Brazil in the world dairy market[1]

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Abstract: The aim of this study was to analyze the world and Brazilian production, consumption and trade of dairy products in the last decade. Four main dairy products were pointed out as well as the world market share of the largest suppliers of such products. The evolution of the dairy production chain in Brazil, in the last decades, which led to the sector modernization, was also described. The recent world economic crisis and its effects on demand and exports of dairy products were evaluated, as well as the price situation. At last, exports possibilities for the world main suppliers and also for Brazil were evaluated, taking into consideration the trade barriers.

Keywords: dairy consumption and dairy world production, exports, imports, trade barriers.

O Brasil no mercado mundial de laticínios

Resumo: O objetivo central deste trabalho foi analisar as principais características da produção, do consumo e do comércio internacional de produtos lácteos na última década. Para tanto, concentrou-se o foco nos quatro principais produtos lácteos, enfatizando a participação dos maiores países fornecedores. Outro aspecto importante abordado foi a evolução da cadeia produtiva do setor lácteo durante as últimas décadas, com destaque para o ritmo de sua modernização. Avaliou-se também o impacto da recente crise financeira mundial sobre a demanda e as exportações dos principais exportadores mundiais, e as possibilidades de o Brasil vir a se firmar como grande fornecedor desses produtos, em que pese as barreiras comerciais praticadas por importantes países importadores.

Palavras-chave: barreiras trarifárias, consumo e produção internacional de lácteos, exportações, importações.

The international dairy market

It's important to bear in mind that an important characteristic of the world's dairy market is the strong degree of state intervention worldwide. It is fundamental to understand the role of the main countries and those politics concerning the sector in order to know the world production, price definition and the ranking of the biggest country's exporters. This particularity

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explains, partially, how difficult it has been for Brazil or other new players to access this market.

The global dairy market is strongly influenced by a little number of big countries, sellers of milk powder, cheese and butter. Following the USDA's data (UNITED STATES, 2009) concerning the global destination of milk, the milk powder exports of milk powder are proportionally larger than the cheese and butter. than cheese and butter. Table 1 shows that around 40% of whole dry milk world production and 30% of non fat dry milk is destined to exports. That is not the case of cheese and butter, whose percentages 8% and 11%, respectively, are exported. As a result, the performance of milk powder exports is important to equilibrium of the world dairy market.

The four main kinds of dairy products

Fluid milk

According to data of the same source mentioned above (UNITED STATES, 2009), the global production is concentrated in a little team of countries. Together, the European Union (EU) and the USA totalized half of the 438,244 million metric tons of the world cow milk production volume in 2008. Only the EU produced 134,346 million of metric tons. This represents around 30% of the world production in that year. Continuing the ranking, the third country was India with 44,100 million tons, followed by China with 36,700 million tons, and Russia with 32,500 million tons. Brazil is the sixth in line with 28,890 million tons of fluid milk produced in the same year.

In regards to consumption, India is the biggest world country, in spite of the fact that it produced only the third of the EU's volume; the country absorbs 95,5% of its production of fluid milk. One of the reasons is the fact that the poor and developing countries consume mainly a majority of fluid milk, while rich countries consume a bigger proportion of byproducts as cheese, yogurts, etc.

The CEO of the Swedish company Tetra Pak (major manufacturer of packaging products), using data from Tetra Pak Global Index and the Consumer Research – 2008, in a report published by *Valor Econômico* (ROCHA, 2009) estimated world consumption of fluid milk for the year 2008, approximately 258 billion liters (including milk sold in the informal market, the UHT and powdered). He emphasized that India has absorbed 51.5 billion liters, which corresponded to one fifth of world consumption of milk, the same year. Important information for the market is that around 65% of this volume was traded in the informal market, i.e. without sanitary inspection. With respect to China, drew attention to the pace of growth in the period 2005 to 2008, which would have expanded the rate of 13.4% per year, bringing the volume consumed 27 billion liters. Another interesting aspect highlighted by the CEO quoted refers to the behavior of consumers of fluid milk. These

Table 1. World production and exports of dairy products[(1)].

