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Haute école de gestion
Genève

Why did the Swiss Young Socialist's initiative against speculation on agricultural foodstuff fail to be approved in Switzerland ?

**Bachelor Project submitted for the obtention of the
Bachelor of Science HES in International Business Management**

by

Vitor Kinji MATSUURA

Bachelor Project Advisor:

Dr. Nicolas Depetris, HES professor

Geneva, May 31th 2016
Haute Ecole de Gestion de Genève (HEG-GE)
International Business Management

Declaration

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Geneva 31st May 2016

Vitor Kinji Matsuura

Acknowledgments

I take this opportunity to express my sincere gratitude to all lecturers from the HEG Geneva Business School who contributed to the process of betterment of my person. Benefiting from their knowledge and skills has been a life-changing experience and I will never forget this moment of my life.

I would like to thank Dr. Nicolas Depetris for his precious time and priceless advices. His guidance throughout this project has been crucial and I am deeply grateful for his professional help.

I also want to express my gratitude for Mr. Robert Piller's enthusiasm in conducting the commodities trading major program. The major in commodities trading is a 30 weeks voyage where Mr. Piller guides you through the meanders of trading. This total immersion in the commodities trading world has definitely shaped my view of business and the direction I want to head my career.

Finally, I want to dedicate this work to my incredible wife and daughter. Their support made me hold on all those evening classes after a fulltime job and all those weekends working on assignments. For this reason this diploma does not belong to me it belongs to my family. Thank you Catherine and Angie.

Executive Summary

Agricultural commodity prices have undergone exceptional volatility in the past decade. Staple foods such as rice, wheat and corn saw their prices rally to unprecedented levels especially in 2008 and 2011. During these periods, social unrest and food riots burst in several developing countries around the world sparking the debate on the role of commodities financialisation in the food price formation. Commodity speculators were once again put in the limelight and their activities fingered as the culprit behind food exorbitant prices.

Firm believers that speculation was the root cause of commodities' prices surge, the Swiss Young Socialist Party concluded that prohibiting speculation on agricultural foodstuff was the easiest way to curb staple food price rallies; hence, a surefire way to fight hunger in the world. This conclusion led to the inception of the popular initiative called "No speculation on agricultural foodstuff" that was submitted to popular vote on February 28th 2016 in Switzerland.

Despite its good intentions, the popular initiative was refused by 59,9% of the Swiss electorate. Acknowledging that Swiss voters were not indifferent to food prices surges and food riots around the world, this work digs into the reasons that led Switzerland to refuse the initiative.

Speculative practices on commodities have always instigated controversies. The literature review associates as many advantages as harms to the practice of speculation. Having to decide on a misty subject not clearly explained or understood by politicians, the Swiss electorate based their decision on other facts than their knowledge about the impact of speculation on food prices.

Results obtained from a local survey^a shows that 58.2% of the Swiss electorate believed speculation was a bad thing and it contributed to foodstuff price rallies. However, the proportion of voters who supported the initiative was inferior to 50% of the total electorate. Based on this fact, we assume that a significant share of voters who believed speculation was a bad thing did not support the initiative. Furthermore, we conclude that perceiving speculation as a bad thing was not a sufficient reason to vote in favor of the initiative.

The suspicion that prohibiting speculation in Switzerland concealed headwinds to the Swiss commodity-trading sector represented the greatest obstacle for the initiative. This study found evidences that the initiative against speculation bore the brunt of the importance of the commodity-trading sector for Switzerland. Considering that 65% of surveyed voters declared to be worried about the Swiss trading sector, we can suggest that the Swiss electorate was well aware of the position of hundreds of commodity-trading companies headquartered in Switzerland whom contribute with thousands of well-paid jobs and a significant share of the Swiss GDP.

By juxtaposing voters' opinions on speculation and their concerns about the initiative covert headwinds for the Swiss economy, we gathered noteworthy information concerning the Swiss electorate's decision-making process. In sum, this work suggests that the Swiss electorate believes that a solution to fight hunger in the world

^a Survey realized in the Canton of Geneva. The results obtained in the Canton of GVA will be used as a proxy for the

is more complex than merely banning speculation on agricultural products. Moreover, Switzerland had too much at stake and the country could not afford to put one of its most lucrative economical sectors in jeopardy in order to engage in a battle that had very little chance to be won.

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Methodology

The first part of this study contextualizes the arguments that fed the debate around the commodities financialisation theme. Elements from the literature and the press were collected to compose a summary of the situation from which the initiative emerged.

The second part of this work applies statistical tools on results obtained from a survey in order split voters into categories according with their decision-making process.

The survey had 110 people from Geneva answering 4 questions about topics related to the popular initiative. The answers to those questions were assumed to be among the most influential factors in voters' decision-making process.

Sampling Criteria

The criteria used to sample the survey participants were the following:

- The survey participant must be Swiss and eligible to vote in Switzerland
- The survey participant is domiciled in Geneva
- The survey participant is not a member of any political party
- The survey participant is not a commodity trader
- The survey participant is not a member of any NGO
- The survey participant is not a HEG student majoring in commodities trading
- The survey participant is not a student from the Trading & Shipping Masters program from the university of Geneva.

Sampling Distribution of Population Proportions^b

- 139.088 voters officially voted on February 28th in the Canton of Geneva.^c
- The initiative was refused by 54.5% of voters in Geneva. This proportion will be considered as the population proportion.
- 110 voters were sampled in the Canton of Geneva.

Considering population proportion as:

$$\pi = \frac{X}{N}$$

Where:

Π = Population proportion

X = Number of items in the population having the attribute of interest

N = Population size

^b Business Statistics, David F Groebner and al (A decision making approach, eighth edition)

^c Official result obtained from Swiss Administration <https://www.admin.ch/ch/f/pore/va/20160228/can598.html>

And considering a sample proportion as:

$$p = \frac{x}{n}$$

Where:

p= Sample proportion

x = Number of items in the sample with the attribute of interest

n = Sample size

Then, if the sample size is sufficiently large, a discrete binomial distribution can be reasonably approximated by the normal distribution. A sample size is sufficiently large if:

$$n\pi \geq 5 \quad \text{and} \quad n(1 - \pi) \geq 5$$

Given that:

$$110(0.545) \geq 5 \quad \text{true}$$

and

$$110(1 - 0.545) \geq 5 \quad \text{true}$$

Then, we are assuming our sample “p” to be approximately normally distributed with:

$$\mu_p = \pi$$

$$\text{Standard error} = \sigma_p = \frac{\sqrt{\pi(1 - \pi)}}{n}$$

$$\text{sampling error} = p - \pi$$

Therefore, this work uses **normal distribution to test its hypothesis**. The sampling error calculated on the number of surveyed voters who refused the initiative was "*sampling error*" = 0.527 – 0.545 = –0.18.^d This work assumes this same value of "*sampling error*" throughout all calculations presented in chapter 4.

^d The value 0.527 corresponds to the proportion of sampled voters who refused the initiative. The value 0.545 corresponds to the population proportion of voters who refused the initiative.

Introduction

The Swiss Young Socialist Party's initiative entitled "Stop speculation on agricultural foodstuff" split the opinions among political parties and the population^e. At the core of the debate was the role of speculation on the surge of commodity prices in the last few years^f. On one hand, supporters of the initiative affirmed that speculating on agricultural foodstuff was an immoral practice as it contributes to cause episodes of famine in the world. On the other hand, critics of the initiative alleged that speculation had nothing to do with the surge of commodity prices as it only reacts to variations of fundamentals.

Swiss voters had to decide whether or not prohibiting speculative practices on agricultural foodstuff in Switzerland was the right thing to do in order to fight hunger in the world. Given the lack of clarity on the real role of speculation, the path to reach a decision was fraught with ambiguity; Swiss voters had to deal with all sorts of contradictory information, which made the population get to grips with distinguishing reality from fallacies surrounding the speculation theme.

The difficulty for Swiss voters laid primarily in the nature of the role of speculation on commodities price formation. Assessing the real impacts of speculation on foodstuff prices might have been puzzling for voters. How could ordinary people decide whether or not speculation was a bad thing when even specialists seem to not agree on the subject? To make things more complicated, the literature review advances as many reasons to believe speculation is beneficial as it suggests it should be abolished from commodity markets.

The second difficulty Swiss voters encountered to reach a decision had its origins in the privileged role the commodity-trading sector plays in Switzerland. Switzerland is home for hundreds of companies that use financial instruments on their day-to-day activities. Voters were warned by the initiative critics that prohibiting speculation in Switzerland could force those companies to leave the country, causing the loss of thousands of jobs and a significant share of the national GDP.

On February 28th 2016, the Swiss electorate rejected the initiative by 59,9% of the votes. Switzerland is not prohibiting speculative practices on agricultural commodities. In light of what was at stake, what did this result mean? Did it mean that the Swiss electorate does not care about food price surges and starving populations? Or did it mean that Swiss voters do not see speculation as a bad thing? What if Swiss voters only voted dreading the potential dangers such initiative could cause to the country's economy? These and other questions will be treated in the following chapters in order to understand why the Swiss electorate rejected the initiative "Stop speculation on agricultural foodstuff".

^e See appendix 1 and 2 Original texts of the initiative in French and German

^f Official website: <http://stopspeculation.ch> « Game Over »

The Swiss Political System

The Swiss direct democracy and popular initiatives

Switzerland has a very unique democratic system where its electorate has the power to launch popular initiatives, provided that a minimum of 100'000 valid signatures is collected among the population^g. These popular initiatives are defined and explained as follows in the official Swiss authorities website^h: *“Any member of the Swiss electorate can launch a popular initiative to demand an amendment to the Federal Constitution (of one or more articles or paragraphs). If the initiative is successful and is not subsequently retracted, the amendment to the Constitution will be put to the popular vote and needs to be approved by a majority of the electorate and the cantons (a ‘double majority’) in order to be made.”*

Steps to launch a popular initiative in Switzerlandⁱ

The first step to launch a popular initiative is to form an initiative committee composed of a minimum of 7 and a maximum of 27 persons entitled to vote in Switzerland. This committee is responsible for drawing the text of the initiative that will be submitted to the Federal Chancellery.

The Federal Chancellery must certify that the text and the title of the initiative submitted by the committee comply with national legal requirements. The Federal Chancellery then publishes its decision in the Federal Gazette. From the date of publication in the Federal Gazette, the initiative committee has 18 months to collect a minimum of 100'00 valid signatures.

If sufficient amount of valid signatures is presented in due time to the Federal Chancellery, the text of the initiative is submitted to the Federal Council and the Parliament. At this stage the text of the initiative can be accepted, rejected or have a counter-proposal submitted by the Parliament. If the text of the initiative is not retracted, it is submitted to a popular vote.

^g See The Swiss democracy system: <http://direct-democracy.geschichte-schweiz.ch>

^h See How to launch a popular initiative in Switzerland: <https://www.ch.ch/en/popular-initiatives/>

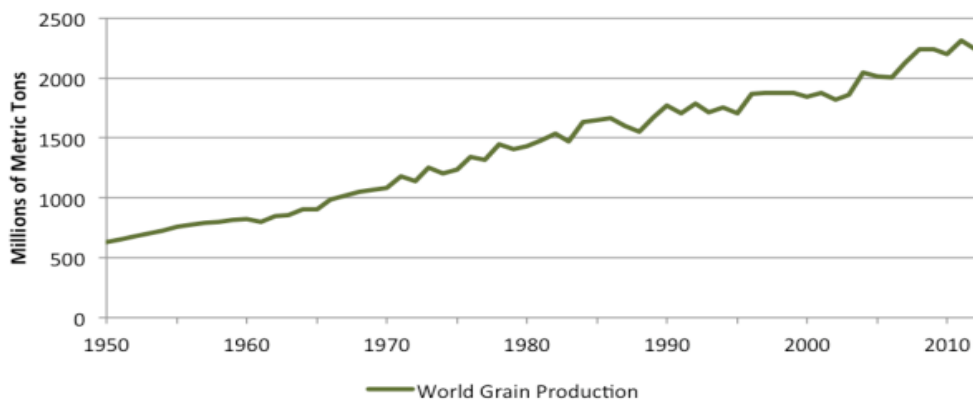
ⁱ Text partially summarized from « How to launch an initiative » found on: <https://www.ch.ch/en/popular-initiatives/>

Chapter 1

1.1 The general situation

The world can be proud of its level of food production achieved over the past 60 years. Thanks to the Green Revolution^j, today's level of agricultural production is sufficient to discredit Malthusian predictions concerning the future of humanity. As we can see on figure 1, today's grain production is about 4 times superior to production levels reached in the 50's.

