University of Tampere
School of Management

THESIS

Influence of Higher Wheat Prices on Ready-to-Eat Cereal Companies in 2010

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Influence of Higher Wheat Prices on Ready-to-Eat Cereal Companies in 2010

1. Introduction

1.1 Background to the Topic

According to the International Institute for Sustainable Development, approximately two billion people, almost one-third of the global population, are dependent on the production of primary commodities such as rice, cotton and copper. Families, workers and farmers depend on the production of primary commodities for having cash incomes in order to buy food, pay fees and have access to medical services.

Wheat is one of the oldest commodities in the world. It is cultivated in places with temperate weather and it grows on more land area worldwide than any other crop. Wheat is considered a staple food all over the world and it is predominately utilized to produce human foods such as breakfast foods, different types of breads, noodles, cakes, biscuits, cookies, and confectionary items (Sariannidis, 2011).

According to the Food and Agriculture Organization of the United Nations (FAO) (2009), the main countries in the global wheat market include the United States, China, West Europe, India, Russia, Canada, Argentina, and Australia.

Before the Chicago Board of Trade (CBOT) was founded, farmers had to take up the risk of planting and cultivating crop without a guarantee that the cost of these activities would be fairly paid. Consequently, agricultural futures contracts were created in order to reduce the price risk of farmers, and in 1865 wheat future contracts were made official in the CBOT.

Farmers and producers have found in the trading mechanisms of the CBOT a way to hedge themselves against undesirable price changes. The agricultural trade has evolved as a result of

the expansion of future markets and the development of electronic price displays and trading platforms (Sariannidis, 2011).

Agricultural commodity prices can be affected rapidly by financial and energy factors (Sariannidis 2011), but also can be influenced by other factors such as natural disasters. A disaster, precipitated by a natural hazard, can be defined as "a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources" (International Strategy for Disaster Reduction [ISDR], 2004).

Some statistics of recorded disaster data (Center for Research and Environmental Decisions [CRED], 2005; International Federation of Red-Cross and Red Crescent Societies [IFRC], 2005; ISDR 2005) show that from 1995-2004 nearly 6,000 disasters were recorded, accounting for about 900,000 dead, USD $738 billion in material losses, and 2.5 billion people affected.

Prices of agricultural commodities such as wheat and corn increased significantly worldwide in the summer of 2010 as a result of droughts and fires. Russia, one of the largest wheat producers in the world, stopped producing around 63 million tons of grains due to drought and ravaging wildfires that damaged crops (U.S. Department of Agriculture, 2010), causing the Russian government to suspend grain exports in 2010, from August until December.

Given the wheat loss in Russia, the price of this commodity increased brusquely in a short period of time. For instance, the price of wheat in the United States presented one of the most significant variations, ranging from $177.40 USD per ton in April, to $237.90 USD in July 2010 (World Bank - Development Economics Report, 2010).

The following chart shows a brusque increase of wheat prices in July 2010

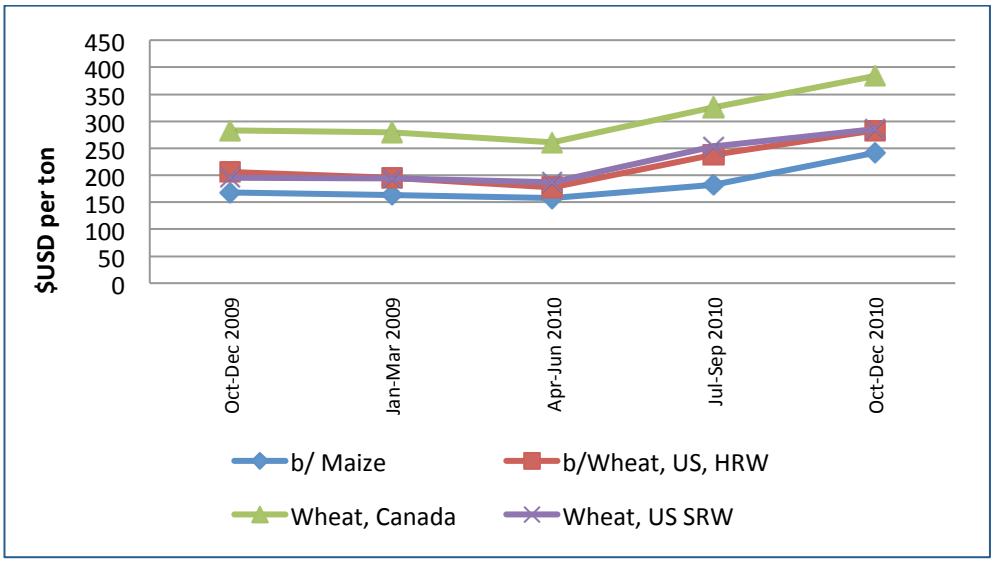


Chart 1 Increase of wheat[1] prices in 2010

Source: United States Department of Agriculture, 2010

The prices of futures contracts of wheat and corn corroborate the increase of this commodity in that period. The following charts show the increase of these future contracts:

Chart 2 Increase of prices of wheat futures contracts

[1] HRW – Hard red winter wheat
SRW – Soft red winter wheat

[2] A food crisis took place in 2008 as a result of droughts in grain exporting countries and high oil prices

Chart 3 Increase of prices of corn futures contracts

Source: CME group, Agricultural section (2010)

The rise of wheat prices increased the prices of stocks, commodities, futures, and options of wheat-related products in the stock exchanges.

1.2 Previous Studies

In this paper the effects of the increase of wheat prices on ready-to-eat cereal companies (due to weather conditions) are investigated. Previous studies about extraordinary events, natural disasters and terrorism that affected wheat prices, financial markets, and the global economy are revised in this section.

The first author to analyze the price impact of several crises was Niederhoffer in 1971. He studies several events ranging from the assassination of President Kennedy to the Korean War, finding that these events had an obvious influence on the instability of stock market averages.

Other authors, such as Worthington and Valadkhani (2004) examine the impact of natural events and disasters, including severe wildfires, floods, storms, earthquakes and cyclones, on

the Australian equity market. An intervention, or impact analysis, based on autoregressive integrated moving average (ARIMA) is used to evaluate how these natural disasters impact the markets. The study shows that distress caused by natural events and disasters; wildfires, cyclones and earthquakes, have an influence on market returns, whereas severe storms and floods do not. According to the authors, the adverse effects of some natural disasters have been mitigated some thanks to the use of better meteorological forecasting and emergency management. As for disasters of human origin, they have been increasing in frequency and severity over the years (the September 11, Balik and Jakarta terrorist attacks). The authors suggest that financial regulators and policy makers at both the national and international level should cooperate, communicate and create disaster recovery plans that can be put in place to provide a quick and effective response to these events.

Shelor et al. (1990) studies the impact of an earthquake that occurred in San Francisco, California in 1989, and the prices on real estate-related stock prices for that year. The result of the study shows that the earthquake brought new information relevant to the financial market. It exposed statistically significant negative stock returns for firms operating in the San Francisco area, whereas real estate-related firms that had operations in other areas of California were generally unaffected by the earthquake and did not experience any significant price reactions.

Barrett et al. (1987) examines a sample of 78 fatal commercial airline crashes that took place from 1962 to 1985. Their study indicates that the immediate negative price reaction to airline crashes is significant for only one full trading day after the event occurs. Moreover, the author analyzes market responses after the initial reaction period and did not find evidence of underreaction or overreaction in the initial response period, which is in accordance with the idea of immediate price adjustment in the market.

There is ample literature about price reaction and effects of terrorist attacks on the financial markets. Chen and Siems (2004) evaluate the effects of terrorist attacks on global capital markets using the event study methodology. Their study analyzes the response of the stock market in the United States, including 14 terrorist attacks, Iraqi's invasion of Kuwait (1990) and the September 11, 2001 attacks. The results indicate that the capital markets in United States are stronger than in the past and tend to recover more quickly than other global capital

markets in the world. Karolyi and Martell (2006) study stock price impact on publicly listed firms during the period from 1995 to 2002, in which 75 attacks occurred. The results from their event-study analysis indicate that throughout the day of the attack there is statistically a significant negative stock price reaction of -0.83%, equivalent to an average of $401 million USD loss per firm, per attack in firm market capitalization. Cross-sectional analyses of the firms´ abnormal stock movement suggest that the impact of terrorist attacks differs according to the home country and the country in which the incident occurred. The results of the study suggest that attacks in countries that are wealthier and more democratic are associated with larger negative share price reactions.

Brounrn and Derwall (2010) examine the effects of terrorist attacks on international financial markets employing data that covers all significant events that are relevant to the major economies of the world, finding that terrorist attacks produce slightly negative price effects. The authors compare the price reactions from terrorist attacks to price reactions from unanticipated catastrophic events, finding that the effects from terrorist attacks are more pronounced. However, in both cases prices recover within the first week of the event. In addition, they compare price responses at an international level and at industry level, finding that reactions are strongest for local markets and for industries that are directly affected by the disaster or attack. Their results indicate that financial markets (with the exception of the September 11 attack) react strongly to events of terrorism, although they recover very quickly and shortly return to normal.

Sariannidis' (2011) work is very much related to the present study. This author examines the financial outcome, currency, and energy indicators on wheat future prices. The result of his research indicates that the stock market positively influences the wheat market as a result of the wealth effect and the modern portfolio management in the context of international market integration. In addition, energy markets seem to affect the supply and demand side having a significant impact on the wheat market. Also, the results show that changes in the currency market, particularly the U.S. dollar/Yen exchange rate, are transmitted to the wheat market. The author concludes his research suggesting that the structural analysis of wheat price volatility support the hypothesis of the asymmetric conditional variance, as it gives the impression to be more volatile in response to positive impacts caused by higher wheat prices (fact that is the opposite in the respective results of the equities market).

Many factors play an important role in the formation of the wheat futures statistical moments such as per capita income, population, and weather conditions. This substantially influences the demand for wheat and consequently the relative price (Regmi, 2008). Some other factors could create an inefficient pattern of world production, consumption, trade and price formation such as government controls on domestic prices, demand, and supply (Mergos 1987; Riethmuller and Roe 1986; Srinivasan and Jha 2001; Herrmann et al. 2006).

According to Sariannidis, there are conditions that affect either slowly or hastily agricultural commodity prices. Demographic changes, behavioral patterns, and government interventions, as well as reforms and trade liberalization in international agricultural markets occur slowly. Therefore short-term prices movements are rarely expected. On the other hand, actual and anticipated changes in financial and energy conditions seem to affect agricultural commodity prices faster. The author identifies in his research three main significant factors that affect wheat prices and volatility: the stock market, energy market, and the volatility of the currency market.

Financial markets affect wheat markets because of the introduction in the last decade of commodities, stock, and currency markets. In addition, the internalization of the markets, the integration of electronic markets, and lower funds required to become a participant have made it easier and more popular to operate these markets.

Fluctuation in the price of oil is another factor that affects the price of wheat and most sectors of the economies as a basic cost variable (Arshad and Hameed 2009). Oil prices affect the supply and demand of agricultural commodities; the supply has an impact because crude oil has a production function through the use of energy inputs such as fertilizers and fuels, and also in the transportation of the goods (Baffes 2007). The demand side effects are related to the consumer spending as oil prices are related to the disposable income. Furthermore, agricultural commodities are also used to produce energy; resulting in a demand in biofuels to be another influential factor in the food market (Arshad and Hameed 2009; Piesse and Thirtle 2009). The production of these biofuels, particularly from ethanol, has increased the demand of agricultural commodities and consequently has reduced land area and resources available for food production and feed, increasing the prices of these commodities.

The last factor that influences wheat prices are the currency markets. According to Piesse and Thirtle (2009) the movements of exchange rates control the price of all world-traded goods and therefore the price of wheat, because they are related to the price of imported and exported goods, substitutes, raw materials, and other cost variables. The volatility of exchange rates, according to Kwek and Koay (2006), impact the opinion of traders and investors, as they prefer to operate and invest their money in stable economies with a stable currency.

We have seen that in the previous studies that diverse events such as; the assassination of President Kennedy, commercial airline crashes, terrorism attacks, natural disasters, and financial and energy indicators have had an influence on financial markets, stock and commodity prices. The evidence shows that the impact of these incidents has varied in each event, which means that it is difficult to measure the severity of the consequences of the situation before they occur, not to mention each event will have a different outcome. For example, the study by Worthington and Valadkhani (2004) about the impact of natural disasters on the capital markets in Australia, suggests that wildfires, cyclones, and earthquakes had an influence in market returns, while severe floods and storms did not. In the case of terrorist attacks, Karolyi and Martell (2006) suggest that the impact of terrorist attacks on the stock price of publicly listed firms differs according to the home country of the target firm and the country in which the incident occurred. Moreover, the results of Brounrn and Derwall (2010) of the effects of terrorist attacks on international financial markets indicate that they react strongly to these attacks, but they recover rapidly and shortly return to normality, though the attack of September 11th caused long-term effects on financial markets worldwide.

It is interesting studying the influence that higher wheat prices had on cereal companies because as previous studies suggest, the financial consequences of this kind of incidents are unknown and vary. Also, because studies about this topic have not been performed before.

1.3 Purpose of the study

In 2010, sever droughts and fires destroyed 20 percent of Russia's wheat crop, increasing significantly the prices of wheat worldwide.

This paper attempts to find the financial consequences that higher wheat prices had on companies that use wheat as their main raw material for their operations. For this, I selected three large international companies (Kellogg Company, Nestlé and Ralcorp Holdings, Inc., owner of Post Foods Company) dedicated to manufacture ready-to-eat cereal and wheat-related products.

This study attempts to answer the following research question: What were the financial consequences that higher wheat prices brought to cereal companies in 2010?

1.4 Methodology

Financial statements, annual reports and stock prices of the cereal companies are examined in order to answer the research question of this study.

As for the financial statements, first, I give a review of the company, then, I identify factors that could affect the finances and operations of the companies. Finally, I compare the results of previous years with the results of 2010 for each company.

I examine the annual reports of the companies in order to find evidence concerning any kind of financial affectation related to the increase of wheat prices.

I also analyze the stock prices of the companies given that they are indicators of supply and demand and provide information that affects the company, which cannot be found in the financial statements and annual reports such as daily financial news, industry aspects and macroeconomic news.

I take the closing stock prices of the cereal companies and wheat future prices at the end of each trading session in the period from December 2009 to February 2011. In order to learn

more about this data and find if there is any relationship between the wheat future prices and the cereal companies, I apply to the data basic statistics and Pearson correlation analysis.