Description	Whole dry milk		Not fat dry milk		Cheese		Butter	
	2007	2008	2007	2008	2007	2008	2007	2008
Production	4,476	3,938	4,444	3,574	21,361	14,407	9,483	7,780
Exports	1,902	1,565	1,238	1,096	1,852	1,250	1,071	0,709
% Exports/Production	42	40	28	3	8	8	11	9

[(1)] 1,000 metric tons.
Source: United States (2009).

consumers are worried about saving money to buy more milk than the common fortified by choosing cheaper brands and using offers and discounts, which explains the reaction of consumers to price increases, confirming the low elasticity of demand in the face of price increases.

Milk powder

Concerning the phase of milk powder, the EU and the USA are fundamental players too, as first and third main exporters. Nevertheless, New Zealand and Australia are decisive in the world trade, although they cannot be considered the biggest producers. Both countries are traditional exporters because they have a high level of surplus due to the efficient production system and low volume of internal consumption. Using the same source previously mentioned (UNITED STATES, 2009), exports data indicates that New Zealand is the first exporter of whole milk powder (621 thousand tons in 2008), followed by the EU (484 thousand tons). Furthermore, this country is the second largest exporter of non fat powder milk (251 thousand tons), only behind the USA (391 thousand tons). The third exporter is the EU, and Australia is the fourth. It is worthy to remark that, together, these four players controlled 86% of international exports of this kind of byproducts in 2008. Australia and New Zealand have a traditional structure and a production capacity that generates enormous quantities of fluid milk above their internal consumption. Hence, both countries must industrialize the milk fluid and exports byproducts. Otherwise, these countries would have to make a necessary hard adjustment in their milk production.

Regarding consumption, data reveals China's relevant weight in the whole milk powder market. In 2008, the country consumed 1,181 million metric tons (40% of the global consumption), while Brazil was left in second place with 525 thousand tons. On the other hand, the non fat milk market has a different situation. The EU, the USA and Mexico represent half of the total world consumption; Brazil was the eighth biggest consumer of this kind of byproduct in 2008 (138 thousand tons).

Cheese

The cheese market basically depends on what happens in the EU and the USA market. The USDA data (UNITED STATES, 2009) indicates that together, both achieved to produce 78% of the total world production and 77% of global consumption, in 2008. The EU processes a mountain of 6,8 million tons of varied kinds of cheese. The USA follows with 4,5 million tons. In third place, with a substantial lower volume, comes Brazil with 630 thousand tons, almost the same quantity absorbed by internal demand. The country's ranking continues with Argentina (540 thousand tons), Russia, and Canada.

The EU decisions concerning cheese impacts strongly this market's price tendency of this product, because their sells corresponded from 30% to 40% of the world trade during the last five years; New Zealand and Australia came in the second and third positions in the raking. The high level of the EU's consumption explains why they have been exporting volumes of less than 100 thousand tons per year, between 2004 and 2007. In 2008, USA raised sells to 131 thousand tons and, simultaneously, imported 125 thousand tons. Consequently, the USA is important in both senses, ranked in the forth position as seller and in the third position as importer.

In relation to demand, Russia has been the first world buyer. In 2008, this country imported 270 thousand tons, followed by Japan with 205 thousand tons; both countries buoyed a half of international purchases. Since 2005, the USA is the third largest importer. In other words, these three countries imported two thirds of global purchases. Russia defines quota to its purchase, and the EU and the USA adopt high levels of tariffs, besides help measures to their farmers.

Butter

India is simultaneously the largest producer and consumer of butter. Normally, the country is self-sufficient; its production reached 3.7 million metric tons in 2007, much more than the 2 thousand tons produced by the USA.