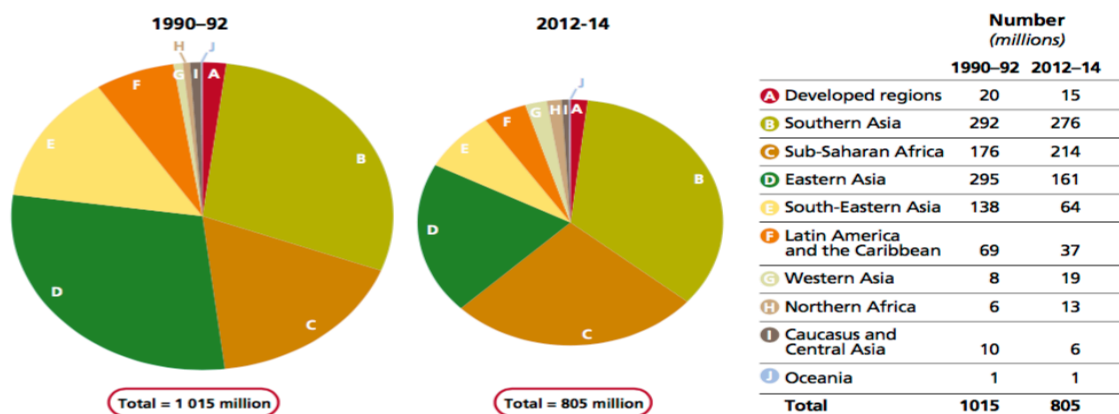
Figure 1: World Grain Production, 1950- 2012



Source: Earth Policy Institute, USDA

Unfortunately, despite this phenomenal increase in food production and a reduction of the total number of people suffering from undernourishment, hunger is still a reality for more than 800 million people in the world. According to World Food Program (WFP)^k: “Hunger and malnutrition are in fact the number one risk to health worldwide – greater than AIDS, malaria and tuberculosis combined”

Figure 2: The changing distribution of hunger in the world



Source: FAO

^j See Prabhu L. Pingali (2012), Green Revolution: Impacts, limits and the path ahead.

^k <https://www.wfp.org/hunger>

1.2 Food high prices

As of 2003 the world witnessed a progressive increase of food prices, which reached record levels in 2008 and 2011. The FAO food price index more than doubled between 2003 and 2008 causing the outbreak of several food riots around the world between 2007 and 2008. Despite the plunge observed during the financial crisis, food prices restarted to surge as of 2010. In 2011 food prices had exceeded price levels attained in 2008 sparking new episodes of food riots in the world.

Figure 3: Food Price Index



Source: FAO (image from Financial Times)

1.3 The commodities market financialisation

The interest for commodities derivatives by the financial markets has significantly increased since 2001. Attracted by the diversification offered to their orthodox equity investments and potential higher returns, investors have flown into the derivative market especially from 2004^l. As we can see on Figure 4, the notional amount of outstanding futures contracts grew more than fourfold between 2001 and 2007. In an article written by Parantap Basu and William T Gavin about the growth of commodities derivatives, we can read: “ *During the past decade, many institutional portfolio managers added commodity derivatives as an asset class to their portfolios...*”

The commodity financialisation phenomenon observed since 2001 has altered the hedgers/speculators^m ratio, which caused the number of speculators to excessively outstrip the number of hedgers in the futures marketⁿ. The consequences of this phenomenon is summarized as follows by Michael Greeberger, University of Maryland^o: “*When speculators make up a too large share of the futures market... prices do not reflect market fundamentals*”.

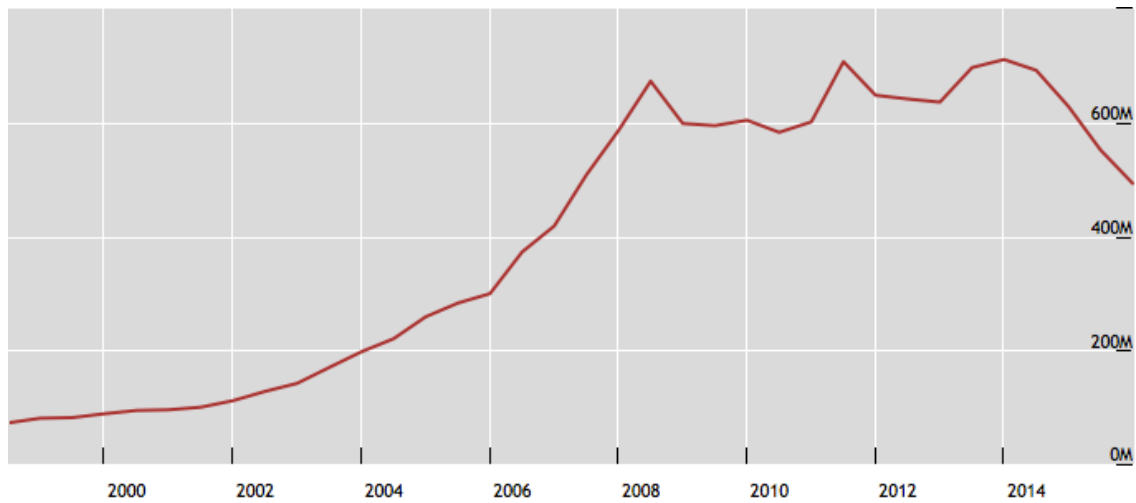
^l See Parantap Basu and William T Gavin, « What explain the growth in commodity derivatives » PDF available at: <https://research.stlouisfed.org/publications/review/11/01/37-48Basu.pdf>

^m The difference between hedgers and speculators is explained in chapter 3.

ⁿ See The hunger-makers. How the Deutsche Bank, Goldman Sachs and other financial institutions are speculating with food at the expense of the poorest? PDF available at: https://www.foodwatch.org/uploads/media/the_hungermakers_foodwatch_report_20111000.pdf

^o Greenberger, Michael (University of Maryland) (2010): The Relationship of Unregulated Excessive Speculation to Oil Market Price Volatility

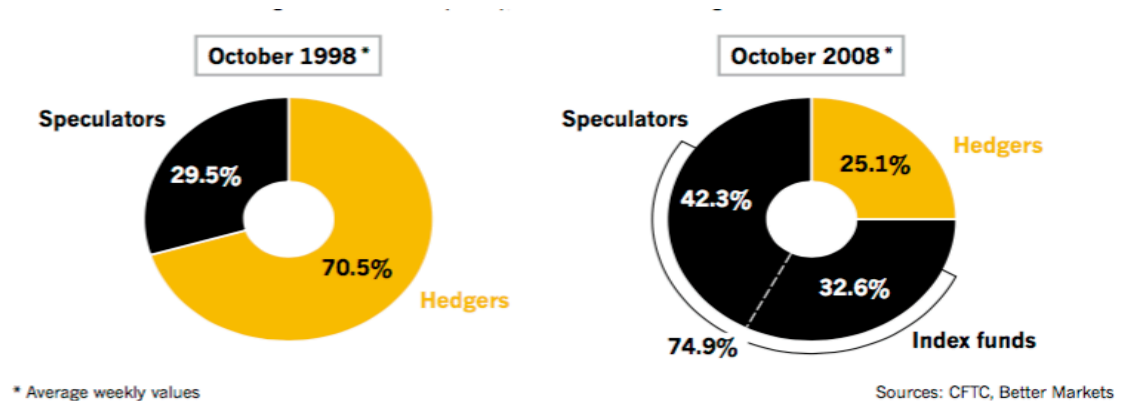
Figure 4: Notional amounts of outstanding contracts



Note: The values indicated on the y-axis are expressed in \$bn. The 2015 outstanding notional amount was \$493 trillion. Source: Bank for international Settlement.

On a research report written by Michel W Masters and Adam K White entitled: “How institutional investors are driving up food and energy prices?” the authors explain that prices reflect supply and demand realities only when physical hedgers are predominant on the commodity futures market. The authors also emphasize that in situations where speculators are dominant over hedgers, prices can become unrelated to fundamentals and reach irrational heights.

Figure 5: Speculators VS Hedgers



Source: The hunger makers – Foodwatch report 2011

Figure 5 shows evidences that the over financialisation phenomenon was mainly caused by the arrival of new speculators in the market. As we can see, the percentage of speculators jumped from 29.5% to 74.9% in ten years, reducing the percentage of hedgers from 70.5% to 25.1% during the same period. The introduction of index funds in the futures market highly contributed to the increase of the number of speculators vis-à-vis the number of hedgers. Notably, Index funds, which were inexistent in 1998, represented 32,6% of total Futures Market participants ten year later.

1.4 From correlation to causation

By juxtaposing the evident increase of the number of speculators in the Futures Market over the last 10 years and the food index prices evolution observed during the same period, number of specialists saw a correlation between these two phenomena. This apparent correlation between higher food prices and the increase of the number of speculators in the Futures Market built ground for leftwing parties to structure their speech against traders and speculative practices.

In Switzerland, the Swiss Young Socialist Party took a step further and attributed an undisputable causation link between the two phenomena conjunction described above. For these leftwing politicians, speculators drive prices up because they greedily want to profit no matter who is losing on the other side of the trade. From this rationale, an over simplified solution to fight hunger in the world saw the day among the inceptors of the initiative; If Switzerland, one of the most important commodity trading hubs in the world, forbids speculation on agricultural foodstuff, food prices will get back to lower levels, as speculators will not be able to artificially inflate them.

1.5 The appealing traits of the initiative

1.5.1 Noble cause

The first appealing trait of the initiative was the fact that it was presented to the population as a surefire way to combat hunger in the world. It is common sense that every single citizen in Switzerland would like to see hunger eradicated from the world. Therefore, at first glance everyone was lured to think that validating the initiative was a no-brainer.

1.5.2 The word speculation

Another strong appealing trait of the initiative was the strategic use of the word speculation. As it will be further discussed in this paper, the word speculation conveys a bad image of its functions among non-initiated people. Knowing this fact, the Young Socialist Party decided to darken the negative aspects of speculation during the campaign^p.

1.5.3 Social justice and morality

During the campaign the defendants of the initiative stressed the fact that the Swiss population was fortunate to be exempt of hunger. This luck not being shared by other populations in the world, Switzerland should not permit its traders to play with food prices. The socialist party tried to create an image of immoral greedy traders getting richer by gambling on food prices to encourage voters to base their decision on their conception of morality^{q,r}. This strategy paid off, as most of voters who were willing to accept the initiative were basing their decision on their sentiment of injustice and unfairness.^s In other words, people saying “yes” to the initiative, were in fact

^p <http://www.popvaud.ch/site/?p=2395>

^q <https://www.youtube.com/watch?v=4ybJdb0-LYU>

^r <https://www.swissaid.ch/fr/stop-speculation-nourriture>

^s See Chapter 4

condemning traders that were supposedly playing with food prices while the poorest populations were bearing the consequences.

CHAPTER 2

2.1 The reality is not as straightforward

The question whether or not speculation is responsible for commodity price hikes is complex. Even if on one side of the spectrum we have Paul Krugman^t, Noble Prize of economy, depicting a guiltless image of speculation: “*futures contracts is a bet about the future price. It has no, zero, nada direct effect on the spot market*”; affirmations such as George Soros’ blur the scenes: “*Speculators create the bubble that lies above everything. Their expectations, [their] gambling on futures help drive up prices, and their business distorts prices, which is especially true for commodities. It is like hoarding food in the midst of a famine, only to make profits on rising prices. That should not be possible.*”

In the middle of such contradictory opinions, most authors and researchers agree that the role of speculation in the surge of commodity prices is not as straightforward as some may pretend. The consensus attributes a more nuanced view of speculation than labeling it as sole culprit or total innocent. The nuance between Krugman and Soros’ viewpoints is summarized by FAO^u: “*Financial firms are progressively investing in commodity derivatives as a portfolio hedge since returns in the commodity sector seem uncorrelated with returns to other assets. While this ‘financialisation of commodities’ is generally not viewed as the source of price turbulence, evidence suggests that trading in futures markets may have amplified volatility in the short term.*”

Assuming a more nuanced view of speculation than the ones proposed by Krugman and Soros and admitting that speculation alone cannot cause as much price volatility without changes in fundamentals, what changes in fundamentals could have contributed to the surge of agricultural commodity prices to levels witnessed in 2007/08 and 2011?

2.2 Chinese new meat consumption impacting grains’ supply and demand

The remarkable economic ascension experienced by China in the last decades has significantly transformed the Chinese population consumption patterns. The Chinese economic boom has created a new middle class with higher income levels, which contributed to an alteration of food consumption behavior in the country.^v In a report released on October 2015, PwC writes: “*It has become increasingly apparent that a*

^t See Speculative nonsense, once again (the conscience of a liberal)
<http://krugman.blogs.nytimes.com/2008/06/23/speculative-nonsense-once-again/>

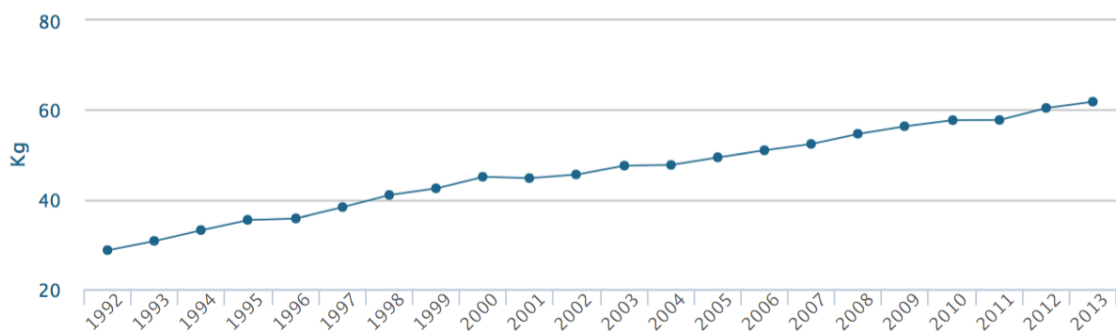
^u See United Nations Food and Agricultural Organization (FAO) (2010). Price Volatility in Agricultural Markets. Economic and Social Perspectives Policy Brief 12. PDF available at:
<http://www.fao.org/docrep/013/am053e/am053e00.pdf>

^v See China growing appetite for meats, National Grain & Oil Information Center. PDF available at :
<http://unitedsoybean.org/wp-content/uploads/2013/07/ChinaMeatMultiClientStudyReport.pdf>

more affluent and more urbanized China is experiencing a dramatic increase in the consumption of food – specifically meat.”

