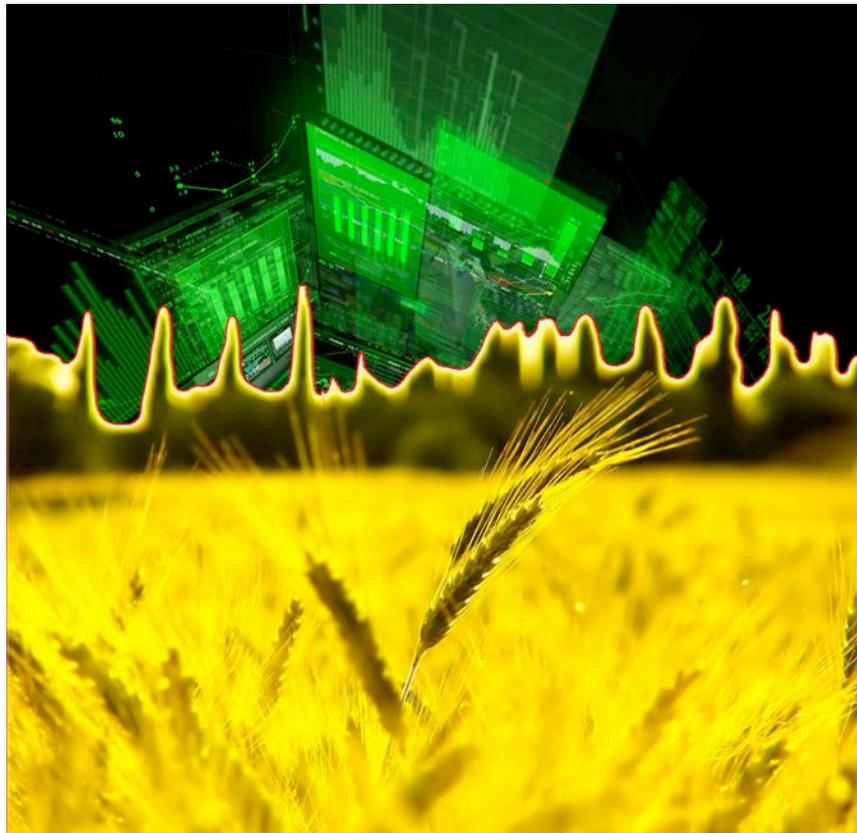


IS FINANCIALIZATION THE FUTURE...



OF AGRICULTURE?

**Objective Measurement of the Information
And 3 Years Projection through the Analysis
Of the Measurement of the Signal**

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FOREWORD

For all the subscribers of the Globe Expert “serial”, beware! It has come to a critical moment that should let you dumbfounded. Indeed, this issue brings a turning point in the way you could perceive this artificial intelligence. Not only does this technology map flows of semantic information about whatever you could ask, but from now on it can also analyse numerical data and compare them to the semantic information found in the web.

This document introduces you to the first study that benefited from Globe expert analyses crossing semantic and numerical data. Sacrilege! How is this possible? Well, no matter how, the most important achievement is that results obtained with this new process turned out to be coherent with what we obtain with the semantic data alone. Then the different results complete each other.

The report here focuses on the financialization of the wheat markets. Nowadays, agriculture faces a few global issues: global warming, energy transition, growing population, and as a consequence, growing demand. On the top of that, financial players have penetrated grains markets in 2005, increasing from then on volatility prices of these vital resources. The 2007-2008 food crisis has made the dichotomy between the abstraction of finance and the return to tangible things such as farm produces even sharper.

Agriculture has become a major stake and a centre of attention again after this crisis. Consequently we seized the opportunity and stepped into the breach. Globe expert finally identify a few hot topics that have to be surveyed in the coming years. One of them is the relation between international organizations that are meant to regulate international trade and finance and players of financialization on the other side. A corollary to this first point is that the speculation axis is divided into two trends. Concerning possible evolutions in the next few years, Globe expert does insist on a spreading financialization.

