

**Faculté des sciences économiques, sociales,
politiques et de communication**

**How did individual behaviour and the
representations of economic players influence
the causes of the 2007-2008 financial crisis?**

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“Men are conscious of their own desire but are ignorant of the causes whereby that desire has been determined.”

Baruch Spinoza

« You don't find out who's been swimming naked until the tide goes out.»

Warren Buffet

Abstract

Since the financial crisis of 2007-2008, a great deal of research has focused on the causes of this phenomenon. Numerous economic currents and theories have provided guidelines for interpreting the causes of this phenomenon. In a review of the literature, we examine the main interpretations of neoliberal, Marxist and Schumpeterian analysis, the study of Kindleberger cycles and the behavioural finance approach. This research aims to study the causes of the 2007-2008 financial crisis from the perspective of behavioural finance and the complex systems approach based on the work of Nassim Nicolas Taleb. Through an empirical analysis of the events and actors central to the financial crisis of 2007-2008, we will identify the behavioural decisions, the influence of representations (narratives), errors of judgement and cognitive biases that may have influenced the actors at the origin of the financial crisis. Finally, we attempt to provide a behavioural interpretation of the political and economic phenomenon of the financial crisis.

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1. Introduction

In this research work we will focus on the causes of financial crises. Our study will focus on the analysis of financial crises from a behavioural perspective. The subject of financial crises from a behavioural perspective seeks to highlight the human explanatory factors in the phenomenon of financial crises. To do this, we will study the psychology of actors and their behaviour, as well as their representations in order to put into perspective the behavioural causes of financial crises.

Our interest in our research topic is twofold. Firstly, in our view, the study of financial crises from a behavioural perspective highlights an innovative economic analysis because it breaks away from macroeconomic and systems analyses in economics. Behavioural finance studies reject the postulate of the pure and perfect rationality of economic agents, but also left aside macroeconomic systems analysis in favour of an analysis centred on individuals, their psychologies and their representations, which are subject to forms of limited rationality. We shall also see that other economists have taken into account the role of actors and their psychologies. However, studies in behavioural finance have really taken the analysis a step further and highlighted the limitations of decisions and the psychology of players.

Secondly, we believe that the causes of financial crises are also of interest in political science studies. Financial crises, and economic crises in general, have fundamental consequences for the development of human societies and international relations. For example, the Great Depression of 1930 and the 2007-2008 crisis had a considerable impact on politics, the socio-economic conditions of the population, political reforms and the legislative framework. Also, as we shall see throughout this work, the study of behaviour in economic functioning and, more specifically, the limitations of our cognition in our decision-making play a role in the appearance of major economic events. Events which, by the same token, have considerable repercussions on our political systems, geopolitics and international relations.

But also, because studying financial crises from a behavioural approach is also important for political science, as it helps to better identify the political responses that should be made to prevent the occurrence of the phenomenon. But it also helps to put into perspective the fundamental role of individual actors in the occurrence of phenomena, and thus to better understand the psychology of actors and their sometimes-irrational decision-making. The aim of our analysis is therefore to gain a better understanding of the human and behavioural factors

involved in the occurrence of major economic events such as financial crises, which in turn have considerable consequences for our economic systems.

In addition, our research is part of the field of international political economy studies. International political economy (IPE) lies at the crossroads of economics, political science and international relations, making it a multidisciplinary discipline. It studies the links between economics, politics and international relations, sometimes in their overall geopolitical aspect. Our behavioural analysis is in line with behavioural finance analyses, which are an integral part of economic analysis. As the author has expertise in both economics and political science, we hope to combine these two sciences to bring a multidisciplinary perspective to the phenomenon of financial crises.

We have decided to focus our research question on the case of the 2007-2008 financial crisis because we believe that it was one of the biggest financial crises in which the behaviour and psychology of economic players played a fundamental role. We will therefore frame our question as: ***“How did individual behaviour and the representations of economic players influence the causes of the 2007-2008 financial crisis?”*** This research question addresses both the causes of financial crises and the analysis of players' behaviour and representations. The aim of this work is not to provide answers to all the causes of financial crises. However, we have chosen to focus mainly on the psychological and behavioural factors that can explain crises. However, we are aware that this approach provides only one answer, which needs to be supplemented by other research into the causes of crises. We will therefore attempt to outline the main explanations for the financial crisis of 2007-2008, particularly in the field of political science.