Then, I study the behavior of each cereal company's stock price and then compare them with the behavior of the wheat future prices.

1.5 Data

Wheat data such as world wheat production, consumption, and stocks and commodity prices, has been collected from the Food and Agriculture Organization of United Nations (FAO), the United States Department of Agriculture, the Chicago Mercantile Exchange (CME), and the World Bank. For the financial analysis of the ready-to-eat cereal companies, their annual reports and financial statements have been examined. Finally, the stock prices of the ready-to-eat cereal companies and wheat prices have been taken from the financial section of Yahoo and Forexpros' websites.

2. Increase of Wheat Prices as a Result of Droughts and Fires in Russia in 2010

2.1 History of grain production in Russia

In 1970 Russia implemented a policy designed to increased meat consumption, becoming a massive producer of meat. This policy required enormous price subsidies for animal feed, which prompted the expansion of Russia as a grain producer, generating substantial net imports of grain.

Russia demonstrated inefficient in the production of meat after the collapse of the Soviet system, resulting in a huge decrease of meat production. This situation forced Russia to increase the meat imports, reducing the demand for feed-grain, which liberated the grain production, converting Russia into a large grain exporter.

According to the Federal State Statistics Service of the Russian Federation (2011) the agricultural production since 2000 has been equally split between growing crops and livestock. Even though there has been growth in both exports and imports have, imports have increased far faster in absolute terms. Imports of foodstuff and agricultural raw materials reached $13.9bn in 2004, increasing up to $35.3bn by 2008. On the other hand, Russia exported $4.5bn in 2005 and increased to $10bn by 2009.

Table 1 shows that the production of Russia increased near 50 per cent in the period from 2000 to 2009. Liefert, W., O. Liefert, and E. Serova (2009) suggest that this increase do not include a rise in grain production area. In the period from 2001 to 2008 the average annual Russian grain area decreased to 45 million hectares compared to 50 million hectares from 1996 to 2000.

Table 1 Production of Gran in Russia from 1992-2009 (million tons)

	1992	1995	2000	2005	2006	2007	2008	2009
Wheat, winter and spring	46.2	30.1	34.5	47.6	44.9	49.4	63.8	61.7
Barley, winter and spring	27	15.8	14	15.7	18	15.6	23.2	17.9
Oats	11.2	8.6	6	4.5	4.9	5.4	5.8	5.4
Rye, winter and spring	13.9	4.1	5.4	3.6	3	3.9	4.5	4.3
Corn for grain	2.1	1.7	1.5	3.1	3.5	3.8	6.7	4
Other (legumes, millet, buckwheat and rice)	6.3	3.1	3.8	3.2	3.9	3.4	4.1	3.2
Total	106.7	63.4	65.3	77.8	78.2	81.5	108	96.6

Source: Federal State Statistics Service of the Russian Federation (2011)

Welton (20011) claims that the good results in grain production from that period can be attributed to good weather, better management practices and investment in physical infrastructure assisted economically by the Russian government. According to Serova (2007) the gradual movement into the market of integrated agricultural operators has played an important role, bringing a combination of technology, investment and better management.

Liefert, W., O. Liefert, and E. Serova (2009) explain that the success in wheat production, before the draughts and fires of 2010, is related to the good weather Russia experienced for almost a decade. In the period from 2001 to 2008 the average annual grain yield of Russia was 1.83 tons per hectare, compared to 1.3 from 1996-2000. This increase in production helped Russia to become a large exporter of grain.

Table 2 Exports of Wheat and Rye 2006-2010

Exports of wheat and rye	2006	2007	2008	2009	2010
Volume (millions tons)	9	14	12	16	11
Total value ($m)	1319	3544	2875	2624	1849
Price per ton ($)	142	251	245	163	175

Source: Federal State Statistics Service of the Russian Federation (2011)

Table 2 presents the great volatility that wheat and rye annual prices have presented in the last years. The highest price was reached in 2007, provoking higher revenues than in 2009 when the production was bigger. Given an export ban in 2010 in the last third of that year, the exports were down one-third.

The production of grain in Russia takes place mostly in the south-west. This table indicates that 74 per cent of the Russian agricultural production comes from the southwest of the country. The Siberian Federal District contributes with 19 per cent and small amount comes from the rest of the country.

Table 3 Gross Production of Grain by Region (Million Tons)

	2007	2008	2009	% total (2009)
Southern Federal District	23.8	37	28.9	30%
Central Federal District	14	23.9	21.6	22%
Volga Federal District	22.3	27.2	21.7	22%

	2007	2008	2009	% total (2009)
Siberian Federal District	15	13.9	18.3	19%
Urals Federal District	5.3	5.2	5.3	5%
Other	1.1	1.1	1.2	1%
Total	81.5	108.2	97.1	100%

Source: Federal State Statistics Service for the Russian Federation (2011)

2.2 Agricultural Policies in Russia

According to Wegren (1910) in end of 1993 most of the financial advantages for agricultural producers disappeared in the period of President Yel'tsin . In 1998, the food prices increased drastically as a result of the financial crisis, reaffirming food prices as an important political matter. In 2005, agriculture became a national priority for Russia and the government increased the spending until 2007 by more than 50 per cent in terms of inflation adjustment (Liefert, W., O. Liefert, and E. Serova, 2009).

It was until 2007, when the general terms of the current agricultural policy of Russia were presented in the Program for the Development of Agriculture for the period from 2008 to 2012 (Welton, 2011). These terms were put in the same year under the Law on the Development of Agriculture, contemplating an expenditure of $19.7 of federal government spending.

Table 4 presents the main components of the agricultural development program for the period of 2008-2012:

Table 4 Components of the agricultural development program (2008-2012)

Title	Description	Total planned spending 2008-2012 (billion rubles)
Sustainable rural development	General spending on rural infrastructure and access to social services in rural areas	112.37 ($4)
Creation of general conditions for functioning of agriculture	Mostly spent trying to support and improve soil fertility, some information provision and the development of agricultural support services	66.55 ($2.4)
Priority agriculture subsector development	Supporting the growth of brood livestock, veterinary services, subsidies of feed development in the North	72.66 ($2.6)
Financial sustainability of agriculture	Offering subsidised loans to a variety of sectors, particularly meat	292.69 ($10.5)
Agriculture product market regulation	Smoothing out price variations, particularly in grain, by buying when price is low and selling when it is high.	7.01 ($0.25)

Source: Foreign Agricultural Service Gain Report, Government Program for Agriculture and Market Regulations 2008-2012

In 2010 President Medvedev espoused the Food Security Doctrine. This document sets principles exhorting to reduce dependence of imported food and goals for self-sufficiency in agricultural sectors (95 per cent self-sufficiency in grain products).

2.3 Loss of wheat crops in Russia in 2010

In July 2010 droughts and fires destroyed 20 percent of the grain part of wheat crop in Russia. This incident increased the prices of cereals worldwide.

The prices of cereals increased worldwide in early July 2010 (Food and Agriculture Organization of United Nations (FAO), 2010) when heat waves struck Russia causing droughts and fires that damaged part of the harvest of that year. According to the United States Department of Agriculture (2011) the drought destroyed 20 percent of wheat crops in Russia, which is approximately 63 million tons of this particular grain, a fact that led the Russian government to restrict the exports temporarily. Furthermore, the production in Ukraine and Kazakhstan also reduced significantly as a consequence of droughts and wildfires in these countries, forcing implemented restrictions on grain exports as well.

As shown in Table 5 on the following page, the main increase on wheat prices took place in the period from July to September of 2010 (World Bank – report development economics, 2010). For instance, wheat in Canada from April to June 2010 was $260.90 USD per ton and increased to $326.10 USD from July to September 2010, signifying a 25% increase. In fact, it kept increasing during October to December of that year, rising another 17% (a 56% wheat price increase in only nine months).

The price of wheat in the US responded similarly having severe variations on prices. In the period from April to June 2010 wheat was $177.40 USD per ton, while from July to September it increased to $237.90 USD. Also, during October to December 2010 the price increased to $283.60 USD, having a 60% increase on prices from April to December. Wheat prices in the US presented one of the most significant variations ranging from $177.00 USD to $237.90 USD per ton in a significantly short time span (April to June 2010).

Table 5 Wheat prices worldwide in 2010

Commodity	year /unit	Annual averages			Quarterly averages					Monthly averages		
		Jan-Dec	Jan-Dec	Jan-Dec	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Oct	Nov	Dec
		2008	2009	2010	2009	2009	2010	2010	2010	2010	2010	2010
b/ Maize	$/mt	223.1	165.5	185.9	167.8	162.7	157.7	181.7	241.5	235.8	238.2	250.4
Wheat, Canada	$/mt	454.6	300.5	312.4	283.4	279	260.9	326.1	383.6	365.6	376.2	408.9
b/Wheat, US, HRW	$/mt	326	224.1	223.6	205.4	195.4	177.4	237.9	283.6	270.2	274.1	306.5
Wheat, US SRW	$/mt	271.5	186	229.7	195.6	193.5	186.9	253.4	284.9	267.5	278.5	308.6

Source: World Bank, Development Economics, 2010

Chart 4 shows monthly wheat prices (USD dollars per metric ton) from January 2007 to March 2011

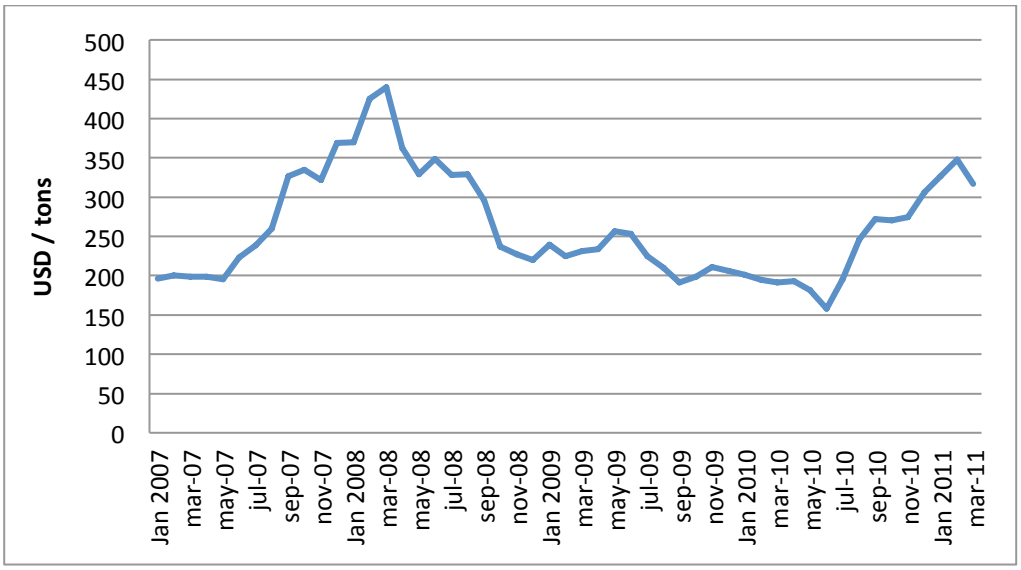


Chart 4 Wheat prices worldwide in 2010

Source: Index Mundi website - Commodities Data

Chart 4 shows that the highest price wheat reached since the wheat losses in 2010 is still one third lower than its peak level in 2008[2]. The highest price was reached in the last week of December 2010 at $300.19 USD per ton, which means is 31.7 percent less than the highest price during the crisis in 2008 when wheat prices reached $439.72 USD per ton.

2.4 Russian Government's Response to the Loss of Wheat Crops

The Volga Federal District, the biggest producing region in Russia, was the most affected, losing more than 70 per cent of the annual harvest. As for the Central Federal District, the losses accounted for 54 per cent of the annual harvest. The harvests in 2010 drop one-third compared to 2009.

Grain prices started to increase rapidly after the news that the harvest of that year was going to be seriously affected by the drought and fires went public. This situation was aggravated when Russian grain speculators retained grain as preventive action of future price increases and fear of a possible ban of grain from the Russian government. Welton (2011) suggests that this situation led to panic purchases, which increased the cost of bread, buckwheat and dairy products.

In response to the drought and fires, Russia assigned 3 million tons of its grain reserve into the markets at the end of July. In addition, the Russian Government imposed in mid-August a grain export ban until the end of that year. Given the hot conditions in autumn of 2010 the ban was prolonged to the next summer harvest.

The ban cancelled the contracts that exporters had with clients out of the country and exempted them from any liability stipulated in those contracts. The sellers were allowed to put on sale the grain it was supposed to be purchased by the importers. This action was taken to ensure domestic supply and to protect prices of staple foods and animal feeds within Russia (Welton, 2011).

[2] A food crisis took place in 2008 as a result of droughts in grain exporting countries and high oil prices (Shah, 2008).

3. Influence of Higher Wheat Prices on Ready-to-Eat Cereal Companies in 2010: Analysis of Financial Statements, Annual Reports and Stock Prices

3.1 Kellogg Company

3.1.1 Brief Explanation of Kellogg Company

Kellogg Company was founded in 1906 and was incorporated in Delaware in 1922. This company devotes its operations to the manufacturing and marketing of ready-to-eat cereals and convenience foods.

a) Principal Products:

Kellogg's main products are closely linked to wheat and other cereals. This company offers as its principal products ready-to-eat cereals and convenience foods such as; cookies, crackers, toaster pastries, cereal bars, fruit-flavored snacks, frozen waffles and veggie foods. These products are manufactured by Kellogg Company in 18 countries and marketed in more than 180 countries. Kellogg's products are sold mainly to the grocery trade through direct sales forces for resale to consumers. In addition, this company markets cookies, crackers and other convenience foods under other brands to supermarkets in the US through a direct store-door delivery system (DSD), even though Kellogg Company has other distribution methods.

b) Raw Materials:

The production is based on agricultural commodities such as wheat, corn, soybean oil, sugar and cocoa. The main materials that are used for packing these products are cartonboard, corrugated cardboard and plastic. Kellogg Co. continuously monitors world supplies and prices of commodities, including those for packaging, along with government trade policies. The company is aware that, "the cost of commodities may fluctuate widely due to government policy and regulation, weather conditions, climate change or other unforeseen

circumstances." Furthermore, they claim to make, "continuous efforts to maintain and improve the quality of such commodities for purposes of their short-term and long-term requirements" (Kellogg Company Annual Report Form 10-K, 2010: 1).

