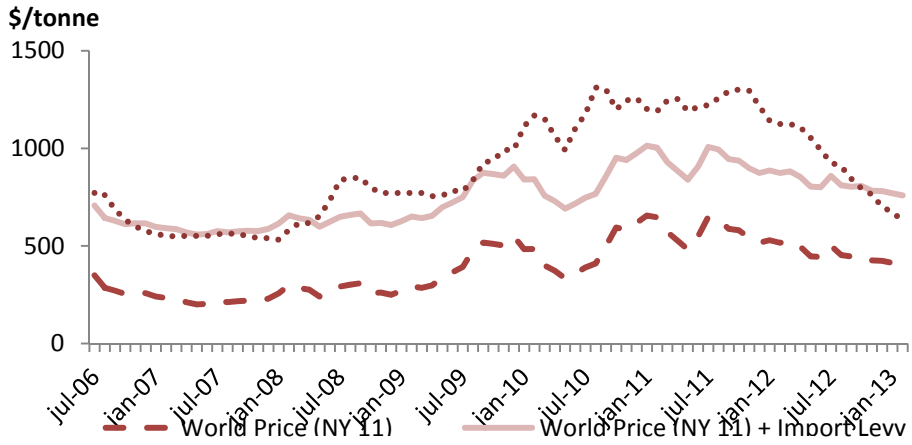


Source: SEO Economic Research, based on information from the European Commission (European price), HPA and USDA

Figure 3.4 reveals that the price of sugar on both the US and European Union markets is much higher than the world price. It is striking to note that the US sugar price is correlated with the world sugar price but that the European sugar price is not.

Figure 3.5 compares the difference between the US sugar price and world sugar price increased by the general US import tariff of $ 357.40 per ton. The total of the world sugar price and general import tariff is close to the US market price. The US market price differed significantly from the import alternative solely in 2010 and 2011, when the US market price was higher.

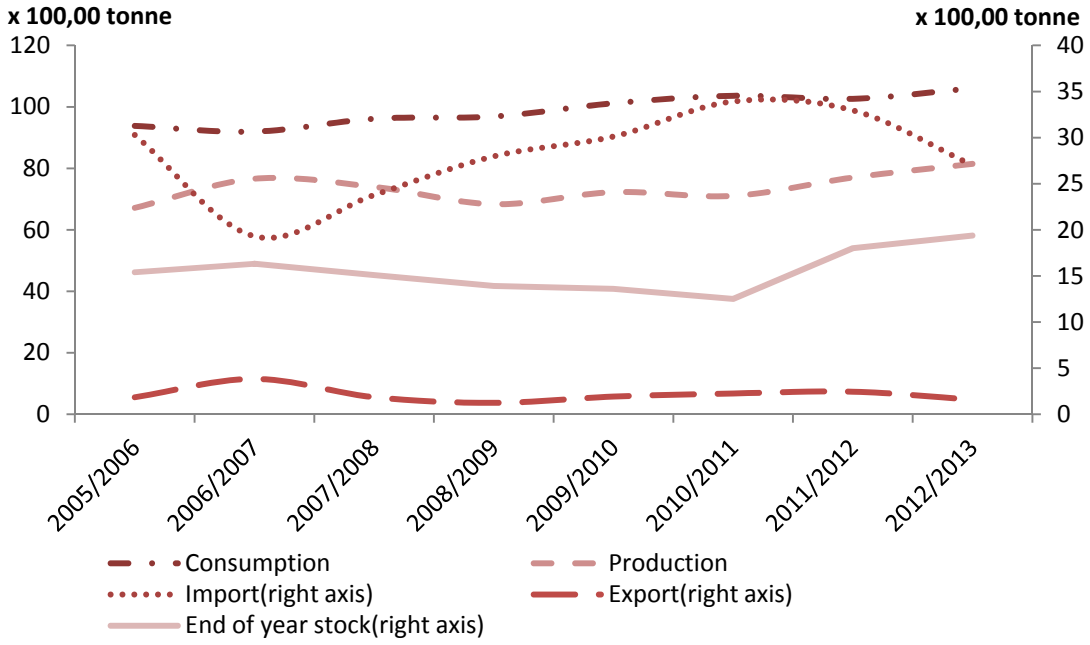
Figure 3.5 The price of sugar produced in the USA is occasionally higher than the import alternative



Source: SEO Economic Research, based on information from HPA and USDA

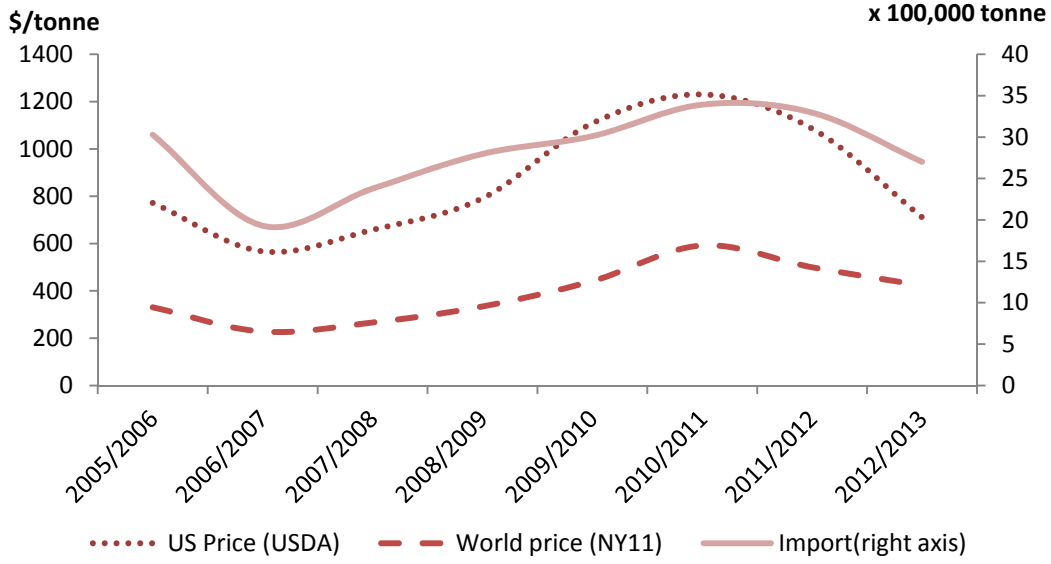
Figure 3.6 reveals that the US sugar consumption, production, export and stock quantities have remained fairly constant in recent years. Imports of sugar are the most volatile variable, which correlate positively with the US sugar price (see Figure 3.8).

Figure 3.6 US imports would appear to absorb fluctuations in US production



Source: SEO Economic Research, on the basis of figures from USDA & FSA (2013)

Figure 3.7 Movements in the US sugar price and imports are closely related



Source: SEO Economic Research, based on information from HPA, USDA & FSA (2013)

The benchmark reveals that the European sugar policy is comparable to the US sugar policy. Both trading blocs have implemented a production quota, Tariff Rate Quota and a form of minimum price, and both are net sugar importers.

In addition, the sugar price in both trading blocs is higher than the world price. This implies that the consumers pay the price for the income certainty provided to growers and sugar producers via the quota system.

However, the US and European sugar markets do differ in terms of the correlation of their prices with the market price. The US sugar price correlates closely with the world price, while the European sugar price would appear to have a will of its own.

