What’s bad: sugar or fat?

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What’s bad: sugar or fat?

This paper aims to provide the latest scientific thinking about the health effect of eating sugar and fat. Contrary to common belief, it is not fat we should worry about; it is sugar. Today, it is hard to avoid eating too much sugar as it is added to almost all packaged food and beverages. Our increased consumption of sugar has led to the current obesity epidemic, and obesity is the main cause of the rising prevalence in diabetes, heart attacks and choked arteries.

The food industry has been off the hook so far. Besides some minor sugar taxes no fierce regulation is present nor has anyone been able to win in court against them.
What’s bad: sugar or fat?
Changing diets The industrialization of our food has changed our diets towards carbohydrates and sugar. The fight to avoid heart attacks has only speeded up our daily sugar intake.
Towards an industrialized diet | The average Western diet has not changed substantially from the early days when our ancestors started with animal breeding and agriculture. The wealthy part of society had a diet containing dairy, animal meat, seasonal fruits and vegetables, nuts, seeds and grains mostly in the form of bread.

However, at the end of the 18th century this diet started to change substantially. Potatoes, which previously were considered pigs’ food, were used more and more in a poor man’s diet. Next to that sugar, formerly a luxury item, became more widely available due to the mechanic invention of extracting sugar from beets. Another diet-changing invention was the cylinder mill, which made white flour at reasonable prices and led to a replacement of whole grain bread with cheap white bread. All three of them - potatoes, sugar and white flour products - are rich in sugar and poor in all other nutrients, like vitamins, fibers, proteins and fat.

In the 20th century food industrialization made previously manmade products, such as cheese, jams, oils and butter, available at reasonable prices. Also the preservation of foods became industrialized with heating, freezing or sugar-coating being the most-used techniques today. The replacement of the previous diet with one containing more industrialized carbohydrates and sugar continued after the Second World War and speeded up due to the US invention of fast food. Fast food became an enormous success in the US and with some delay also abroad. Next to fast food also packaged food like prefab soups and pasta sauces became very successful after the Second World War.

Figure 1 | President Eisenhower suffered from a heart attack

President down | On September 23, 1955, something happened that speeded up the change in Western diets. On that day, US president Eisenhower suffered from a heart attack due to
coronary thrombosis. Contrary to his predecessors, President Eisenhower was very open about his medical condition and even organized a press conference outside the hospital together with Dr. Paul Dudley White, a well-respected cardiologist, to discuss the cause of the attack. Dr. White invited Ancel Keys, an American nutritionist, to give advice to both the president and the general public on how to avoid heart attacks and thrombosis. At the time, the US experienced a rapid rise in the number of heart attacks in its adult population. Cardiovascular diseases became the #1 cause of death in American society. The advice in 1955 was to stop smoking and cut down on fat and cholesterol, as eating cholesterol would increase the cholesterol levels in your blood and cause heart attacks and coronary thrombosis. The idea that eating fat makes you fat was programmed into the American mindset and led to changing eating habits.

Also Eisenhower changed his diet and stopped eating his daily steak. Unfortunately, it did not help Eisenhower much. He suffered from six more heart attacks until his death in 1969.

Counter arguments | Ancel Keys was not the only nutritionist who had ideas on how to stop the outbreak of cardiovascular diseases (CVD) or the heart attack epidemic in Western societies. The Brit John Yudkin had a totally different view on the problem. According to him, CVD is caused by sugar and alcohol intake, not fat. Human cholesterol is produced in the liver and made from sugar in the blood. Eating fat does not make you fat. Your body breaks down the fat you eat into sugar. In his book *Pure, White and Deadly*, Yudkin describes that humans have always been carnivores. We only started eating carbohydrates like bread 10,000 years ago and pure sugar just 300 years ago. This is too short for evolution to adjust our digestion.

Even though Yudkin had published his scientific view in a scientific journal, Keys was able to win the public debate by claiming that Yudkin was writing propaganda for the meat and dairy industries.

The final knock-out in the debate came from Keys with his *Seven Countries Study*. In this study, Keys statistically showed that when combining data from seven countries a clear correlation could be found between consumption of saturated fat and heart diseases. As turned out later, this study was one of the first examples of proper data mining. According to pediatrician Dr. Robert Lustig in his book *Fat Chance*, Keys cherry-picked 7 of 22 countries. Data from large countries like Germany and France were left out, presumably because these countries had a fat loving diet but no major heart disease problems.