Kellogg Company produces the principal ingredients for the products within the US. In addition, most of the commodities are purchased mainly from sources in the US as well. Concerning commodities, Kellogg purchases them on the open market and uses long-term contracts depending on their view of possible price fluctuations, supply levels, and their negotiating power. Kellogg does use commodity futures and options to hedge some of their costs.

c) Seasonality:

The demand for their products in general has been consistent throughout the years, even though some of Kellogg's convenience foods have a bias for stronger demand in the second half of the year due to the holidays. Furthermore, in the first quarter of the year, cookies for the Girl Scouts of the U.S.A. are custom-baked.

d) Regulation:

Activities in the US are regulated by various government agencies such as the Food and Drug Administration, Federal Trade Commission and the Departments of Agriculture, Commerce and Labor. Many agencies and bodies of the European Union and various other countries, states and municipalities also regulate activities outside the U.S.

3.1.2 Risks and Uncertainties that could affect Kellogg's Business, Financial Condition and Results of Operations

Kellogg Company has categorized some risks and uncertainties that could considerably affect their business, financial condition and results of operations. Concerning the results, Kellogg recognizes that "it might be materially and adversely impacted as a result of **increases in the price of raw materials, including agricultural commodities**, fuel and labor." (Kellogg Company Annual Report Form 10-K, 2010: 6)

1. **Agricultural commodities** are the principal raw materials used by this company. According to Kellogg Company the cost of such commodities may fluctuate widely due to government policy and regulation, weather conditions, climate change or other unforeseen circumstances. If one of the mentioned factors affects the prices of the commodities and Kellogg is unable to increase the prices or hedge against those changes "the results of the operations could be materially and adversely affected." (Kellogg Company Annual Report Form 10-K, 2010: 6) Kellogg Co. uses derivatives to hedge price risk related to forecasted purchases of raw materials.

2. Natural gas or propane: cereal-processing ovens are regulated by this item at both domestic and international facilities. In short term the company is prepared in case of an interruption in natural gas supplies, having propane storages. In addition, oil and diesel fuel may be used to fuel certain activities at the plants and to distribute the products. Kellogg Co. acknowledges that fluctuations on cost of fuel "could have a material adverse effect on [their] consolidated operating results or financial condition." (Kellogg Company Annual Report Form 10-K, 2010: 6)

3. Increase of labor cost: due to shortage in the labor pool or other inflationary pressures or changes in laws and regulations.

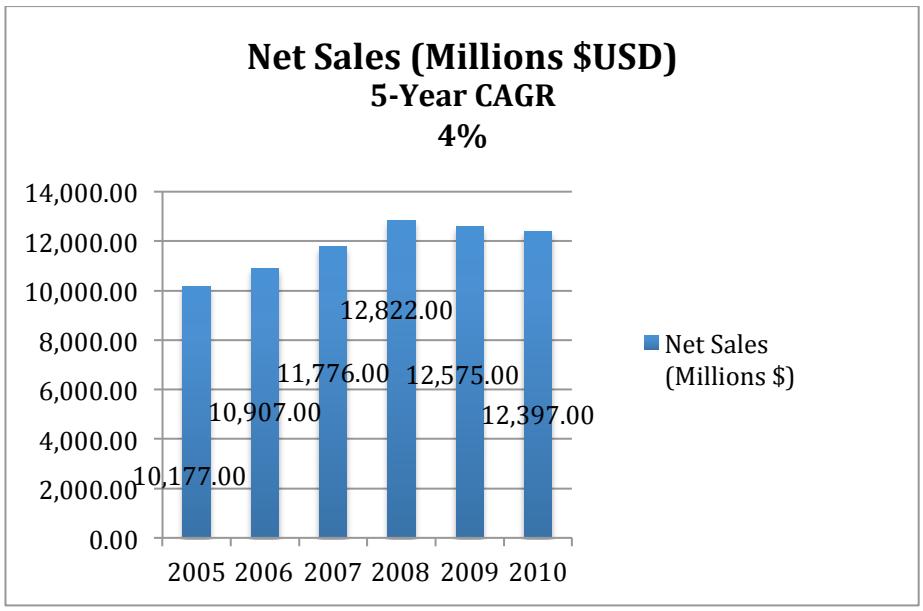
4. Foreign currency exchange rate exposure: Kellogg Co. hold assets, liabilities, earn revenue and pay expenses in different currencies such as the British pound, the euro, Australian dollar, Canadian dollar, Mexican peso, Venezuelan bolivar fuerte and the Russian Ruble. Since this company presents its financial statements in U.S. dollars, changes in value of the currencies may affect the company.

5. Others risks enlisted by Kellogg Co. include; concerns with the safety and quality of food products, disruption of the supply chain, changes in taxes, environmental, food quality, other regulations and/or failure to comply with existing licensing, labeling, trade, and other regulations and laws. In addition, risks associated with acquisitions, divestitures or join ventures. New products and processes, a highly competitive food industry, potential liabilities and costs from litigation, significant amount of

indebtedness, impairment in carrying value of goodwill or other acquired intangibles, economic downturns, concerns related to cost reduction initiatives, technology failures and concerns misuse of property rights, are also taken into account by this company as potential risks.

3.1.3 Analysis of Kellogg's Financial Statements

Kellogg Company had a slight worse year compared to the previous year. The performance reported by this company in 2010 was as follows (Annual Report Form 10-K, 2010):



Net sales were down 1% in 2009 to 2010. (Annual Report Form 10-K, 2010)

Chart 5 Kellogg's net sales (2005-2010)

Source: Kellogg's Annual Report 2010, Financial Highlights

The only region that had positive net sales in that year was Asia Pacific advancing 4%. North America, Europe and Latin America presented negative results.

Table 6 Kellogg's net sales by region (2010 vs 2009)

(dollars in millions)	North America	Europe	Latin America	Asia Pacific	Consolidated
2010 net sales	$8,402	$2,230	$923	$842	$12,397
2009 net sales	$8,510	$2,361	$963	$741	$12,575
% Change – 2010 vs. 2009	-2.50%	-2.40%	-3.40%	4.30%	-2.10%
Subtotal –internal business	-1.90%	-2.70%	4.80%	2.00%	-2.10%
Foreign currency impact	0.60%	-2.80%	-8.90%	11.70%	0.80%
Total change	-1.30%	-5.50%	-4.10%	13.70%	-1.40%

Source: Kellogg's Annual Report 2010, Financial Highlights

Diluted Earnings per Share (EPS):

The diluted earnings per share increased six percent on a currency neutral basis. Reported EPS was $3.30 USD, which means an increase of four percent over the previous years' $3.16 USD.

Table 7 Kellogg's reconciliation of reported EPS to currency neutral EPS (2008-2010)

Consolidated results	2010	2009	2008
Diluted net earnings per share (EPS)	$3.30	$3.16	$2.99
Translational impact (a)	0.04	0.22	-
Currency neutral EPS	$3.34	$3.38	$2.99
Currency neutral EPS growth (b)	6%	13%	8%

(a) Translation impact is the difference between reported EPS and the translation of current

year net profits at prior year exchange rates, adjusted for gains (losses) on translational hedges, if applicable.

(b) Calculated as a percentage of growth from the prior year's reported EPS

Source: Kellogg's Annual Report 2010, Financial Highlights

The only region that presented positive operating profit was Europe. The rest of the regions had negative results, especially Asia Pacific.

Table 8 Kellogg's operating profit by region (2010 vs 2009)

(dollars in millions)	North America	Europe	Latin America	Asia Pacific	Corporate	Consolidated
2010 operating profit	$1,554	$364	$153	$74	-$155	$1,990
2009 operating profit	$1,569	$348	$179	$86	-$181	$2,001
% change – 2010 vs. 2009 (internal business)	-1.70%	8.20%	-2.40%	-29.50%	14.20%	-0.10%
% change – 2010 vs. 2009 (foreign currency impact)	0.70%	-3.40%	-12.30%	15.20%	-	-0.50%
Total change	-1.00%	4.80%	-14.70%	14.30%	14.20%	-0.60%

Source: Kellogg's Annual Report 2010, Financial Highlights

Margin Performance:

The gross margin declined 20 basis points in 2010. As for the general and administrative (SGA) expense as a percentage of net sales, the company claims that the 40 basis point decreased was due to "a reduction in incentive compensation expense and lower costs for cost reduction initiatives, which more than offset increased advertising investment and a goodwill impairment."

Table 9 Kellogg's Margin Performance (2010-2008)

	2010	2009	2008
Gross margin (a)	42.70%	42.90%	41.90%
SGA% (b)	-26.60%	-27.00%	-26.70%
Operating margin	16.10%	15.90%	15.20%

(a) Gross profit as a percentage of net sales. Gross profit is equal to net sales less cost of goods sold.

(b) Selling, general, and administrative expense as a percentage of net sales.

Source: Source: Kellogg's Annual Report Form 10-K, 2010: 16

The prices of Kellogg's products could reflect the increase of wheat prices. The following table and chart shows the variations of the prices in 2010.

Table 10 Variations of the prices of Kellogg's products in 2010

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
North America	0.90%	-0.50%	0.50%	0.60%
Europe	0.80%	0.80%	0.20%	-0.30%
Latin America	2.30%	10.80%	7.30%	8.20%
Asia Pacific	5.90%	-0.50%	-0.90%	-2.30%
Consolidated	1.30%	0.60%	0.90%	0.80%

Source: Kellogg Company Posts Solid First, Second, Third and Four Quarter 2010 Results

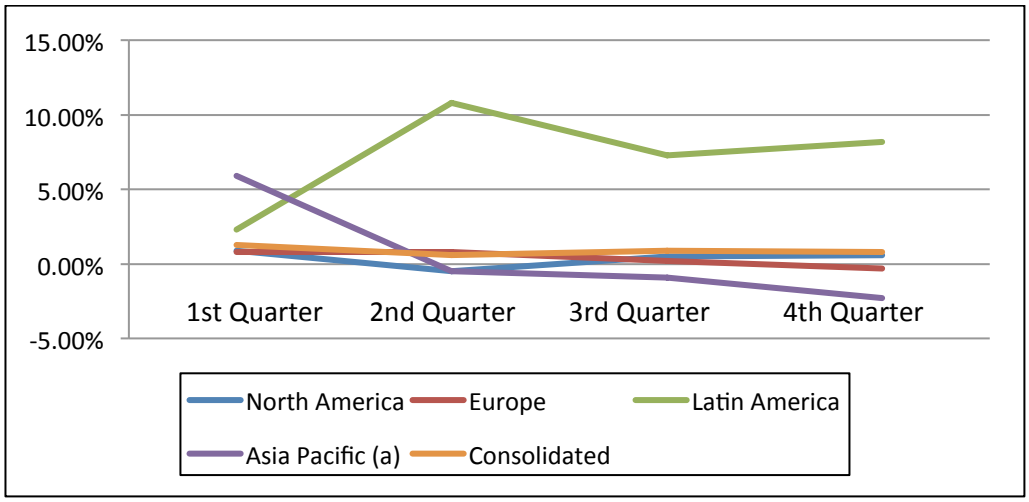


Chart 6 Variations of the prices of Kellogg's products in 2010

Source: Kellogg Company Posts Solid First, Second, Third and Four Quarter 2010 Results

According to Table 10, the prices of Kellogg's products did not present any significant change during the period when the wheat prices increased. Only Latin America segment presents a slight increase, however this rise had occurred since the second semester, which discards the possibility of an increase due to the rise of wheat prices.

Regarding the production levels of Kellogg Company, it can be appreciated in Table 11 a slight drop in 2010 compared to 2009:

Table 11 Kellogg's production levels in 2010

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
North America	0.9%	-5.3%	-2.8%	-2.5%
Europe	1.4%	-3.3%	-2.3%	-2.4%
Latin America	-0.9%	-6.1%	-3.7%	-3.4%
Asia Pacific	-4.8%	3.9%	3.0%	4.3%
Consolidated	0.5%	-4.5%	-2.4%	-2.1%

Source: Kellogg Company Posts Solid First, Second, Third and Four Quarter 2010 Results

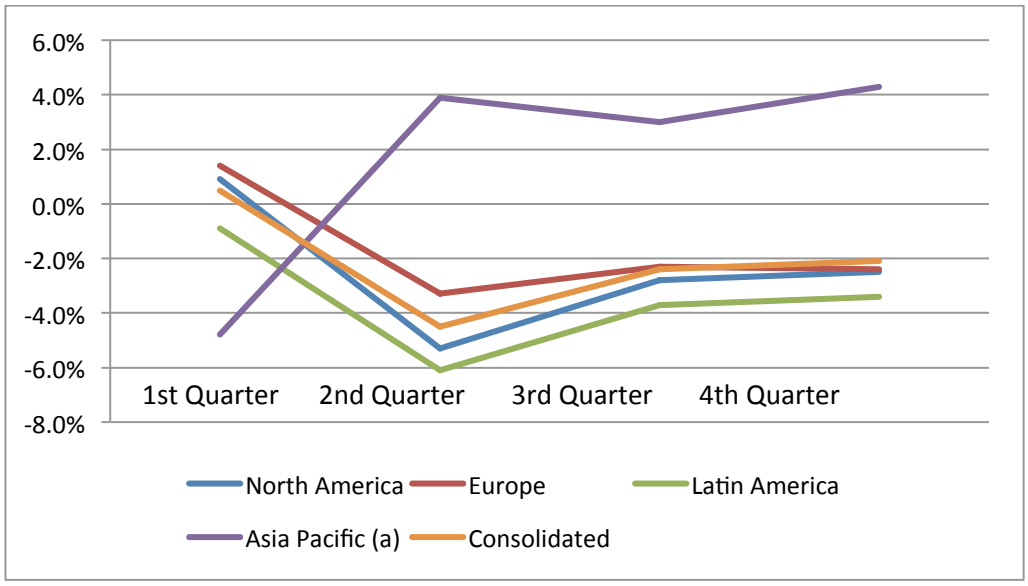


Chart 7 Kellogg's production levels in 2010

Source: Kellogg Company Posts Solid First, Second, Third and Four Quarter 2010 Results

These negative tendencies are not evidence that the company was affected by the higher wheat prices since the drop of production is consistent throughout 2010 and there are no significant variations in the third and fourth quarter when the wheat prices raised.