Wheat markets more financialized, but also the creation of markets for other vital resources like arable land, new sources of energy or water, where financial players could invest if they foresee any possible profit. **Financialization is a global and transverse issue. This perspective asks questions about the way of life of future generations. What socio-economic model do we expect to be the most valuable one for them?**

OBJECTIVES, METHODOLOGY AND PARAMETERS

OBJECTIVES

From 2005 and especially 2006 onwards, financial actors have directed some of their activities on the grains markets. This financialization has brought volatility, it is said, and has been damaging for grain producers. This report, by the generation of cartographies, aims at revealing signs of hidden dynamics in the financialization of the wheat market and their possible evolutions. The analysis is based on the **Globe Expert** tools. Globe Expert is an **artificial intelligence**, which manages and analyzes the flows of information. By crossing entropy, fuzzy logic and different models such as neural or genetic algorithms, it provides cartographies and forecasting analyses.

METHODOLOGY

1. Preparing a **semantic frame of references** structured by axes, segments and associated keywords.
2. Starting from this frame of references, a first search is executed on the whole database (3 million documents) in order to retrieve the most relevant documents matching with each reference. Thus, a **documentary repository** is carried out. It includes about 500 documents by segments.
3. Provided with this “base of learning”, the system executes new queries and searches for the most relevant and complex documents with respect to the references. In this way a **mini database** (20.000 documents) is carried out.
4. Keywords expressing the **core question** of the study are associated with the frame of references and the mini database before the full process starts.
5. The process takes into account **concepts** and not only words. It is not binary - yes or no, white or black - but **fuzzy**: i.e. rendering a wide scope of colours. It is **comparative**.

PARAMETERS

1. In order to operate a comparison as correct as possible, we executed a query complying with: “**Wheat AND Speculative AND Investment**”.
2. We chose to limit the **projection by 3 years**.
3. Regarding the “behavioural simulations” (genetic algorithms) we opted for the “Prey and Predator Model” based on the Lotka-Volterra equation.
5. We did not balance the weight of the different predators, just as we did not modify the selection of the preys and predators that the system had carried out.

The original and detailed charts presented in this report are available in JPEG format under request by sending an email to contact@globe-expert.com.

FRAMES OF REFERENCES

1. WHEAT AND SPECULATION FRAME OF REFERENCES

AXES	SEGMENTS	KEYWORDS
DEMAND	Import	European Union; Russia; Ukraine; USA; Cuba; Mexico; Brazil; Colombia; Peru; Venezuela; Iran; Iraq; Israel; Turkey; Yemen; Bangladesh; China; India; Indonesia; Japan; Korea; Philippines; Pakistan; Algeria; Egypt; Morocco; Australia
	Meteorology	Weather; drought; rain; dry; fair; flood; storm; fire
	Domestic Policy	Democracy theocracy communism dictatorial system Islamic democracy Import taxes Export taxes food aid poverty developing country
	Foreign Policy	Stability crisis black list sanctions conflict
	Foreign exchange reserve	Dollar Euro Yen Swiss Franc pound sterling state bonds
SUPPLY	Export	USA Canada France European Union Argentina Australia Russia Kazakhstan Turkey Ukraine India
	Meteorology	Weather drought rain dry fair flood storm fire
	Cultivation	Arable farming fallow seed crop harvest yield wheat Hard Red Spring Hard Red Winter Soft Red Winter disease pest
	Domestic Policy	Import taxes Export taxes quota
	Foreign Policy	Stability crisis black list sanctions conflict
	European Union	CAP Common agricultural Policy subsidy price support mechanism minimum price import tariff quota set-aside payment EAGF European Agricultural Guarantee Fund