Also Dr. Robert Atkins saw more risk in eating sugar and carbohydrates than eating fat. He launched his famous Atkins diet in 1972, in which he claimed that a high-fat and low-
carbohydrate diet is the only viable way to weight loss. Also Atkins and his commercial diet were hated by science at the time.

**Dietary guidelines** Based on the work of Keys, the US updated their Dietary Guidelines in 1980. According to these new guidelines, consumers should cut back on saturated fats and cholesterol. Seven food groups were introduced and each food item of the packaged food industry had to list the ingredients according to these groups and the percentage of the advised daily dose of the underlying ingredient. Unlike fat, sugar was not one of the seven food groups, so food companies were not obliged to list the amount of sugar as a percentage of the advised daily dose on the packaging. This was the start of the light or low-fat revolution. Almost all packaged food items also got a (more expensive) light version, in which fat was mostly replaced by more sugar. Fat used to be added as a cheap and tasteful ingredient in order to guarantee a longer shelf life. Sugar has similar properties, so whenever possible the food industry simply replaced fat with sugar.

US consumers listened well to the new advice and massively replaced steaks with pasta, butter with margarine, eggs with muesli and milk with orange juice. Or in other words, consumers replaced proteins and fat with carbohydrates and sugar. As we will show in the following chapter, the effect on the health of the US population was devastating. Other Western countries followed the example of the US and introduced their own version of the dietary guidelines. In the Netherlands, the ‘Maaltijdscijf’ or ‘Schijf van vijf’ was reintroduced in 1981 along the same lines as the US dietary guidelines.

**Figure 2 | US dietary guidelines 1980**

Source: US department of Agriculture (USDA)
Contrary to the ideas behind our recommended diets, saturated fat and cholesterol are actually not bad but good for our health. Given that the human body is a very effective sugar factory, there is no need to eat pure refined sugar. However, sugar is rather addictive and there is no automatic break stopping our consumption.
Sugar or glucose is one of the key fuels for our body. Our muscles, brain and other organs need glucose to perform. Consuming raw sugar or something that contains large amounts of sugar therefore feels like adding fuel to the fire. However, our human body and all the bacteria in our digestion system are very well equipped to extract glucose out of almost anything we eat.

Depending on the ingredients of the food we eat, our body can either immediately extract glucose or it can take several hours for our blood sugar level to increase. The quick fix for our energy levels are carbohydrates: they contain large amounts of sugar and are mostly easy to digest as they do not contain large amounts of fibers for which we need the help from our intestinal flora. Main examples of carbohydrates are pasta, (white) bread and potatoes.

Proteins like meat and dairy products take more time to increase our blood sugar level. Fat is by far the slowest and most difficult ingredient for our body to digest and transform into glucose. So the original English tradition of having eggs for breakfast is not such a bad idea after all. It fills up the stomach, lowers the appetite for longer and gives a slow but long lasting increase of our blood sugar.

In essence, our body is a very effective sugar factory. We do not need to eat raw sugar to increase our energy level. In fact, eating sugar almost entirely bypasses the human sugar factory and flows directly into the blood, giving it a direct and short-lasting energy boost.

Insulin | The amount of glucose in your blood varies throughout the day depending on what you eat and how active you are. If your blood sugar level becomes too high or too low, your body starts a correction mechanism. The body only has two ways to decrease the blood sugar level if it becomes too high. One is to exercise and the other is insulin. Insulin is a hormone produced by the pancreas and triggers the body to take sugar out of the blood stream. Based on this insulin warning, the liver starts to produce fat out of the surplus of glucose in the
blood. If it was not for insulin we would not become fat. It is clear to science today that it is the overload of sugar in your blood that makes you fat, not necessarily the amount of fat you eat.

**Fat: good or bad?** Fat should be an essential part of our diets. It contains essential ingredients that our body needs; if we were to stop eating fat we would slowly but surely die. The most striking evidence of our need for fat is breast milk. An essential part of the breast milk of all mammals contains fat. Human breast milk, for instance, contains 56% fat, 6% protein and 38% lactose or carbohydrates. So if fat is bad for you, would not evolution have taken care of lowering the fat level in breast milk?

After the Seven Countries Study of Ancel Keys, many more studies were done to figure out if there is any relationship between the amount of fat we eat and health problems.