3.1.4 Findings of Kellogg's Financial Statements and Annual Reports

Despite the fact that Kellogg Company presented a slightly negative performance in 2010 compared to 2009, the company does not present in their financial results any significant variation that could be related to the increase of wheat prices in 2010. Having concluded 2010 with USD 12.3 billion dollars in sales compared to USD 12.5 billion in 2009, and having increased the net profits in 2010 up to USD 1.24 billion compared to USD 1.20 billion in 2009, are all very strong indicators that the company did not reflect any significant change.

The company recognizes four major issues that affected their results in 2010 (Kellogg Company Annual Report Form 10-K, 2010: 14):

1. Decreased innovation; not enough cereal innovations. Rather they focused on renovating existing cereal products.
2. Supply chain disruptions in the waffle business, and there was also a second quarter recall of select packages of breakfast cereal.
3. Weakness in core cereal businesses in both measured and non-measured channels.
4. Deflationary pressures; the competitive environment drove price deflation into the cereal category.

None of the issues stated by Kellogg had any relation to the increase of wheat prices.

3.2 Nestlé Group

3.2.1 Brief Explanation of Nestlé Group

Nestlé is a global leader in nutrition, health and wellness with presence in all continents around the world. Its operations are carried out in some 86 countries and the company has around 280,000 employees worldwide. This company markets its products in 130 countries and it is the company that invests the most money in research and development.

a) Brands:

Nestlé's brands have given the company an outstanding position globally through a wide range of product categories. Around 70% of net sales of the company are provided by global brands such as Nestlé, Nescafe, Nestea, Maggi, Buitoni and Friskies, where Nescafe contributes to 40% of these figures. In addition, Nestlé owns regional and domestic brands in several countries to allow the customers to keep enjoying their own individualities and traditions. Nestlé Group aims to ensure that all their brands exceed the customer's expectations and that they can be available everywhere in order to assure the continuity of the company. In addition, the company seeks for the continuous innovation of its products to fulfill current and future customers.

b) Products:

Nestlé Group produces baby food, bottled water, **cereals**, chocolates, frozen food, dairy products, beverages, nutritional products, ice cream, animal food, sports nutrition products and weight control products.

c) Raw Materials:

The principal raw materials in which Néstle Group uses to produce their products are; **wheat**, corn, sugar, cocoa, honey and milk. Cereal Partners Worldwide and General Mills produce the cereal for Nestlé Group.

3.2.2 Risks and Uncertainties that could affect Nestlé's Business, Financial Condition and Results of Operations

Nestlé has categorized the financial risks that the company is exposed to as follows (Nestlé Group, Consolidated Financial Statements 2010: 95):

1. *Credit risk* exposition on financial instruments such as liquid assets, derivative assets and trade receivable portfolios. The company assumes that credit risk occurs when "a counterparty may fail to perform its obligations (Nestlé Group, Consolidated Financial Statements 2010: 95).

2. *Liquidity risk*; for Nestlé Group this type of risk takes place when "a company encounters difficulties to meet commitments associated with liabilities and other payment obligations. Such risk may result from inadequate market depth or disruption or refinancing problems." (Nestlé Group, Consolidated Financial Statements 2010: 96) Nestlé Group has as a goal to administer this exposure by, "limiting exposures in instruments that may be affected by liquidity problems and by maintaining sufficient back-up facilities."

3. *Market risk*; assets, liabilities and predicted futures transactions might be affected by movements in foreign currency exchange rates, interest rates and market prices.

3.1 *Foreign Currency Risk*; this exposure occurs when performing transactions and translations. According to Nestlé's needs, the transactional exposures are carried out along with a systematic hedging policy. Translation exposure results when consolidating the financial statements of another countries operation in the company's currency (Swiss francs). Nestlé Group's goal is to manage its foreign currency exposure by using "currency forwards, futures, swaps and options." (Nestlé Group, Consolidated Financial Statements 2010: 99)

3.2 *Interest Rate Risk*; embraces the internet price risk which "results from borrowings at fixed rates and the interest cash flow risk that results from borrowings at variable rates." (Nestlé Group, Consolidated Financial Statements 2010: 100) By using Internet rate forwards, futures and swaps, the company manages its interest rate exposure.

3.3 ***Commodity Price Risk*** might take place when Nestlé Group completes transactions on the world commodity market to ensure supplies for the manufacture of its products such as, "green coffee, cocoa beans and other commodities." (Nestlé Group, Consolidated Financial Statements 2010: 100) The company's goal is to reduce the impact due to fluctuations on commodity prices by hedging the risk with anticipated future purchases, which implies a "combination of derivatives (futures and options) and executory contracts (differentials and ratios)."

4. *Equity Price risk*; has to do with price risk resulting from investment in securities. Nestlé Group diversifies its portfolio according to guidelines set by the Board of Directors (Nestlé Group, Consolidated Financial Statements 2010: 100). It covers settlement risk, value at risk and capital risk management.

3.2.3 Analysis of Nestlé's Financial Statements

Nestlé Group had a **satisfactory performance** in 2010 (Nestlé Group, Annual Report 2010). The following table presents the income statement of 2010 and 2009:

Table 12 Nestlé's income statement (2010-2009)

(in millions of CHF)	2010	2009
Sales	**109 722**	**107 618**
Cost of goods	-45 849	-45 208
Distribution expenses	-8510	-8420
Marketing and administration expenses	-37288	-36270
Research and development cost	-1881	-2021
EBIT Earnings Before Interest, Taxes, restructuring and impairments	**16 194**	**15 699**
Other income	24741	509
Other expenses	-2115	-1238
Profit before interest and taxes	**38 820**	**14 970**
Financial income	94	179
Financial expense	-847	-794
Profit before taxes and associates	**38067**	**14 355**
Taxes	-3693	-3362
Share of results of associates	1010	800
Profit of the year	**35384**	**11 793**
Of which attributable to non-controlling interests	1151	1365
Of which attributable to shareholders of the parent (Net profit)	34233	10 428
As percentage of sales		
EBIT Earnings before interest, taxes, restructuring and impairments	0.148	0.146
Profit of the year attributable to shareholders	0.312	0.097
Earnings per share (in CHF):		
Basic earnings per share	10.16	2.92
Fully diluted earnings per share	10.12	2.91

Source: Nestlé Group, Consolidated Financial Statements 2010

Net Sales:

In 2010 the company generated CHF 109,722 million in sales, growing 1.9 percent compared to CHF 107,618 million in 2009.

EBIT:

Nestlé's EBIT increased in 2009 from CHF 1.56 billion to CHF 1.61 billion in 2010. In addition, the EBIT margin advanced 20 basis points from 14.6 percent to 14.8 percent.

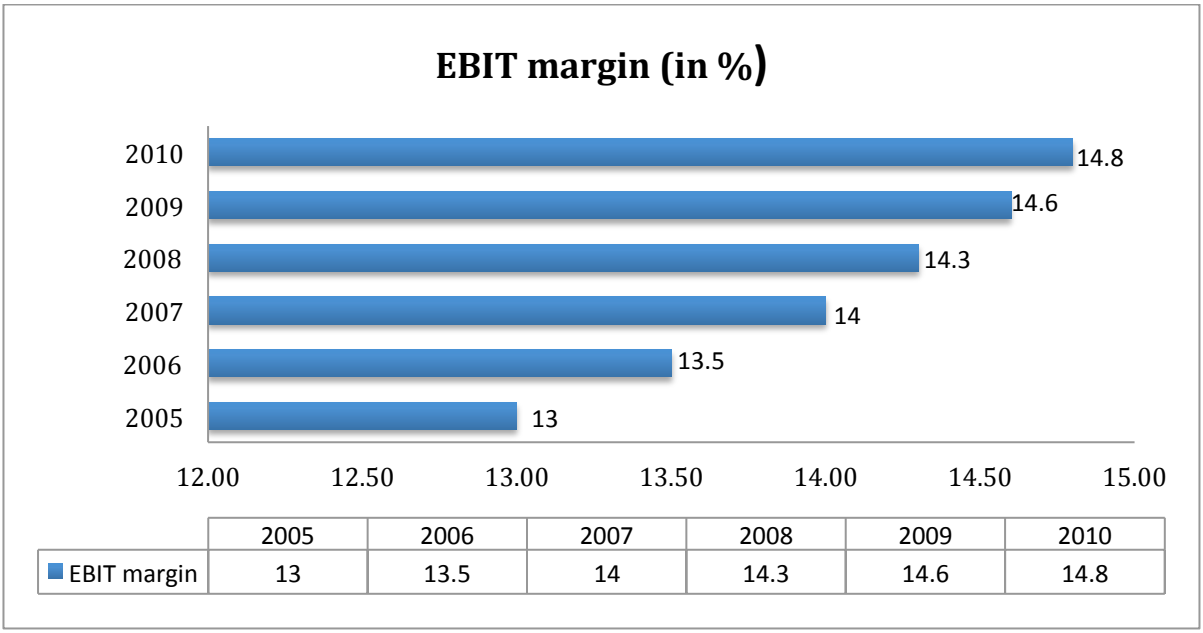


Chart 8 Nestlé's EBIT margin (2005-2010)

Source: Nestlé Group, Consolidated Financial Statements 2010

Net Profits:

Nestlé Group reached net profits up to CHF 3.42 billion in 2010. However, it is not comparable to 2009 CHF 1.04 billion due to the extraordinary profit added in 2010 on the disposal of remaining interest in Alcon.

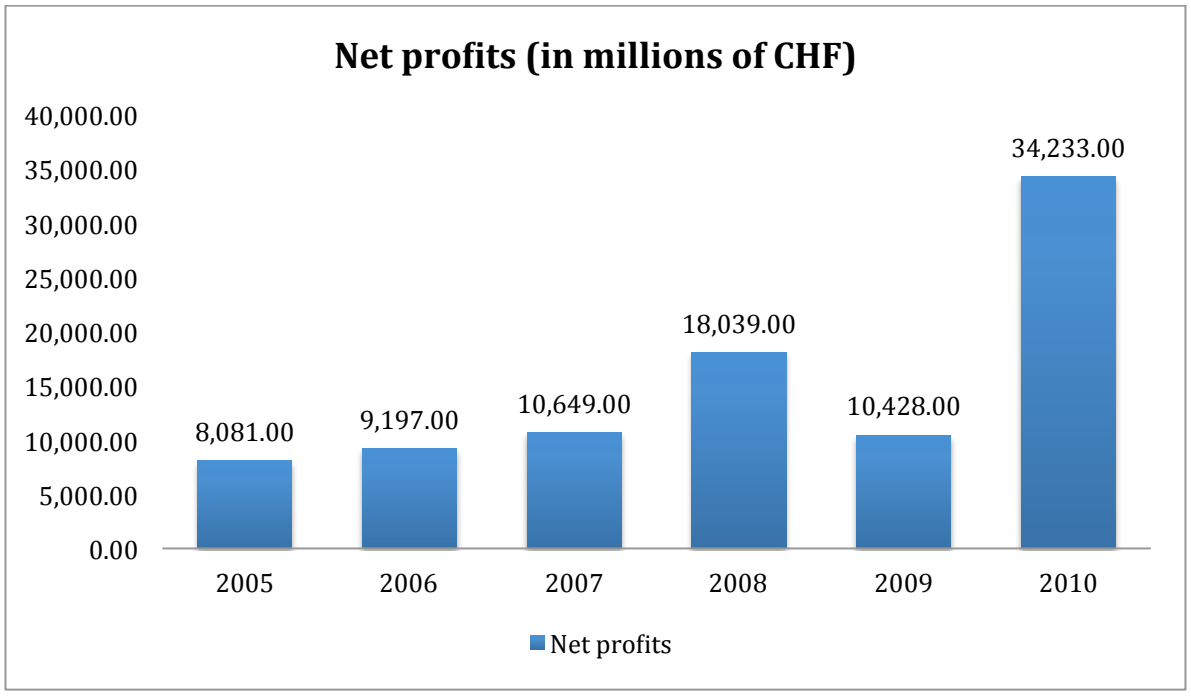


Chart 9 Nestlé's net profits (2005-2010)

Source: Nestlé Group, Consolidated Financial Statements 2010

Operating Cash:

The operating cash decreased in 2010 to CHF 1.36 billion, whereas in 2009 the company reported CHF 1.79 billion.

Earnings per Share (EPS):

The underlying earnings per share rose 7.4 percent, from CHF 3.09 in 2009 to CHF 3.32 in 2010.

Nutrition segment:

This segment presented sales of CHF 1.03 billion in 2010 compared to CHF 996 million in 2009. This means a growth of 6.8 percent in 2010.

Table 13 Nestlé's nutrition segment report (2010-2009)

(in millions of CHF)	2010	2009
Revenues and Sales		
Sales	10 368	9 965
EBIT Earnings Before Interest, Taxes, restructuring and impairments	**1 874**	**1 734**
Impairment of assets	-143	-5
Restructuring costs	-35	-30
Assets	15 946	15 711
Of which goodwill and intangible assets	9 630	9 790
Liabilities	2 775	2 785

Source: Nestlé Group, Consolidated Financial Statements 2010

Food and beverages segment:

As for the food and beverages segment, profits improved from CHF 99.7 billion in 2009 to CHF 103.7 billion in 2010.

Table 14 Nestlé's food and beverages segment report (2010-2009)

(in millions of CHF)	2010	2009
Revenues and Sales		
Sales	10 372	99 798
EBIT Earnings Before Interest, Taxes, restructuring and impairments	**13 783**	**13 083**
Impairment of assets	-531	-207
Restructuring costs	-469	-200
Assets	80 566	78 063
Of which goodwill and intangible assets	36 080	34 397
Liabilities	16 031	15 642

Source: Nestlé Group, Consolidated Financial Statements 2010

Nestlé's wheat-related products also show a positive outcome in 2010.

Table 15 Nestlé's wheat-related products report (2010-2009)

(in millions of CHF)	Jan.-Sept. 2010	Jan.-Sept. 2009	Change (%)
By Product			
Powdered and liquid beverages	15006	13952	8
Water	7280	7224	4.3
Milk products and ice cream	15531	14883	6.1
Nutrition	**7844**	**7481**	**6.8**
Prepared dishes and cooking aids	13162	12379	3.5
Confectionery	8535	8177	7.4
PetCare	9664	9613	4
Pharmaceutical products	5748	5838	10.6
Total Group	82770	79547	6.1

Source: Nestlé Group, Consolidated Financial Statements 2010

3.2.4 Findings of Nestlé's Financial Statements and Annual Reports

In general terms, Nestlé Group accomplished a satisfactory 2010. Despite the fact that this company is not merely dedicated to the production of ready-to-eat cereals, financial statements of both the nutrition segment and food and beverages segment indicate positive results. The cost of goods did not present any significant variation compared to the previous

year. In addition, Nestlé does not mention of having had any problem related to the increase of the price of wheat in the annual report for 2010.