The world market is limited. Russia is the main and largest importer. This country buoyed 135 thousand tons in 2008, followed by the EU with 65 thousand tons, and Mexico with 62 thousand tons in the same year. The USA is an important player because it is the second largest consumer; it imports few and sells big quantities. In 2008, the country exported 125 thousand tons. Others countries import little volumes.

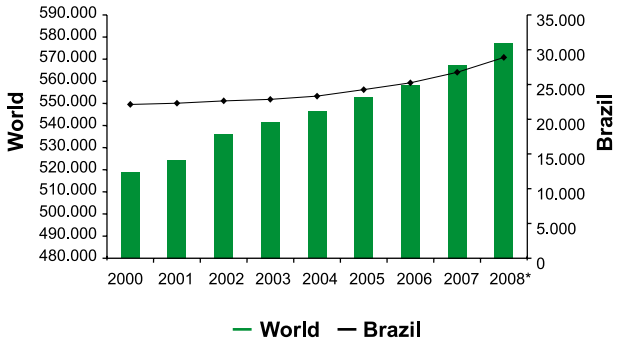
On the other side, the exports world leader is New Zealand. This little country is one of the leading efficient dairy producers, considering the productive chain, including sales strategy. This country exported 367 thousand metric tons in 2008, which correspond to half of the world trade and represent almost 2.5 times the amount exported by the EU, who stands in second place. The USA occupies the third place with 105 thousand tons, followed by Australia with 59 thousand tons. Together, these four countries supply around 80% of the world's year trade of butter.

The Brazilian milk dairy production

During the seventies and the eighties of the last century, the Brazilian dairy production system was very heterogenic. There were islands of modernity, especially in the states of São Paulo, Paraná, Rio Grande do Sul and Minas Gerais. Nevertheless, there were also farmers working with low levels of technology. The producer's average of 200 liters to 300 liters ought to double in order for it to be possible to implement a new technological pattern; it was predictable that around 200 to 300 thousand farmers would disappear with a rapid modernization process, and professionals would come to substitute amateur farmers. The technological improvements have included genetics, animal nutrition, management, equipments, machinery, sanity and hygiene. The old milk cane was replaced by milk tank refrigerators and transported by special trucks. This innovation mentioned was already implemented in the USA in the early thirties of the last century. On the other hand, the consumer's requirements have been more rigorous, especially regarding quality and options. Consumers were beneficiated by the new pattern of fluid milk and byproducts packaged by modern equipments and material; Brazil had lost a great amount of time in this matter. Finally, it resumes to the high technological level of modern producers.

The recent Brazilian history shows that dairy production had two distinct phases; the first one, under strong state intervention, with the state's guidance over the market. This model prevailed for five decades. The state control was justified by governors as necessary to guarantee an essential food item, with a low price for the poor class. The volume produced raised slowly during this period, while quality was inappropriate for the industry. The second phase started after the governor's decision of deregulation taken at the end of 1999.

The market rules have stimulated investments, as well as technological and management innovations. In fact, the dairy production chain has experienced rapid modernization in recent years, the rural production to the industrial processing of products and marketing. That includes cow nutrition, genetic and sanity equipments, processing plants, and labeling; this has created a competitive condition for Brazilian quality, as well as milk price and byproducts. Unhappily, thousands of inefficient farmers were not able to accompany this modernization process and abandoned the activity. However, since the supply increased, milk quality improved. This new phase has been changing the appearance of the sector in Brazil; the national dairy production has been modernized quickly and has increased around 100% from 2000 to 2008, as we can see in graph 1 below. We can see how Brazilian production has increased faster than the world average from year 2000 to 2008, especially after the market's sector deregulation. The total supply achieved 30 billion liters per