Chinese people have virtually doubled their meat consumption over the last 20 years^w. Although this fact might appear trifling, we can only understand the magnitude of such change if we put this information into perspective. The Chinese population is the largest population in the world with 1.3bn inhabitants^x. Considering that it takes 2 kilos of feed to produce 1 kilo of chicken, 3 kilos of feed to produce 1 kilo of pork and between 5 to 20 kilos of feed to produce 1 kilo of beef^y; the new Chinese meat consumption represents an increase in demand of millions of tons of cereal for China.

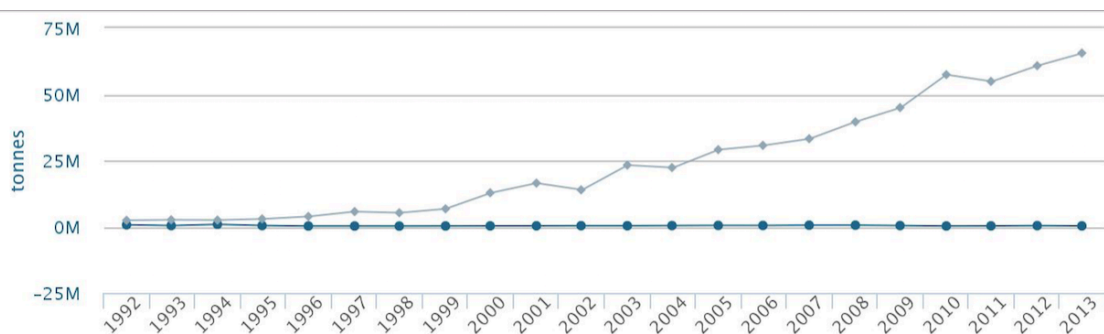
Figure 6: Chinese annual per capita meat consumption



Source: FAOSTAT online

Meat production being feed intensive^z; the new Chinese meat consumption had immediate consequences on the country’s grain import/export balance. Figure 7 shows how the Chinese soybeans imports ramped from 2000 following the increase of meat consumption in the country shown on Figure 6.

Figure 7: Chinese Soybeans Imports & Exports



M = Million, k = Thousand

● Export Quantity — Import Quantity

Source FAOSTAT online

^w See PwC report : China agricultural challenges roads to be traveled October 2015

^x UN data 2016

^y The Economist online version : December 2013 <http://www.economist.com/blogs/feastandfamine/2013/12/livestock>

^z See Tara Garnett, FCRN Briefing paper January 2010, « Livestock, feed and food security » http://www.fcrn.org.uk/sites/default/files/FCRN_livestockfeed_foodsecurity.pdf

2.3. Bad weather conditions reducing crops around the world

Poor weather conditions have a major influence on the levels of crops, which dictates the levels of stocks and supply. Unpredicted changes in weather are prone to decrease harvests' output, which decreases supply and leads to shortages. During the periods 2006-2008 and 2010-2012, the world faced several episodes of extreme weather conditions that have damaged crops in major staple food producing countries.

Below follows a non-exhaustive list of weather hazards episodes that took place between the periods 2006/2008 and 2010/2012 negatively affecting global supply of major agricultural products.

- Australia produces 3% of the global wheat production, but the country is responsible to 10%-15% of the annual wheat global trade according to a PwC 2011 report^{aa}. During the 2006/2007 harvests, due to a prolonged drought, Australia saw its wheat production fall by 57% relative to the previous cycle^{bb}. As a direct result of the poor 2006/2007 wheat harvests, Australia had its wheat exports considerably reduced until 2008^{cc}.
- The Black Sea region is endowed with 3 major wheat producers namely Russia, Kazakhstan and Ukraine. Today, these 3 countries are respectively responsible for 25%, 18% and 22% of the global wheat production^{dd}. But during 2006/08 and 2010/11 after two episodes of atypical drought leading to reduced harvests, these countries implemented exports' quotas, taxes and bans in order to protect domestic supply. In 2008, during the world food-crisis, wheat exports were banned in Kazakhstan, Russian wheat exports were taxed up to 40% and Ukraine had implemented quotas reducing considerably its exports^{ee}.
- The US is the largest corn producer and exporter in the world^{ff}. The country accounts for 36% of the world's total corn production and 40% of the world's total exports^{gg}. In summer 2012 the nation was hit by one of the most severe droughts in 50 years wreak-havocking crops all over the country^{hh}. Corn was particularly hit by the drought, which resulted in a crop 12,7% inferior to the previous yearⁱⁱ.

^{aa} See The Australian grain industry. PwC report available at :

<http://www.pwc.com.au/industry/agribusiness/assets/australian-grains-industry-nov11.pdf>

^{bb} <http://www.indexmundi.com/agriculture/?country=au&commodity=wheat&graph=production>

^{cc} Ibid.

^{dd} See The competitive position of the Black Sea Region in world wheat exports markets, by Daniel M. O'Brien and Frayne Olson. PDF available at : http://www.farmdoc.illinois.edu/nccc134/conf_2014/pdf/O'Brien_Olson_NCCC-134_2014.pdf

^{ee} See Transition to Agricultural Market Economies, The future of Kazakhstan, Ukraine and Russia by Andrew Schmitz and William H. Meyers

^{ff} See World of corn 2015 NCGA <http://www.worldofcorn.com/pdf/WOC-2015.pdf>

^{gg} See Why the export market is important for US corn, Minnesota department of agriculture. PDF available at : <https://www.mda.state.mn.us/food/business/~media/Files/food/business/economics/exports-corn.ashx>

^{hh} See online version Financial Times, World braced for new food crisis : <https://next.ft.com/content/9989dc80-d1c5-11e1-badb-00144feabdc0>

ⁱⁱ World of corn, US corn production : <http://www.ncga.com/upload/files/documents/pdf/woc-2014.pdf>

Ronald Trostle (2008) has detailed several examples of protective policy measures taken in 2007 leading to global supply restrictions and potentially contributing to food prices increase^{jj}:

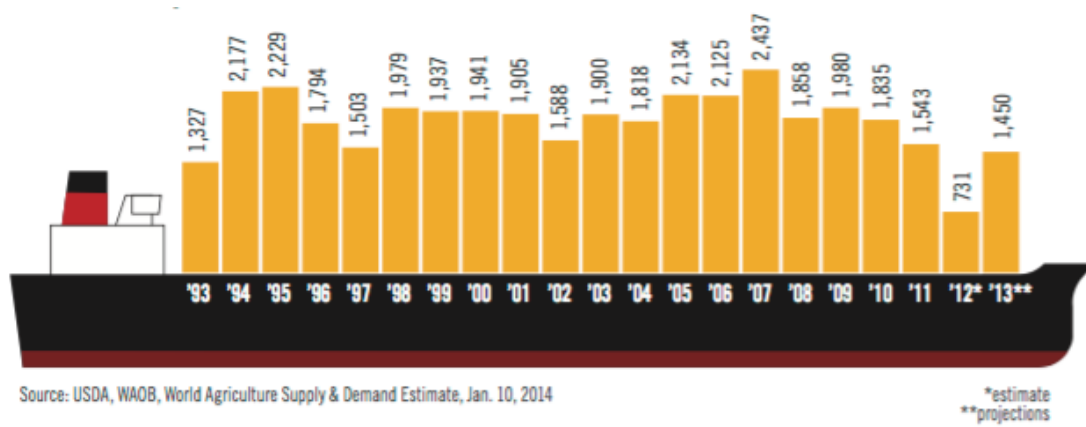
- *China eliminates rebates on VAT on grains' exports. These rebates used to be used as exports subsidies.*
- *China imposes taxes on grain exports.*
- *Argentina raises export taxes on wheat, corn and soybeans and restricts exports' volumes of wheat.*
- *Russia and Kazakhstan raise export taxes on wheat.*
- *Ukraine, Serbia and India ban wheat exports.*
- *Egypt, Vietnam, Cambodia and Indonesia ban rice exports.*
- *India banned the exports of all varieties of rice except basmati*

2.4 Biofuels

Regulations don't necessarily need to be restrictive in order to have a significant impact on the supply of certain commodities. In 2005 the American Congress adopted the Renewable Fuel Standards (RFS) implying a Government mandate to blend 4 billion gallons of corn-based ethanol to gasoline by 2006 and 7.5 billion gallons by 2012. As a result of this mandate, by 2012 around 29% of the total American corn production was used to produce biofuels^{kk}.

As previously mentioned, in 2012 US were severely hit by a heat wave, which damaged a significant portion of the American corn crop. Figure 8 shows what happened to the American corn exports in 2012 resulting from the compound effects of a severe drought and the biofuels mandate. As we can see, the American corn exports were reduced by more than 50% from 2011 to 2012.

Figure 8: US Corn Exports 1993-2013



Source: World of Corn 2014 NCGA

^{jj} Examples taken from Ronald Trostle, "Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices". PDF available at: http://www.ers.usda.gov/media/218027/wrs0801_1_.pdf

^{kk} American Environment Protection Agency; RFS program : <https://www.epa.gov/renewable-fuel-standard-program/program-overview-renewable-fuel-standard-program>

2.5 Food price formation is complex

All the elements presented above such as energy prices, weather conditions and political decisions add up to the complexity of food prices formation. Agricultural food prices are the compound result of the interaction of several stimuli from the market. The Center for European Policy Studies (CEPS) distinguishes 5 families of commodities price formation drivers as shown on figure 9. As we can see, speculation is only one factor among dozens of others potentially contributing to commodity prices formation.

Figure 9: Key Commodities Price Formation Drivers

Product Characteristics	Supply Factors	Demand Factors	Exogeneous Factors	Market Organisation
<ul style="list-style-type: none"> • Quality • Storability • Recyclability • Substitutability • Usability 	<ul style="list-style-type: none"> • Production convertibility and capital intensity • Horizontal and vertical integration • Storability and transportability • Industry concentration • Geographical concentration • Technological developments • Supply peaks and future trends 	<ul style="list-style-type: none"> • Income growth and urbanization • Technological developments and alternative uses • long term habits and demographics • Economic cycle 	<ul style="list-style-type: none"> • Financialisation process and monetary policies • Subsidies programmes • General governments interventions • The economical cycle • Technological developments • Unpredictable events (eg. weather) 	<ul style="list-style-type: none"> • Micro-structural events (eg. competitive settings) • Functioning of internationally recognised benchmark futures or physical prices • Futures market infrastructure • Expansion of commodity futures to non-commercial investors

Source: Center for European Policy Studies (CEPS)

2.6 Surging prices did not last

A strong argument against the claims, which attribute food rising prices to the presence of speculators in the commodity market, is the fact that despite its 2 peaks in 2008 and 2011, food index prices sharply plummeted in 2009 and have been consistently declining since 2011. See figure 3

In the same manner anti speculators use the 2 peaks (2008 and 2011) in the food index prices chart to condemn the negative impacts of speculation, speculation defenders use the very same chart to underpin their case that these 2 peaks were the result of a sharp shift in the equilibrium of fundamentals, as today the speculation activity on agricultural foodstuff is still important, yet prices are falling.

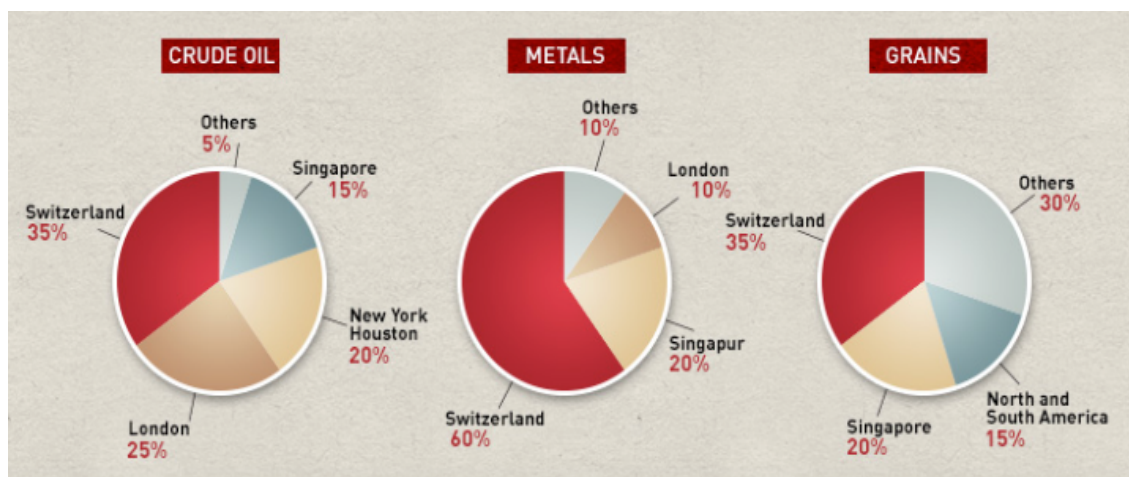
CHAPTER 3

3.1 Commodities trading in Switzerland

Although Switzerland is a small landlocked country, poorly endowed with natural resources and arable lands, the country has become one of the most important commodity trading hubs in the world^{ll}. In recent years, a cluster of more than 500 commodity trading companies has gathered around the Lake of Geneva, Zug and Lugano, creating over 10'000 jobs^{mm}. Today the sector is responsible for 3.6%ⁿⁿ of the national GDP, which places commodity trading among the country's most important economic sectors.