3.3 Ralcorp Inc.

3.3.1 Brief Explanation of Ralcorp Inc.

Ralcorp Holdings, Inc. was founded in 1996. It is a company dedicated to the manufacturing, distribution and marketing of "private-brand food products, ready-to-eat cereal (Post Foods) and value-brand food products, in channels such as the grocery, mass merchandise, pharmacy and foodservice." (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010) In 2008 Ralcorp Holdings Inc. acquired Post Foods, and since then it has positioned itself as the third largest ready-to-eat cereal company.

Ralcorp's strategy is to increase their business by acquiring other companies as well as increasing the sales of current and new products. In addition, the company seeks to increase distribution to new customers and regions. The company's businesses embrace the following segments: Branded Cereal Products, Other Cereal Products, Snacks, Sauces and Spreads, Frozen Bakery Products and Pasta.

a) Principal Products:

Ralcorp Holding Inc. products consist of "**ready-to-eat and hot cereal products**; nutritional bars; wet-filled products such as salad dressings, mayonnaise, peanut butter, syrups, jams and jellies, and specialty sauces; snack nuts, snack mixes, corn-based snacks and chocolate candy; dry pasta products; crackers and cookies; frozen griddle products (pancakes, waffles, French toast and custom griddle products) and biscuits; and breads, rolls and muffins." (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 3)

b) Branded Cereal Products:

This segment contains the brand Post Foods that is a ready-to-eat cereal business. This company is dedicated to produce, market and sales of ready-to-eat cereals. Its products are manufactured mainly in four conveniences in the United States and Canada using production processes such as shredding, extruding, gun-puffing, batch cooking and continuous cooking. Sales staff and an independent sales agency are in charge of sales in the US through grocery, mass merchandise, drugstores and food service channels. For sales outside the US the company uses broker distribution and other similar arrangements (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 4-5).

c) Other Cereal Products:

This segment embraces the private-brand and value-brand ready-to-eat cereals and hot cereals of the company. In addition, Bloomfield Bakers products are contained in this segment making room for nutritional bars, cookies, crackers and cereals. Three manufacturing facilities produce the private-brand ready-to-eat cereals, utilizing 45 different types of cereals. The production of the private-brand and value-brand hot cereals is carried out at one facility involving products such as old-fashioned oatmeal, quick oatmeal, regular instant oatmeal, flavored instant oatmeal, farina, instant hot wheat cereal (Ralston) and other hot cereals (3 Minute Brand).

In fiscal 2010, nearly 58 percent of net sales were in ready to-eat-cereals based products, seven percent in hot cereals and 35 percent in the Bloomfield Bakers products. The company produces cereal products based on estimations of customer orders, thereby maintaining an average of four to six week's inventory of finished products (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 5).

d) Raw Materials:

This company utilizes main ingredients such as; **wheat, corn, rice, oats**, nuts, peanuts and cashews, sugar and eggs. The packaging materials consist of linerboard cartons, corrugated boxes, plastic bottles, plastic containers and composite cans. The raw materials are purchased from local, regional, national and international suppliers.

The company acknowledges that costs of raw materials may fluctuate widely due to "weather conditions, labor disputes, government regulations, industry consolidation, economic climate, energy shortages, transportation delays, or other unforeseen circumstances." The supply of raw materials can be affected by the same factors. (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 8). In order to assure favorable prices the company often buys contracts up to three years in advance for ingredients and up to five years for packaging materials.

e) Seasonality:

Some of the aspects of the operations are to some extent seasonal, having slightly higher sales and operating profits on the first and fourth fiscal quarters.

f) Customers:

Ralcorp's most important client is Wal-Mart Stores, Inc., which in fiscal 2010 contributed 18 percent of aggregate net sales. Products are sold domestically and overseas in Canada, Europe and Southeast Asia to retail chains, mass merchandisers, grocery wholesalers, warehouse club stores, drugstores, restaurant chains and foodservice distributors (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 7).

g) Competition:

According to Ralcorp Holdings, Inc. competition is based on "product quality, price, effective promotional activities, and the ability to identify and satisfy emerging consumer preferences." (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 7) Large branded manufacturers and competitive private-brand and foodservice manufacturers compete intensively against the company. Some of the first-class cereal competitors are Kellogg, General Mills, Quaker Oats and Malt-O- Meal.

3.3.2 Risks and Uncertainties that could affect Ralcorp's Business, Financial Condition and Results of Operations

Ralcorp Holdings Inc. has identified risks and uncertainties that might have a negative affectation on their business, financial situation and results of operations as follows (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 10):

Growth and acquisitions; the company acknowledges that important growth has come from acquisitions and mergers, however it is now always possible to continue amassing companies at the same rate they have done in past years (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 10).

Commodity prices; shortage in commodities due to fluctuations might increase the costs and impact negatively on profits. The company does use commodity futures and options as a way to reduce the price volatility of raw materials (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 10).

Competitive Pressures; strong competitors with their substantial percentage of market share might push the company to make strategic decisions that could affect operations and profits (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 10).

Name and Recognition; failure of the company managing the price gap between their private-label products and the competitors' products might affect results (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 11).

Private-brand competitive activity; buying decisions of the customers are related to a periodic bidding process in which the winner obtains the selling of certain products (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 11).

Cost strategies; failure to carry out business strategies to lower costs might impact negatively the results of operations (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 11).

Capability to increase prices; the company might have to rise prices due to industry supply, demand and other activities made by competitors, therefore an increase on prices would be

needed. If the company is unable to increase prices there might be an adversely affectation on the results of operations (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 11).

Losing a customer; some customers represent a large segment of net sales. If the company fails to maintain its level of sales and product distribution to its customers they may have negative results (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 11).

Other risks enlisted by the company that might affect them adversely include: product liability, incapacity to predict changes in consumer trends and preferences, indebtedness, new laws or changes in current laws or regulations, possible anti-dumping measures imposed against some foreign imports, labor strikes, bankruptcy of an important customer, higher expenses on pension plans, impairment in carrying value of goodwill, **changes in weather conditions and natural disasters**.

3.3.3. Analysis of Ralcorp's Financial Statements

Ralcorp Holdings, Inc. overall did not have a satisfactory performance in 2010. The performance reported by the company in 2010 versus 2009 was as follows (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 20):

Net Sales:

Net sales increased four percent in 2010 reaching USD 4.04 billion, compared to USD 3.89 billion in 2009. Growth in 2010 was due to an acquisition that added USD 244.1 million; however, excluding the acquisition the company reported a decline of two percent in sales due to lower selling prices and higher trade promotion spending of branded cereal products. Furthermore, the company reported that the **sales prices** in some product categories **declined** due to **commodity prices** that fell in the first half of the year.

Operating Profit:

The company reported operating profits of USD 421.9 million, decreasing 5.8% compared to USD 448.3 million in 2009. The operating profit margins (as a percentage of net sales)

decreased from 11.5% in 2009 to 10.4% in 2010. According to the company, operating profits were impacted by the impairment of intangible assets, merger and integration costs, a provision for legal settlement and plan closure costs.

Margins:

Gross profit margins decreased by 60 basis points from 27.2 percent in 2009 to 26.6 percent in 2010. The company claims that these results are due to "negative sales mix, higher trade promotion for branded cereal products, lower net selling prices and a USD 3.9 million inventory adjustment related to the AIPC acquisition."

Net earnings:

Net earnings were down USD 81.6 million; declining to USD 208.8 million compared to USD 290.4 million in 2009. This negative result, according to the company, was due the absence of Vail related gains (included in the 2009 results), the impairment of goodwill and brand trademarks, merger and integration costs, a provision for legal settlement and amounts related to plant closures.

Earnings per Share (EPS):

Even though the company benefited from acquisitions, higher overall base-business volumes, lower raw material costs, and fewer numbers of outstanding shares in 2010, the diluted earnings per share were down to $3.74 USD per share compared to $5.09 USD per share in 2009.

Table 16 Ralcorp's financial summary from 2006 to 2010

	2010	2009	2008	2007	2006
Net sales (a)	4,048.50	3,891.90	2,824.40	2,233.40	1,850.20
Cost of goods sold	-2,971.60	-2,834.10	-2,318.10	-1,819.20	-1,497.20
Gross profit	**1,076.90**	**1,057.80**	**506.3**	**414.2**	**353**
Selling, general and administrative expenses	-528.1	-564.8	-297.8	-227.8	-211.5
Amortization of intangible assets	-49.3	-41.8	-29.2	-23.7	-13.4
Impairment of intangible assets	-39.9	-	-	-	-

	2010	2009	2008	2007	2006
Other operating expenses	-37.7	-2.9	-3.1	-2.2	-1.6
Operating profit	**421.9**	**448.3**	**176.2**	**160.5**	**126.5**
Interest expense, net	-107.8	-99	-54.6	-42.3	-28.1
Gain (loss) on forward sale contracts	-	17.6	111.8	-87.7	-9.8
Gain on sale of securities	-	70.6	7.1	-	2.6
Earnings before income taxes and equity earnings	**314.1**	**437.5**	**240.5**	**30.5**	**91.2**
Income taxes	-105.3	-156.9	-86.7	-7.5	-29.9
Equity in earnings of Vail Resorts, Inc., net of related deferred income taxes	-	9.8	14	8.9	7
Net earnings	**208.8**	**290.4**	**167.8**	**31.9**	**68.3**
Earnings per share:					
Basic	3.79	5.16	5.51	1.2	2.46
Diluted	3.74	5.09	5.38	1.17	2.41
Weighted average shares outstanding:					
Basic	54.9	56.2	30.3	24.6	27.7
Diluted	55.6	57	31.1	27.1	28.2

Source: Ralcorp Holdings, Inc. Form 10-K, 2010

Branded Cereal Products:

The performance reported by the company of the **branded cereal products** in 2010 versus 2009 was as follows (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 25):

Branded Cereal Product's Net Sales:

The net sales in the branded cereals segment decreased eight percent, falling to USD 83.1 million in 2010. The company claims that these negative results in net sales are due to lower volumes and a lower net selling price as result of increased trade promotion spending compared to 2009. The ready-to-eat cereal category, including Post Foods products, had negative results because the competition used trade promotions to compete on pricing and to protect market shares.

Branded Cereal Product's Operating Profit:

This segment reported a decline of USD 30 million in operating profits in 2010, slumping to USD 220.6 million, twelve percent less compared to USD 250.6 million in 2009. The company claims the drop was due to reduced volumes and lower net selling prices due to increased trade promotion spending. However, these negative results were partially offset by benevolent raw material costs and a decrease of operating expenses.

Other Cereal Products:

The performance reported by the company of the **other cereal products** in 2010 versus 2009 was as follows (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 25):

Other Cereal Products' Net Sales:

Net sales slid three percent to USD 799.7 million in 2010, from USD 803.3 million in 2009.

Other Cereal Products' Operating Profit:

Profits decreased USD 1.7 million from USD 92 million in 2009 to USD 90.3 million in 2010.

Table 17 Ralcorp's segment results (2008 -2010)

	2010	%Change	2009	%Change	2008
(pounds in millions)					
Sales Volume					
Branded Cereal Products	492.8	-2%	503	480%	86.7
Other Cereal Products	527.3	-3%	544.5	4%	525.1
Snacks, Sauces & Spreads	1,315.20	8%	1,217.40	-1%	1,232.00
Frozen Bakery Products	652.4	3%	636.1	-8%	689.1
Pasta	160.1	n/a	-	n/a	-
Total Sales Volume	3,147.80	9%	2,901.00	15%	2,532.90
(dollars in millions)					
Net Sales					
Branded Cereal Products	987.5	-8%	1,070.60	493%	180.5
Other Cereal Products	799.7	0%	803.3	6%	756

	2010	%Change	2009	%Change	2008
Snacks, Sauces & Spreads	1,461.60	10%	1,323.20	13%	1,176.10
Frozen Bakery Products	698.3	1%	694.8	-2%	711.8
Pasta	101.4	n/a	-	n/a	-
Total Net Sales	4,048.50	4%	3,891.90	38%	$2,824.40
Segment Profit					
Branded Cereal Products	220.6	-12%	250.6	479%	43.3
Other Cereal Products	90.3	-2%	92	23%	74.8
Snacks, Sauces & Spreads	152.6	30%	117.6	87%	62.8
Frozen Bakery Products	80.8	17%	69.1	8%	63.7
Pasta	21.6	n/a	-	n/a	-
Total Segment Profit	565.9	7%	529.3	116%	244.6
Segment Profit Margin					
Branded Cereal Products	22%		23%		24%
Other Cereal Products	11%		11%		10%
Snacks, Sauces & Spreads	10%		9%		5%
Frozen Bakery Products	12%		10%		9%
Pasta	21%		n/a		n/a
Total Segment Profit Margin	**14%**		**14%**		**9%**

Source: Source: Ralcorp Holdings, Inc. Form 10-K, 2010

3.3.4 Findings of Ralcorp's Financial Statements and Annual Report

Ralcorp Holdings Inc.'s performance in 2010 was clearly not good, presenting poor results mainly as a consequence of the impairment of goodwill and brand trademarks, merger and integration costs, not to mention a provision for legal settlement and amounts related to plant closures (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 20). Concerning branded cereal products the company claims the results were negative due to lower volumes not withstanding higher promotional spending (Ralcorp Holdings, Inc., Annual Report Form 10-K, 2010: 32).

Despite the fact that the cost of goods increased in 2010, sales and gross profit increased during the year. In addition, the company does not mention an affectation as a result of an increase of commodity prices that could have been expected as a result of the increase in wheat prices. The company claims in the Annual Report 2010 Form 10-K that the cost of

wheat, durum wheat, corn products, cashews and packaging materials have risen considerably compared to prices in 2010, however there is no evidence that this impacted the company.

3.4 Analysis of the Ready-to-Eat Cereal Companies' Stock Prices

None of the ready-to-eat cereal companies provided significant evidence in their financial statements such as significant negative variations in the cost of raw materials or gross profits, nor any claims from the companies in their annual reports about any kind of impact from the increase of wheat prices.