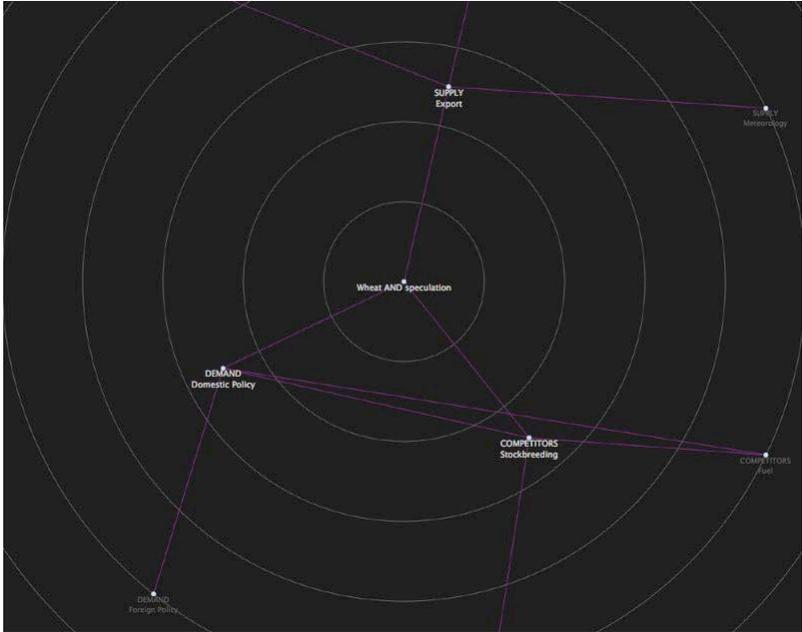
COMPETITORS	Cultivation	Soya maize rice barley oats rye
	Stockbreeding	Feed forage
	Fuel	Bio-fuel ethanol sugar-cane sugar cane beet sugar beet oil petroleum
SPECULATION	Players	Hedge Funds Sovereign Wealth Funds pension funds investment funds exchange-traded funds swap Exchange-traded Note trader
	Targets	Land silo grain elevator wheat futures contract agricultural land purchase
	Markets	Chicago Kansas City New York London Paris Geneva Kuala Lumpur index commodity pricing rate rising variation drop cash market
	Organizations	WTO World Trade Organization FAO Food Agriculture Organization CAP Common agricultural Policy World bank Doha Commodity Futures Trading Commission International Grains Council
	Economic background	Dollar euro gold Inflation interest rate crash bond market stock exchange discount rate financialization
	Political background	Strike social conflict
	International Background	Crisis conflict economic warfare
	Stocks	Grain stock carry-forward stocks day

2. SPECULATIVE INVESTMENTS FRAME OF REFERENCES

Axes	Segments	Keywords
Agriculture	Wheat	Production, stocks
	Stockbreeding	Feed, forage
	Biofuel	Ethanol, sugar cane, beet
	Cultivation	Soya, oats, rice, barley, maize, rye
Economy	Trade	Trade barriers, import taxes, export taxes, subsidies, demand
	Micro finance	Micro finance, weather insurance, microloans
	Finance	Bonds, equities, real estates
	Crisis	Production shortage, inflation, poor harvest
Exogenous factors	Resources	Arable land, water
	Weather	Drought, rain, flood, storm, fire
	Regulation	CFTC, Commodity futures trading commission, WTO, World trade organization, CBOT, Chicago board of trade, International Grains Council
	Fuel	Oil, petroleum, transport, fertilizer