Finally, our research plan will be divided into several stages in order to answer our research question. To do this, we will first establish a non-exhaustive literature review of the causes of financial crises. In doing so, we will highlight the theoretical explanations of the major economic trends such as the classical and neoclassical current, Marxism, Schumpeterian theories. In addition, we will also discuss studies relating to economic cycles. We will also be interested in the analysis of complex systems from the perspective of the work of Nassim Taleb, who highlights the appearance of unforeseen events (black swans) which disrupt classic economic models. Because his work on unpredictability will be useful for highlighting the limitations of certain statistical and financial models but also because it also explains the limitations of our perceptions of reality. Finally, we will study the contributions of behavioral

finance studies to the occurrence of financial crises. These studies highlight the micro role of individual actors, their psychologies, their biases and decision-making.

Then, based on this review of the literature, we will develop an analytical framework based on the tools provided by theories in behavioral finance but also the work of Nassim Taleb (2007) on complex systems and the unpredictability of extreme events. On this basis, we will explain how we developed our research question based on our theoretical analysis.

Finally, on a hypothetico-deductive basis, we will answer our research question by determining the of our research hypotheses. We have three main working hypotheses. first of all, Classical liberal macroeconomic models are limited by their inability to take into account the functioning of complex systems as well as the behaviour of actors in the conceptualization of financial crises. Secondly, the behaviour¹ of economic actors is subject to errors of judgment and the influence of the narratives because actors are influenced by their psychology, and they have a bounded rationality² which depends mainly on their human emotions. Thirdly, among the many causes of the financial crisis of 2007-2008, the behaviour of the actors, their decisions, their bounded rationalities played a role in the origin of the crisis and in its accentuation.

To do this, we will adopt as an empirical case study the financial crisis of 2007-2008 in the United States in order to illustrate our analysis. On this basis, we will analyse our case study using theoretical tools from studies in psychology and behavioural finance. In addition, our empirical analysis will study the chronology of events, the study of “harmful” behaviour adopted by financial institutions, the behaviour and decisions of key economic actors who played a fundamental role in our case study. To conclude, we will find validation of our research hypotheses and we will therefore note the role of individuals and their representations in the advent of the financial crisis of 2007-2008.

Why are we focusing on the case study of the 2008 financial crisis? Obviously, we could have chosen other examples. Indeed, studies in behavioural finance could also have shed light on the Dotcom crisis or the Great Recession of 1930. As we saw previously, financial crises share several common characteristics, such as the formation of speculative bubbles, the propensity

¹ The behaviour of actors is defined in behavioural finance as the decision-making process that is sometimes irrational because it is subject to numerous influences and cognitive biases. It is about seeing how the impact of emotions, cognitive errors and social influences impact individual decisions.

² The idea of "bounded rationality" states that people make judgments in response to finite amounts of information, time, and cognitive capacity. In contrast to the conventional economic assumption of perfect rationality, people might not always make the best choices because of cognitive constraints and the complexity of real-world circumstances.

for panic, decision errors and the numerous cognitive biases to which actors are subject. However, our case study combines a multitude of determining factors which particularly bring to the forefront the role of economic actors.

To conclude, we have tried to demonstrate through our analysis the importance of the human factor in the occurrence of financial crises. To do this, we have highlighted the key role of actors but also the role of particular actors involved in the analysis of panic phenomena. Also, we have shown how the specific case of the bankruptcy of Lehmann Brothers appears in our opinion to be a factor in amplifying the crisis. To do this, we exposed the influence of economic narratives and neoliberalism in the occurrence of the crisis. We have highlighted the role of previous administrations in the causes of deregulation and the massive development of derivative products linked to subprimes throughout this period. But also the proliferation of excessive and dangerous behaviours of the actors which have accentuated the interconnection of the financial system and which have weakened it.