Before discussing the outcomes of these studies we first need to complicate things a little more, as there are many different types of fat. There is saturated fat, the key enemy of Keys, which is mostly found in cheese and other dairy products and meat. In a recent overview study from Credit Suisse the Seven Countries Study from Keys was redone with more data and including fat-loving countries, such as France and Germany, that Keys left out. The results can be seen in Figure 4. Contrary to Keys’ conclusion there is a negative relationship between eating saturated fat and dying from a heart attack. So eating saturated fat lowers the risk of a heart attack. It must be said that this is statistically not a very strong relationship, so perhaps it is better to say that saturated fats are not bad for your health.

**Figure 4 | The relationship between saturated fat and CVD**

Source: European CVD Statistics; National Nutritional and Dietary Surveys. Credit Suisse Research
The best part of saturated fats is called omega 3 and can be found in fatty fish and nuts. Several studies have shown that the consumption of omega 3-rich food has clearly positive health effects. If we go back to breast milk, 25% of human breast milk is saturated fat and 1.5% omega 3. Both are essential for the growth and development of mammals like us.

Next to saturated fat there is also unsaturated fat and it comes in two types: monounsaturated and polyunsaturated fat. Both can be found in mayonnaise, dressings and are added to bread and cookies to increase the shelf life of these products. Monounsaturated fat has a neutral effect on CVDs and should be seen as just a good fuel source. As for polyunsaturated fat, the most recent research shows that eating too much of it actually increases the risk of CVDs. Figure 5 shows the positive statistical relationship between polyunsaturated fat and deaths from CVDs from the same overview study from Credit Suisse. Omega 6, which is mostly found in polyunsaturated fat, is an essential nutrient for our body. However, eating too much omega 6 and too little omega 3 harms the immune system and makes the body vulnerable to all sorts of diseases.

**Figure 5** | The relationship between polyunsaturated fat and CVD

Due to the introduction of the ill-informed US dietary guidelines the opposite of what should have happened actually happened. Our consumption of saturated fats like omega 3 declined while our consumption of polyunsaturated fats like omega 6 increased.

The last type of fat is by far the worst available and is called trans-fat. This used to be added to cookies, margarine, snacks like donuts and was used as frying fat. The consumption of trans-fat is scientifically linked to CVDs and has already been (partially) banned for a decade.
in a couple of European countries. The US followed in 2015, with a total ban on trans-fat to be implemented by 2017 and the entire European Union is expected to follow soon.

**Another myth: cholesterol**  
As was the case for fat, consumers were told that eating cholesterol would increase the cholesterol levels in their blood. In fact, the US dietary guidelines until 2010 explicitly recommended a maximum of 200 mg of cholesterol per day, which is roughly one egg. Our own cholesterol is produced by the liver, plays an important role in our body and has different purposes. Without cholesterol we would simply die. Science today has a completely different view on cholesterol and doesn’t see a direct relation between the cholesterol we eat and the amount of cholesterol in our blood. In fact, there has been an interesting case study about an 88-year old man whose diet contained 25 eggs per day without any effect on his own cholesterol level. [Kern a.o. 1991]

Another myth about cholesterol is that having a high cholesterol level in your blood would increase the risk of getting all sorts of diseases. Recent studies have shown that things are not as black and white as previously thought. Having high cholesterol levels in your blood actually lowers the risk of getting diseases like dementia and HIV. Cholesterol supports our immune system and therefore lowers the risk of these diseases. As for heart attacks or any other CVD, high cholesterol remains one of the minor risk indicators according to the WHO. Smoking is by far the most important risk factor for predicting a heart attack. Or in other words, if one stops smoking one could also stop taking cholesterol lowering drugs.

**Our love for sugar**  
As written before, refined sugar as a product has only been around since we started to industrialize our food. It is not that we did not eat sugary products before, but these sugars were mostly packed in fibers and we need the bacteria in our digestion system to break down these fibers and get the glucose out. Take for instance an apple: if we eat the entire apple, most of the glucose never gets into our blood stream but is used as food for the bacteria that did all the work to break down the fibers of the apple.

Our body has developed a way to signal the amount of calories we eat. When we eat high caloric fat, our body reacts by lowering our appetite and gives us the feeling of being stuffed. The same holds for eating proteins like meat or for sugary fruits, but not for eating pure refined sugar. We simply miss the automatic break in eating pure sugar. The clearest example of this is oranges and orange juice. It is not that hard to drink two glasses of orange juice. Orange juice contains pure sugar, water and some vitamins but no fibers. If we wanted to consume the same ingredients from non-squeezed oranges, so including the fibers, we would have to eat seven or eight of them, an almost impossible task.