The extent to which the sugar price follows movements in sugar production and consumption is greatly dependent on the regulations governing the quota system: the feasibility of importing sugar to close the gap between domestic production and consumption is of particularly great importance. US sugar imports respond to the threat of a deficit in good time. The US sugar price and sugar imports are correlated, with a correlation coefficient of 0.83[25]. EU sugar imports, conversely, are not correlated with the European sugar price. This indicates that the European Union experiences difficulty in influencing sugar imports and adjusting imports rapidly to absorb movements in European sugar production.

3.3.2 Benchmark: European cereals market

The European Common Agricultural Policy for cereals was implemented in 1967. The CAP governs soft wheat, hard wheat, barley, maize sorghum. Both types of wheat are further subdivided into high, medium and low-quality wheat (EC 2011).

The cereals policy is primarily based on intervention, for which purpose the EC makes use of an intervention price and a Tariff Rate Quota system: production is not governed by quotas. The EC has set one intervention price of € 101.31 per tonne for all types of cereals. When the price of a cereal on the European cereals market falls below the intervention price the EC automatically intervenes by buying in a maximum quantity of cereal. The maximum quantity of soft wheat that may be bought in was reduced to 3 million tonnes in 2010/2011. No maxima are applicable to other types of cereals (EC 2011). When the EC decides that an intervention quantity in excess of the maximum is required then it opens a tendering procedure.

The intervention stock of cereal is stored until it is released back onto the market. This takes place when "...the prices offered by traders do not undercut local market prices, and when the offered price is higher than or equal to the reference price (= intervention price, € 101.31 per tonne)" (EC 2011). Intervention stock is also is also allocated to food aid.

The import tariff varies by type of cereal and, for some types of cereal, by the quality group of the specific type. The import tariffs on high-quality soft wheat, all qualities of hard wheat, barley, maize and sorghum are variable: these variable import tariffs are a function of the difference between the EU intervention price for cereals (€ 101.31 per tonne) and the CIF price[26]. The customs duties then increase with increasing world market prices (and vice versa).[27] The variable

25 The correlation coefficient was calculated using seasonal data for the period from 2008/2009 to 2012/2013. The number of observations is too low to draw conclusions from the correlation coefficient.

26 Cost, Insurance, Freight. The seller pays for carriage to the port of destination (exclusive of unloading) and insurance to the port of destination.

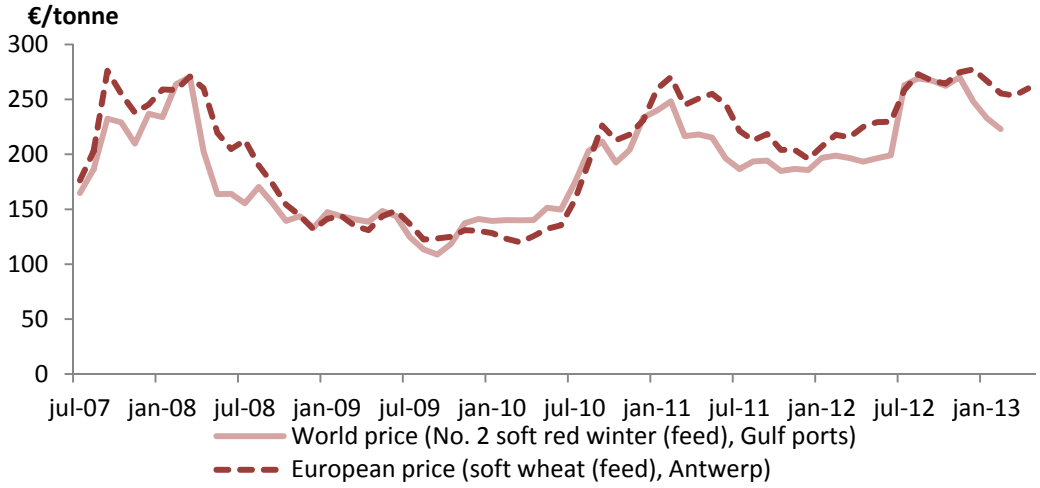
27 HPA (2013)

tariff is set once every two weeks, or earlier when the difference is greater than € 5. The fixed tariff for the other types of cereal is between € 89 and € 95 per tonne (EC 2011).

The EU is a net cereals exporter and exports about 15 percent of its production. The EU has instruments available to grant export refunds for or impose levies on exports of cereals when the world price is higher or lower than the European price. No export refunds on cereals exports have been granted since 2006, and no levies have been imposed on cereals exports.

Contracts in the EU are concluded via the exchange, worldwide brokers, online trading forums, local collectors and by other means. Figure 3.8 reveals that European cereal prices are in line with movements in the world price, with a correlation coefficient of 0.94.

Figure 3.8 European cereal prices are the same as world cereal prices



Source: SEO Economic Research, based on information from HPA and USDA, exchange rate from DNB.

Why are the production and consumption sides reconciled on the regulated cereals market, while the European sugar market has suffered from a supply deficit for some years? The explanation for this difference can be identified only by carrying out an analysis of the differences between these regulated markets.

Firstly, cereals are less homogeneous than sugar: cereals are available in a wide variety of types and qualities. Secondly, the contracts are not concluded in the same manner: sugar contracts are concluded in bilateral negotiations, while cereal contracts are concluded via the exchange, worldwide brokers, online trading forums, local collectors and by other means. As a result, the cereals market exhibits more similarities with the customary commodity markets. The market exhibits a better performance.

Thirdly, the EU is a net cereals exporter but a net sugar importer. This is probably due to the fact that the cereals market is not governed by a production quota, as a result of which producers are in a better position to accommodate forecast movements in consumption. This incentive has been eliminated in the sugar market following the introduction of the production quota.

Fourthly, and lastly, an automatic intervention mechanism has been implemented for soft wheat that ensures that cereal supplies respond flexibly and rapidly to movements in the cereals market. The sugar market lacks this mechanism: the time required for the decision-making on intervention retards responses and, as a result, can allow any deficit to persist.

3.3.3 Comparison with the two benchmarks: an explanation for the European sugar price?

The objective of the analyses of the US sugar market and European cereals market is to put the findings on the European sugar market in a broader perspective.

The US sugar market resembles the European sugar market in that both are regulated markets. However, the markets differ in terms of their binding minimum price, flexibility of setting the TRQ and production quota and market deficit, as shown in Table 3.1. Nevertheless, the two markets exhibit different price movements: the European sugar price does not appear to be correlated with the world sugar price, while the US sugar price is closely correlated with the world sugar price.

The European sugar and cereals markets are similar in that both are regulated markets with a minimum price and TRQ, but differ in that the cereals market is not governed by a production quota. The two markets also differ in terms of the price movements relative to their respective world markets.

Table 3.1 summarises the comparison of the various elements of these markets.

Table 3.1 The European sugar market lacks a number of mechanisms that enable other regulated markets to make rapid supply adjustments

	EU sugar market	US sugar market	EU cereals market
Net importer	yes	yes	no
Limiting production quota	yes	yes	no
Minimum price	yes	yes	yes
Market price equal to minimum price	yes (to 2008/2009)	no	no
Automatic intervention	no	yes	yes
Tariff Rate Quota	yes	yes	yes
Homogeneous product	yes	yes	no
Bilateral price negotiations	yes	-	no
Production allocation & TRQ recalculated annually	no	yes	no
Supply deficit	yes (from 2010/2011*)	no	no
Correlation with world price	-0.16	0.88	0.94

Bron: SEO Economic Research. * The European Commission began making interventions to increase supply in 2010/2011

It may be concluded from the comparison that the European sugar market exhibits a rigid response to movements as compared to the other markets. Both the US sugar market and European cereals markets are governed by automatic intervention mechanisms and have access to sufficient imports, both of which are lacking in the European sugar market. This could explain why European sugar market prices are relatively independent from world sugar market prices.