Also, we have identified a series of psychological tendencies and cognitive biases that can provide elements of response to the establishment of the crisis: tendencies such as “Overconfidence”, “lack of financial literacy”, the trap of prediction and mathematical models, but also the inability to understand complex adaptive systems. In addition, our analysis highlighted the importance of other factors linked to group pressure, such as conformity bias, operant conditioning, financial incentives, and finally principal agent and moral hazard.

We also showed the importance of the individual factor in decision-making with global consequences. Furthermore, we expose in our empirical case the counterintuitive nature of rescue policies for American leaders of the time as well as the failure of a bailout agreement for Lehman Brothers between private sector and government. Finally, we analysed the causes of the development of global panic with regard to crowd psychology and the functioning of speculative bubbles. We also noted numerous psychological factors that contributed to the acceleration of the global panic, such as emotions, investor sentiment, the influence of the environment in a panic selling movement, the limitations of our mind, our “bounded rationality” and finally social conformity and social contagion. In doing so, we believe we have highlighted the role of psychological and behavioural factors in the occurrence of crises by answering our research question and responding to our hypotheses.

2. What causes financial crises ?

In this first part, we will attempt to provide an overview of the theoretical state of the art on the causes of financial crises. To do this, we will first briefly look at the definition of the phenomenon in order to set out its characteristics. We will then look at the responses provided by the main theoretical currents: classical/neoclassical, Marxist and Schumpeterian. This is because, first and foremost, there is a link between major economic theory and the reasons behind financial crises. Because of their importance, each school of thought has tried to explain the fundamental causes of the phenomenon in its own way. So, for example, according to the neoclassical paradigm - which still dominates in many areas of the financial markets - the explanations are to be found in market mechanisms. The crisis should be seen primarily in terms of exogenous shocks and market readjustments, in other words explanations that arise externally and in unforeseeable ways. For example, abrupt fluctuations in interest rates, currency rates, geopolitical conflict, or commodity prices like oil shock. From this perspective, financial markets should be considered efficient by nature and in a constant search for equilibrium. (Broihanne & Capelle-Blancard, 2018).

We will then look at other, less global approaches, which also provide some answers to the phenomenon. Charles Kindleberger's approach provides a detailed analysis of the cyclical nature of crises and the five phases that make them up and the causes. (Kindleberger, 2016b) Next, we look at studies on the unpredictability of crises - black swans -(Nassim Taleb, 2007), and who also reject the absolute 'scientific' position that consists of trying to encompass all the realities of complex economic systems in a single complete system of rationality. (Taleb & Martin, 2012).

Finally, we present the responses of behavioural finance, which moves away from global and macroeconomic models to focus on 'endogenous' causes, meaning causes which arise within the economic system itself. Their work studies the behavior of actors and shows the role of psychological biases that lead agents to behave sometimes irrationally in markets. They also provide other explanations and challenges the economic classic theories of market efficiency that postulate the rationality of agents. Studies in behavioral finance speak of the "bounded rationality" of actors and attempt to add psychological factors in the understanding of crises by placing the economic agent back at the centre of the analysis. (Shiller, 2010).

2.1 What is a financial crisis?

First and foremost, we need to look at the economic and societal phenomenon represented by the financial crisis. We will try to give a definition to our subject of study so that it can serve as a basis for our research. So, what is a financial crisis? According to our definition, a financial crisis is characterized by sharp drops in asset values, inability of individuals and companies to make debt payments, and shortages of liquidity in financial institutions. It is also frequently accompanied by fear and impulsive actions and irrational behaviour.

In the scientific literature, there are several types of definition, each with its own specific features. According to Charles Kindleberger (2016b), the causes are multiple and mainly endogenous and which it is characterised by different phases of imbalances in the financial system that take the form of a general panic, a collapse in asset prices and a lack of liquidity. For Joseph Stiglitz (2012), the crisis is rooted in macroeconomic imbalances and the failure of economic players through incompetence and greed (Stiglitz, 2010). The descriptions of the phenomenon provided by these two authors highlight the importance of macroeconomic factors, as well as the importance of the behaviour of economic agents.