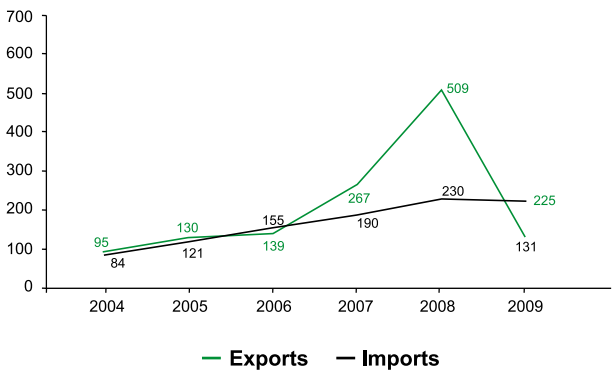
Graph 1. World and Brazil dairy milk cow production (thousand of liters).
Source: United States (2009).

year, which placed Brazil among the largest world producers.

Another face of the modernization of the sector was the enterprise concentration. Some big European and USA corporations continued in the activity and new enterprises from Brazil and abroad have come in to invest hardly in the area. A number of middle and small enterprises and cooperatives were buoyed by big companies. This change has contributed to attract new investors that did not operate in this market before. Many companies continue to invest in the sector and others in Brazil and abroad come to invest heavily in the activity. Thus, a new scale of production allowed implementing new standard technique and management level.

However, the Brazilian domestic market is limited yet when compared to its production and consumption possibilities. The average per capita year consumption is 130 liters, below the 160 liters recommended by the World Wealth Organization. It has been raising slowly, with a historical average a slight amount over the population growth index. In the opposite sense, the internal milk supply has been increased in average around 6,5% per year during the last few years. This unbalance between supply and demand became the worst with Mercosul's imports of milk powder, milk whey and cheese. Obviously, in this situation, exports are absolutely indispensable to make feasible the growing production tendency in Brazil. At a glance, Brazil actually produces and consumes approximately 30 billion milk liters per year and imports around 1 billion litters of many kinds of dairy byproducts. Therefore, it is vital to export about 1 billion liters equivalent. If not, shut down of milk prices to farmers is unavoidable. And price market adjustment normally causes big difficulties for farmers and even takes some abandon the activity; the concentration of production increases too.

Even though delayed, Brazil has self-qualified in order to dive into the team of milk exporter countries. Until the end of the nineties, Brazil's exports were irrelevant. According governor data, illustrated in graph 2 below, we can see that Brazil succeeded in becoming a net exporter, for the first time, in 2006. It ranked as the fifth largest world exporter of milk powder, in 2008. An unfavorable conjuncture in 2009 resulted in market contraction and a sharp drop due to overvalued currency has created a temporary elimination of the surplus. Nonetheless, most experts believe that the modern productive and commercial structure installed will recuperate export performance and consolidate the new status of relevant exporter throughout the years.



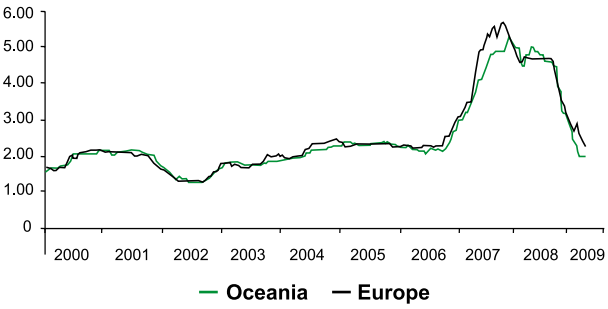
Graph 2. Brazilian dairy products balance trade, 2004 to Oct/2009.
Source: Brasil (2009).

The market changes and the world crisis

Another peculiarity of the dairy market is the low elasticity of demand in relation to milk prices in most countries. In other words, as fluid and powder milk are an essential food, especially for children, there is a tendency to guarantee them before other products in case of income loss, although that is not the case of byproducts such as yogurt, dairy desserts and "functional foods". The demand of these categories of products tends to be more impacted by level and income rhythm.