Switzerland has indisputably the largest market share among other commodity trading centers. As shown on figure 10, Switzerland is a major trader of grains, oil and metals, which places the country ahead of other important centers such as London and Singapore. The country is also the world's biggest trader of sugar and coffee, being responsible for respectively 50% and 60% of the world's transactions.

Figure 10: Switzerland's commodity trading market share



Source: SWI swissinfo.ch

^{ll} See Switzerland and the commodities trade, Swiss academies factsheet. Pdf available at: https://www.google.ch/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwiEqoq70JLMAhWLPhQKHcx9DWAQFggjMAE&url=http%3A%2F%2Fwww.naturalsciences.ch%2Fdownload%2F4976ba22-e34b-52a5-ad43-5d4b4c594903%2F40408&usg=AFQjCNHAOeL-G_TPeraBjkEZ1Whnradzmv&bvm=bv.119745492,d.d24

^{mm} See Switzerland as commodity trading center, Swiss Banking Factual Pdf available at: http://www.zugcommodity.ch/media/documents/upload/SBA_Switzerland%20as%20a%20commodity%20trading%20centre.pdf

ⁿⁿ Ibid.

3.2 Why Switzerland?

The Swiss Trading/Shipping Association (STSA) alleges that there are other reasons than tax purposes contributing for Switzerland becoming such an important commodity trading center. Among these reasons STSA cites:

- The Swiss political stability: Switzerland is well known for its traditional political stability and its neutrality, which comforts investors and stakeholders.
- Financial expertise: Before being a commodity-trading hub, Switzerland is a notorious financial center. The availability of world-class financial instruments providers combined with the security of its banking system has immensely contributed to attract international trading companies to the Swiss soil.
- Time zone: The geographic localization of Switzerland is an important factor attracting traders to the country. Situated in the middle of Europe, Switzerland benefits from an ideal time zone, which enables traders to follow Asian transactions in the morning and American transactions in the afternoon.
- Abundance of qualified professionals: Switzerland benefits from an abundant qualified labor pool. The country counts numerous applied-science schools delivering skilled professionals to the market. The multicultural facet of the country also contributes to the plentiful availability of bilingual/trilingual professionals, which facilitates trading.

3.3 How commodity trading companies function? Defining trading arbitrages

Commodity trading companies are essentially firms that add value by physically moving commodities from places where they are abundant to places where they are scarce^{oo}. Commodity traders like to say that their main role is to balance the resources imbalances in the world. But behind this rather simplistic definition hides a complex universe composed of robust supply chain knowledge, cutting edge logistics and financial expertise^{pp}.

A crucial element necessary to understand how commodity trading companies function is the clarification of the concept of arbitrage. The term arbitrage used by commodity trading firms (CTFs) has a different definition from the definition used in finance^{qq}. Craig Pirrong (2014) says about arbitrage: “*An arbitrage is said to exist when the value of a transformation, as indicated by the difference between the prices of the transformed and untransformed commodity, exceeds the cost of making the transformation.*”

Arbitrage can be understood as an opportunity to profit from the difference of levels of availability of a certain commodity in 2 different places. These opportunities can emerge in 3 different ways: in space, time and form^{rr}. The role of CTFs is to identify

^{oo} See Craig Pirrong, The economics of commodity trading firms. Pdf available at : http://eurocapitalmarkets.org/system/files/Report_TheEconomicsCommodityTradingFirms.pdf

^{pp} See Craig Pirrong The economics of commodity trading firms. Pdf available at : <http://www.trafigura.com/media/1364/economics-commodity-trading-firms.pdf>

^{qq} Ibid.

^{rr} Ibid.

these opportunities and put together a strategy based on their supply chain knowledge, logistics and financial expertise to perform such transformations^{ss}.

3.3.1 Space arbitrage

A transformation **in space** means that the trader has identified a place Alpha, where a certain commodity is abundant and a place Beta where this same commodity is scarce. Knowing that this commodity is cheaper in Alpha, traders arrange its transfer to Beta and make a profit on the transaction. Example: Traders buy wheat from Ukraine, one of the most important wheat producers in the world, to sell it to Egypt, one of the biggest wheat importers in the world.

3.3.2 Time arbitrage

A transformation **in time** happens when traders identify a period of the year when a certain type of commodity gains or loses value. Commodities tend to have their prices varying all year long but sometimes these variations are predictable such as the decrease in prices of agricultural products immediately after harvests. Example: Traders may choose to buy corn from a producer right after the harvest season when corn prices are lower, store it for a few months and finally resell it for a higher price to a livestock feeder when corn supply gets smaller.

3.3.3 Form arbitrage

The last type of transformation occurs when there is a **form arbitrage**. Transformations **in form** occur when traders identify commodities that, in their current form, do not satisfy the local demand requirements. In order to meet the local demand requirements traders transform the quality of the commodity by blending it with a commodity of a different quality. Example: Traders commonly blend different grades of oil from different origins in order to meet refineries requirements.

In order to successfully perform those transformations, CTFs have become specialized in supply chain and risk management. CTFs use their advanced knowledge of the market to profit from the best trading flows, the cheapest ways of shipping and the best locations for storage. As supply chain managers, these companies know the best moments to buy, sell and store. As risk managers, CTFs know how to protect themselves against prices moves, counterparty risks and various other hazards.

3.4 Hedging VS Speculation

It is not in the scope of this paper to explain how hedging works and what are the hedging strategies used by CTFs to avoid unfavorable price moves against their positions. Therefore, the sole objective of this section is to distinguish speculative practices from hedging practices.

At this stage it is important to clarify that CTFs are not speculators per se^{tt}. As explained in the previous section, the main role of CTFs is to identify possible

^{ss} Ibid.

^{tt} Ibid.

arbitrages and use their knowledge in supply chain, logistics and risk management in order to successfully operate space, time and form transformations.

Although physical traders (CTFs) are not initially buying and selling commodities speculating on their price moves, these traders are exposed to price volatility from the moment they purchase a commodity until the moment they sell it. Knowing that the commodity-trading sector generates very small margins, the slightest unfavorable price move against a trader position is able of ruin the trade profitability. In order to protect trades against unfavorable price movements between the purchase and the sales moment, traders use financial instruments such as futures contracts and options. This practice of using financial operations in order to manage price risk is called hedging.

Speculators on the other hand also use futures contracts. But contrary to hedgers, speculators use this type of financial instruments to generate profits by betting on the direction prices will move. The international trading center (ITC) clarifies the difference between hedging and speculation with the following words: *“where hedging is essentially a means to avoid or reduce price risk, speculation relies on the risk element... hedging offers an element of protection against price risk, whereas speculation involves deliberately taking a risk on price movements, up or down, in the hope of obtaining a profit...”*^{uu}

As hedgers and speculators pursue different goals when buying or selling futures contracts, they also have opposing positions in the futures market. Actually, transactions in the futures market are only possible because of this fundamental difference. When hedgers want to sell futures contract to protect themselves against prices going down, most of the times these contracts are bought by speculators betting that prices are going up. Hedgers' and speculators' interests on the Futures Market is summarized as follows by the ITC: *“One of the principles of speculation involves the opportunity for gain that the investor achieves by agreeing to accept some of the risk passed off by the hedger. In other words, the hedger gives up some opportunity in exchange for reduced risk. The speculator on the other hand acquires opportunity in exchange for taking on risk.”*^w

^{uu} See ITC website: Difference between hedging and speculation <http://www.intracen.org/coffee-guide/hedging-and-other-operations/differences-between-hedging-and-speculation/>

^w Ibid.

CHAPTER 4

4.1 Ballot results raising questions

After months of campaign^{ww} and public debates on national television, Swiss voters were finally called to deliberate on whether Switzerland should ban speculative practices on agricultural foodstuff. In the afternoon of February 28th 2016, the ballot's final result was communicated to the public. The Swiss electorate had decided with 59,9% of the votes that speculative practices on agricultural foodstuff should not be banned in Switzerland.

Considering the leftwing party's allegations on speculation as a vector of hunger and misery among the poorest populations in the world, did this result mean that 6 out of 10 Swiss voters do not care about other populations' woes? Was the initiative refused because the Swiss electorate did not believe that a ban on speculative practices in Switzerland could address the situation? Or was there something else?

On the other side of the spectrum, a noteworthy 40,1% of the electorate voted in favor of the initiative. Bearing in mind that people's opinion on speculation was at the core of the debate, did this result mean that 4 out of 10 Swiss voters saw speculation as a bad thing? What percentage of people who thought speculation was a bad thing actually voted in favor of the initiative?

4.2 Voters profiling level I

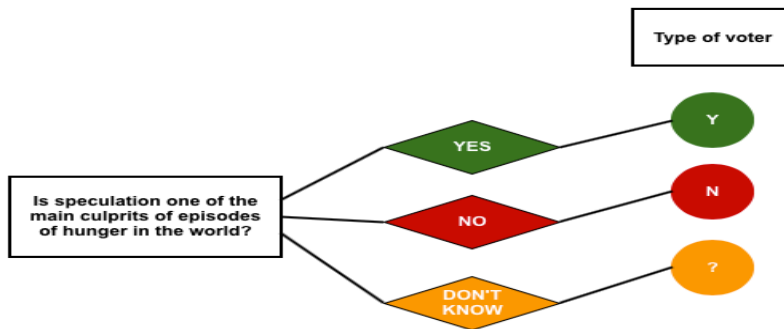
In this section, we are going to attempt to find out possible reasons that contributed to the refusal of the Swiss Young Socialist's Initiative. In order to accomplish this task, we are going to make a few assumptions regarding the Swiss electorate.

Assumption 1: Each Swiss voter prior to voting had to implicitly answer the questions: Is speculation really a bad thing? Is it causing prices to surge and thus creating episodes of hunger in the world?

Considering **assumption 1**, there were 3 possible types of voters who voted on February 28th 2016. These voters were categorized as a function of what they thought about the role of speculation on the surge of agricultural foodstuff prices.

^{ww} Appendix 3 & 4: Non-exhaustive list of parties and companies supporting or opposing the initiative.

Figure 11: Type of voters



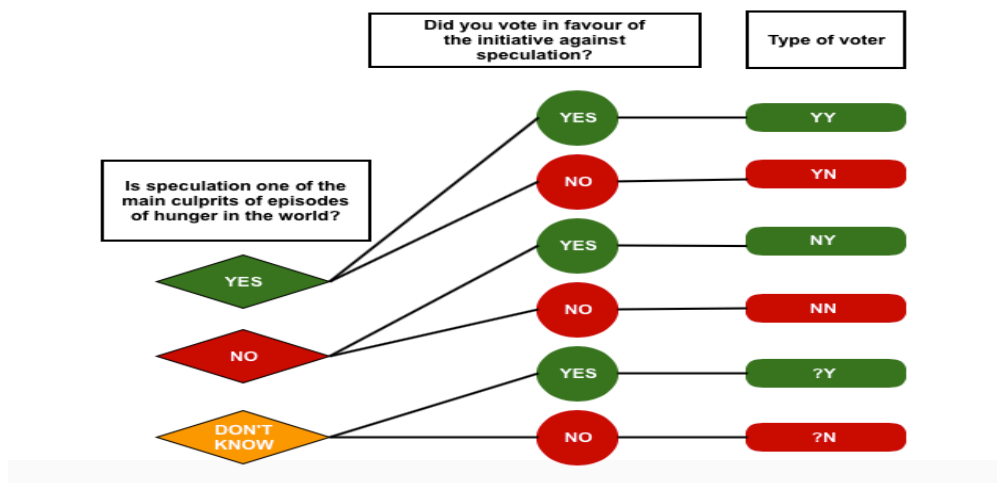
4.2.1 Defining categories of voters level I (assumption 1 correlate):

- (Y): Category of voters who thought speculation was a bad thing.
- (N): Category of voters who thought speculation was not a bad thing.
- (?): Category of voters who did not have an opinion regarding the role of speculation.

Assumption 2: Considering assumption 1 and notwithstanding other reasons potentially having an influence on voters' decisions, voters either voted "YES", in favor of the initiative or "NO", against the approval of the initiative.