However, the phenomenon can also be characterised by other factors. For example, the work of Nassim Taleb (2007) highlights what he calls the "black swan": rare and unpredictable events with major consequences. A "Black Swan" event referred to an unforeseen, uncommon, and extremely significant event that defies expectations. According to Taleb, the exceptional rarity, devastating effect, and retroactive prediction of these occurrences define them. In this way, it exposes the major consequences of an unpredictable and disruptive event, as well as the systemic risks inherent in all complex systems.

Robert Shiller (2016), Kahneman (2011) and others behaviourists puts the psychology of market participants back at the centre of his explanation. According to him, the drastic fall in prices and the high volatility triggered on the markets during the crisis are due to psychological factors, such as fear, uncertainty and panic. Without denying the importance of global macroeconomic phenomena, we have chosen to adopt the approaches of Robert Shiller (2016) and Nassim Taleb (2007) in order to analyse our case study and answer our research question. For although the crisis can take several forms - monetary, banking, speculative - in our view the factors of irrationality and unpredictability remain the central elements of the phenomenon. Despite a certain cyclicity in financial crises throughout history, a crisis remains an unpredictable event that is always characterised by panic, fear and uncertainty. However, there

are many causes and "exogenous", macroeconomic factors cannot be denied in the analysis of the phenomenon. We will now try to see how authors in the scientific literature explain the causes of the phenomenon.

2.2 The liberal classical and neoclassical approach

For many players, classical and neoclassical economic theories are the reference models for the financial world. They have greatly influenced both the conception of the market and the way it operates. Similarly, the liberal paradigm is a powerful economic narrative that has contributed to the establishment of the financial world but also our way of life and political science studies. However, the doctrines of "laissez-faire" and "deregulation" are seen by some as the cause of the worsening financial crises. For others, they lay the foundations for a fair system that maximises individual choice and avoids the plunder and injustice of an over-regulatory state. As Friedman said (1993b), one of the great theoreticians of the neoclassical doctrine: "Government actions often provide substantial benefits to a few while imposing small costs on many." We should also add that after the period of the thirty glorious years and the end of the Bretton Woods agreements, the Keynesian parenthesis closed, and an era of financial deregulation began (Salais, 2013). Marked by the figures of Margaret Thatcher and Ronald Reagan, this period initiated considerable changes in the financial markets. It saw the rise of Hedge Funds, complex financial products (debt securitisation), high-frequency trading, unlimited borrowing, unprecedented capital movements, the IMF and the globalisation of world trade. This period marked a paradigm shift with considerable ideological and economic consequences. This historical contextualisation will be useful when we come to study our case study. Indeed, for many economists, the subprime crisis is also a consequence of this period and of the "laissez-faire" doctrine.

This neoclassical thinking theorises the stability of the capitalist system and, by extension, explains that the market can achieve general equilibrium on the sole condition that no external forces intervene in free competition and in the affairs of economic agents. Laissez-faire" assumes an "invisible hand" which, independently of its actors, allows optimal satisfaction and therefore leads to economic equilibrium (Albertini & Silem, 2014). This theorisation of equilibrium will also lead to the development of financial models. Models which will have a considerable influence in the analysis of the explanation of crises, but also on financial market players. Indeed, these paradigms of market 'efficiency' postulate, in the continuity of the neoclassical vision, the rationality of individuals through the quest to maximise their satisfaction.

In other words, in the market, as in the economy, there is only one type of economic rationality: that of homo economicus. The theory of homo economicus states that people make rational decisions by maximizing their own economic self-interest. It therefore assumes that human beings are perfectly rational, that they know perfectly the available information and that they act in a predictable manner in order to maximize their utility. What's more, this rationality of agents is embodied, at all times, in market prices and fluctuations. For efficiency models, asset prices therefore reflect all available information accurately and instantaneously (Hagstrom, 2020). Markowitz was the first to theorize about it: "The idea that speculative asset price such as stock prices always incorporate the best information about fundamental values" (Shiller, 2003). This positivist vision of perfect rationality and the mathematisation of finance led to the development of risk-return models in the financial world (Albouy, 2009).