On top of that we all like sugar, as it gives an immediate kick to our energy levels. According to neuroscience, sugar stimulates the brain’s ‘hedonic pathway’, which makes us enjoy the
consumption of sugar as an intrinsic reward. Blind tests show our clear preference for products that contain more sugar. Something the food industry clearly knows and uses. It even gets worse. Combining sugar with fat in roughly a 50/50 ratio turns off our body’s appetite-control system for eating fat. Such combinations cannot be found in nature but happen to be found in hard-to-resist snacks like glazed ring doughnuts and cheese cake.

From a scientific point of view, pure refined sugar has all the characteristics of an addictive and toxic ingredient in a similar way as alcohol. For alcohol we know this and therefore warn potential consumers, tax the products containing it and even restrict the consumption to adults. For sugar this is clearly not (yet) the case.
Eating too many calories combined with eating the wrong ones has led to an epidemic outbreak of obesity in the US. This has triggered a spur of chronic diseases, which place a large burden on society. Especially the growing consumption of added sugar is linked to diabetes. The US is not an isolated case; the rest of the world is following their bad example.
Too many calories | It is clear that our diet is very important and a controllable risk factor for our future health. Eating too much or eating the wrong things will lead to massive human fat production and obesity. Unfortunately, we have done both in the last 50 years. Figure 6 shows that the US calorie intake has increased by 25% since 1960 from 3200 calories to roughly 4000 calories today, whereas just 2000 calories are recommended by the USDA. The large increase in calorie intake started in 1980 and happened to coincide with the introduction of the new Dietary Guidelines were introduced.

Figure 6 | US calorie consumption growth

Source: USDA

Some of the growth in calorie intake can be explained by increased sugar consumption. Sugar is added in almost any packaged food or drinks item available in the supermarket. Today an average American consumes 32 teaspoons of sugar a day when only 8 teaspoons are recommended, and even 8 teaspoons is rather questionable as our bodies do not need any additional sugar. The consumption of sugar is still growing around the world. Especially soft drinks, of which Americans drink more than 160 liters per year, are considered to be the culprit of caloric overconsumption. One can of regular Coke contains 11 teaspoons of sugar without any nutritional value.
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The increase of the calorie intake has caused an epidemic of obesity. In the US, more than 33% of the adult population is officially medically obese, which means that their BMI (Body Mass Indicator) is above 30. In Europe this is still less than 25% of the population but growing alarmingly fast. Globally, 35% of adults are considered overweight (BMI>25) and 12% of all adults are obese (BMI>30). The epidemic is no longer a Western disease only as countries like Russia and Mexico have a similar obesity prevalence. Anywhere a population begins eating Western diets and living Western lifestyles obesity epidemics follow. Also the number of obese children is rising alarmingly fast, indicating that obesity is not a problem that will go away anytime soon.

The health impact of obesity | It is clear to the medical community that obesity is a key risk factor for many chronic diseases. Diabetes, CVDs, Hypertension, Osteoporosis and even...
Cancer are all scientifically related to obesity. Figure 8 gives an alarming overview from the USDA about the number of chronic patients in the US and the link to obesity. In 2010 more than 33% of the US population suffered from a CVD, more than 33% had hypertension, more than 10% had diabetes, and more than 33% had pre-diabetes and will almost certainly get diabetes unless they change their lifestyle drastically. These alarming numbers are putting a heavy burden on US society, in terms of both labor productivity and healthcare costs. In 2014, the US spent roughly 17% of its GDP on healthcare, in 1995 this was ‘only’ 13%. With the increasing number of chronic patients and an aging population, it is only a matter of time before the US will reach 20% of GDP spent on healthcare. Globally roughly 10% of GDP was spent on healthcare in 2014 (source: data.worldbank.org).

According to a recent study (Basu, Yoffe, Hills & Lustig 2013) there is a statistically sound relationship between sugar consumption and getting diabetes type 2. According to this study every daily intake of an additional 150 kcal of sugar increases type 2 diabetes prevalence by 1.1%. Or said differently, one can of regular Coke a day less will decrease the likelihood of getting diabetes by more than 1%.