By taking **assumptions 1&2** into account, we split Swiss voters into 6 categories:

Figure 12: Voters category level I



4.2.2 Defining categories of voters level II:

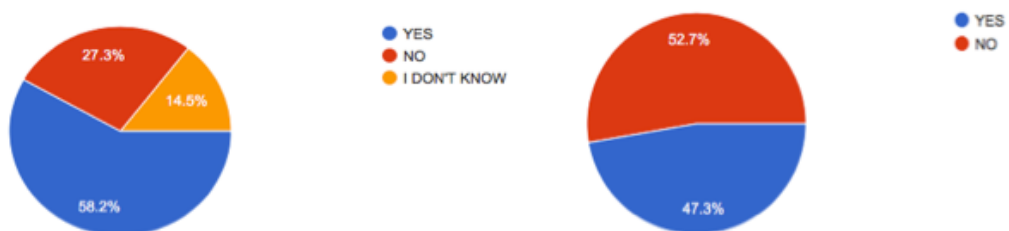
- **(YY)**: Category of voters who thought speculation was a bad thing and voted in favor of the initiative.
- **(YN)**: Category of voters who thought speculation was a bad thing but decided to vote against the initiative.
- **(NY)**: Category of voters who did not think speculation was a bad thing but decided to vote in favor of the initiative.
- **(NN)**: Category of voters who did not think speculation was a bad thing and voted against the initiative.
- **(?Y)**: Category of voters who did not know whether speculation was a bad thing but decided to vote in favor of the initiative.
- **(?N)**: Category of voters who did not know whether speculation was a bad thing but decided to vote against the initiative.

4.3 Survey part I:

A survey completed in Geneva after the February 28th 2016 vote had 110 people answering 4 questions about the initiative. The combined answers of questions 1 and 2 presented below were used to estimate the proportions of voters fitting in each of the categories described above:

- **Question 1:** Do you think speculation on agricultural foodstuff is a bad thing as it causes price surges, which contributes to exacerbate episodes of hunger in the world?
- **Question 2:** Did you vote in favor of the Young Socialist Initiative aiming at banning speculative practices on agricultural products in Switzerland?

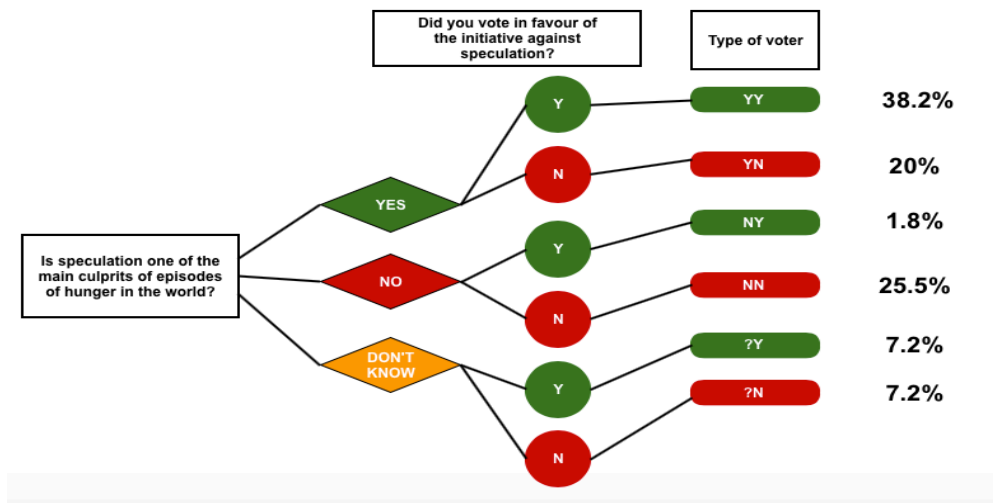
Figure 13: Answers to question 1 (left) / Answers to question 2 (right)



As we can see on the pie charts presented above, the majority of surveyed voters 58.2% had a bad opinion about speculation. Curiously, however, only 47.3% of surveyed voters confirmed their conviction by validating the initiative. These proportions' mismatch entails that a portion of people who believed speculation was a bad thing voted against the initiative. Therefore, we can assume that considering speculation as a bad thing was not a sufficient reason to vote in favor of the initiative.

By adding one level of granularity to the results above, we find the following categories of voters and their proportions:

Figure 14: Voters proportions per category



4.3.1 Survey results I:

- 38.2% of the surveyed voters thought speculation was a bad thing and confirmed their position by voting in favor of the initiative.
- As much as 20% of the surveyed voters thought speculation was a bad thing and did not confirm their position as they voted against the initiative.
- Only 1.8% of the surveyed voters thought speculation was not a bad thing and voted in favor of the initiative.
- 25.5% of the surveyed voters thought speculation was not a bad thing and confirmed their position by voting against the initiative.
- 7.2% of the surveyed voters did not have a take on speculation but voted in favor of the initiative
- 7.2% of the surveyed voters did not have a take on speculation but voted against the initiative.

4.3.2 Interpretations:

The proportion of voters belonging to the **YN** category seems to be one of the reasons why despite having 58.2% of voters against speculation, only 47.3% voted in favor of the initiative. Taking into consideration our assumptions, **YN = 20%** represents a significant number of surveyed voters who did not think that considering speculation as a bad thing was a satisfactory reason to support the initiative. Thus, we can assume that these voters based their decisions considering other factors than their opinion on the role of speculation in the episodes of hunger in the world.

4.3.3 YN Voters' Claim

Assuming a proportion sampling error of 0.18

$$\text{Sampling error} = \pi - p$$

$$\pi = 0,218 \text{ and } p = 0.2$$

Where:

$p = 0.2$ Sample proportion of YN

$\pi = 0,218$ YN Population proportion assumed with sampling error.^{xx}

YN Voters' Claim: The percentage of voters who thought speculation was a bad thing and voted against the initiative was smaller than 20%.

Hypothesis testing:

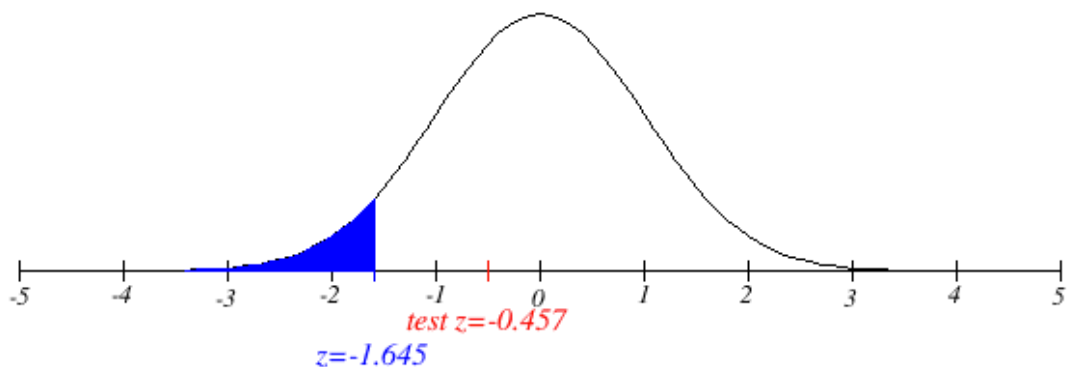
$$H_0: \pi \geq 20\%$$

$$H_1: \pi < 20\% \text{ (Claim)}$$

Significance level $\alpha = 0.05$ (left tail test)

Decision rule: reject H_0 if Z score < -1.645 (from normal distribution table)

$$\text{Z-score} = \frac{p - \pi}{\sqrt{\frac{\pi(1-\pi)}{n}}} = \frac{0.2 - 0.218}{\sqrt{\frac{0.218(1-0.218)}{110}}} = -0.457$$



We do not have enough evidence to reject H_0 . Thus, we can conclude that at least 20% of the Swiss electorate believed speculation was a bad thing and yet voted against the initiative.

^{xx} See methodology section

Based on this result and considering our assumptions, we can conclude that a significant share of Swiss voters did not consider their bad opinion on speculation as a sufficient reason to validate the Young Socialist initiative.

4.4 Voters profiling level III

Considering the answers collected in the first part of the survey and reflecting on the percentage of people who voted against the initiative despite their negative opinion on speculation, we are going to sub-categorize the surveyed voters in order to fine-tune their profiles.

Assumption 3: We assume that after deciding whether or not speculation was a bad thing, voters had to decide whether or not they were worried about the Swiss trading sector in case the initiative were to be approved by the population.

Assumption 4: Considering assumptions 1&3 and notwithstanding other reasons potentially having an influence on their decisions, voters either voted “YES”, in favor of the initiative or “NO”, against the initiative.

Considering **Assumptions 3&4**, we can split surveyed voters into **12 sub-categories** as follows:

Figure 15: Voters subcategories



4.4.1 Defining sub-categories of voters:

- **(YYY):** Subcategory of voters who thought speculation was a bad thing prone to cause prices of agricultural products to surge. These voters voted in favor of the initiative despite the fact that they were worried about the possible impacts of the initiative on the Swiss trading sector.

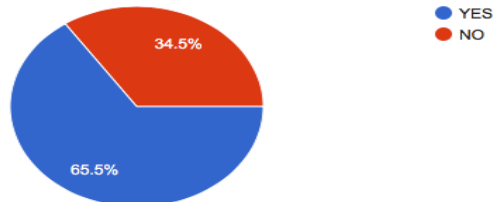
- **(YYN)**: Subcategory of voters who thought speculation was a bad thing prone to cause prices of agricultural products to surge. These voters decided to vote against the initiative because they were worried about the possible impacts of the initiative on the Swiss trading sector.
- **(YNY)**: Subcategory of voters who thought speculation was a bad thing prone to cause prices of agricultural products to surge. These voters voted in favor of the initiative because they were not worried about the possible impacts of the initiative on the Swiss trading sector.
- **(YNN)**: Subcategory of voters who thought speculation was a bad thing prone to cause prices of agricultural products to surge. These voters voted against the initiative even though they were not worried about the possible consequences of the initiative on the Swiss trading sector.
- **(NYY)**: Subcategory of voters who did not think speculation was a bad thing. These voters decided to vote in favor of the initiative despite the fact that they were worried about the potential consequences the initiative could have on the Swiss trading sector.
- **(NYN)**: Subcategory of voters who did not think speculation was a bad thing. These voters were worried about the potential harms the initiative could cause to the Swiss trading sector and therefore they voted against the initiative.
- **(NNY)**: Subcategory of voters who did not think speculation was a bad thing but they voted in favor of the initiative because they were not worried about the possible consequences the initiative could cause to the Swiss trading sector.
- **(NNN)**: Subcategory of voters who did not think speculation was a bad thing. These voters were not worried about the consequences of the initiative on the Swiss trading sector, but because they believed speculation was not a bad thing, they voted against the initiative.
- **(?YY)**: Subcategory of voters who did not have a take on the concept of speculation. These voters voted in favor of the initiative despite the fact that they were worried about its consequences on the Swiss trading sector.
- **(?YN)**: Subcategory of voters who did not have a take on the concept of speculation. These voters voted against the initiative because they were worried about its consequences on the Swiss trading sector.
- **(?NY)**: Subcategory of voters who did not have a take on the concept of speculation. Since these voters were not worried about the consequences of the initiative on the Swiss trading sector, they decided to vote in favor the initiative
- **(?NN)**: Subcategory of voters who did not have a take on the concept of speculation. These voters were not worried about the consequences of the initiative on the Swiss trading sector. These voters decided to vote against the initiative.

4.4.2 Survey part II

The combined answers of **questions 1,2 and 3** were used to estimate the proportions of voters fitting in each of the sub-categories described above.

- **Question 3:** Were you worried to see commodity-trading companies leaving Switzerland if the Swiss population had accepted the initiative?

Figure 16: Answers to question 3



As we can see on the pie chart presented above, the Swiss trading sector was a major concern among voters. More than 65% of surveyed voters expressed that they were worried about seeing commodity-trading companies leaving Switzerland for other countries.

4.4.3 Worried Voters' Claim

Assuming the proportion sampling error = 1.8

$$\text{Sampling error} = \pi - p$$

$$\pi = 0.668 \text{ and } p = 0.65$$

Where:

$p = 0.65$ Sample proportion of worried voters

$\pi = 0.668$ Population proportion of worried voters assumed with sampling error

Worried voters Claim: Less than 65% of the Swiss electorate was worried about the Swiss commodity-trading sector.