These models seek to describe the rationality to be adopted on the markets so that the investor can satisfy his utility as a function of a certain level of risk. The financial world should be considered as the sum of rational choices in equilibrium (Rainelli-Weiss, 2012). Moreover, this concept will influence investment funds, banks and insurance companies, in short, all financial players on the market. However, the crisis as a phenomenon completely contradicts the construction of these models. The defenders of the efficiency theory will explain this fundamental contradiction in their models by unforeseeable and exogenous events that temporarily interrupt the normal efficiency of the markets. In short, the crisis is a temporary anomaly. It is the equivalent of a disastrous but abnormal and temporary earthquake.

However, within the context of the neoclassical paradigm, this postulate has been criticized and qualified. Neoclassical economists, for instance, are aware of the drawbacks of the premise of perfect competition and perfect knowledge. In actuality, markets could not always be totally competitive, and information is frequently incomplete. As a result of this realization, models that take into account market frictions, incomplete knowledge, and other elements that may influence how economic agents behave have been developed afterwards because it comes from exogenous factors.

2.3 Marxist approaches

The economist and philosopher Karl Marx, in addition to having had a considerable influence over the last two centuries, provided an analysis of the capitalist system that is still relevant in some respects.

To sum up his thesis briefly, this "contradiction of capitalism" stems from the plundering of capitalists at the expense of workers. Through the exploitation of labour power - the worker's labour produces more than the cost of production - surplus value is generated. However, this surplus value is seized by the owners of capital (Albertini & Silem, 2014). This spoliation of capital also finds its limit in the reduction of capital accumulation cycles and profit rates. Marx showed that, over time, surplus value diminishes and cuts into capitalists' profits. So crises are inherent in the capitalist system. They are central to the system's survivability because they undervalue capital, provide access to cheap loans, and therefore increase the capital employed/capital gain ratio. In short, they put a coin back into the machine. For Marx, crises act as regulatory mechanisms for re-establishing the rate of profit. The crisis "is the only way to eliminate errors and prevent the system from crashing." (Albertini & Silem, 2014)

However, in his view, this system does not allow for a stable equilibrium. Not least because these crises go from imbalance to imbalance, which for Marx will lead to the death of the system itself. It should be noted, however, that this absence of equilibrium allows the system to continue temporarily. The system oscillates between overcapitalisation/reduction in the rate of profit and undervaluation/increase in the rate of profit. To put it simply, capital increases and leads to saturation where it becomes difficult to earn money, then the crisis causes undercapitalization where profits become new accessible for capitalists. This analysis of overcapitalisation/over-capitalisation may provide some answers to the 2007-2008 crisis, where this phenomenon was observed. It should be noted that that Marxist analysis shows the contradiction of the system and the capitalists. Because the system goes from crisis to crisis. Capitalists are encouraged to let profits run. Marx had already shown that the capitalist is caught in a system which completely alienates him because the capitalist system is stronger than him. Since the capitalist system is constantly oscillating between two situations of imbalance. Let us add that Marx's vision is a class vision, according to him there is a constant balance of power between the capitalists and the workers.

This analysis of the instability of financial systems remains entirely relevant in view of the many financial crises that preceded his work. Today, many economists still draw on his doctrine. Marx sought to lay the foundations for a science of history and economics - what he called historical materialism. Like other theorists whom we shall also study, he sought to establish a positive science of economics. His aim was to encompass and explain all economic functioning and mechanisms. As we have seen, according to Marx, capitalism is on the road to ruin. In his view, the system contained a fundamental contradiction that would lead to its general collapse

and the advent of revolution. A revolution that Marx believed to be the only solution to the end of the capitalist system.

2.4 The Schumpeterian approach

Joseph Schumpeter developed an in-depth analysis of the capitalist system and the crises that arose from it. Unlike other great theorists, he was not interested in the question of equilibrium, but rather in the 'laws of change' that drive the economy (Albertini & Silem, 2014). His analysis focuses on the entrepreneur as the source of innovation and economic dynamics. The entrepreneur is at the heart of the system.