Nevertheless, GDP rhythm growing is important to understand the increasing world consumption and trade. The world trade has increased over the GDP during the last years. The WTO's report - 2009 (WORLD TRADE ORGANIZATION, 2009a) points out that world trade average grew in volumes 5,7% from 1998 to 2007; that is a high average for a ten years period. Also, the same report indicates that the GDP has increased 3,7% in 2006, and 3,5% in 2007. But the recent world economic crises pulled down the GDP, in 2008, 1,7% and the trade index 2%. Data concerning 2009 indicate an end to the declining trend. These changes in the economic system and trade have changed the market situation too; the world food demand fell down on the whole, and milk products accompanied this drop movement.

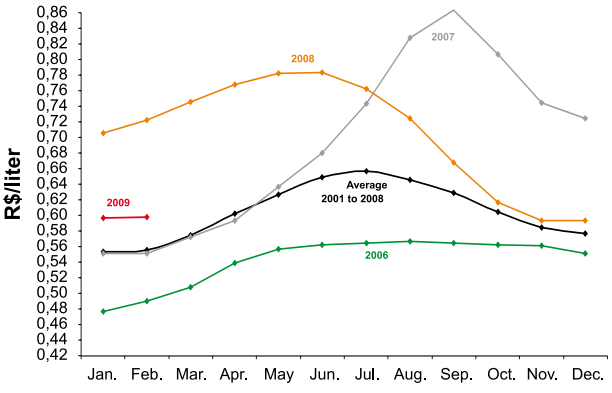
The dairy world supply was adapted to a higher level of demand until the end of 2007. During 2008, a bad market conjuncture generated high volumes of stocks, large productive capacity, and low demand, reinforced by the old and new trade barriers, subsides to export, etc. Graph 3 below shows the price's evolution. The same graph indicates prices of milk powder arriving to an unthinkable US$5,400.00 per ton before crisis and flowing back to US$2 thousand. This low level price was unregistered at the beginning of the decade. At the end of 2009, prices of milk powder rose again, reaching US$3,000 per ton.



Graph 3. International prices of whole dry milk (US$/tons).
Source: United States (2009).

The recent international economic crisis proved serious difficulties for dairy production-sector around the world. The dairy producers cannot diminish quality and quantity of food without harming their cow milk herd, and it is discouraging to eliminate specialized cow that required years to recompose. The bodies representing the European producers complained about government measures to compensate their losses. In addition, they requested the return of subsidizing the export and for processing milk into butter. The European Commission response was to add more funds in the budget of the Common Agricultural Policy for 2009, aiming to stock up 160 thousand tons of milk powder and butter. In Brazil, the government increased the resources for the Program of Guaranteed Minimum Price. The producers claim the decrease of the sharp fall in prices which, besides causing sudden lack of capital, and can lead to abandonment of the activity, especially for small producers. In this respect, the graph 4 below, released by Cepea-USP (CEPEA, 2009) shows the oscillation occurred in the last two years. It may be noted that in 2007 the price has shot up in the middle of the year, while in the same period the following year, the price had an inverse effect with a sharp fall.

The exchange rate is another important variable to consider themselves when comes to competitiveness. The actual price may distort conclusions about the efficiency of the sector. Considering only the first ten months of the



Graph 4. Variation in the average prices paid to farmers (prices in R$ per liter, 2001 to 2008). Average prices deflated by IPCA, observed in RS, SC, PR, SP, MG, GO and BA.

Source: Cepea (2009).

year 2009, saw a sudden change. During that period, the real has appreciated almost 30%. Thus, the Brazilian producer, which received a value close to US$ 0.20 per liter, was regarded as competitive as the colleagues from neighboring Argentina and Uruguay. Ten months later, the figure had artificially risen to US0.30$, or no longer would be more competitive because these correspond to the high prices received by farmers in Europe.