FINANCIALIZATION OF THE WHEAT MARKET

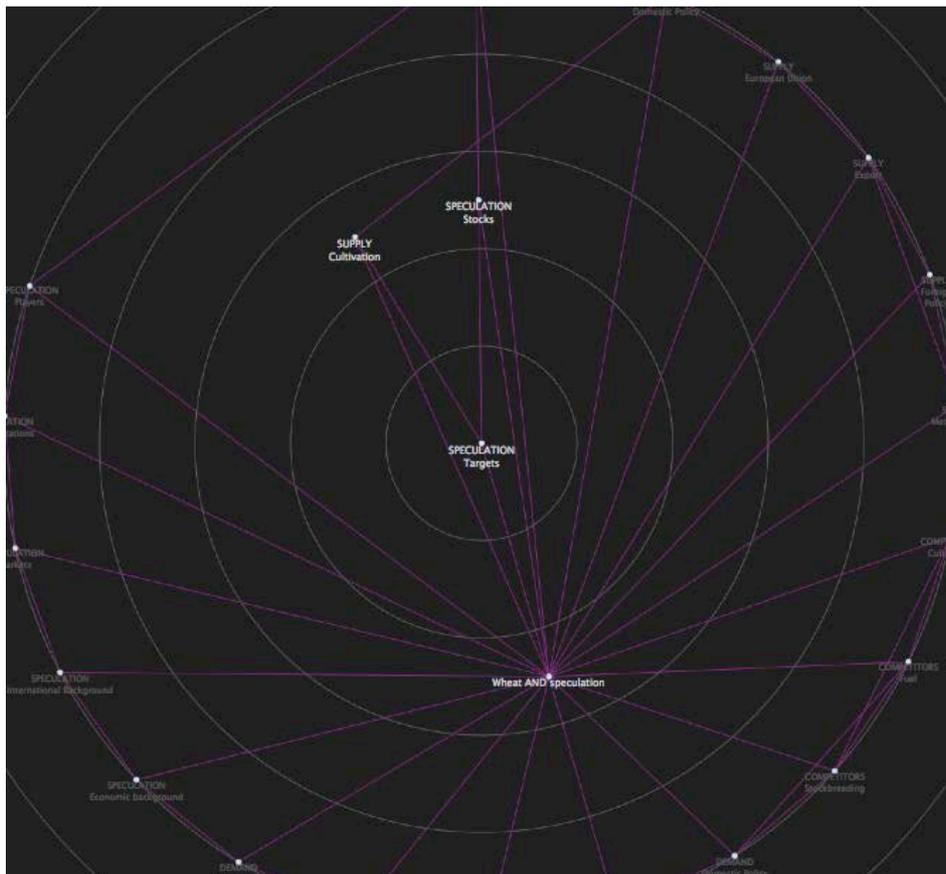
OBSERVATIONS: “WHEAT AND SPECULATION”



Map 1 & 2: relations of interaction centred on the Wheat and Speculation issue, 2009 simulation. Top, result obtained with semantic data only. Down, semantic and numerical data have been crossed.

The semantic analysis shows a classical scheme linking “Supply: exports” with “Demand: domestic policy” and Competitors: stockbreeding”. **The speculation then appears not be much of a disruptive element** as regards of the fundamentals of the wheat markets.

Map 2 allows a more detailed view of the problem, since it adds numerical data to the frame of references. Here only these latest data appear: **the Dollar/Euro parity and the wheat exchange rate, both of them referring to the ante-crisis period, meaning a “normal” period.**