Hypothesis testing:

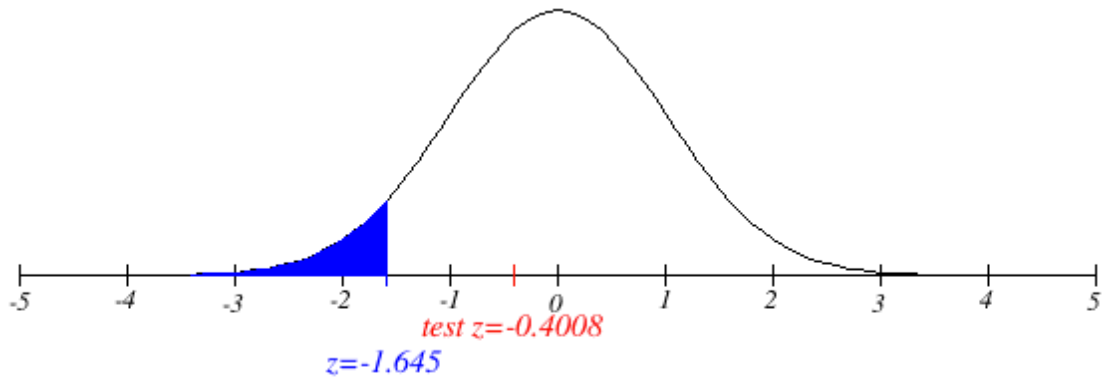
$$H_0 \geq 65\%$$

$$H_1 < 65\% \text{ (Claim)}$$

Significance level $\alpha = 0.05$ (left tail test)

Decision rule: Reject H_0 if Z-score ≤ -1.645 (normal distribution table)

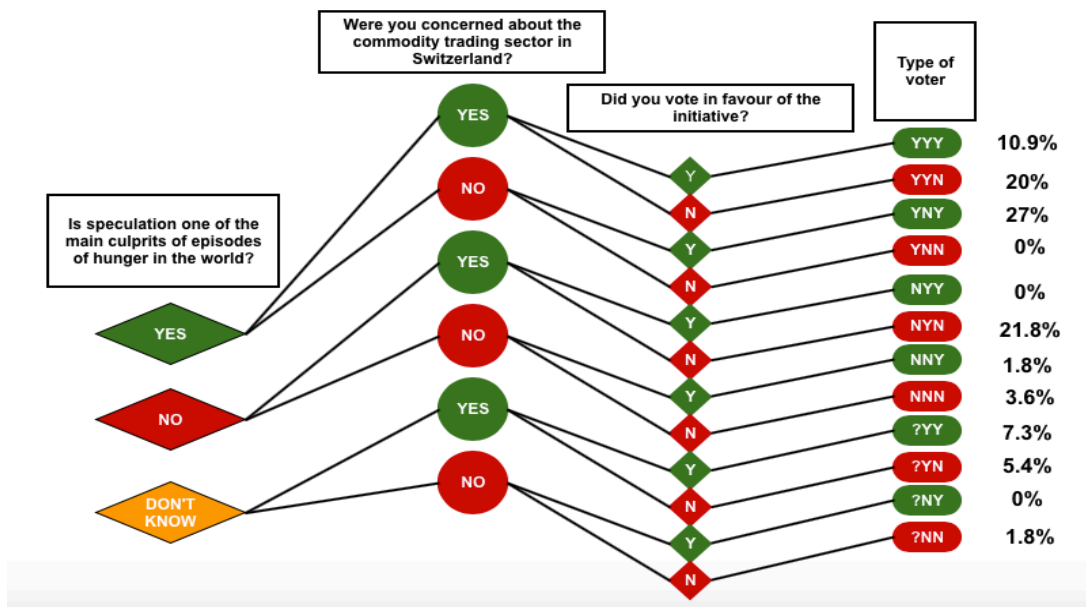
$$Z \text{ score} = \frac{p - \pi}{\sqrt{\frac{\pi(1-\pi)}{n}}} = \frac{0.65 - 0.668}{\sqrt{\frac{0.668(1-0.668)}{110}}} = -0.4008$$



We do not have enough evidence to reject H_0 . Thus it is not statistically incorrect to affirm that at least 65% of the Swiss electorate was worried about the impact of the initiative on the Swiss commodity-trading sector.

Assuming that the concern about the Swiss commodity sector was one of the reasons leading people to vote against the initiative, we sub-categorized voters in order to estimate the impact of this concern on voters final decisions.

Figure 17: Voters' percentage per subcategory



4.4.4 Survey results II

- 10.9% of surveyed voters decided that their negative view on speculation was more important than their worries concerning commodities trading companies leaving Switzerland. Therefore, those voters decided to vote in favor of the initiative.
- 20% of the surveyed voters decided that their concerns about the Swiss trading sector were more important than their opinions on speculation. Therefore, those voters decided to vote against the initiative.

- 27% of the surveyed voters decided to vote in favor of the initiative because they had a bad opinion on speculation and because they were not worried about the Swiss trading sector.
- None of the surveyed voters rejected the initiative when they had a bad opinion about speculation and they were not worried about the Swiss trading sector.
- None of the surveyed voters accepted the initiative when they had a good opinion about speculation and they were worried about the Swiss trading sector.
- 21.8% of the surveyed voters were totally against speculation because they thought speculation was not a bad thing and they were worried about the Swiss commodity-trading sector.
- 1.8% of surveyed voters accepted the initiative when they did not have a bad opinion about speculation and they were worried about the Swiss trading sector.
- 3.6% of surveyed voters rejected the initiative despite not being concerned about the Swiss commodity-trading sector because they did not have a bad opinion on speculation.
- 7.3% of surveyed voters did not know what to think about speculation but finally voted in favor of the initiative despite their concerns about the Swiss commodity-trading sector.
- 5.4% of surveyed voters did not know what to think about speculation but finally voted against the initiative as they were concerned by the Swiss commodity-trading sector.
- None of the surveyed voters voted in favor of the initiative when they did not know what to think about speculation and when they were not worried about the Swiss trading sector.
- 1.8% of surveyed voters rejected the initiative when they did not know what to think about speculation and when they were not worried about the Swiss trading sector.

4.4.5 Interpretations

YYY

YYY = 10.9% suggests that 1 out of 10 voters composing the Swiss electorate would like to see Switzerland being proactive in regards to its commodity-trading sector regulations. Despite being concerned about the revenues and jobs that the commodity-trading sector represents for Switzerland, these voters think that actions should be taken in order to address the hunger situation in the world.

Voters composing this subcategory often claimed that speculating on agricultural foodstuff was immoral and Switzerland should not be proud to make money out of a sector that starves millions of people around the world. This proportion of the Swiss electorate probably thought Switzerland was doing something immoral and therefore would have liked to see the country stopping its activities even though such decision might have implied economical risks for the country.

YYN

YYN = 20%. These voters believed speculation was a bad thing yet they did not want to adopt any measures to ban its practices in Switzerland. Contrary to **YYY**, these voters weighed the risks involved in accepting the initiative as more important than their opinion about the role of speculation.

An argument often heard from this type of voter was that an action taken in Switzerland was not bound to address the situation in the world. For these voters, If Switzerland decided to forbid speculation on agricultural products, other countries would have never followed suit and would probably end up taking over Switzerland's market share. These voters summarize the outcome of this initiative as: Switzerland loses one of its most important economical sectors and the situation in the world remains the same.

YNY

YNY = 27%. This result suggests that the majority of voters who supported the Young Socialist Initiative were people who did not like speculative practices on agricultural foodstuff and were not concerned about trading companies leaving the Swiss territory.

Voters of this subcategory were likely to be the ones claiming that Switzerland had nothing to lose in accepting this initiative and would soon be followed by other countries. In their view, Switzerland should show the way and pioneer in the action against speculation rather than having to comply with international regulations imposed on the country.

This profile suits the inceptors of the initiative who believes speculation on agricultural products is living on borrowed time. If speculation on agricultural products is bound to disappear, Switzerland might as well get rid of its practices now and act in favor of a better world.

YNN

YNN = 0%: This result suggests that surveyed voters had no reasons to vote against the initiative if they believed that speculation was a bad thing and they were not worried about the Swiss commodity-trading sector. Therefore, this result implies that all of the surveyed voters, who were against speculation and did not care about the Swiss trading sector voted in favor of the initiative.

NYN

NYN = 0%: This result suggests that surveyed voters had no reasons to vote in favor of the initiative if they did not believe speculation was a bad thing and if they were worried about the Swiss trading sector. Therefore, this result implies that all surveyed voters, who had a positive opinion on speculation and were worried about the Swiss commodity-trading sector voted against the initiative.

YYN

YYN = 21.8%. The majority of surveyed voters who rejected the initiative had a positive view of speculation and was worried about the Swiss commodity-trading sector.

This subcategory suits liberal voters who defended that speculation is necessary to control prices volatility in the market. As part of the most aggressive critics of the initiative, these voters believed that Switzerland had everything to lose by accepting this initiative that was not going to address the situation anyways.

The Swiss parliament had a **NYN** profile as it advised the population to refuse the initiative on the basis that speculation was a necessary instrument to protect producers and give liquidity to the market. The parliament also suggested that thousands of jobs were threaten in Switzerland if companies could not exert freely their activities.

NNY

NNY = 1.8%. A very small number of surveyed voters voted in favor of the initiative only because they were not worried about the Swiss commodity-trading sector. This implies that not being worried about the potential loss of jobs and revenues for the country was not a sufficient reason to accept the initiative. Therefore, we can conclude that the majority of people who accepted the initiative had a bad opinion about speculation at first place.

NNN

NNN = 3.6% Only a small number of surveyed voters voted against the initiative only because they did not view speculation as a bad thing. This implies that considering speculation a good thing was not a sufficient reason to reject the initiative. Therefore, we can conclude that most of voters who rejected the initiative were also worried about the Swiss commodity-trading sector.

?YY

?YY = 7.3% These voters did not know what to think about speculation and were nonetheless worried about the Swiss trading sector. Their decision to accept the initiative might have come from the feeling that Switzerland would have to get rid of speculative practices sooner or later. The memory of Switzerland losing its bank secrecy imposed by international pressure might have influenced voters of this subcategory.

?YN

?YN = 5.4% This subcategory of voters was worried about the Swiss commodity-trading sector and probably decided to play it safe since they did not know what to think about speculation. These voters probably decided to vote as the Swiss Parliament advised the population to vote.

?NY

?NY = 0% None of the surveyed voters who did not know what to think about speculation and were not worried about the Swiss trading sector decided to approve the initiative.

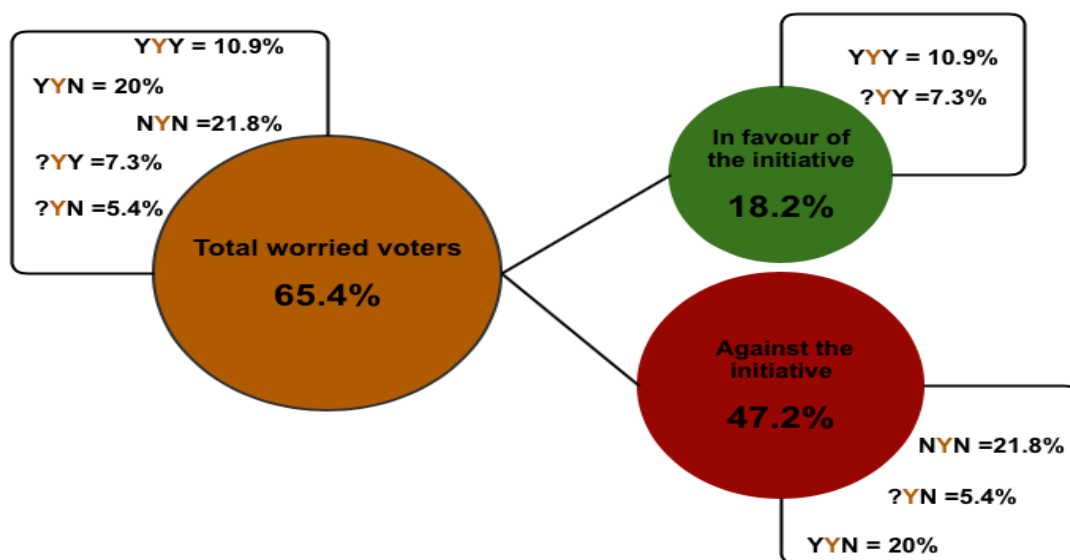
?NN

?NN = 1.8% is exactly one-third of **?YN = 5.4%**, which suggest that people who were in doubt about speculation but were worried about the Swiss trading sector rejected 3 times more the initiative than those who had a doubt about speculation but were not worried about the Swiss trading sector. This result along with **YYN** shows the important role worried voters played on the final ballot results.

4.5 Worried voters

Voters worried about the Swiss commodity-trading sector might have been the ballot's result main deciders. As shown previously, more than 65% of surveyed voters said they were concerned about the Swiss trading sector. If we take a closer look at how worried voters voted, we can see that the majority of worried voters voted against the initiative, even when they did not know what to think about speculation or when they were convinced speculation was bad thing.