The stock price of a company can reflect the company's situation in a very extensive way, taking into account wide-ranging data such as day-to-day financial news, industry aspects and macroeconomic news.

3.4.1 Basic Statistics Analysis

The prices[3] are taken from a period that covers the most significant wheat prices variations, which is from December 2009 to February 2011. The variables that were taken into account for the following studies are as follows:

- Wheat Future Prices
- Stock prices of cereal companies:
    - Kellogg
    - Nestlé
    - Ralcorp

The results were pulled out using Statgraphics, which is a statistical-analysis software. I decided to use this software since it is ideally suited for users of statistical methods who may not be professional statisticians. Important applications of the software include quality control in manufacturing, design of experiments, data analysis in research and development,

[3] The wheat future prices and the stock prices of cereal companies can be found in the Annexes Section

monitoring of social and environmental trends, financial and economic forecasting. The version used to perform the analysis was Statgraphics Centurion XV Multilingual Edition.

Basic statistics are applied to the variables in Table 18 such as measures of central tendency and measures of shape.

Table 18 Basic Statistics Analysis

	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
Average	613.564	61.8409	51.2791	51.9301
Standard Deviation	**130.953**	3.5302	3.6225	1.76737
Coefficient of Variation	21.343%	5.70852%	7.06428%	3.40336%
Minimum	427.38	54.35	43.94	47.98
Maximum	888.25	69.29	59.36	55.58
Range	460.87	14.94	15.42	7.6

The principle finding of this analysis is that wheat future prices have a deviation standard of 130.953, which corroborates the great volatility of these prices during that period.

3.4.2 Pearson Correlation Analysis

A correlation analysis is performed to measure the dependence between the cereal companies and the prices of wheat.

In Statistics, the Pearson correlation coefficient is an index that measures the linear relationship between two quantitative random variables. Unlike the covariance, the Pearson correlation is independent of the scale that measures variables.

The Pearson correlation coefficient can be defined as an index that can be used to measure the degree of relationship between two variables as long as both are quantitative. The coefficient can be calculated on a statistic sample, denoted as:

$$r_{xy} = \frac{\sum x_i y_i - n\bar{x}\bar{y}}{n s_x s_y} = \frac{n\sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n\sum x_i^2 - (\sum x_i)^2}\ \sqrt{n\sum y_i^2 - (\sum y_i)^2}}.$$

Guidelines to Interpret the Pearson Correlation Analysis:

1. The value of the correlation index varies in the range [-1,1].

2. If r= 1 there is a perfect positive correlation. The index indicates a total dependency between the two variables called *direct relation*; when one increases, so does the other one at a constant rate.

3. If 0< r < 1 there is a positive correlation

4. If r= 0 there is no linear relation. It does not mean necessarily that the variables are independent; there might exist no linear relations between the two variables

5. If -1 < r < 0 there is a negative correlation

6. If r= -1 there is a perfect negative correlation. The index indicates a total dependence between the two variables called inverse relation; when one increases the other decreases at a constant rate.

A Pearson product-moment correlation analysis is conducted in Table 19 to each pair of variables in order to find their level of interdependence. The correlation coefficients ranging from -1 to +1 measure the strength of the linear relationship between the variables (first line). On the second line, the numbers in parenthesis are the number of pairs of data used to calculate each coefficient. The third number in each location of the table is a P-value, which tests the statistical significance of the estimated correlations. A statistically significant result

is unlikely to occur by randomness, and P-values below 0.05 indicate statistically significant non-zero correlations at the 95 percent confidence level.

Table 19 Pearson Correlation Analysis

	Kellogg	**Nestlé**	**Ralcorp**	**Wheat Future Prices**
Kellogg		-0.6760	0.2930	-0.6764
		(294)	(294)	(294)
		0.0000	0.0000	0.0000
Nestlé	-0.6760		0.1137	0.8151
	(294)		(294)	(294)
	0.0000		0.0515	0.0000
Ralcorp	0.2930	0.1137		-0.1571
	(294)	(294)		(294)
	0.0000	0.0515		0.0069
Wheat Future Prices	-0.6764	0.8151	-0.1571	
	(294)	(294)	(294)	
	0.0000	0.0000	0.0069	

According to the results on Table 19, the following pair of variables have P-values below 0.05, which means that each pair of variables depend on each other:

- ✓ Kellogg and Nestlé
- ✓ Kellogg and Ralcorp
- ✓ Kellogg and Wheat Future Prices
- ✓ Nestlé and Wheat Future Prices
- ✓ Ralcorp and Wheat Future Prices

3.4.3 Behavior of the Stocks Prices during the Volatility Period

The cereal companies' stock prices provide detailed information that cannot be found on the financial statements or annual reports. The daily variations of the stock prices reflect the

companies' situation in a very extensive way including daily information about the company, industry, macroeconomic news and many more variables.

For instance, if a company reports undesired profits, its stock price will present negative effects immediately, this means that if there was an impact as a result of the increase of wheat prices in the cereal companies, it could be represented in their stock prices.

For the following study, the closing stock prices of the cereal companies and wheat future prices were analyzed in the period from December 2009 to February 2011.

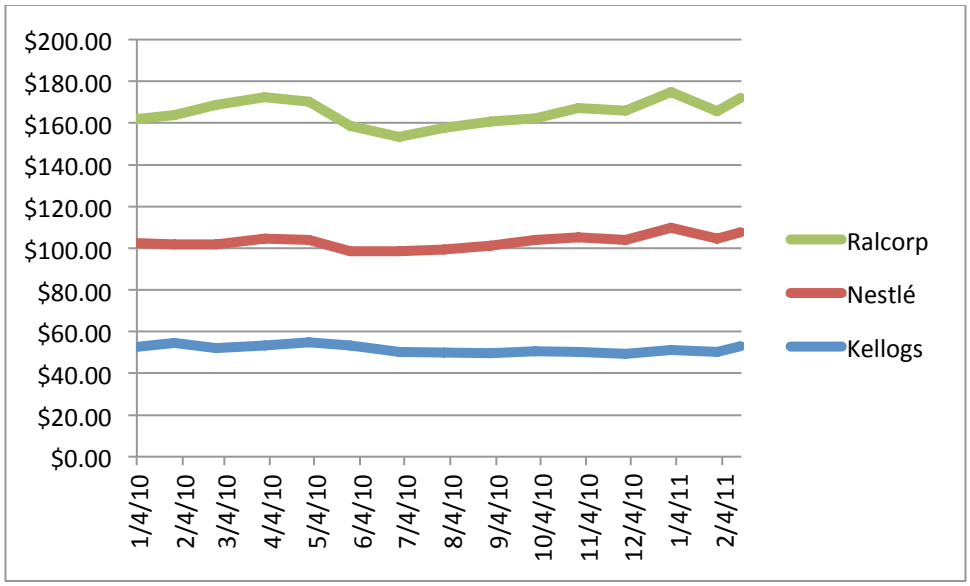


Chart 10 Stock Prices of Cereal Companies

The previous chart shows that the stock prices of the cereal companies had a consistent performance and did not present any significant prices variations in July 2010 when the increase of wheat prices took place.

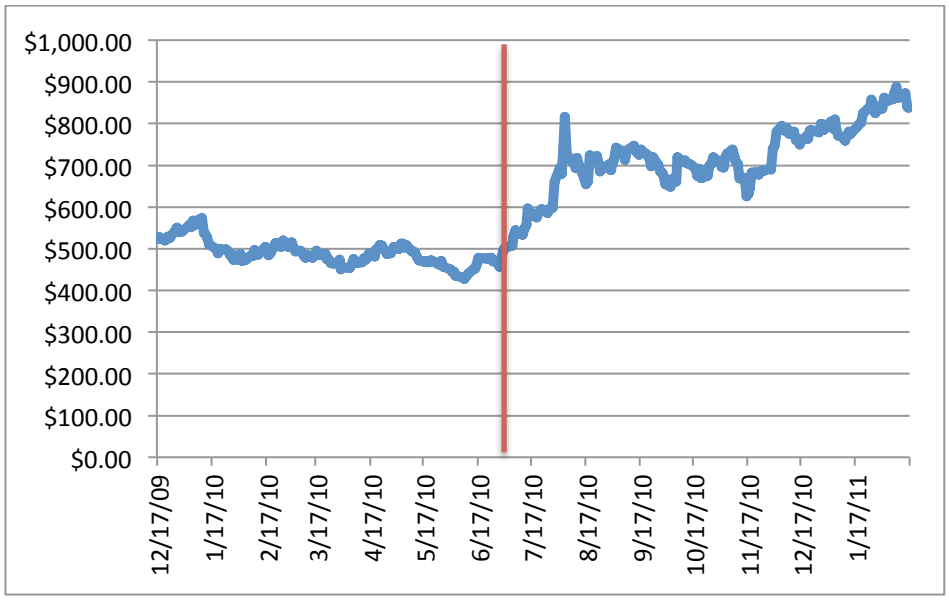


Chart 11 Prices of Wheat Futures in 2010

On the other hand, the wheat future prices, presented a brusque increase during the volatile period from July to December of 2010.

The following chart shows the significant increase the wheat future prices went through in the period of July-December 2010, while the stock prices of the cereal companies remained without important changes during that time.

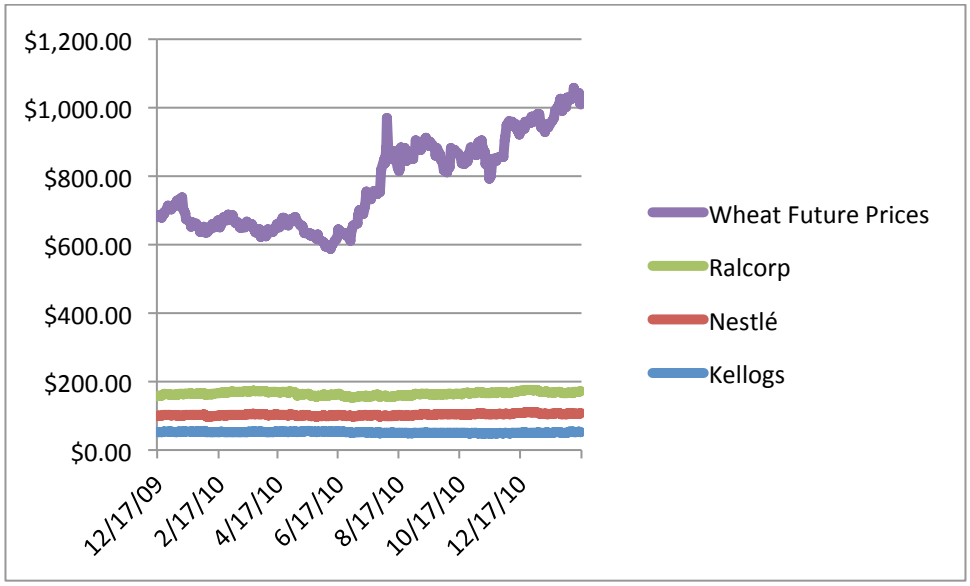


Chart 12 Comparison between the Wheat Future Prices and the Stock Prices of the Cereal Companies (July-December 2010)

According to these results, the stock prices of the cereal companies presented no significant financial consequences in the period that saw the wheat prices increasing drastically in 2010.

4. Assumptions about why the Cereal Companies did not present Financial Consequences due to the Increase of Wheat Prices

4.1 Sufficient Reserves of Wheat

Nervousness came up to the markets when the droughts and fires took place in Russia, specially having fresh in mind the food crisis in 2008 as a result of a declining of grain stocks worldwide and high oil prices (Shah, 2008). The drop in production of wheat, the temporary restriction to export in Russia, and the rise of wheat prices were concerns to think about a possible food crisis once again.

However, the increase of wheat prices in 2010 could have seemed unreasonable for the cereal companies for several reasons, preventing them from buying high prices of futures of wheat and affecting their finances. Firstly, even though Russia is one of largest suppliers of wheat in the world, it only accounts for 8 percent of the world wheat production and there are many other wheat suppliers. Secondly, the world wheat production in 2010 was only 6 percent lower than 2009 production. (Food and Agriculture Organization of United Nations FAO, 2010). The following Table shows the world wheat production from 2006 to March 2011:

Table 20 World wheat production, thousand metric tons (2006-2011)

Production	2006/07	2007/08	2008/09	2009/10	2010/11Feb	2011/12Feb
Argentina	16,300	18,600	11,000	11,000	14,000	14,500
Australia	10,822	13,569	21,420	21,923	25,000	29,500
Canada	25,265	20,054	28,611	26,848	23,167	25,260
China	108,466	109,298	112,464	115,120	114,500	117,920
Egypt	8,274	8,275	7,977	8,523	8,500	8,700
EU-27	124,870	120,133	151,122	138,051	136,528	137,486
India	69,350	75,810	78,570	80,680	80,710	86,870
Iran	14,500	15,000	10,000	12,000	14,400	13,750
Kazakhstan	13,460	16,467	12,538	17,052	9,700	22,732
Pakistan	21,277	23,295	20,959	24,033	23,900	24,000
Russia	**44,900**	**49,400**	**63,700**	**61,700**	**41,500**	**56,231**
Turkey	17,500	15,500	16,800	18,450	17,000	18,800

Production	2006/07	2007/08	2008/09	2009/10	2010/11Feb	2011/12Feb
Ukraine	14,000	13,900	25,900	20,900	16,850	22,000
Uzbekistan	5,850	6,200	6,000	6,200	6,500	6,300
Others	49,830	46,055	43,198	54,722	47,150	49,562
Subtotal	546,898	555,381	616,139	622,228	585,305	639,611
United States	49,217	55,821	68,016	60,366	60,103	54,413
World Total	**596,115**	**611,202**	**684,155**	**682,594**	**645,408**	**692,875**