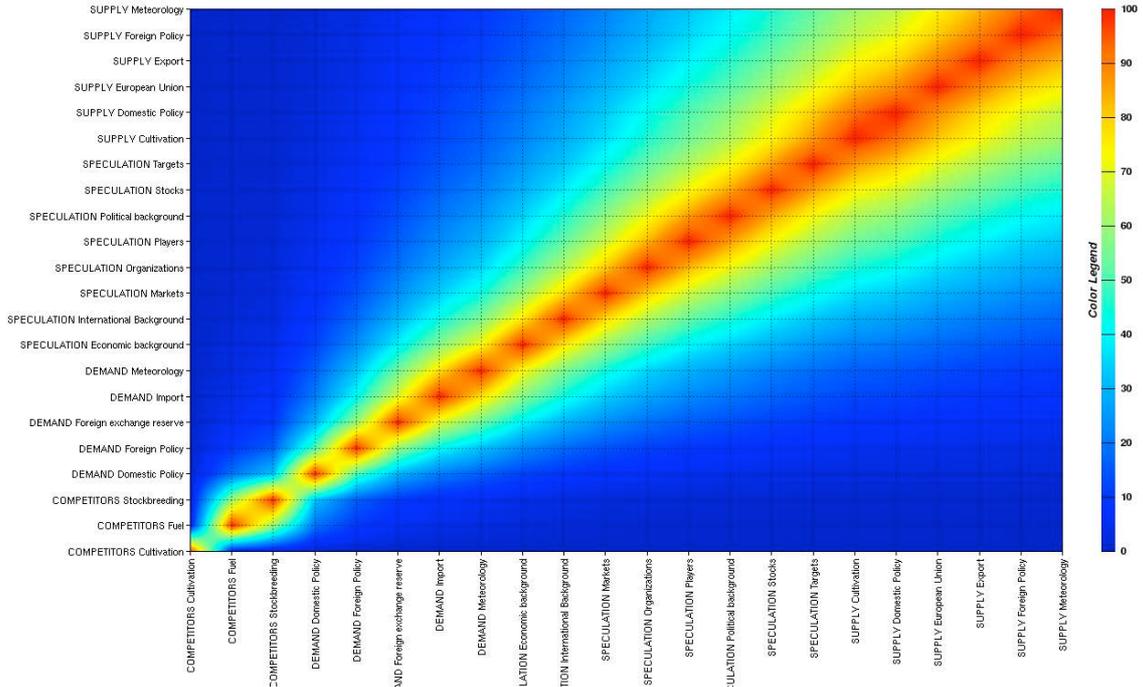


Map 3 (top): relations of interaction centred on “Speculation: organizations”, with semantic data only. Map 4 (down): relations of interaction centred on “Speculation: targets”.

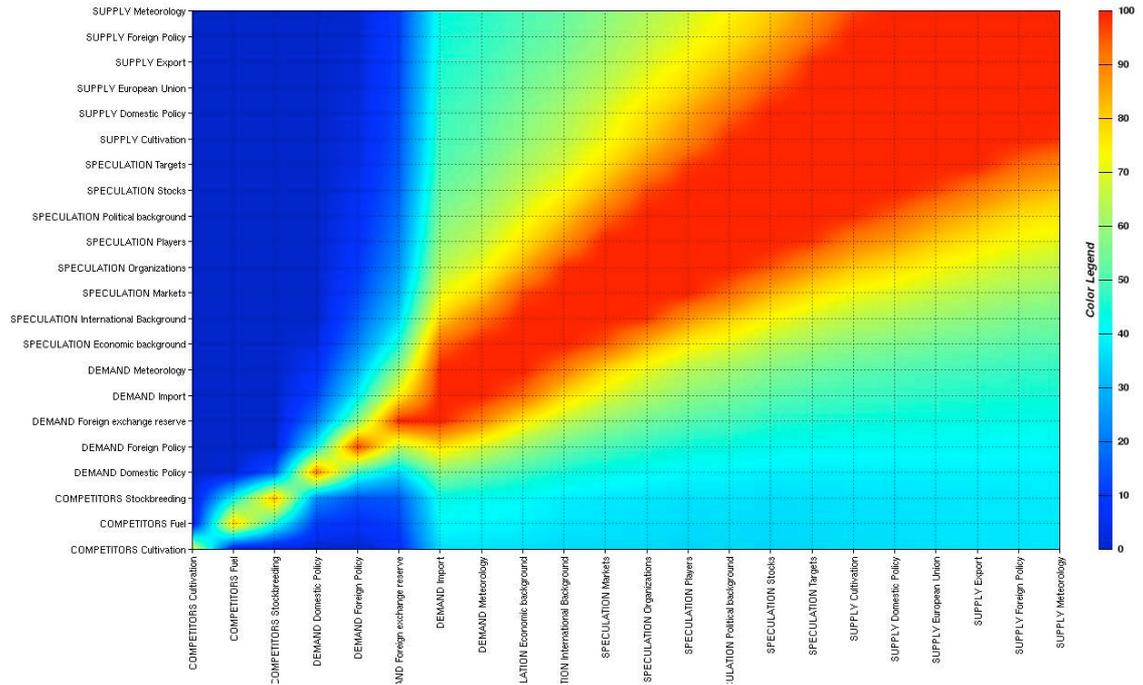
Map 3, among others, clearly shows the privileged relationship between the players of speculation, markets and organizations. **This raises the question of the way these three players interact with each other.**