4 Market structure and sugar price

What is the structure of the sugar market? Is the sugar market a competitive market? The Dutch market is dominated by Suiker Unie. The market structure explains why the European and Dutch sugar prices have increased sharply in recent years.

4.1 Introduction

This Chapter analyses the structure of the Dutch sugar market.[28] The Netherlands' Royal Cosun and CSM Suiker companies merged in 2007. This resulted in the creation of one Dutch sugar producer, Royal Cosun, with an 80-90 percent share of the Dutch market.[29]

The Dutch sugar market is part of the European sugar market and for this reason this Chapter also reviews the European market. Figure 4.1 reveals that a consolidation process has taken place in the European sugar market during the past 10 years. This research focuses specifically on the price structure of sugar deliveries to industrial bulk users, where elements including market share, procurement power and switching barriers for industrial bulk users are all issues of importance. The review begins with the supply side of the market and then continues with the demand side (the industrial bulk users).

4.2 Market structure

4.2.1 Supply side of the market

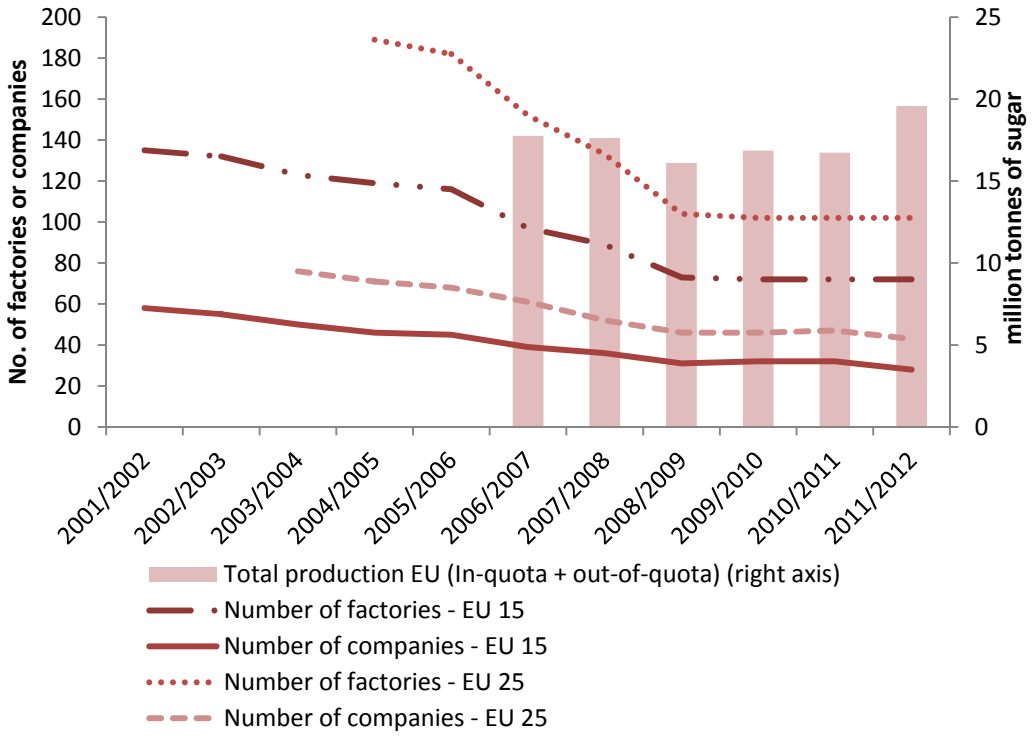
The supply side of the market is formed by the sugar producers who produce both industrial and retail sugar. This research focuses on the pricing of and movements in the price of sugar supplies to industrial bulk users, and does not extend to a review of what is referred to as consumer sugar marketed via the retail channel.

A distinction also needs to be made on the supply side of the market, namely between the European and Dutch markets.
The stable European sugar production is produced by a continually decreasing number of companies, as is shown in Figure 4.1. Mergers and takeovers taking place in the European sugar industry are resulting in increasing concentration on the supply side.

[28] This research does not extend to a geographical demarcation of the market. Information about the demarcations is available from the decisions reached by the European Commission and national competition authorities. The sugar market is, in general, demarcated at national rather than European level (see EC (2001), EC (1997), EC (1999), EC (1973), Italian Autoritá Garante della Concorrenza e del Mercato (2002). At the time of the merger of Royal Cosun and CSM the market was regarded as extending to a maximum radius of 300 km. (NMa, 2007)

[29] NMa 2006, rn 29

Figure 4.1 Consolidation is taking place in the European Union's sugar industry



Source: SEO Economic Research, on the basis of CEFS (2012)

In 2008, almost 50 percent of the sugar was produced by the three largest European sugar producers, Südzucker, Nordzucker and France's Tereos. Südzucker is by far the largest sugar producer (see Table 4.1) and was active in ten Member States in 2011, as a result of which it is also the largest European producer in terms of its geographical spread. Most of the other top-ten sugar producers are also active in several Member States. Solely the smaller companies, with a maximum market share of 4.5 percent, have operations in one Member State. Confidential information reveals that the market shares listed in Table 4.1 have not changed greatly since 2008. In 2011, the three largest sugar producers jointly produced about 50 percent of the European sugar quota.

Table 4.1 Suiker Unie is a mid-sized European producer

Company	Country of origin	Factories in (2011)[30]	Sugar quota in 2008	European market share in 2008 (%)
Südzucker	Germany	DE, FR, PL, BE, LT, CZ, AT, RO, SL, HU	3,319,608	24.9%
Nordzucker	Germany	DE, PL, DK, CH, LT, FI, SL	2,006,981	15.0%
Tereos	France	FR, ES, CZ	1,440,215	10.8%
British Sugar	United Kingdom	UK, ES	1,207,964	9.1%
Suiker Unie	Netherlands	NL, DE	916,888	6.9%
Pfeifer & Langen	Germany	DE, PL, RO	866,497	6.5%
Cristal Union*	France	FR	594,705	4.5%
Krajowa Spólka Cukrowa**	Poland	PL	549,606	4.1%
Azucarera Ebro Agricolas***	Spain	ES	494,845	3.7%
Vermandoise*	France	FR	416,704	3.1%
Total, top 10			*11,814,013*	*88.6%*
Total, Europe			*13,336,741*	*100%*

Source: SEO Economic Research, on the basis of Berkhout, P. & Van Bruchem, C. (2009). * Cristal Union has since been renamed CristalCo. The French competition authority approved the merger of Cristal Union and Vermandoise on 20 January 2012[31] ** Krajowa Spólka Cukrowa has since been renamed Polski Cukier. *** Azucarera Ebro Agricolas became part of AB Sugar in 2009. British Sugar is also part of AB Sugar.

Suiker Unie, with a market share of almost 7 percent of the European sugar quota in 2008, is one of the mid-sized producers (6 percent in 2011). Suiker Unie is the sole sugar producer with factories in the Netherlands. Although the first phase merger decision issued by the Dutch Competition Authority (NMa) in 2006 referred to a 80-90 percent market share for Suiker Unie following the merger, later figures reveal that Suiker Unie produced 100 percent of the Netherlands' quota sugar in 2008 and subsequent years.