In his view, financial crises are a normal phenomenon in a capitalist system. In many respects, Schumpeter's analysis is similar to Marx. Except that, unlike Marx, he places innovation at the centre of his theory, triggering "creative destruction". In Schumpeter's *Business Cycles* (2006), he shows the clustered appearance of innovations and their effects on economic cycles. This innovation leads to changes in industry and in business models. The new replaces the old for example, the locomotive, like the car, is replacing horse-drawn carts, and electricity is replacing candles. And these technological upheavals generate cycles that change the economy considerably. From there, he goes on to analyse how these cycles fluctuate.

Finally, he shows how financial crises are linked to the phenomenon of economic cycles. He argues that the cycles first unfold through a phase of expansion and economic optimism, during which players take greater risks. He goes on to show that optimism leads to excessive borrowing and investment. And when the recession begins, investments lose their profitability and this accentuates the financial difficulties which in turn accentuate the crisis. He thus also questions the expansion of credit and the development of speculative behaviour in the emergence of this mechanism. Schumpeter's analysis shows how the lure of profit also leads to the accentuation of crises and the rapid collapse of the economy.

Furthermore, unlike some classical economists, Schumpeter does not believe in efficiency, the cyclical economy is in perpetual movement and change. It also addresses the role of monopolies that oppose the vision of perfect competition efficiency. Thus, according to him, monopolies have a significant influence on economic development. Unlike the traditional perspective that sees monopolies as barriers to competition, Schumpeter proposed the idea that monopolies can be beneficial for innovation and economic growth.

However, Schumpeter was not exclusively interested in macroeconomic models. He has a more systemic approach and analysis of the economy. Indeed, at the heart of its model is the role of entrepreneurship. According to Schumpeter, innovation and economic change play a crucial role in long-term growth.

Robert Solow which is close to the classical liberal current also came close to this perspective. According to the Solow model that he developed in 1956, if everything seems to converge theoretically towards a stationary and balanced state, innovation (technical development) makes it possible to regularly revive growth. This innovation is another exogenous factor often taken into account. Note that we will not adopt these models for our theoretical analysis but we are aware of their importance in order to understand the economic realities and the subtleties of the different economic trends (Jouhandin, 2024). We can therefore observe that other economists, long before the behaviourists, considered the role of individuals and behaviours in the economy. Also, some classical liberal economists considered individual aspects and brought nuance to the pure and perfect equilibrium economic model. However, we will subsequently see how behavioural finance studies have provided other elements of analysis.

Moreover, unlike the other economists we have studied, Schumpeter did not adopt a classical scientific approach to economics. For him, economics is not the most important thing in the evolution of human history. He refused to separate the economic discipline from the individual and social factors. In this, he adopts a structuralist approach, as his analysis leaves room for several levels of rationality.

2.5 The study of cycles

We are interested here in the analysis of Charles Kindleberger, who for the first time studied the behavioural stages of crises using major historical examples. In his book, *Manias, panics, and crashes: a history of financial crises* (Kindleberger, 2000), he pointed several important reasons for financial crises. Also, “Charles Kindleberger has shown that these crises are endogenous, because they are part of financial cycles.” (Aglietta & Valla, 2017). Thus, financial crises are frequently brought on by a number of different endogenous circumstances. For example, the trend towards more and more excessive leverage, that is to say that the actors want more profits and will therefore go into debt to increase their chances while increasing the risk. As a result, debt levels are becoming increasingly significant, which can exacerbate the effects of market downturns and lead to a high number of payment defaults and bankruptcies. But also, speculative bubbles are an explanatory factor in themselves. Thus, excessive optimism and

irrational behaviours among investors frequently lead to speculative bubbles in asset values. These factors are precursors to financial disasters.

Finally, factors such as contagion or the absence of regulations are also to blame. During a contagion, there is a domino effect of panic among investors who sell their assets. Also, the spread of contagion is rapid. Kindleberger highlighted how lack of supervision and control contributes to dangerous behaviour and financial imbalances leading to disaster. Kindleberger's work highlights the importance of interconnecting the variables that interact and exacerbate financial crises. (Lenoir, s. d.)