Source: United States Department of Agriculture, 2011

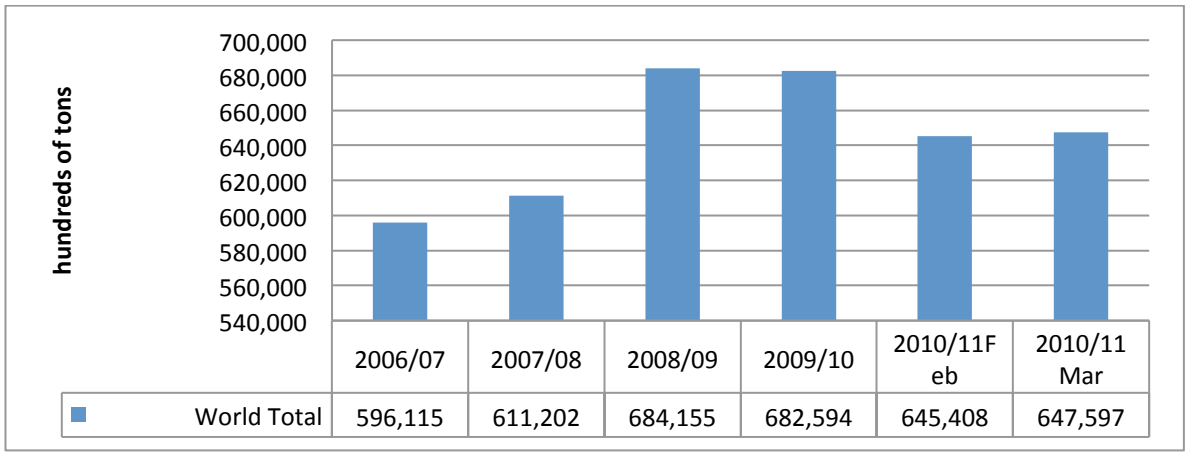


Chart 13 Production of wheat in the world from 2006 to 2011

Source: United States Department of Agriculture, 2011 (World Wheat Production, Consumption, and Stocks)

Most likely the cereal companies studied the reserves of wheat, this way they knew there were sufficient supplies to satisfy the loss of wheat in Russia. The following table presents the reserves of wheat worldwide from 2007 to 2012:

Table 21 Reserves of wheat worldwide, thousand metric tons (2007-2012)

	2007/08	2008/09	2009/10	2010/11	2011/12Feb	2011/12Mar
Reserves						
China	39,081	45,803	54,425	59,091	65,011	61,511
Russia	4,068	10,743	14,521	13,535	10,866	10,866
United States	8,323	17,867	26,552	23,466	22,997	22,453

World Total	126,903	167,050	202,330	199,485	213,099	209,584

Source: United States Department of Agriculture, 2012

In 2010, the world total wheat production was 651,513 millions tons, whereas the world total wheat consumption was 654,358 millions tons; however the world total wheat reserves of that year accounted for 199,485 millions tons, which easily satisfied the shortage problems of 2010. These figures could have suggested to the cereal companies that the loss of wheat in Russia would not be significant in global terms.

Table 22 Consumption of wheat worldwide, thousand metric tons (2007-2012)

	2007/08	2008/09	2009/10	2010/11	2011/12Feb	2011/12Mar
Total Consumption						
China	106,000	105,500	107,000	110,500	113,500	116,000
Russia	37,650	38,900	39,600	38,600	38,600	38,600
United States	28,614	34,293	30,978	30,710	31,613	31,477
World Total	617,676	642,668	650,307	654,358	680,478	683,925

Source: United States Department of Agriculture, 2012

The cereal companies could have realized as well that the world wheat market was in better shape than it was at the time of the food crisis in 2008. During the 2007-2008 season when a food crisis was declared, wheat production was at 611 million tons, while in 2010 even discounting the loss of that year, the world wheat production was around 645 million tons.

It can be presumable that cereal companies realized that panic purchases in the financial markets led to an unreasonable increase of wheat prices. Wheat markets are strongly linked to the financial markets; apart from some specific factors that are implied by the relative economics of wheat, the reason why financial markets affect the wheat market is because of the integration of commodities, stock, and currency markets in the last ten years (Sariannidis, 2011). Commodity, stock, energy, and currency markets have become more popular, friendlier and more interdependent from each other as a result of the internationalization of economies.

Wheat markets are strongly linked to the financial markets; apart from some specific factors that are implied by the relative economics of wheat, the reason why financial markets affect the wheat market is because of the integration of commodities, stock, and currency markets in the last ten years (Sariannidis, 2011). Commodity, stock, energy, and currency markets have become more popular, friendlier and more interdependent from each other as a result of the internationalization of economies.

As stated by Sariannidis, more accessibility to financial instruments for foreign capital in those markets, including investors with small capital, has led to the integration of the markets, making it possible for anyone can become a participant of trading. A unification of markets has grown thanks to the development of Internet technologies and electronic markets exchanges, being that have helped trading to become an integrated international electronic space that gives the opportunity for anyone to join in on it.

Governments have also played a role by helping world trade become more liberalized by diminishing interventions in cereal markets, as well as major grain producing countries such as China, the Former Soviet Union, and Eastern Europe have all experienced significant economic restructuring. As a result of this, financial investors have incorporated agricultural commodities into their investing portfolios. Commodities are good diversifiers in traditional investment portfolios and could be considered as an alternative approach (Holmes 2006; Feldman and Till 2006; Tang and Xiong 2009).

Ando and Modigliani (1963) using the life-cycle model of household spending behavior explain the theoretical connection between the stock markets and wheat; the influence the stock market has on the consumption and the price of wheat. They suggest that "the nature of the correlation between asset prices and consumption is attributed to the direct wealth effect: increasing asset prices increases household wealth, which, in turn, increases consumption". They also claim that household's increase and decrease wealth in order to keep their consumption relatively stable but if unpredictable changes occur in the wealth of households, their model suggests that the households will revise their consumption plan. Ando and Modigliani conclude their research indicating that predictable changes in asset prices should not lead to changes in planned consumption; however unexpected changes should generate a

response. As for the wealth effect of the stock market, the authors suggest that it is a significant determinant of wheat consumption and its price as well.

4.2 Agricultural Commodity Price Hedging

Another possible explanation of why the cereal companies did not present financial consequences to the increase of wheat prices is that these companies use agricultural commodity price hedging tools as a protection way to adverse price changes. Hedging is a manner of reducing and eliminating the level of exposure to risks inherent in commodities, foreign currencies and financial assets (Acharya et al. , 2009).

Cereal companies use wheat as their main raw material and they have no way of knowing if the price of wheat will fluctuate or not in the future. Therefore, it is very important that cereal companies purchase wheat in advance to assure the availability of wheat in the future through derivatives. Derivatives are financial instruments that derive their value from the value of other, more basic, underlying variables (Hull, 2008). These future contracts offer assurance of future prices and availability of goods in an unstable business environment.

The three companies in this study mention the importance of using derivatives to hedge price risk related to raw materials.

For instance, for Kellogg Company, agricultural commodities are the principal raw materials, therefore they use derivatives to hedge price risk related to forecasted purchases of raw materials. They recognize that fluctuation in prices as a result of weather conditions, climate change or government policy and regulation could affect the results of their operations.

Nestlé Group attempts to reduce the impact due to fluctuations on commodity prices by hedging the risk with anticipated future purchases, which implies a combination of derivatives such as futures and options and executory contracts.

Ralcorp also acknowledges that shortage in commodities due to fluctuations could increase their costs and impact negatively on profits. For this reason they use commodity future and

options to reduce the price volatility of raw materials such as wheat, corn, rice, oats, nuts, peanuts and cashews.

5. Concluding Remarks

5.1 Contribution of the thesis

In 2010, sever droughts and fires destroyed 20 percent of Russia's wheat crop. This incident increased dramatically the prices of wheat worldwide. This paper studies the financial consequences that these higher wheat prices brought to companies that use wheat to manufacture ready-to-eat cereal and wheat-related products. The international cereal companies selected for this study were Kellogg Company, Nestlé Group and Ralcorp Holdings, Inc., owner of Post Foods Company.

The study begins reviewing how Russia became one of the largest wheat exporters of wheat to date. A policy implemented in 1970 to increase meat consumption, boosted the production of cereals to feed the animals. Given a decrease in meat production, feed-grain for this purpose became available, making Russia a large grain exporter. The study also reviews agricultural policies in Russia from 1993 to date.

In July 2010, Russia lost 20 percent of the country's wheat crop as a result of droughts and fires. This situation raised concerns worldwide about the supply and demand of wheat, which increased the prices of wheat dramatically. In less than three months the price of wheat had increased 25 percent. In the second quarter the price of wheat was at $260.90 USD per ton, however after the incident in Russia, the price of wheat for the next quarter was at $326.10 USD. This rise in wheat prices continued for nine months reaching a 56 percent increase.

In order to find whether these higher prices of wheat had any financial consequences on the cereal companies, financial statements, annual reports and stock prices of each company were analyzed. The following results were found:

1. Kellogg Company

a) Financial Statements: the results of 2010 of this company were a little worse than the previous year. Net sales and operating profits decreased 1 percent from the previous year and gross margin declined 20 basis points. The prices of the company's products did not present any significant change during the period when the wheat prices increased. The production levels were a little lower than the previous year although this is not significant for the study since the reduction was consistent during the whole year. All in all, the financial results indicate no financial consequences from the higher wheat prices of 2010.

b) Annual Report: four major issues affected the results of this company in 2010, however none of the issues mentioned by the company are related to the increase of wheat prices:

1. Decreased innovation; not enough cereal innovations. Rather they focused on renovating existing cereal products.
2. Supply chain disruptions in the waffle business, and there was also a second quarter recall of select packages of breakfast cereal.
3. Weakness in core cereal businesses in both measured and non-measured channels.
4. Deflationary pressures; the competitive environment drove price deflation into the cereal category.

2. Nestlé Group

a) Financial Statements: this company presented satisfactory results for 2010. Net sales grew 1.9 percent, EBIT margin advanced 20 basis points and the net profits increased also. The nutrition segment, where wheat related products are used, presented a 9 percent increase. The cost of goods did not present any significant variation compared to the previous year.

b) Annual Report: the company presents positive results and does not add or mention anything regarding the rise of raw materials in that year.

From the results of both financial statements and annual report it can be concluded that this company also did not present any financial consequences from higher wheat prices.

3. Ralcorp

a) Financial Statements: the results of 2010 were unsatisfactory. The net sales for the branded cereals segment decreased 8 percent, the operating profit decreased almost 6 percent and the gross profit margins reduced by 60 basis points.

b) Annual Report: the company claims that the bad results in 2010 are the consequence of the impairment of goodwill and brand trademarks, merger and integration costs, and a provision for legal settlement and amounts related to plant closures. According to Ralcorp, lower volumes of promotional spending affected the results from branded cereal products segment.

Concerning commodities, Ralcorp does mention that the cost of wheat, durum wheat, corn products, cashews and packaging materials increased considerably during 2010. Ralcorp also mentions strategies to offset this cost increase for the next year, however this increase of raw materials is not mention as one of the major problems that affected the operations of this company.

Considering that stock prices provide detailed information about companies based on daily information, industry aspects and macroeconomic news, the stock prices of the cereal companies along with prices of futures of wheat were analyzed.

The behavior of the cereal companies' stock prices was analyzed in the period from December 2009 to February 2011 and compared to the behavior of wheat future prices.

Basic statistics were applied to the data finding that wheat future prices had a very high deviation standard of 130.953. This result corroborates the great volatility the wheat future prices went through during that period. On the other hand, the stock prices did not show any notable variations. This could indicate that the cereal companies did not have financial consequences from the increase of wheat prices in that period.

A Pearson correlation analysis was performed to measure the dependence between the wheat future prices and the cereal companies. According to the results of this study, the following pair of variables depends on each other:

- Kellogg and Nestlé
- Kellogg and Ralcorp
- Kellogg and Wheat Future Prices
- Nestlé and Wheat Future Prices
- Ralcorp and Wheat Future Prices

This analysis demonstrates the strong relationship between cereal companies and wheat prices.

In view of the strong dependence of the cereal companies on their main raw material, wheat, and that there are no indications that the increase of wheat prices had significant financial consequences on the cereal companies, I provide two hypothesis about why the cereal companies chosen for this study did not present repercussions from higher wheat prices.

Cereal Companies' knowledge of the wheat situation; Russia accounts for 8 percent of the world wheat production and there are many other grain exporters. The levels of wheat production at the time of the incident were slightly down compared to the previous years (only 6 percent lower than 2009), not to mention that the levels of production were much better in 2010 than in 2008 when the food crisis took place. Besides, the reserves of wheat were in good shape to easily satisfy the shortage of wheat from that year.

Agricultural Commodity Price hedging; the three companies acknowledge that increases in the price of wheat can be critical for their operations. The cost of the commodities can be affected by weather conditions, government policies and regulations or unforeseen reasons. For all this, the cereal companies use agricultural commodities price hedging strategies to ensure wheat supplies and to avoid higher wheat prices.

Financial markets influenced the wheat markets; there is a strong relationship of financial markets on agricultural commodities and wheat markets. This means that the increases of wheat prices were driven by the uncertainty of demand of these cereals in the financial markets, although there was enough supply to satisfy the demand for wheat. The loss of wheat in Russia was not significant in global terms; the production of wheat in that country in 2009

was 6.17 billion tons, and 4.15 billion tons in 2010. The world total wheat production was 65.1 billion tons, whereas the world total wheat consumption was 65.4 billion tons, however the world total wheat reserves of that year accounted for 19.9 billion tons, which easily satisfied shortage problems of wheat during that year.