Barriers and challenges regarding scenery and outlook

The fact that the dairy sector is one of the most controlled of the world economy imposes enormous difficulties concerning market access. Even big exporter countries protect their market with high tariffs (*ad valorem* and specifics), and control of volumes imported by cottas or sanitary restrictions. Furthermore, internal support measures to help farmers and export subsides distort the dairy market too. Table 2 below illustrates the degree of protectionism practiced by important players.

The current and principal barriers to international trade in dairy products are created by quotas and tariffs on imports. Table 2 below shows how the WTO bound tariffs, selected countries, may prevent or hinder exports. As you can see, it's like the U.S. to prohibit the entry of certain types of cream and whey, it applies that correspond to more than double the price of the product in question. Other items are also taxed at excessively high rates. Similarly, the U.S., another mega market, also several consolidated prohibitive tariffs in excess of 100%. Mexico is a big importer of dairy products. But it is difficult to export to the country due to the high level of tariffs, set out in column 1 of the above table. As benefits the country, special assessments are offered with tariffs reduced. China, with its booming market, with expected rates also very high for milk powder, and consolidated the remaining items at levels higher than those of Brazil (31.5% and 35% for most items) . India, another mega market, virtually blocked imports of milk cream with a rate of 150%, while for other products are higher than those of Brazil.

Table 2. Tariffs consolidated on WTO to dairy milk products by countries.

Description	Mexico (%)	USA (%)	China (%)	India (%)	USA (%)
Non fat dry milk	0,00 to 40,00	0,91 to 40,09	76,00	0,00	56,66 to 80,27
Whole dry milk	37,50 to 125,10	17,50 to 59,99	76,00	40,00	42,45 to 185,18
Milk cream and others	37,50	0,04 to 139,09	40,00	150,00	7,35 to 264,32
Whey	37,50	2,42 to 111,73	7,00	40,00	7,28 to 203,32
Butter	37,50	2,32 to 85,45	40,00	40,00	82,82 to 135,32
Cheese	30,00 to 125,10	4,2 to 69,35	40,00	40,00	0,90 to 85,43

Source: World Trade Organization (2009b).

Regarding the outlook, it can be said that the world raise in demand for dairy products in recent decades was caused by the increase in income in the so-called emerging countries. Apparently, this trend should continue at least the medium term. On the other hand, can also predict that the demand for functional products will continue to expand as well as the so-called milk drinks more affordable to the lower classes. Furthermore, the packed milk will continue to take space in milk sold in the informal market.

This resume allows an overview regarding main players of the dairy products of the global market. It has been remarked that it isn't so larger than it could be, and it is disputed by a little number of giant sellers. The new country exporters' challenge will be to dispute with the four traditional sellers of conventional products and new byproducts. Difficulties for the new exporters are larger, due to the traditional productive structure and the historic presence in the international market of the four main players. But also because the UE and the USA support income of their producers, subside the exports and protect their internal markets against imports.

Nevertheless, there are new growing markets that will appear in future statistics as relevant importers; especially China and others Asiatic countries, besides the Middle East and North Africa. The challenge for countries trying to enter this difficult market, as is the case of Brazil, to be able to compete with the four big exporters as well as to open spaces over the restrictions posed by tariff barriers and quotas. On the import side, which really undermines the advancement of domestic production is the risk of entering the country of products subsidized or encouraged by an overvalued currency.

Internally, the challenges should not fundamentally change: boosting domestic consumption, the decrease in variation in prices (including to consumers) and the professionalization of producers (instead of instable producer). And in a broader context, the decrease in the so-called "Brazilian cost", especially the logistics of transport and taxes.

In short, the history of dairy farming and industry in Brazil was marked by rapid and intense modernization of the production chain, to ensure international competitiveness and the effect of opening up possibilities to enter the international market as outstanding supplier. Hence for freight, the continuity in the progress depends largely on expanding the domestic consumption and success in competition with traditional exporters on a market subsidized and protected, while maintaining reasonable control over imports in unfair conditions of competition.

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