Alongside the Netherlands, six other Member States also have one sugar producer that produces 100 percent of the national sugar quota (see Table 4.2). The sugar production in the other Member States is also relatively concentrated. The HHI is a measure of the concentration in a specific market.[32]

A market with an HHI below 0.01 has a low concentration, with an Index of between 0.01 and 0.18 a moderate concentration and with an Index of above 0.18 a high concentration.[33] An HHI of 1 indicates that the market has one monopolistic company. Table 4.2 reveals that the HHI of the markets in virtually all Member States is above 0.18[34], which indicates that the majority of the Member States have allocated their sugar quota to just a few sugar producers. Although this does

30 Based on confidential information

31 Autorité de la concurrence (2012)

32 The Herfindahl-Hirschman Index (HHI) is the sum of the squares of the market shares s. The formula is: $\sum_{i=1}^{N} s_i^2$.

33 Motta (2004)

34 Part of the sugar quota of some Member States is produced by sugar producers other than those listed in the Table (the 'others' category). The HHI of these Member States is presented as a range. The lowest HHI is then based on the percentages of the quota accounted for by the eight producers and the highest HHI on the assumption that the 'others' category consists of one producer rather than a (potential) number of producers.

not offer a full insight into the degree of competition in the Member States, it does indicate that in many Member States industrial bulk users wishing to procure their supplies from a source close to their factory can obtain deliveries from only a few sugar producers.

Table 4.2 One sugar producer produces all the national quota of sugar in almost half the Member States

	DE	FR	UK	NL	PL	BE & LU	ES	CZ	DK	AT	CH	RO	LT	FI	SL	HU
Südzucker	40%	20%			25%	72%		25%		100%		23%			61%	100%
Nordzucker	34%				9%				100%		100%		71%	100%	39%	
Tereos		41%					26%	56%								
British Sugar*			100%				74%									
Suiker Unie	4%			100%												
Pfeifer & Langen	22%				27%							32%				
Cristal Co**		37%														
Polski Cukier					39%											
Other		2%				28%		19%				45%	29%			
Total	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
HHI	0.33	0.35	1.00	1.00	0.30	0.52 - 0.60	0.62	0.38 - 0.41	1.00	1.00	1.00	0.16 - 0.36	0.50 - 0.59	1.00	0.52	1.00

Bron: SEO Economic Research, on the basis of confidential information. ** including Vermandoise. * including Azucarera Ebro Agricolas

The possibility cannot be excluded that Dutch industrial bulk users procure sugar from sugar producers in other Member States. Suiker Unie would then produce 100 percent of the Dutch quota but would not have a 100 percent share of the Dutch industrial sugar market. The various sources of information about the degree of trade between European Member States are contradictory and unclear, as a result of which it is not possible to provide an unequivocal insight into the competition a national sugar producer encounters from producers in other Member States.[35] The in-depth interviews reveal that most of the Dutch sugar-processing industry's sugar is procured from Dutch sugar producers.

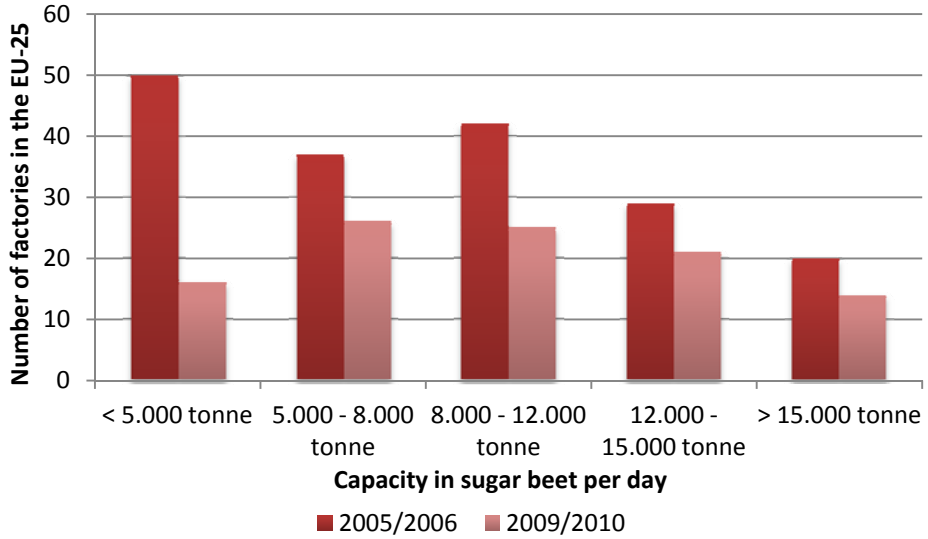
Increasing scale of European sugar producers

European sugar producers would appear to be increasing the scale of their operations. Figure 4.1 reveals a decline in both the number of companies and number of factories. Although this decline can in part be explained by the declining European production of sugar, it can also be due to the increased average size of the remaining factories as compared to some years ago. The smaller factories, in particular, (less than 5,000 tonnes of sugar beet per day) have been closed in recent years: just 16 of the 50 European factories of this size in operation in 2005/2006 were still

35 Earlier studies carried out by European competition authorities state that there were no significant inter-Member State trade flows, which the studies attributed to the regulatory systems prior to 2006. The ruling in a German case which took account of the 2006 reform reached the same conclusion (Bundeskartellamt, 2006). Netherlands Statistics and Eurostat figures, conversely, demonstrate substantial trade flows back and forth between the Netherlands and other Member States. Although their figures for the quantities differ, both organisations refer to substantial Dutch exports. The large quantities of the exports as compared to the Dutch quota of 805,000 tonnes of sugar gave cause to the presumption that the figures included re-exports. All-in-all, it is not possible to arrive at a conclusion on the quantity of sugar the Dutch sugar-processing industry procures from producers in other Member States.

in operation in 2009/2010 (EU-25) (see Figure 4.2). The Netherlands had five factories of this size in 2000/2001, but just two in 2009/2010.[36]

Figure 4.2 The smaller factories, in particular, have closed

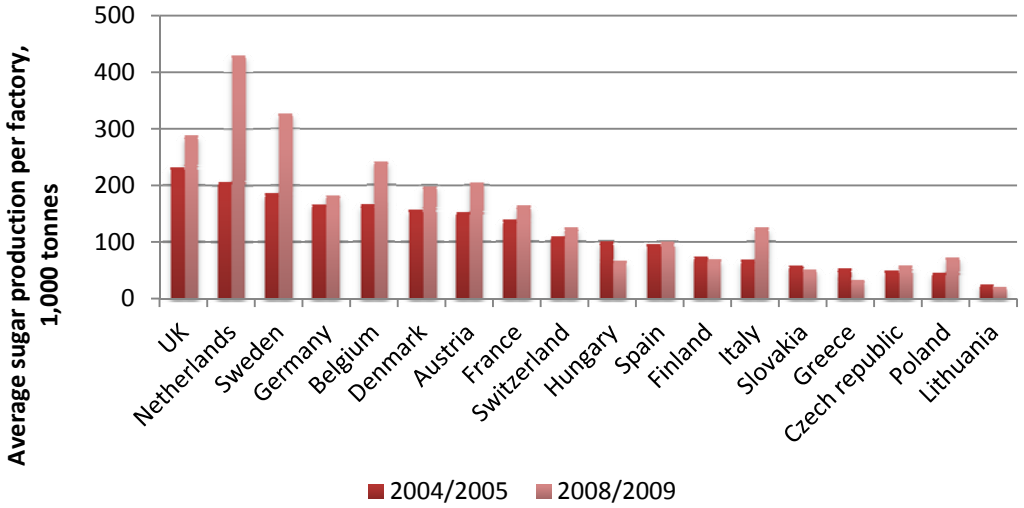


Source: SEO Economic Research, on the basis of figures from Agrosynergie (2011).