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5.3 Annexes

Annex 1 Stock Prices

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
12/17/09	522.63	57.47	47.44	52.14
12/18/09	527.13	57.88	48	52.27
12/21/09	519.38	58.6	48.18	52.17
12/22/09	522.38	59.8	48.71	52.84
12/23/09	529.63	60.68	49.1	53.3
12/24/09	525.75	60.53	49.21	54
12/28/09	550.38	60.39	48.88	53.96
12/29/09	540.5	60.45	49.03	53.98
12/30/09	543.75	60.5	48.28	53.99
12/31/09	541.13	59.71	48.35	53.2
1/4/10	557.63	59.69	49.54	52.83
1/5/10	552.63	59.49	48.2	52.95
1/6/10	567.13	60.99	47.6	52.96
1/7/10	556.63	61.71	46.98	53.48
1/8/10	568.13	62.47	48.07	53.38
1/11/10	574.25	61.8	48.27	53.41
1/12/10	537.88	61.67	47.88	53.39
1/13/10	535.13	62.02	48.05	53.72
1/14/10	527.13	62.13	48.53	53.85
1/15/10	509.88	62.3	47.95	54.34
1/19/10	499.25	62.2	48.65	54.5
1/20/10	488.88	62.29	48.12	53.87
1/21/10	500.38	62.5	48.8	53.44
1/22/10	498.13	61.63	48.02	54.34
1/25/10	497.88	62.25	48.31	54.17
1/26/10	493	61.71	47.62	54.85
1/27/10	484.75	62.39	48.37	55.05
1/28/10	487	62.15	48.4	54.81
1/29/10	473.13	61.8	47.51	54.42
2/1/10	474.38	61.73	48.15	54.72
2/2/10	487	61.87	48.39	55.36
2/3/10	470.13	61.69	48.24	55.19
2/4/10	475.63	61.05	46.45	52.41
2/5/10	474.13	64.04	45.15	52.72

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
2/8/10	484.38	64.57	45.8	52.01
2/9/10	482.25	64.9	46.46	52.49
2/10/10	496.88	65.03	46	52.33
2/11/10	491.5	65.35	46.74	52.62
2/12/10	485.63	65.74	46.75	52.34
2/16/10	504.88	65.86	47.56	52.6
2/17/10	494.88	66.13	47.55	52.98
2/18/10	483.88	66.36	47.35	53.01
2/19/10	488.88	66.62	48.8	53.2
2/22/10	513.13	66.36	48.7	52.86
2/23/10	506.13	66.47	48.6	52.73
2/24/10	514.13	66.7	49.4	52.4
2/25/10	503.88	66.66	49.19	52.31
2/26/10	519.13	66.81	49.74	52.15
3/1/10	504.75	67.69	49.94	52.16
3/2/10	504	67.93	50.45	52.61
3/3/10	515.63	68.22	49.74	52.57
3/4/10	502.88	68.16	50.13	52.65
3/5/10	493.13	68.23	49.43	52.93
3/8/10	494.63	68.18	49.41	52.62
3/9/10	489.38	67.94	49.87	52.43
3/10/10	481.13	67.65	50.21	52.51
3/11/10	478.38	67.28	50.43	52.69
3/12/10	485.13	67.64	50.82	52.49
3/15/10	478.63	67.87	50.66	52.51
3/16/10	487.38	67.28	51.5	52.83
3/17/10	495.88	67.03	51.4	52.96
3/18/10	489.38	67.11	51.18	52.84
3/19/10	484.75	66.4	50.36	53.43
3/22/10	487.13	67.29	50.97	54.16
3/23/10	475.88	67.95	50.9	54.76
3/24/10	476	69.29	50.04	54.61
3/25/10	466.13	66.95	50.19	54.24
3/26/10	464.88	67.57	50.23	53.76
3/29/10	464.38	68.06	50.55	53.86
3/30/10	473.38	68.12	50.57	53.75
3/31/10	450.38	67.78	51.2	53.43
4/1/10	456.13	67.71	51.03	53.61
4/5/10	453.5	67.55	50.78	53.14
4/6/10	463.38	66.99	50.21	53.04
4/7/10	475.5	66.82	49.75	52.65
4/8/10	469.13	66.35	49.35	52.31

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
4/9/10	466.13	66.46	50.02	52.81
4/12/10	467.13	66.43	50.25	53.08
4/13/10	476.13	66.38	50.3	53.12
4/14/10	473.88	66.14	50.72	53.52
4/15/10	480.38	66.12	50.74	53.54
4/16/10	489.5	66.18	50.05	54.04
4/19/10	481.38	66.43	48.48	53.78
4/20/10	498.88	66.32	48.95	53.61
4/21/10	499.63	67.18	48.84	53.87
4/22/10	508.5	67.49	49.35	53.98
4/23/10	507	67.5	49.73	53.62
4/26/10	488.38	67.25	49.85	53.34
4/27/10	489.75	66.87	48.15	52.43
4/28/10	489.88	66.62	47.74	52.58
4/29/10	495.25	67.54	48.86	55.01
4/30/10	505.13	66.55	48.9	54.94
5/3/10	500.38	67.23	48.62	54.74
5/4/10	512.38	66.93	47.68	54.13
5/5/10	512.38	66.92	46.82	54.74
5/6/10	503.63	65.17	46.43	53.71
5/7/10	508.38	61.01	45.25	52.84
5/10/10	493.88	61.4	46.31	54.25
5/11/10	493.63	61.33	47.39	54.38
5/12/10	490.5	61.45	48.17	54.89
5/13/10	480.63	60.94	47.55	54.63
5/14/10	471.88	60.75	46.8	54.5
5/17/10	469.75	61.16	46.8	55.58
5/18/10	467.13	61.97	46.05	55.46
5/19/10	470.75	61.43	46.43	55.17
5/20/10	467.13	59.68	45.25	53.76
5/21/10	472.13	60.04	45.04	54.08
5/24/10	466.13	60.43	44.2	53.96
5/25/10	462.5	59.37	44.61	53.43
5/26/10	461.63	58.98	43.94	52.91
5/27/10	470	60.45	45.65	53.59
5/28/10	457.38	60.07	45.14	53.43
6/1/10	451.5	59.86	45.4	53.59
6/2/10	444.38	60.57	46.84	54.94
6/3/10	444.13	60.37	46.54	55.11
6/4/10	435.38	59.73	45.79	53.22
6/7/10	433.13	59.62	45.7	53.49
6/8/10	432.38	59.78	46.65	54.35

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
6/9/10	427.38	59.44	46.67	53.98
6/10/10	433.63	60.29	47.64	54.33
6/11/10	440.13	59.9	47.12	53.66
6/14/10	451.38	60.29	47.07	54.47
6/15/10	451.88	60.35	47.8	54.62
6/16/10	460.88	60.96	47.5	54.2
6/17/10	479.13	61.79	48.33	54.8
6/18/10	476.5	62.17	47.78	54.47
6/21/10	477.38	57.28	47.7	53.96
6/22/10	476.13	55.66	47.65	53.48
6/23/10	475.75	55.73	47.45	53.38
6/24/10	477.88	55.69	47.63	52.86
6/25/10	471.13	55.96	47.45	52.42
6/28/10	464.5	55.89	48.48	52.51
6/29/10	456.63	55.34	48.39	51.75
6/30/10	479.25	54.8	48.24	50.3
7/1/10	496.88	54.45	47.44	50.77
7/2/10	503.38	54.35	47.24	50.67
7/6/10	507.25	54.58	48.35	51.31
7/7/10	530	55.5	49.25	51.99
7/8/10	544.5	55.94	49.49	51.94
7/9/10	537.88	55.53	49.3	51.77
7/12/10	533.5	55.09	49.36	51.63
7/13/10	549.38	55.54	50.01	51.95
7/14/10	556.88	55.75	50.46	52.06
7/15/10	596.88	55.48	51.41	51.89
7/16/10	588.25	54.41	50.37	51.05
7/19/10	577.88	54.43	50.37	51.31
7/20/10	575.5	55.42	50.6	51.64
7/21/10	585.75	55.98	50.35	51.14
7/22/10	593.63	57.8	51.25	50.6
7/23/10	595.75	59.54	50.85	51.1
7/26/10	586.13	59.71	51	51.34
7/27/10	595.63	59.48	49.55	52.48
7/28/10	596.63	58.94	49.58	51.52
7/29/10	597.63	58.13	49.52	47.98
7/30/10	661.38	58.4	49.35	50.05
8/2/10	693	58.58	50	50
8/3/10	679.38	58.17	50.08	49.67
8/4/10	726.25	58.38	49.59	50.76
8/5/10	815.63	56.11	48.53	49.87
8/6/10	726.63	56.19	49.03	50.15

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
8/9/10	710	56.08	48.76	50.79
8/10/10	705.13	56.09	49.17	51.77
8/11/10	693.25	55.5	48.65	50.92
8/12/10	717.13	56.1	49.9	50.37
8/13/10	701.13	56.6	50	50.64
8/16/10	666	57	50.8	50.93
8/17/10	655.25	57.85	50.76	51.2
8/18/10	661.25	58.04	51.18	50.96
8/19/10	723.88	58.92	51.33	49.86
8/20/10	711.25	59.55	50.24	49.75
8/23/10	722.38	59.7	50.27	49.91
8/24/10	704.25	59.15	50.4	49.72
8/25/10	685.88	59.67	50.6	49.6
8/26/10	694.88	59.21	50.72	49.41
8/27/10	693.38	59.84	50.91	50.49
8/30/10	701.88	59.23	51.05	49.31
8/31/10	689.38	59.65	51.55	49.68
9/1/10	707.75	60.68	52.76	49.9
9/2/10	715.13	60.8	53.11	50.02
9/3/10	741.75	60.28	52.84	50.41
9/7/10	733.88	59.86	52.77	50.07
9/8/10	713.63	60.23	53.21	50.56
9/9/10	734.63	60.93	53.01	50.89
9/10/10	737.38	60.71	52.62	51.27
9/13/10	747.5	60.78	52.93	51.31
9/14/10	737.38	60.85	53.72	50.71
9/15/10	730.38	60.87	53	51
9/16/10	724.88	60.43	52.01	50.98
9/17/10	738.25	60	51.6	50.58
9/20/10	727.13	59.79	52.59	50.82
9/21/10	723.63	58.69	52.46	50.36
9/22/10	715.88	57.95	53.31	50.77
9/23/10	698.63	57.45	52.95	50.56
9/24/10	719.88	57.7	53.5	51
9/27/10	701.38	57.54	53.75	50.61
9/28/10	685.75	57.44	54.24	50.66
9/29/10	683.25	57.57	53.81	50.62
9/30/10	676.13	58.48	53.43	50.51
10/1/10	654.38	58.54	53.78	50.91
10/4/10	648.25	58.6	53.6	50.58
10/5/10	666.63	59.16	54.38	50.64
10/6/10	660.38	59.52	54.8	50.49

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
10/7/10	661.75	59.46	54.77	50.2
10/8/10	719.38	59.26	54.48	49.97
10/11/10	708.88	59.11	54.13	49.82
10/12/10	712	59.28	54.72	50.03
10/13/10	705.88	59.36	54.69	50.81
10/14/10	704.75	59.6	54.86	50.37
10/15/10	702.63	59.5	54.51	50.08
10/18/10	692.63	60.39	54.65	50.1
10/19/10	674.75	59.99	53.4	49.9
10/20/10	691.75	60.21	54.3	50.02
10/21/10	670.38	62.15	55.22	49.75
10/22/10	670.13	62.73	53.87	49.55
10/25/10	675.25	62.89	54.78	49.57
10/26/10	699.88	62.74	54.19	49.26
10/27/10	704.13	62.3	53.82	49.08
10/28/10	718.63	62.51	54.55	49.38
10/29/10	715.75	62.06	54.85	50.26
11/1/10	706.88	61.98	54.4	50.75
11/2/10	695.88	61.6	55.44	49.69
11/3/10	695.13	61.55	56.16	49.57
11/4/10	720.63	61.89	58.04	49.31
11/5/10	729.13	61.63	58.25	49.32
11/8/10	737.13	61.47	57.67	49.32
11/9/10	720.38	61.16	56.95	48.94
11/10/10	709.38	61.83	56.67	48.88
11/11/10	704.38	61.4	56.28	49.25
11/12/10	668.88	61.21	56.04	48.95
11/15/10	670.13	61.42	55.89	48.8
11/16/10	626.38	61.74	54.83	48.94
11/17/10	632.63	62.18	54.96	48.88
11/18/10	645.88	62.18	55.78	49.38
11/19/10	682.25	62.45	56.29	48.98
11/22/10	684.38	63.4	56.07	49.13
11/23/10	678.63	62.83	54.97	49.3
11/24/10	685.5	63.64	55.8	49.19
11/26/10	686.63	63.1	56.53	49.48
11/29/10	691.38	62.87	56.09	49.19
11/30/10	689.63	61.92	54.73	49.23
12/1/10	738.63	62.08	55.03	49.44
12/2/10	748.13	63.1	56.07	49.53
12/3/10	780.38	62.34	56.7	49.5
12/6/10	794	61.64	56.06	49.3

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
12/7/10	783.13	61.51	55.82	48.91
12/8/10	784.13	62.21	56.28	49.64
12/9/10	788.88	63.11	56.43	49.77
12/10/10	775.88	63	56.8	49.78
12/13/10	780.5	62.76	57.58	50.22
12/14/10	761.38	62.72	58.14	51.02
12/15/10	763.88	62.78	57.15	51.06
12/16/10	749.88	63.5	57.94	51.14
12/17/10	757.5	64.57	57.7	51.23
12/20/10	769.88	65.04	57.85	51.36
12/21/10	764.63	65.01	58.49	51.11
12/22/10	783.63	65.17	58.87	51.3
12/23/10	783.63	65.21	58.99	51.15
12/27/10	779.88	65.02	58.95	51.07
12/28/10	799.13	64.75	59.36	51.15
12/29/10	799.13	64.88	59.28	51.11
12/30/10	784.75	65.11	58.33	51.12
12/31/10	792.63	65.01	58.82	51.08
1/3/11	805.25	65.23	59.31	50.88
1/4/11	788	64.73	57.67	51.29
1/5/11	809.88	64.3	56.2	51.07
1/6/11	788.13	63.55	55.5	50.92
1/7/11	772.13	63.25	55.62	51
1/10/11	766.63	63.35	55.36	51.05
1/11/11	758.63	64.54	55.29	50.92
1/12/11	773.63	64.59	55.53	51.11
1/13/11	781.38	64.43	53.82	51.5
1/14/11	773.88	62.91	53.79	51
1/18/11	793.38	62.47	54.44	51.14
1/19/11	798.63	61.99	54.93	51.05
1/20/11	802.38	61.29	54.26	51.68
1/21/11	824.75	61.38	54.89	51.95
1/24/11	835.88	62.03	55.97	51.85
1/25/11	838.88	62.53	56	51.73
1/26/11	856.88	62.26	55.33	51.5
1/27/11	847.13	61.95	54.47	50.85
1/28/11	824.63	61.11	54.17	50.49
1/31/11	838.63	61.2	54.22	50.3
2/1/11	835.38	61.55	55.2	50.2
2/2/11	862.88	61.34	55	50.36
2/3/11	858.38	60.46	55	52.52
2/4/11	854.5	60.33	54.45	53.42

Date	Wheat Future Prices	Ralcorp	Nestlé	Kellogg
2/7/11	858.88	59.4	54	53.25
2/8/11	873.88	59.67	53.43	53.29
2/9/11	888.25	64.49	52.87	53.1
2/10/11	861.38	63.85	53.15	52.81
2/11/11	867.63	64.16	53.44	53.09
2/14/11	872.38	63.87	53.4	53.48
2/15/11	840.25	64.35	54.31	53
2/16/11	837.38	64.41	54.72	52.93