Map 4 is the same whether with the semantic data or with the crossing of semantic and numerical data. **It reveals that targets of speculators focus on the amount of available wheat, whether it comes from the cultivation production or from inventories.**

PROXIMITY RELATIONSHIP MAP

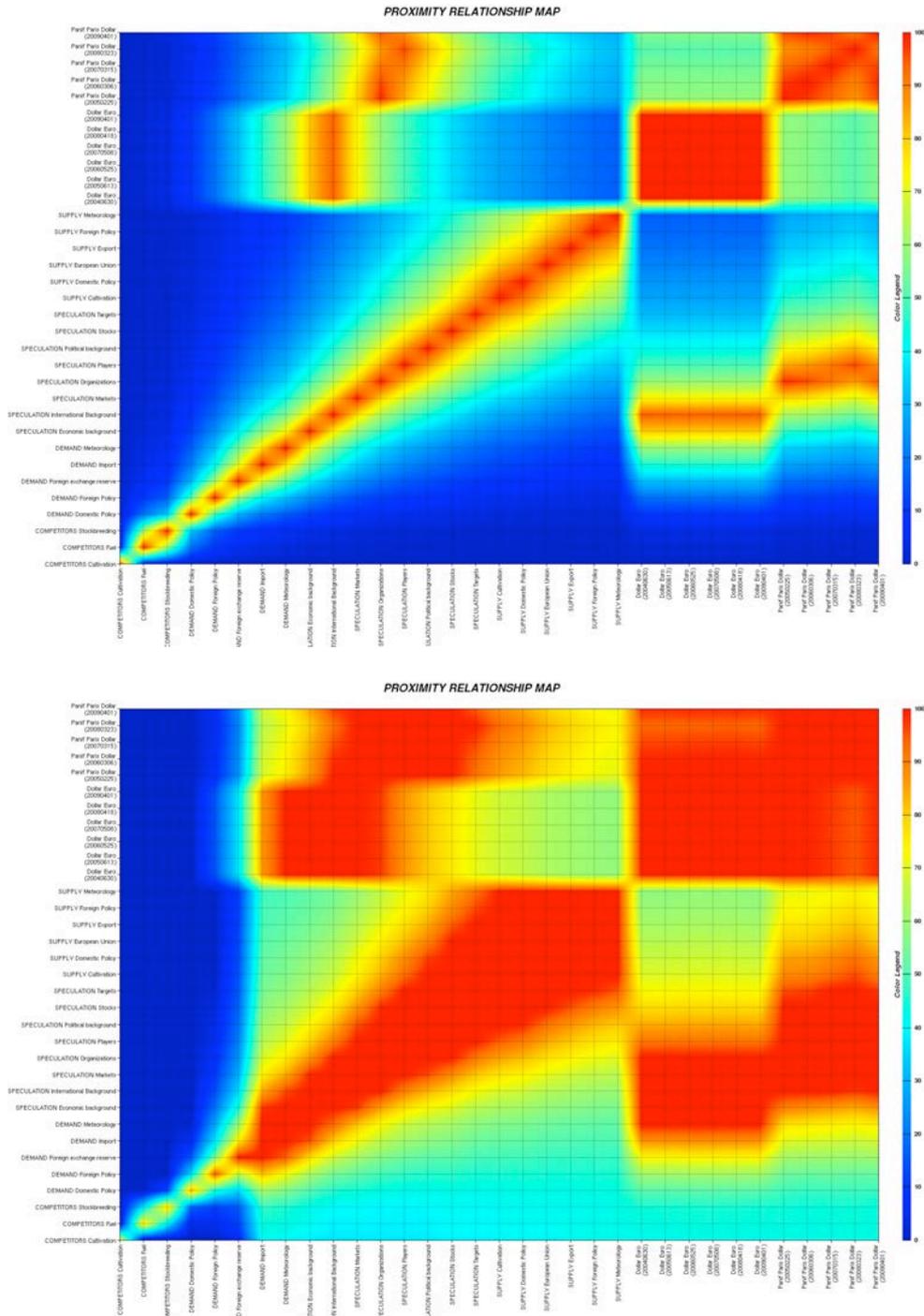


PROXIMITY RELATIONSHIP MAP



Map 7 (top): heat map of the relations of proximity between concepts treated by information flows, in 2010, with semantic data only. Map 8 (down): 2013 projection, all things being equal.

There are two main differences between these graphs: first, the “Speculation - Supply” relation is far hotter in the 2013 projection than is it now. Second, the “Competitors” and most of the “Demand” sectors become isolated in 2013.