This increase in the scale of the remaining factories is also evident from the figures for the average sugar production of each factory. Figure 4.3 compares the averages in the 2004/2005 campaign, prior to the reform of the quota policy, and in the 2008/2009 campaign, after the reform of the quota policy. This reveals that the average sugar production of each factory increased during this period. The average sugar production of the Netherlands' factories was already one of the highest prior to the 2006 reform, and this has been further enhanced following the reform of the quota policy: the Netherlands, with an average production of 430,000 tonnes of sugar by each factory in 2008/2009, ranked first in Europe, followed by Sweden with an average production of 327,000 tonnes of sugar by each factory in that same campaign (see Figure 4.3).

[36] CEFS (2012)

Figure 4.3 The Netherlands has the highest average production of sugar by each factory following the reform of the quota policy



Source: SEO Economic Research, based on figures from CEFS (2012), tables 3 and 11.

Geographical integration

An annual quantity of 3.5 million tonnes of sugar may be imported from the ACP States. Table 2.2 reveals that this option is not fully utilised.

European sugar producers own, either directly or indirectly, part of the production of these States. Consequently, there is a certain degree of European integration. A number of examples are given below, although this list is probably not exhaustive.

- Südzucker: This German sugar producer has entered into a partnership agreement with Mauritius Sugar Syndicate for the production of 400,000 tonnes of white sugar (when fully operational) (Agrosynergie, 2011) As from 2010, this syndicate is also the sole sales organisation for Mauritian sugar producers.[37]
- Eridania-Sadam: This Italian company has formed a joint venture with Sudan's Kenana for the construction of a new raw sugar refinery with a capacity of between 500,000 and 1,000,000 tonnes of sugar, which is scheduled to begin operations in 2014. The Italian company will import half of this sugar directly into the European market (Agrosynergie, 2011)
- AB Sugar: This parent company of subsidiaries including British Sugar and Spain's Azucarera Ebro Agricolas owns 51 percent of the shares in Illovo Sugar Limited.[38] Illovo produces 1.5 million tonnes of sugar a year in Africa, 556,000 tonnes of which is exported to destinations including the EU. Illovo has a strong position in Malawi and Zambia, where it has a 100 percent and 93 percent share of these market respectively. Illovo has a market share of between 23 and 28 percent in Swaziland, Tanzania, Mozambique and South Africa.[39]

37 Südzucker (2012)
38 AB Sugar (2012)
39 Illovo Sugar Limited (2012)

- Tereos: France's Tereos has four cane sugar factories in Africa, in Reunion, Mozambique and Tanzania.[40] These factories produced 208,000 tonnes of sugar in 2008.[41]

For as far as is known, solely Südzucker and the UK's ED&F MAN have entered into vertical integration. This British company was the world's second largest sugar trader in 2012, and also produces sugar. The European Commission approved the merger in May 2012, subject to the condition that ED&F MAN divest its interest in the largest Italian cane sugar refinery.[42]

Sellers' barriers to entry

Companies may produce beet sugar solely once they have been allocated the required quota. However, as the European sugar quota has already been allocated new parties can enter the sugar production market solely by taking over existing production facilities.

Cane sugar production is not governed by the European quota system and, consequently, cane sugar can be offered on the European market without volume restrictions. However, cane sugar supplies are restricted on the import side. Cane sugar refineries may import raw cane sugar and refine it to obtain white sugar. Although imports from ACP States are tariff-free the actual imports from these States are, as referred to earlier, lower than had been anticipated. In addition, companies must be registered sugar traders if they are to be allowed to import sugar from these States. This requirement is met when companies have imported sugar from non-ACP States for at least one year and at the regular import tariff.
This condition is not attached to imports from other states, although an import tariff will then be levied on each tonne of sugar.
When these barriers to cane sugar imports have been overcome companies will still be confronted with substantial investments for the construction of a sugar refinery. Consequently, companies wishing to enter the market by opening a cane sugar refinery are also confronted with barriers.

Product differentiation

Sugar is available in a variety of forms. In general, industrial bulk users procure sugar in the form of refined white sugar. White sugar is, in principle, an homogeneous product, although there are differences in its quality: for example, the in-depth interviews revealed that sugar from the ACP States is of a lower quality than European sugar.

Raw cane sugar cannot be processed by all factories and, consequently, constitutes a slightly different form of product.

Collusive conduct

The history of discoveries of collusive conduct in the sugar industry dates back to 1975, when the European Commission adopted a decision on a number of European sugar producers including Suiker Unie, Pfeifer & Langen and Südzucker's predecessor. In brief, the sugar producers acted in a manner that limited the options for the import of sugar into and export of sugar from the

40 Tereos Internacional (2012a)
41 Tereos Internacional (2012b)
42 EC (2012b)

European Community. These acts included the control of sugar deliveries to the Italian, Dutch and parts of the German markets, as well as the partitioning of the markets.[43]

In 1998, the European Commission ruled against two other sugar traders for coordinating conduct between 1986 and 1990. The sugar traders, Napier Brown and James Budgett, served as a platform for sales of sugar produced by British Sugar and Tate & Lyle. This vertically integrated cartel had been active on the British market.[44]

In April 2013, European Commission officials carried out unannounced inspections at a number of European sugar producers in connection with suspicions of the infringement of the prohibition on cartel agreements.[45] In May 2013, it was announced that this investigation would extend to at least Suiker Unie, Südzucker and Nordzucker.[46]

4.2.2 Demand side of the market

The sugar producers' customers can be classified into two groups. About 30 percent of the sugar produced in the Netherlands is sold directly to consumers via the retail channel. The remaining 70 percent is supplied to the sugar-processing industry. The latter category is comprised of the industrial bulk users examined in this research. These companies process their sugar in products including soft drinks, dairy products, ice cream, confectionery, pastry goods and cakes and chocolate products. These parties are represented by CIUS NL. CIUS NL's members jointly procure more than 600,000 tonnes of sugar. At a European level, the members of CIUS Europe procure 9 million tonnes of sugar.

Procurement power

Table 4.2 revealed that national sugar quotas are usually divided between one or a few sugar producers. The resulting bargaining power this offers the sugar producers can be counterbalanced by the industrial bulk users' procurement power. This is the case when individual sugar-processing companies procure quantities of sugar of an amount that enables them, for example, to demand a lower price. This same effect can also be achieved when the sugar-processing companies pool their procurement of sugar to a total large quantity.

Only a few large European industrial bulk users procure more than one million tonnes of sugar a year. However, most of these producers have factories in a number of Member States and, consequently, do not procure all their sugar from one sugar producer. Nevertheless, these producers will be able to exert a certain degree of counterbalancing procurement power.

The in-depth interviews revealed that there is virtually no pooled procurement, as companies are concerned about infringements of the prohibition on cartel agreements as prescribed by the European Competition Act.