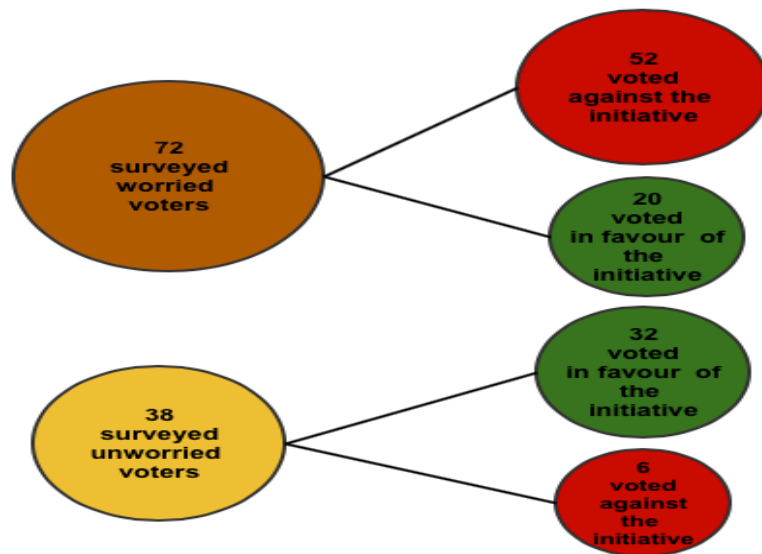
Figure 18: Worried voters split from total voters



4.5.1 Worried voters breakdown

The total amount of surveyed worried voters was 72. From those 72 surveyed voters, 52 voters voted against the initiative and 20 voters voted in favor of the initiative. On the other side, the number of unworried surveyed voters was 38. From those 38 unworried voters, 32 voters voted in favor of the initiative and 6 voters voted against the initiative. Considering that the proportion of worried who voted against the initiative was larger than the proportion of unworried voters who voted against the initiative, do we have statistical evidence to claim that worried voters tended to vote more often against the initiative than unworried voters?

Figure 19: Worried & Unworried voters breakdown



Worried voters Claim number 2: Worried voters tended to vote more often against the initiative than unworried voters.

Comparing 2 population proportions- Hypothesis testing:

$$H_0: p_1 = p_2$$

$$H_1: p_1 \neq p_2 \text{ (Claim)}$$

Significance level $\alpha = 0.05$ (two tails test)

Decision rule: Reject H_0 if Z-score \in rejection zone $z > 1.645$ or $z < -1.645$ (normal distribution table)

$$Z\text{-score} = \frac{(p_1 - p_2) - (\pi_1 - \pi_2)}{\sqrt{p\bar{p}(1-p\bar{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where: $p_1 = \frac{x_1}{n_1}$ and $p_2 = \frac{x_2}{n_2}$

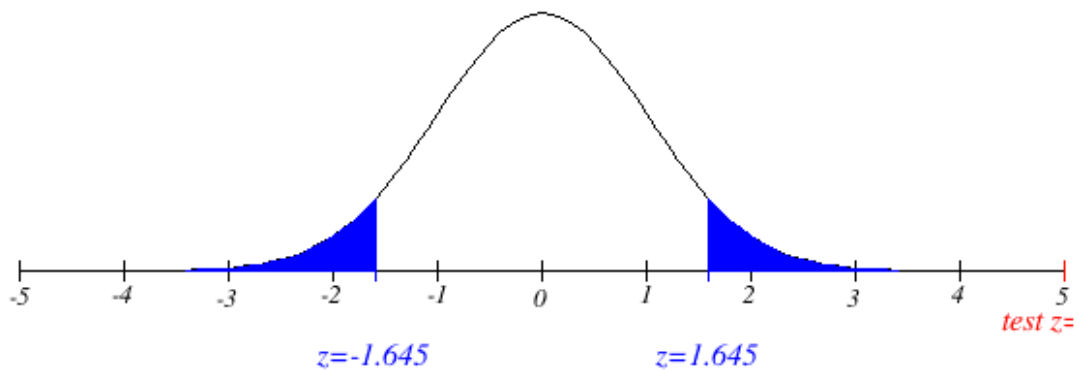
Worried voters: $p_1 = \frac{x_1}{n_1} = \frac{52}{72} = 0.72$

Unworried voters: $p_2 = \frac{x_2}{n_2} = \frac{6}{38} = 0.158$

Overall proportion: $p\bar{p} = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2} = \frac{72 * 0.72 + 38 * 0.158}{38 + 72} = 0.519$

Therefore,

$$Z\text{-score} = \frac{(0.72 - 0.158) - (0)}{\sqrt{0.519(1 - 0.519)\left(\frac{1}{72} + \frac{1}{38}\right)}} = 5.6$$



We have enough evidence to reject H_0 . Thus we can claim that worried voters tended to vote more often against the initiative than unworried voters. Therefore, we can conclude that worried voters' decision has been pivotal in the ballot's results.

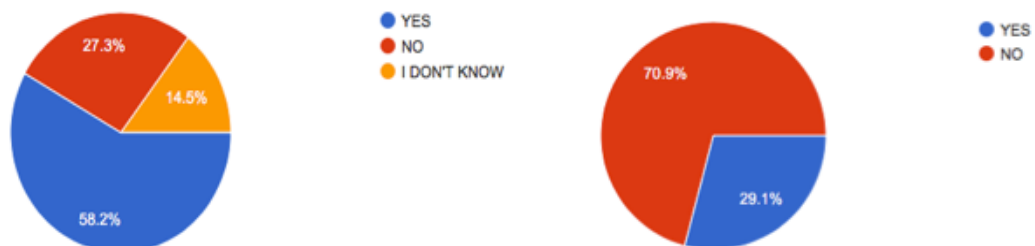
4.5.2 Survey part III:

The first 2 parts of the survey was composed of 3 questions aiming at finding the possible reasons that underpinned voters' decisions. In the last part of the survey we want to know whether voters who knew about the way the Futures Market works were more positive about speculation vis-à-vis voters who did not know anything about the Futures Market.

In order to estimate whether voters who knew something about hedging were less prone to have a bad opinion about speculation, we compared the results of the first and the fourth questions.

- **Question 1:** Do you think speculation on agricultural foodstuff is a bad thing as it causes price surges, which contributes to exacerbate episodes of hunger in the world?
- **Question 4:** Do you know anything about how hedging and the Futures Market work?

Figure 20: Answers question 1 (left) / Answers question 4 (right)



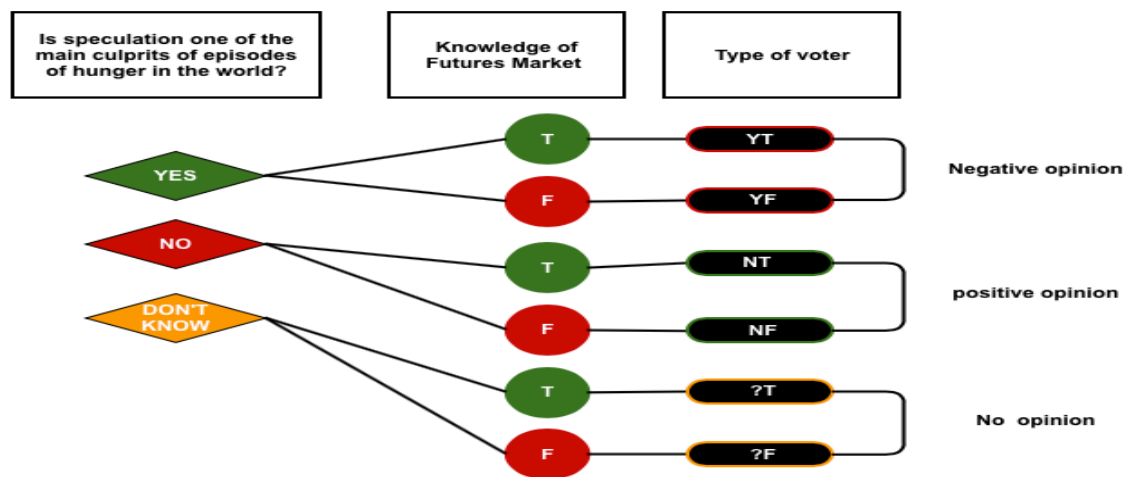
As we can easily notice by looking at the pie charts above, the proportion of voters who did not know how hedging and the Futures Market work was largely superior to the proportion of voters who knew something these financial instruments.

The charts also tell us that the proportion of voters who understood about hedging was approximately equivalent to the proportion of people who did not have a negative opinion about speculation.

Assumption 5: Each voter prior to making his opinion about speculation implicitly asked himself whether he knew something about Futures Market or not. We assume that voters either knew something, in which case he answered, “YES”, or he did not know anything, in which case he answered “NO”.

Considering **assumption 5** and still assuming that voters can have a positive, a bad or no opinion about speculation (**assumption 1**), we can categorize surveyed voters as follows:

Figure 21: Type of voters by opinion on speculation



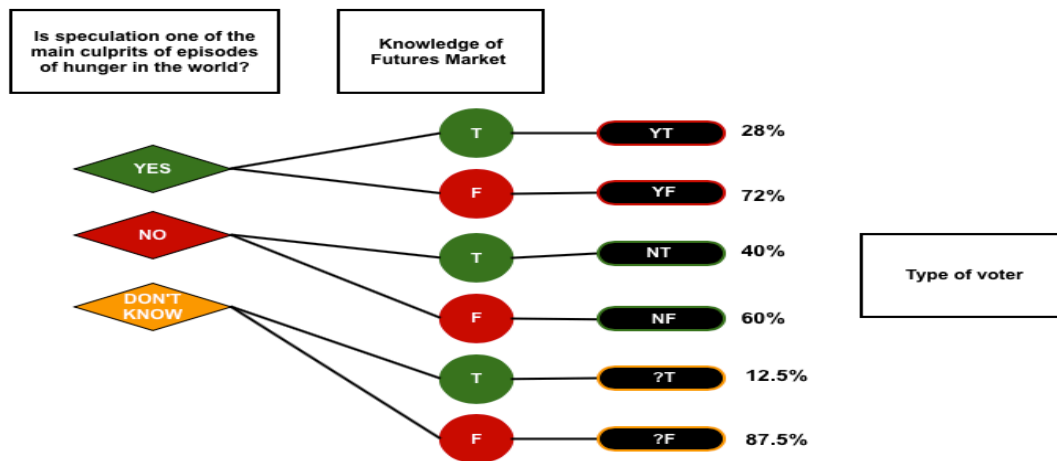
4.5.3 Defining categories of voters:

- **(YT):** Category of voters who had some knowledge about the Futures Market and had a negative opinion about speculation.
- **(YF):** Category of voters who did not have any knowledge about the Futures market and had a negative opinion about speculation.
- **(NT):** Category of voters who had some knowledge about the Futures market and had a positive opinion about speculation.
- **(NF):** Category of voters who did not have any knowledge about the Futures Market and had a positive opinion about speculation.
- **(?T):** Category of voters who had some knowledge about the Futures Market and did not have a firm opinion about speculation.
- **(?F):** Category of voters who did not have any knowledge about the Futures Market and had no firm opinion about speculation.

4.5.4 Results:

- 28% of the surveyed voters **who had a negative opinion on speculation** had some knowledge about hedging and the Futures Market.
- 72% of surveyed voters **who had a negative opinion on speculation** had no knowledge about neither hedging no the Futures Market.
- 40% of the surveyed voters **who had a positive opinion on speculation** had some knowledge about hedging and the Futures Market.
- 60% of the surveyed voters **who had a positive opinion on speculation** had no knowledge about hedging or the Futures Market.
- 12.5% of the surveyed voters **who had no opinion about speculation** had some knowledge about hedging and the Futures Market.
- 87% of the surveyed voters **who had no opinion about speculation** had no knowledge about hedging or the Futures Market.

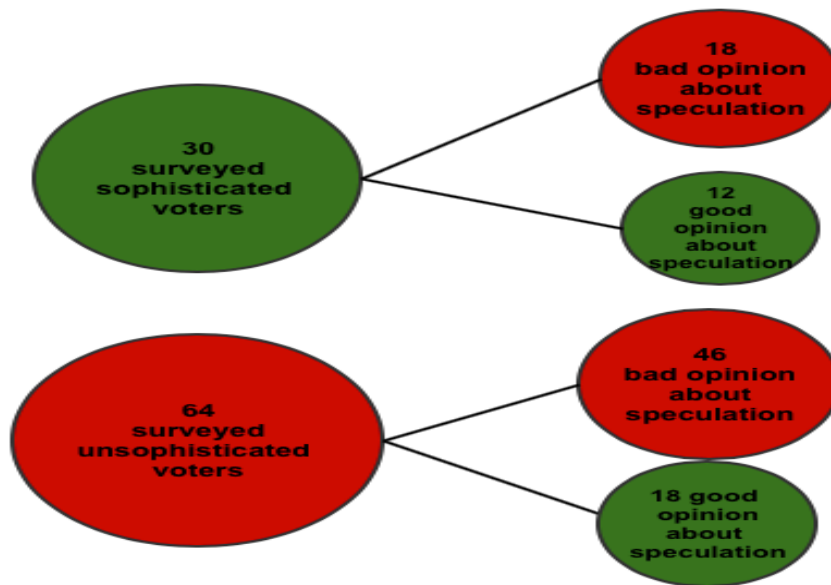
Figure 22: Proportion of voters per opinion on speculation



4.5.5 Knowledge about Futures Market Breakdown

If we exclude voters who did not have an opinion about speculation; among all other surveyed voters, who either thought speculation was a bad thing or a good thing, 30 surveyed voters knew something about the Futures Market, whereas 64 surveyed voters did not know anything about it. Among the 30 voters who knew something about the Futures Market, 18 voters had a bad opinion about speculation, whereas among the 64 voters who did not know anything about the Futures Market, 46 voters had a bad opinion about speculation. Considering that the proportion of voters who did not know anything about the Futures Market and had a bad opinion about speculation is larger than the proportions of voters who knew something about the Futures Market and had a bad opinion about speculation, do we have enough statistical evidence to affirm that people who did not know anything about the Futures Market tended to have more often a bad opinion about speculation than voters who knew something about the Futures Market?