Map 9 (top): heat map of the relations of proximity between concepts treated by information flows, in 2010, crossing semantic and numerical data. Map 10 (down): 2013 projection, all things being equal.

These are the result of the integration of the numerical data to the frame of references. According to this, the game between the Dollar/Euro parity, the wheat exchange rate and the Speculation segments will intensify in the next few years. The Demand topic, especially “import” and “foreign exchange reserves”, will also get closer to this triangle.

OBSERVATIONS: “SPECULATIVE INVESTMENTS”

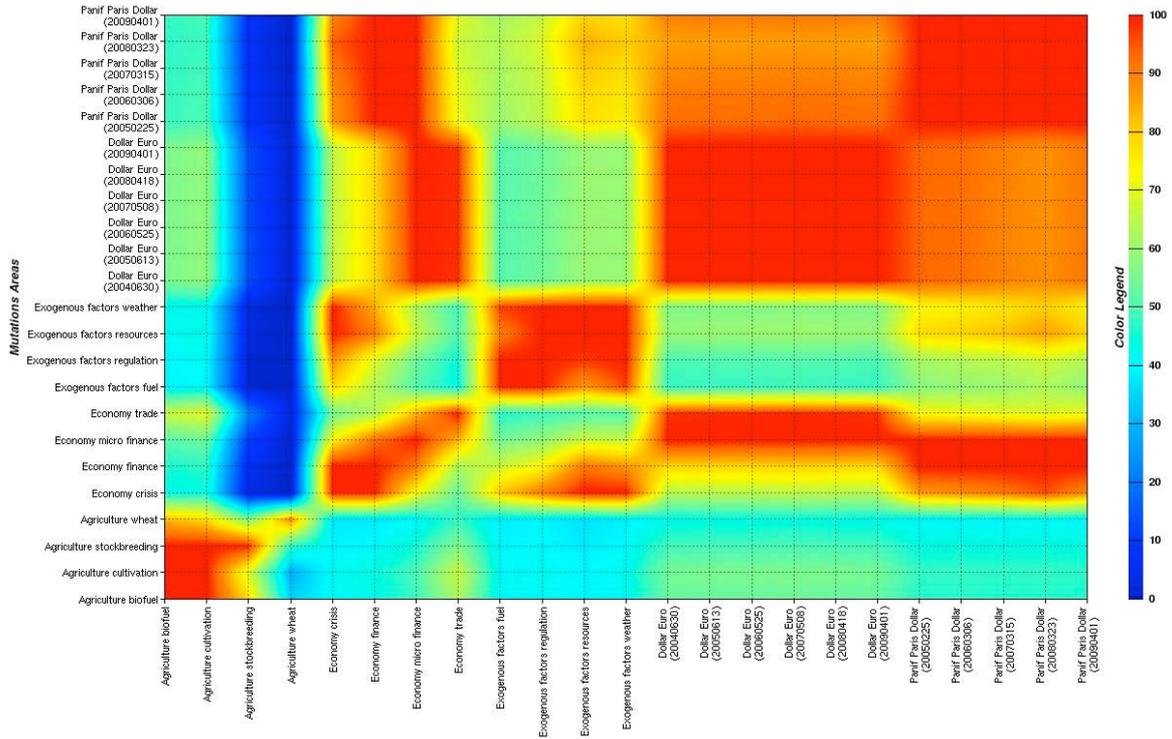


Map 11: relations of interaction centred on Speculative investments, with semantic and numerical data.