43 European Commission (1975)
44 EC (1999)
45 EC (2013b).
46 Het Financieele Dagblad (2013) & The Washington Post (2013)

Barriers to switching suppliers

Switching to non-European sugar producers

Industrial bulk users can procure supplies from outside the EU solely by importing sugar. Imports of sugar produced by the ACP States are not subject to import tariffs. However, the quality may be lower than the quality of European sugar. In addition, sugar from these States is usually raw sugar and industrial bulk users do not have facilities to refine the sugar to obtain white sugar. Moreover, the supplies of sugar from these States fall short of the European Commission's expectations: just 49 percent of the maximum permitted quantity is actually imported. As some of this sugar, as discussed in Chapter 4.2.1, is already reserved for European sugar producers via long-term contracts, joint ventures or participating interests in the sugar producers in the ACP States, this portion of the ACP States' production is not available for direct imports by industrial bulk users. In conclusion, solely companies that are registered sugar traders may import sugar from ACP States.[47]

An import tariff of € 419 per tonne of white sugar and € 339 per tonne of raw sugar is levied on supplies from other States outside the European Union. This creates a financial barrier to switching to non-European sugar producers.
The last barrier confronting industrial bulk users wishing to import sugar supplies is the limited availability of storage capacity. Pursuant to the customary practice in the Netherlands, Suiker Unie store sugars in its silos and makes deliveries when the industrial bulk users' limited stocks run low. This approach avoids the need for industrial bulk users to store large quantities of sugar. Companies importing sugar, in contrast, will usually need to make arrangements for storage. This creates a barrier to switching to non-European sugar producers. One means of overcoming the import barrier created by limited storage capacity is to call on the services of a broker. The broker's role is discussed later in this Chapter.

Switching to European sugar producers

Dutch industrial bulk users are confronted with two barriers to receiving supplies of sugar from producers outside the Netherlands. The first of these barriers is created by the higher transport costs. In its first phase merger decision on the merger of Royal Cosun and CSM, the Dutch Competition Authority (NMa) concluded that the transport costs incurred in deliveries at a maximum of 300 km from the factory would not create an impediment to cross-border transports of industrial sugar.[48] For Germany, this distance was assessed as 220 km.[49] This indicates that importing sugar within a maximum radius of 300 and 220 km respectively would become profitable following a 5 percent increase in the price of Dutch sugar. The NMa's statement would appear to imply that industrial bulk users would have the option of switching to other suppliers in the event that the merged Suiker Unie company increased its prices.

The second barrier to switching suppliers is created by the current quota system. Each EU Member State has been allocated a sugar production quota which it has divided between its

47 Rural Payments Agency (2013)
48 NMa (2007) rn 61.
49 The German transport costs per tonne are higher due to the lower maximum authorised weight of vehicles transporting freight by road. Rn. 60.

national sugar producers. As a result, all European sugar producers are governed by a limit which prescribes their maximum sales of quota sugar (see Box 4.1 for the concomitant implications of this limit as identified by economics literature). As the consumption of sugar in the Member States is usually in excess of their production quotas (see Table 2.1) their sugar producers can sell their entire production on the national market. As a result, an industrial bulk user wishing to switch from Suiker Unie to, for example, Nordzucker, may discover that the latter has already divided its entire quota between its existing customers. The sugar producer will then be interested in accepting a new customer solely when the new customer is prepared to pay a higher price than its existing customers. This reduces the industrial bulk users' price incentives to switch to another supplier. The aforementioned NMa decision confirms the problem caused by the sugar producers' distribution of their production quota between their existing customers. A number of non-Dutch sugar producers have stated that they assign priority to supplying their existing customers in their market and to supplying customers in deficit areas.[50] The in-depth interviews with a number of industrial bulk users revealed that on occasion non-Dutch sugar producers have no remaining production quota available, as a result of which the users are unable to switch to these suppliers.

The quota system imposes capacity constraints which weaken competitive incentives in the market (see Box 4.1).

Box 4.1 Capacity constraints weaken competition

The economic theory for industrial organisation states that capacity constraints reduce incentives to set competitive prices (Shy, 1996). This can be illustrated with an example in which a competitive situation is analysed to assess the feasibility of a producer profiting from a price increase. When this is feasible then the competitive market is not in equilibrium.

In this example two sugar producers set the price of their sugar at the level of their marginal costs. This is the most competitive situation. Neither of these companies then generates a profit (Tirole 1988, p. 211). Company 1 cannot supply all the potential customers in its market, as its production quota is lower than the demand for sugar. If sugar producer 2 increases its price slightly then its customers will wish to switch to company 1 but will be unable to do so as company 1 cannot meet the demand. Consequently, some customers can obtain deliveries solely from company 2 and have to pay a price which is in excess of the marginal costs. As a result, increasing the price was profitable for company 2: the competitive market is not in equilibrium. More in general, economic literature reveals that companies operating in markets with capacity constraints generate supra-competitive profits and set their prices above the marginal costs.

Other

Brokers are also active on the sugar market. Brokers may import sugar on behalf of industrial bulk users (from ACP States and other states) and submit bids for reduced import tariff tenders. As a result, brokers account for a portion of the supplies of sugar to the European market. However, it is a moot point whether these supplies impose downward pressure on European sugar prices. Although the ACP States' sugar price follows the movements in the European sugar price, the price is lower than the European sugar price (by between € 50 and € 100 per tonne of

[50] NMa (2007) rn 71

sugar).[51] However, the in-depth interviews give the impression that the sugar supplies from these States do not impose a downward pressure on the European sugar price. This may be due to the inadequacy of the supplies from these States – in part because a portion is reserved by European sugar producers – and to the lower quality of the sugar.
Imports from other States are subject to an import tariff and, consequently, these supplies do not put pressure on European sugar prices.

Brokers can provide a solution for the lack of storage capacity: offering industrial bulk users access to storage facilities makes it easier for them to import sugar. Nevertheless, there is no information which indicates that this also takes place in practice.

On the supply side, brokers can facilitate exports of out-of-quota sugar from Europe and, consequently, can also be of importance to sugar producers.

Sugar substitutes

A variety of sugar substitutes are available, such as stevia, aspartame, acesulfame, sorbitol, xylitol and isoglucose. However, in-depth interviews with industrial bulk users reveal that in practice the use of these sugar substitutes to replace sugar is rare. This is largely due to the fact that sugar not only sweeten products but also gives them bulk. As the aforementioned sugar substitutes are intensive sweeteners, they do not provide this bulk: this results in a change in the product's bite. Part of the sugar in the product can, depending on the specific product, be replaced with another sweetener. Full replacement of the sugar by stevia is not possible. Solely *light* variants of regular products replace all the sugar contained with alternative sweeteners (other than stevia).

In addition, there are individual objections to the widespread use of each of these sugar substitutes: for example, aspartame has a poor reputation due to its alleged detrimental effect on health. Nevertheless, aspartame is used in consumer products. Substituting sugar with a sweetener also affects the flavour of the product. Isoglucose is a better alternative for sugar than other sweeteners in soft drinks. This product is also governed by the sugar regime, and pursuant to the isoglucose quota less than 700,000 tonnes are produced a year (Strand, 2002).

It may be concluded that sugar substitutes are at best imperfect sugar replacements and, as a result, do not impose downward pressure on sugar prices.

4.3 Conclusions

Which explanation for the (movements in) the European sugar price can be given on the basis of the above review of the market structure? A market can perform in the appropriate manner solely in the absence of a structural deficit or surplus. However, as revealed by Chapter 2.2.2 the European sugar market would appear to be confronted with a structural supply deficit.
Moreover, a concentration on the supply or demand side of the market is indicative of an imbalance in the negotiation power. Should these factors impair the performance of the market then their detrimental effect could be compensated by a number of other factors. Low barriers to

[51] Agrosynergie (2011), Figure 34

entry to the market, low barriers to switching suppliers and the availability of really suitable sugar substitutes could counterbalance any excessive sellers' power, where relevant. This has been reviewed by examining the size of the market and its supply side and demand side.