Figure 23: Opinion on speculation breakdown



Comparing 2 population proportions^{yy}

Unsophisticated voters Claim^{zz}: Voters who did not know anything about the Futures Market tended to have more often a bad opinion about speculation than voters who knew something about the Futures Market.

Hypothesis testing:

$$H_0: p_1 = p_2$$

$$H_1: p_1 \neq p_2 \text{ (Claim)}$$

Significance level $\alpha = 0.05$ (two tails test)

Decision rule: Reject H_0 if z-score \in rejection zone $z > 1.645$ or $z < -1.645$ (normal distribution table)

$$z\text{-score} = \frac{(p_1 - p_2) - (\pi_1 - \pi_2)}{\sqrt{p\text{bar}(1 - p\text{bar})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where: $p_1 = \frac{x_1}{n_1}$ and $p_2 = \frac{x_2}{n_2}$

Sophisticated voters: $p_1 = \frac{x_1}{n_1} = \frac{18}{30} = 0.6$

^{yy} The proportions differ from figure 24 because the proportion of voters who did not have an opinion about speculation was not used in this calculations

^{zz} **Unsophisticated voter:** voter who did not know anything about speculation and had a bad opinion about speculation.

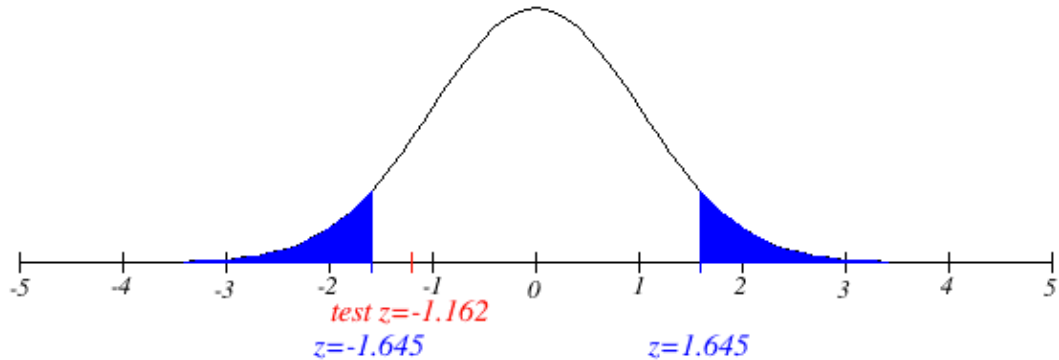
Sophisticated voter: voter who knew something about speculation and had a bad opinion about speculation.

$$\text{Unsophisticated voters: } p_2 = \frac{x_2}{n_2} = \frac{46}{64} = 0.72$$

$$\text{Overall proportion: } \bar{p} = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2} = \frac{30 \cdot 0.6 + 64 \cdot 0.72}{30 + 64} = 0.68$$

Therefore,

$$\text{Z-score} = \frac{(0.6 - 0.72) - (0)}{\sqrt{0.68(1 - 0.68)\left(\frac{1}{30} + \frac{1}{64}\right)}} = -1.162$$



We do not have enough evidence to reject H_0 . Hence; we cannot say that unsophisticated voters tended to have more often than sophisticated voters a bad opinion about speculation. Therefore, we can conclude that the final ballot result did not depend on whether or not voters knew something about the Futures Market.

4.6 Final Thoughts

This survey shows evidences that one of the most influential elements in voters' decision-making process seemed to be the possible impacts of the initiative on the Swiss commodity-trading sector.

Notwithstanding the ballot's outcome, speculation on agricultural foodstuff seems to be unpopular among voters. However, beyond speculation unpopularity, other elements at stake may have weighed more on voters' final decisions. Therefore, in accordance to all assumptions taken in this work, the main reasons that appeared to have impeded the Swiss Young Socialist initiative to be approved by the Swiss electorate were the following:

- Lack of absolute and undeniable proof that speculation on agricultural foodstuff was the main culprit behind staple food price surges.
- Absence of evidence showing that a measure taken in Switzerland could have a significant positive impact on the hunger situation in the world.
- Supporters of the initiative did not manage to dissolve voters' concerns about the Swiss commodity-trading sector.

Conclusions

The idea of fighting hunger in the world brought by the initiative crafted by the Swiss Young Socialist Party should be remembered as altruistic and audacious. Altruistic because only people gifted with generosity and humanitarian consciousness can think beyond their own comfort and act in favor of those who are precariously endowed. Audacious because the path chosen to reach the ultimate goal was fraught with adversities and painful trade offs. The population did not approve the initiative but it kindled the debate, which is one of the pillars of our democratic society to reach solutions.

Today the Swiss electorate does not believe that a less liberal system could address the world's woes. As the survey results suggest, 20% (**YYN**) of voters voted against the initiative despite believing that speculation might cause food price surges. This result reflects the populations' hesitations and doubts concerning the idea's implementation and feasibility.

Swiss voters considered that Switzerland had too much at stake. The risks of potential harms to the Swiss commodity-trading sector were taken very seriously. As the survey showed, 65.5% of surveyed voters demonstrated worry about lost jobs and lost revenue for the country. Therefore, we can say that the Swiss population is very aware of what puts bread on the table and thinks twice before biting the feeding hand. As a matter of fact, the results obtained by the survey showed that people who were worried about the Swiss commodity-trading sector tended to vote more often against the initiative. Had the commodity-trading sector not been as important for Switzerland, the Swiss electorate could have had a less biased decision-making process and the issue could have had a different outcome.

There is still no consensus in the literature and in people's perception about the real role of speculation in the surge of commodity prices. Therefore, having 58% of the electorate believing speculation was a bad thing was insufficient to have the initiative approved. Had the role of speculation been less ambiguous, had we gotten a definite prove that speculation was a bad thing, Swiss electorate could have voted in a different manner as well.

Based on the assumptions taken throughout this work, it is likely that a lack of understanding of what is speculation and what it does to commodity prices has contributed to confuse voters in their decision-making process. Confused and not having the certainty about the efficiency of such decision, it is also likely that the Swiss electorate proceeded by weighing trade offs. Therefore, the risks incurred for one of the country's most lucrative sectors being presented as imminent must have played the biggest role on voter's decision-making process.

In sum, because speculation is not proved to be the real culprit behind commodity prices surges, because a measure taken in Switzerland is not proved to have a significant impact internationally and because the risks associated to the adoption of the initiative were estimated as too important; the Swiss Young Socialist's Initiative aiming at fighting hunger in the world by banning speculation on agricultural commodities was not accepted by the Swiss electorate.

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Appendix 1: Initiative Text (original version in FR)

I. La Constitution fédérale est modifiée comme suit:

Art. 98a (nouveau) Lutte contre la spéculation sur les matières premières agricoles et les denrées alimentaires.

1 La Confédération légifère sur la lutte contre la spéculation sur les matières premières agricoles et les denrées alimentaires. Ce faisant, elle respecte les principes suivants :

a. les banques, les négociants en valeurs mobilières, les assurances privées, les fonds de placements collectifs de capitaux et les personnes en leur sein chargées de la direction des affaires et de la gestion de fortune, les institutions d'assurances sociales, les autres investisseurs institutionnels et les gestionnaires de fortune indépendants ayant leur siège ou une succursale en Suisse ne peuvent investir ni pour eux-mêmes ni pour leur clientèle et ni directement ou indirectement dans des instruments financiers se rapportant à des matières premières agricoles et à des denrées alimentaires. Il en va de même pour la vente de produits structurés correspondants.

b. Les contrats conclus avec des producteurs et des commerçants de matières premières agricoles et de denrées alimentaires qui portent sur la garantie des délais ou des prix fixés pour livrer des quantités déterminées sont autorisés.

2 La Confédération veille à une exécution efficace des prescriptions visées à l'al. 1. Ce faisant, elle respecte les principes suivants:

a. la surveillance, la poursuite pénale et le jugement relèvent de la compétence de la Confédération;

b. les entreprises fautives peuvent, indépendamment d'un éventuel manque d'organisation, être sanctionnées directement.

3 La Confédération s'engage au niveau international en faveur d'une lutte efficace à l'échelle mondiale contre la spéculation sur les matières premières agricoles et les denrées alimentaires.

II. Les dispositions transitoires de la Constitution fédérale sont modifiées comme suit:
Art. 197, ch. 9 (nouveau)

9. Disposition transitoire ad art. 98a (Lutte contre la spéculation sur les matières premières agricoles et les denrées alimentaires)

Si les dispositions légales correspondantes n'entrent pas en vigueur dans les trois ans suivant l'acceptation de l'art. 98a par le peuple et les cantons, le Conseil fédéral édicte, en attendant leur entrée en vigueur, les dispositions d'exécution nécessaires par voie d'ordonnance.

Appendix 2: Initiative Text (original version DE)

Die Eidgenössischen Volksinitiative "Keine Spekulation mit Nahrungsmitteln" will die Bundesverfassung mit folgendem Text ergänzen:

I. Die Bundesverfassung wird wie folgt geändert:

Art. 98a (neu) Bekämpfung der Spekulation mit Agrarrohstoffen und Nahrungsmitteln
1 Der Bund erlässt Vorschriften zur Bekämpfung der Spekulation mit Agrarrohstoffen und Nahrungsmitteln. Dabei hält er sich an folgende Grundsätze:

a. Banken, Effekthändler, Privatversicherungen, kollektive Kapitalanlagen und ihre mit der Geschäftsführung und Vermögensverwaltung befassten Personen, Einrichtungen der Sozialversicherung und andere institutionelle Anleger und unabhängige Vermögensverwalter mit Sitz oder Niederlassung in der Schweiz dürfen weder für sich noch für ihre Kundschaft und weder direkt noch indirekt in Finanzinstrumente investieren, die sich auf Agrarrohstoffe und Nahrungsmittel beziehen. Dasselbe gilt für den Verkauf entsprechender strukturierter Produkte.

b. Zulässig sind Verträge mit Produzenten und Händlern von Agrarrohstoffen und Nahrungsmitteln über die terminliche oder preisliche Absicherung bestimmter Liefermengen.

2 Der Bund sorgt für einen wirksamen Vollzug der Vorschriften. Dabei beachtet er folgende Grundsätze:

a. Aufsicht-, sowie Strafverfolgung und -beurteilung sind Sache des Bundes.

b. Fehlbare Unternehmen können unabhängig von Organisationsmängeln direkt bestraft werden.

3 Der Bund setzt sich auf internationaler Ebene dafür ein, dass die Spekulation mit Agrarrohstoffen und Nahrungsmitteln weltweit wirksam bekämpft wird.

II Die Übergangsbestimmungen der Bundesverfassung werden wie folgt geändert:
Art. 197 Ziff. 9 (neu)

9. Übergangsbestimmung zu Art. 98a (Bekämpfung der Spekulation mit Agrarrohstoffen und Nahrungsmitteln)

Treten innerhalb von drei Jahren nach Annahme von Artikel 98a durch Volk und Stände die entsprechenden gesetzlichen Bestimmungen nicht in Kraft, so erlässt der Bundesrat die nötigen Ausführungsbestimmungen auf dem Verordnungsweg; diese gelten bis zum Inkrafttreten der gesetzlichen Bestimmungen.

Appendix 3: List of parties and organizations supporting the initiative

Swiss Parties:

Les Socialistes, Les Verts, Parti du Travail, Indépendants de Gauche, Défense des Aînés, Parti Communiste Genevois, Action de Citoyen-ne-s et de Travailleurs-euses en Lutte (ACTE), Attac-Genève, Communauté Genevoise d'action Syndicale (CGAS), Les jeunes Vertes, Parti Evangélique Genève (PEV)

Swiss Organizations

Syndicat interpersonnel de travailleurs et travailleuses (SIT), Syndicat interprofessionnel (SYNA), UNIA, Alliance Agraire, BioSuisse, Biofarm, BIOFORUM, CETIM, Claro Fair Trade, COMUNDO, DEMETER, Le Pont avec le Sud, Eglises réformées Berne-Jura-Soleure, KleinBauern Vereinigung, OEME, reBREADING, Occupy Zurich, SGB/USS, SOLIDAR, SOLIFONDS, SOS TICINO, THE HUNGER PROJECT, UNITERRE, SWISSAID, Terre des hommes Schweiz, FIAN, AL Zurich.

Appendix 4: List of parties and organizations opposing the initiative

Swiss Parties

Les Libéraux-Radicaux (PLR), Mouvement Citoyens Genevois (MCG), Parit Chrétien Démocrate (PDC), UDC/SVP, Jeunes UDC, Les Verts Libéraux

Swiss Organizations

Chambre de Commerce Genève, Fédération des Entreprises Romande, Swiss Trading & Shipping Association (STSA)