Here factors that play a major role in the Speculative investments are Dollar/Euro parity, wheat exchange rate and meteorology.

If we shift the focus on Finance, the two closest segments are again the wheat exchange rate of 2007-08 and 2008-09. Since the keywords behind Finance are bonds, equities, real estates, tools of financialization have really impacted on the wheat exchange rate during the crisis. This meets the result we previously obtained with the Players of the speculation.

PROXIMITY RELATIONSHIP MAP



Map 12: heat map of the relations of proximity between concepts treated by information flows, 2013 projection, crossing semantic and numerical data.

On the one hand, the Wheat segment, referring to the production and the inventories of wheat, will cool down in the coming years. This comes to confirm the fact that the **Supply sector stands apart from the whole system** of the previous frame of references. But on the other hand, the relation between the price of wheat on the markets and the segments “Crisis”, “Finance” and “Microfinance”, will get warmer.

COMMENTS

The basis of this study is composed of many more maps and graphs, but we selected here the most striking ones. Conclusions below come from the analyses of results obtained with both semantic data and the crossing of semantic and numerical data. Interestingly, comments made with one or another method do not contradict each other but rather complete each other.

First, the special relationship between speculation and the wheat exchange rate during the 2 years' crisis have been proved true by our results. Observations clearly highlight the close link between tools (equities, bonds...) and actors (hedge funds...) of speculation and the wheat exchange rate from 2007 to 2009. Moreover the latter's expected growing proximity with the Dollar/Euro parity also expresses the increasing financialization of the sector.

Concerning the behaviour of speculative investors, it appears that they mainly rely on fundamental elements of the wheat markets. They are interested in any information about the production of wheat: arable land, weather, production itself and inventories. Indeed, targets of speculation focus on the last two factors. Besides, the Crisis segment, especially composed of "inflation" and "poor shortage" keywords, and the Finance segment will get closer, confirming the suspicion that speculators invest more when the available amount of wheat is lower.

Since the financialization will keep on spreading, how will international organizations respond to this phenomenon? Many graphs showed a real proximity between these institutions and markets and speculative players. This situation questions whether the organizations will follow this speculative process or try to regulate it. This in turn brings the issue of the power struggle that could emerge from the possible will to regulate the activity of huge financial companies.

Perhaps these two ways are already detected by Globe Expert. Results suggest that there are two different dynamics within the Speculation axis. Organizations, markets, political and economic backgrounds compose the first group. The second one gathers the players, targets, stocks and the international context. Both groups do not respond to the same stimuli in the same way, they adopt different behaviours and are not influenced by the same discourses.

Second, the demand will steadily increase in the coming years and decades. Maps point out a few main clues about the future of the demand. On the one hand, maps put the stress on the major role of foreign exchange reserve, since this factor is the condition for countries to import. Thus the import capability depends on the foreign exchange reserves. On the other hand, graphs show that the policy of importing countries influence both markets and speculative actors. **Since the relation between Speculation and Demand, as axes, should increase in intensity, the potential creation of new financial tools must not be neglected.**

Third, actors from the Export axis look marginalized. Their relations with segments from other axes are very low. **This can be interpreted as a lack of open-mindedness/adaptation from the wheat producers to whole commercial system.** Furthermore, they are not influenced by the competitors' discourses, even though the latter are destabilizing elements.

Of course, this study can be the starting of many other deeper studies. We already defined investigation lines concerning the wheat markets, but also other commodities and vital resources.