The national sugar markets have a concentrated supply side: Seven Member States, one of which is the Netherlands, have one sugar producer that accounts for the Member State's entire production quota.
The operations of sugar producers active in the European market are becoming increasingly concentrated as a result of the current consolidation process. In addition, the sugar producers have increased the scale of their operations: the average sugar production per European factory has increased since 2005. Some of the sugar supplied on the European market is imported from outside the EU. The total of 3.9 million tonnes of sugar imported from all states outside the EU in 2011/2012 accounted for 23.6 percent of European sugar consumption. Some of the sugar produced by the ACP States is reserved for specific European sugar producers via subsidiaries, long-term contracts or joint ventures and is not available for import by industrial bulk users.

The supply side of the sugar market cannot be expanded by the entry of new sugar producers to the market: pursuant to the quota system, companies can begin to produce (quota) sugar only once they have been allocated a production quota by the relevant Member State – or, in other words, new sugar producers can enter the market solely by taking over an existing quota. Consequently, the entry of new producers to the sugar market does not increase the supply side. Although the supply side can be expanded by constructing case sugar refineries, substantial investments will then be required.

The market analysis reveals that the European sugar market is confronted with a production deficit. This strengthens the sugar producers' negotiation position and tends to force prices upwards. This effect is further enhanced by the concentration of suppliers in the national markets and the barriers to the entry of potential alternative sugar producers. Industrial bulk users would be placed in a better negotiating position if they were able to switch to a competitor. Procurement power could reduce prices. As each European sugar producer is governed by an annual production quota and has generally already divided this between its existing customers, switching to another producer is not a realistic option. As a result, the quota system impedes competition on the sugar market. In addition, it is a moot point whether industrial bulk users would be able to procure sugar at a lower price from a competitor that is further away from the user's factory due to higher transport costs.

Switching to imported sugar is not a realistic option in view of the barriers to imports, including the limited supplies from ACP States, the import tariff levied on supplies from other states, the lack of storage capacity and the lower quality of sugar from the ACP States. A last option would be switching to a sugar substitute: however, products such as aspartame and stevia are not realistic substitutes for sugar as they do not give the product the same bulk.

In conclusion, both the supply side (concentrated markets) and the demand side (lack of procurement power) of the market offer explanations for the (movements in the) European sugar prices for industrial bulk users. In combination, the supply deficit, concentrated national markets and lack of options for switching to competitors result in the selling power possessed by

European sugar producers. This explains why the European sugar price is higher than the world price and why the European sugar price has increased sharply in recent years.

5 Conclusions

This research focuses on gaining an understanding of and explaining the pricing and price structure of sugar supplies to Dutch industrial users. For this reason the emphasis of the research is placed on the Dutch market, although the European context also needs to be taken into account in view of the stringent European sugar policy. The European sugar price has increased by about 50 percent in a two-year period. This movement is diametrically opposed to the movements in the world sugar price. This price movement is caused by a structural deficit of sugar on the market, the strongly concentrated supply side of the national markets and the effects of factors that have forced prices upwards, such as the barriers to the entry of new sugar producers, to imports of sugar and to switching suppliers.

The price of sugar has increased sharply since 2011: the price has now increased to € 728 per tonne of sugar in the 2012/2013 campaign, well above the European minimum price of € 632 per tonne that had prevailed for many years and the current reference price of € 404 per tonne. This rapid increase is giving cause to concern about the resultant impact on inflation and on the competitive strength of the sugar-processing industry: non-European competitors have access to sugar available at prices that have tended to decrease rather than increase since 2011. The contrary movements in the sugar prices in the various markets are particularly striking. There is no correlation between the European and world sugar prices, which is unusual for relatively homogeneous products such as sugar.

The European sugar policy

The European production quota of 13.3 million tonnes of sugar is lower than the European consumption of sugar, which was approximately 16.8 million tonnes in 2011/2012. The Netherlands has been allocated of circa 800,000 tonnes of sugar of the European production quota, equivalent to 6 percent of the total European quota.

The Common Market Organisation of Sugar (CMO Sugar) was introduced in 1968. This encompasses a production quota, minimum price for sugar beet and import tariffs with an import quota. The import tariff levied by the European Commission is intended to protect the internal market from external competition. The current tariffs amount to € 419 per tonne of white sugar and € 339 per tonne of raw sugar. A number of states have been designated as states that can export a maximum of in excess of 4 million tonnes of sugar without the levy of import tariffs. 3.5 million tonnes of sugar was to be imported from the ACP States (a group of African, Caribbean and Pacific states).

The European Union can respond to a deficit on the European market by implementing the following measures. The EC can open a tendering procedure for the reclassification of out-of-quota sugar into in-quota sugar and open a tendering procedure for additional sugar imports at a reduced import tariff (reduced tariff tenders). The EC can also increase the tariff-free quota per State or *erga omnes* (for everyone).

As the current sugar quota policy expires in 2015, a decision will be made on the future of the sugar quota policy next June. On 13 March 2013, the European Parliament voted for the

retention of the sugar quota until 2020. This is the first step towards the prolongation of the sugar quota. The European Commission and Council of Ministers will decide on this issue in June 2013.
The Dutch sugar industry procures most sugar directly over the counter from the producer, industrial bulk users adopt this approach out of concern for the scarcity of sugar supplies due to the European production ceiling: they do not want to run the risk of missing out. For this reason customers wish to obtain assurances for their deliveries from the annual production cycle for the entire year in good time before the beginning of the campaign.

Structure of the sugar price

The structure of the sugar price can in part be reconstructed from published information. The sugar beet price is the most important procurement price component. This price has fallen in the past few years: the procurement of sugar beet accounts for € 202 of the cost of each tonne of sugar. The second component is the members' bonus which sugar beet growers receive from Royal Cosun, a bonus which is based on Royal Cosun's profitability. This constitutes a form of dividend payment to the members of the cooperative, the sugar beet growers. The members' bonus has increased in line with the increase in the price of sugar, which indicates that Royal Cosun has recorded an increasing profit in recent years. The Lerner Index (the mark-up) can be calculated after making an assumption about the amount of the other production costs to be covered by the gross margin less the members' bonus. This reveals that Royal Cosun's mark-up was between 26 and 51 percent in the period from 2006/2007 to 2012/2013. The mark-up has increased to 51 percent since 2009/2010. The average production of each Royal Cosun factory has increased since 2006/2007, as a result of which the average costs are more likely to have decreased than increased. In other words, the increasing European sugar price would not appear to be due to increasing production costs. The price structure includes an increasing mark-up that is indicative of a lack of competition in the sugar market.

Benchmark: US sugar and European cereals

A comparison of the price movements in the sugar markets and comparable markets might provide explanations for the price movements in the European sugar market. The US sugar market and European cereals market were selected as benchmarks.

The US sugar market, in analogy with the European sugar market, is governed by a production quota and an import tariff. The USA is also a net importer of sugar. One of the most important differences between the two markets is that the US production quota is set annually on the basis of import and consumption forecasts. The US market also differs in that imports respond rapidly to price movements. As a result, the US sugar price follows movements in the world market price. This relationship between the European price and world market price is absent in the European sugar market, and at the moment the European sugar price is actually moving contrary to the world sugar price. The US sugar policy enables the US market to respond to price movements more rapidly than the European sugar market.

The cereals market is also governed by a minimum price and an import tariff (albeit variable). One of the important differences from the sugar market is the absence of a production quota for the cereals market. As a result, the cereals market responds more rapidly than the sugar market.

Cereal is also a less homogeneous product than sugar and the organisation of the market is more resemblant of the customary commodity markets. This probably explains why the European cereals price is correlated with the world market price.