**Figure 8 | The heavy toll of diet-related chronic diseases in 2010**

The American diet has made the US a land full of chronic patients. But do not think this is an isolated US problem as Europe and emerging countries are following the US with some delay. Only drastically changing our lifestyles, by limiting our daily calories and especially our sugar intake, would be able to turn around this worrying trend.
Legal action against the food industry

Who is responsible for the health consequences of a Western diet? So far no court in the world has ruled that the food industry has any responsibility. The barriers to win a legal claim against the food industry are extremely high and politicians are on the side of the food industry.
Lawsuit against McDonald’s | Given that science is providing us with more and more evidence that eating too many sugary products may lead to substantial healthcare problems, it makes sense to expect legal claims from consumers against the food industry. The most important lawsuit against the food industry so far took place in 2003. In this lawsuit, known as Pelman against McDonald’s, it was claimed that McDonald’s had been negligent in warning about the danger of eating its products, which therefore led to obesity and various chronic diseases of the plaintiffs. The case was lost and the arguments that were used by the judge are still being used in courtrooms today. The verdict said that: “If consumers know, or reasonably should know, the potential ill health effects of eating McDonald’s products, they cannot blame McDonald’s if they nonetheless choose to satiate their appetite with supersized McDonald’s products.”

In essence one can only win a negligence-of-warning lawsuit against the food industry if one can prove that:

1. The danger was not apparent to the average consumer, and
2. There is external predated proof that the product is unreasonably dangerous for its intended use, and
3. The plaintiff’s obesity or other health problems are caused by the food in question, and
4. Harm would not have occurred if warned upfront.

This has set the bar too high for any lawsuit against the food industry to be won. All US lawsuits against the food industry claiming that they are responsible for the health consequences of obesity have so far been lost.

Figure 9 | Despite winning the lawsuit, McDonald’s got negative publicity

Source: Wayodd.com
Politics on the side of the food industry | In addition to the fact that it has already become extremely difficult to win a court case against the food industry, US politicians have also been very kind to the food industry. In 2004 a US Federal law to ban lawsuits against the food industry, called the Cheeseburger bill, got approved in the House of Representatives only to be blocked in Senate. Probably due to this block, 26 individual US states have so far banned lawsuits against fast food, restaurants and the food industry in their state courts.

There is one key argument generally used by the food industry that is also used by politicians in banning lawsuits. Their general defense is that just like the weapon industry is not responsible for murder, the food industry is not responsible for obesity. Freedom of choice is extremely important in the US.

Another example of the strong ties between the food industry and US politics is the ‘ketchup as a vegetable controversy’. After introducing the Dietary Guidelines in the 1980s, the US had problems getting enough subscribed vegetables into school meals, particularly after the budgets for school meals had been cut. The Reagan administration and the USDA proposed more flexibility for schools to be able to follow the Dietary Guidelines. Despite containing more than 50% sugar, ketchup and pickle relish were now allowed to be counted as a vegetable in school meals. This bill was later withdrawn after criticism from Congress and the press.

Targeting children | Recent scientific findings that link sugar intake to diabetes (Basu, Yoffe, Hills & Lustig 2013) in an econometrically sound way have lowered the barrier for a successful claim against the food industry. In a current lawsuit against Kellogg and General Mills these findings are used to prove negligence in targeting children with high sugar products. Apparently food targeting children contains even more sugar than the food targeting adults. A verdict is expected in the first half of 2017.

In the European Union discussions have been held with the food industry to ban the use of children’s heroes, such as Dora, for sugary products. In some individual European countries this has already led to a (voluntary) ban of such products.
In the US the legal route to force the food industry to pay for the health consequences of their products seems more or less blocked for now. The food industry learned from the lost tobacco lawsuits and so far has won every court case filed against them. On top of that, they have also been able to get the politicians on their side. So despite the toxic and addictive nature of sugar, it is therefore not very likely to expect any regulation against the food industry any time soon, let alone a total ban on adding sugar to packaged food.

It is not that nothing is happening in the US. Updates to the Nutrition Facts label are being prepared, including a new ‘added sugars’ tab. In certain US cities mayors have banned soft drinks sales in public schools. However, this has been a drop in the ocean as there are still more McDonald’s in pediatric hospitals in the US than there are schools banning soft drinks.