Market structure

As Europe consumes sugar in excess of the European production quota the supply deficit needs to be made up by other means. This can be achieved by importing sugar, drawing down on stocks or by European Commission interventions. Although approximately 3.7 million tonnes of quota sugar were imported during the past two years (and 1.2 million tonnes of sugar have been exported), the imports have been much lower than was expected. This is largely due to the fact that just 40 percent and 49 percent of the total potential quantity of tariff-free imports from ACP States was actually imported in 2009/2009 and 2010/2011 respectively. The second option, drawing down on existing stocks, has only a limited effect as the amount of stocks is relatively small. Moreover, the sugar-processing industry is unable to keep any stock as it lacks the necessary storage facilities. As a result, the customers' storage of sugar cannot serve as a 'lubricant' for the market. The last option is interventions by the European Commission: an intervention in the 2011/2012 campaign brought a total of 1.05 million tonnes of extra sugar into the market. This, in comparison with the production quota of 13.3 million tons, was a substantial intervention. Nevertheless, it proved to be insufficient to close the gap between supply and demand.

The national sugar markets have a strongly concentrated supply side: alongside the Netherlands, six other Member States have one sugar producer that produces 100 percent of the national sugar quota. The European supply market is also concentrated: in 2011, almost 50 percent of the quota sugar was produced by the three largest European sugar producers, Südzucker, Nordzucker and France's Tereos. The market shares as based on national sugar quotas do not provide a full insight into the degree of competition in the Member States' markets. However, this concentration does indicate that industrial bulk users in many Member States wishing to procure sugar from a supplier close to their factories can obtain deliveries from only a few sugar producers.

The strongly concentrated supply side of the market and the sugar deficit both force prices upwards. This can be countered with low barriers to entry to the market, low barriers to switching suppliers and the availability of really suitable sugar substitutes. However, these corrective market forces are not present in the sugar market. Pursuant to the quota system, a new sugar producer can enter the market only when a Member State allocates it a quota. The total quota is not increased, as a result of which new parties can enter the sugar production market solely by taking over existing production facilities. Although cane sugar is not governed by the production quota supplies are impeded by barriers to imports: an import tariff is levied on sugar supplied by states other than a number of states such as the ACP States. However, the quantity offered by the ACP States is low, the quality may be poorer and a portion of these States' production is already directly or indirectly owned by European sugar producers.

If industrial bulk users able to switch to a different sugar producer then this would tend to force prices downwards. However, it is a moot point whether a competitor at a greater distance from the customer would be able to offer a better price after the increased transport costs are taken

into account. Moreover, many European sugar producers have already divided their entire quota between their existing customers and are unable to offer sugar supplies to a customer giving consideration to switching suppliers.

Solely extremely large industrial bulk users will very probably be in a position to exert procurement power to counterbalance the sugar producers' selling power. However, only a few large European industrial bulk sugar users procure more than one million tonnes of sugar a year.

Sugar substitutes, in conclusion, are at best imperfect sugar replacements. This is in part due to the fact that sugar not only sweetens products but also gives them bulk. Alternatives such as aspartame and stevia are intensive sweeteners that do not provide this bulk and, as a result, they are not equivalents. The absence of substitutes further enhances the market power of European sugar producers, as buyers have only limited options.

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Appendix A Production quotas of the European Member States

Table 5.1 Annual production and quota by Member State

Member State	Quota 2009/2010	Out-of-quota 2009/2010	Total production* 2009/2010	Quota 2010/2011	Out-of-quota 2010/2011	Total production 2010/2011	Quota 2011/2012	Out-of-quota 2011/2012	Total production 2011/2012
Belgium	676,235	149,627	843,158	676,235	79,061	689,185	676,235	17,410	880,660
Czech Republic	372,459	105,505	478,818	372,459	90,389	458,876	372,459	233,755	615,440
Denmark	372,383	68,761	444,976	372,383	86,314	453,395	372383	146,620	519003
Germany	2,898,256	1,221,249	4,232,290	2,898,256	755,366	3,469,277	2,898,256	998,330	4,266,670
Greece	158,702	0	171,787	158,702	0	142,182	158,702	0	159,278
Spain	498,480	47,444	549,741	498,480	32,268	527,497	489,480	99,451	612,813
France	2,956,787	1,522,064	4,460,400	3,004,811	1,233,460	4,225,287	3,004,811	1,683,373	4,774,869
France (Dom**)	480,245	19,291	449478	432,220	0	257607	432,220	0	416,896
Italy	508,379	0	508,842	508,379	13,153	554,530	508,379	10,623	506,523
Lithuania	90,252	22,828	113,089	90,252	2,203	92,450	90,252	62,101	152,403
Hungary	105,420	19,694	125114	105,420	15,080	120500	105,420	16,460	121,880
Netherlands	804,888	168,878	992,766	804,888	88,242	873,130	804,888	178,480	998,368
Austria	351,027	36,031	381,233	351,027	92,916	443,627	351,027	195,901	546,928
Poland	1,405,608	240,617	1646225	1,405,608	60,062	1465670	1,405,608	436,662	1,910,567
Azores	9,953	0	426	9,953	0	718	9,953	0	1700
Romania	104,689	39,384	146,212	104,689	25,200	123,664	104,689	41,348	145,848
Slovenia	112,320	52,690	162,040	112,320	28,329	140649	112,320	120,888	233207
Finland	80,999	1,402	87,857	80,999	1,202	80,675	80,999	7,586	94,235
Sweden	293,186	98,452	402,829	293,186	38,701	315,429	293,186	119,345	416,860
United Kingdom	1,056,474	263,839	1,308,056	1,056,474	55,781	994,791	1,056,474	207,460	1,314,558
Total	13,336,741	4,077,756	17,505,338	13,336,741	2,697,728	15,429,140	13,336,741	4,728,794	18,688,706
EU Consumption			16,426,000			17,213,000			16,867,000

Source: SEO Economic Research, based on data from the European Commission * 'Total production' is understood as the harvest. The quantity of sugar brought onto the market can differ due to stocks. ** The French overseas departments. Portugal and Bulgaria have not been allocated a quota.

Appendix B ACP States

The European Union has opened its markets to imports from the Less Developed Countries (LDC) and ACP States (a group of African, Caribbean and Pacific states) (LEI, 2011). The European Commission has designated the following ACP States:

- Angola
- Antigua and Barbuda
- Bahamas
- Barbados
- Belize
- Benin
- Botswana
- Burkina Faso
- Burundi
- Cameroon
- Cape Verde
- Central African Republic
- Chad
- Comoros
- Congo (Democratic Republic of the)
- Cook Islands
- Cote d'Ivoire
- Cuba
- Djibouti
- Dominican Republic
- Equatorial Guinea
- Eritrea
- Ethiopia
- Fiji
- Gabon
- Gambia
- Ghana
- Grenada
- Guinea
- Guinea-Bissau
- Guyana
- Haiti
- Jamaica
- Kenya
- Kiribati
- Lesotho
- Liberia
- Madagascar
- Malawi
- Mali
- Marshall Islands
- Mauritania
- Mauritius
- Micronesia (Federated States of)
- Mozambique
- Namibia
- Nauru
- Niger
- Nigeria
- Niue
- Palau
- Papua
- New Guinea
- Rwanda
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and the Grenadines
- Samoa (Western)
- Sao Tome and Principe
- Senegal Seychelles
- Sierra Leone
- Solomon Islands
- Somalia
- South Africa
- Sudan
- Suriname
- Swaziland
- Tanzania (United Republic of)
- Timor-Leste
- Togo
- Tonga
- Trinidad and Tobago
- Tuvalu
- Uganda
- Vanuatu
- Zambia
- Zimbabwe

Source: EU (2013)

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