In other countries sugar taxes are being discussed more regularly. In the UK, for instance, the example of Mexico will be followed in 2018 with the introduction of a sugar tax on soft drinks. On the last World Obesity Day (October 11), the WHO issued a ‘call to action’ for all governments to increase the retail price of sugary drinks by 20% through taxes.
Conclusions for the food industry

Unless sugar gets the same treatment as tobacco, the food and beverages industry will probably only see a slow consumption shift away from high sugar-containing products to healthier alternatives.
Sugar-conscious consumers | If it is not being regulated, it is up to the consumers themselves to adjust their lifestyle and lower their sugar intake. Sugar-conscious consumers are the ones that read all ingredients tables and try to avoid eating too much sugar. Although it is hard to find data it seems that in the Western markets our sugar intake has peaked. In North America sugar consumption dropped by 7 kg to 65 kg per person per year between 2001 and 2011. In emerging markets, sugar consumption per capita is still growing, albeit from a lower base. Apparently the Western diet remains aspirational for the new middle class in emerging markets.

Figure 11 | Sugar consumption growth 2001-2011

For packaged food, where a lot of sugar is hidden, recent results from the food industry provide roughly the same picture. In Western markets, packaged food is no longer gaining market share in the budgets that consumers spend on food. A sign that the optimists would explain as the arrival of sugar-conscious consumers.

Sugar alternatives | The presence of sugar-conscious consumers should also be noticed when looking at growth rates of the most popular soft drinks. Carbonated soft drinks are seen by some as the biggest evil among the sugar-containing products. It would therefore be logical to expect low-sugar soft drinks to outgrow the high-sugar ones. Figure 12, however, shows the opposite. The growth of all carbonated soft drinks has stalled the last few years, both the high-sugar variants and the light variants. Fruit juices and ice tea have been outgrowing carbonated soft drinks in 2008-2013. So if this is the work of the sugar-conscious consumers they probably need to be re-educated as both juices and ice tea contain just as much sugar as a regular Coke.
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Figure 12 | Global growth of soft drinks volumes 2008-2013

Source: Euromonitor and Morgan Stanley Research

Sugar: the tobacco of the 21st century? | The more sugar’s potential harm gets known by the general public, the more the food and beverages industry can be named and shamed. This might lead to slower or even negative volume growth for a prolonged period and will most definitely lead to lower stock multiples.

The food and beverages industry’s current situation is quite comparable with the situation the tobacco industry was in at the beginning of this century. At that time science already knew that smoking caused serious health problems like lung cancer; however, the tobacco industry had been able to avoid getting the full blame for it. They had launched light cigarettes and were able to win almost all court cases against them until 2000. In this year a jury verdict in a Florida Circuit Court granted the Engle class action, containing roughly 100,000 smokers, the huge amount of USD 145 billion. The tobacco industry was shocked and so were the shareholders of tobacco stocks. The industry fought back and used every legal trick available in order to win the appeal. They partially won the appeal and ‘only’ paid out an estimated USD 700 million in the end.

This court case was a major wake-up call for the tobacco industry as well as for the regulators. Ever since, selling tobacco products has been highly restricted and marketing cigarettes has almost entirely been banned. In roughly 15 years smoking changed from being a habit of roughly a third of the population to something so obscure that it is now banned from all public areas, offices and restaurants. Tobacco products today are among the heaviest taxed products available and the number of smokers has dropped from over 40% in the 1970s to 18% today. (source: www.cdc.gov)
Despite the decline in smokers and the fierce regulation of tobacco, the stocks of tobacco companies have been among the best performing ones. Since 2000, the tobacco sector has gained 750%, or 13.4% per year, versus ‘only’ 85% for the world index, or 3.7% per year. The sector massively consolidated, cut costs and was able to increase its prices along with ever increasing taxes.

If sugar is ever to become just as restricted as tobacco, sugar companies at least know what to do to maximize shareholder value. However, as seen in the previous chapters, sugar is nowhere near tobacco in terms of fierce regulation or losing in court against a class action of obese people. It is clear that regulators today are not ready to see sugar as an addictive and toxic ingredient similarly to alcohol. Perhaps the wake-up call will come to politicians and regulators if the bill arrives from the obesity epidemic.

Until such wake-up call arrives, we expect the food and beverages industry to be faced with volume declines of their sugary products as consumers themselves will be seeking for healthier alternatives. The food and beverages industry is of course very much aware of this and has been buying up companies that provide healthy alternatives. The recent bid of Danone on Whitewave is just one example and it will not be the last one.
Recommended reading

Credit Suisse Research Institute, “Fat: the new health paradigm”, 2015

Nina Teicholtz, “The big fat surprise”, 2014

Robert Lustig, “Fat chance”, 2013

John Yudkin, “Pure, white and deadly”, 1972

www.sevencountriesstudy.com
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