Moreover, according to him, crises or asset bubbles can be broken down into five phases. His model can be transposed to all asset bubbles. At the heart of his analysis is human nature, which he believes is a constant that will always remain the same. He describes the first phase as 'displacement'. It is triggered by an event or an innovation - an idea also found in Schumpeter's work - which changes the expectations of players and the market perspective (Albertini & Silem, 2014). In the second phase, the period of 'expansion', economic players begin to adhere and a narrative is established that drives up prices. The third phase, or "euphoria", can be seen as a time of total confidence: everyone believes they can become rich. However, the fourth phase, "crisis", signals the start of a disastrous downturn for investors. Panic selling began, with everyone trying to preserve what they had acquired and save their skins. This period marks the beginning of a tipping point, moving from selling to "panic selling". Finally, the 'contagion' phase is what is generally referred to as a crisis. This last phase marks the sudden fall and the contagion of bad news that completes the descent into hell (Kindleberger, 2016b). This five-stage analytical framework is highly relevant to the study of the 2007-8 crisis. Moreover, as Kindleberger (2016b) intended, its criteria also seem to apply to other crises such as the tulip bulb crisis and the Dotcom crisis.

Other economists have also tried to develop models to determine the phases in crises. For example, Hyman Minsky, in his book "Stabilizing an unstable economy" (Minsky & Kaufman, 2008), highlights several phases in the financial crisis process. First of all, the origin is the formation of a speculative bubble. Then, as prices increase considerably due to the speculative bubble, players quickly take on debt to keep up with the rise in prices. Then, agents begin to find themselves in a precarious situation and have difficulty repaying their loans. Fourth, there is a sudden reversal that leads to crashes that cause massive bankruptcies and falling prices. Finally, the last phase is that of a return to normality with significant liquidations of indebted players.

The question of cycles in economics is a recurring theme that has been studied at length. Indeed, for many, crises not only repeat themselves, but represent a kind of continual return to reality of the cycles that are inerrant in the capitalist system. This vision of financial cyclicity is found in Marx, Keynes and Schumpeter, who made it a crucial element in his analysis of financial crises. Also, here we find a form of recognition of the irrational side that actors can adopt, and he has highlighted the psychological factors that are essential to understanding crises.

2.6 The Black Swan and the limitation of classic models

Other approaches have tried to provide answers to the causes of financial crises. One of these is the analysis of complex systems, and the "Black Swan" theory developed by Nassim Taleb (2007). This analysis of complex systems is intended to be different from traditional macroeconomic models. This vision of complex systems rejects the globalising, positivist perspective that thinks it can encompass all the complexity of the economy in a single system. Of course, many economists say that financial crises are complex phenomena. We saw previously that many authors have developed models in order to provide explanations for this complexity, emphasizing the multiplicity of factors at play.

However, the work of Nassim Taleb is particularly interesting because, it postulates that the economy is a complex, dynamic, non-linear system in which the various players and variables are constantly interconnected. In his view, financial crises are therefore seen as "black swans" or "fat tails" in a statistical and probabilistic sense. The statistical term 'fat tails' refers to a probability distribution where the likelihood of severe events is very high. Additionally, fat tails suggest a significant impact of severe observations on projected future risk. (Nassim Taleb, 2007) To do this, economists “use the terms black swans and fat-tailed distributions to describe rare, but high-impact events in areas ranging from the financial markets to climate change.” (Kvitting et al., 2022). This analysis is radically opposed to neoclassical liberal models of efficiency, which can represent financial movements using a simple statistical distribution.

According to Taleb, a complex, non-linear world, randomness and the unexpected have considerable consequences for financial volatility. For many players in the financial world, volatility is a risk indicator, which is calculated on the basis of price variations. Based on work in neoclassical liberal economics, financial players have tried to suppress volatility in order to protect themselves from risk. However, as shown by Taleb & Blyth (2011b), “The artificial suppression of volatility – the ups and downs of life – in the name of stability tend to become

extremely fragile, while at the same time exhibiting no visible risks.” A "black swan" event on the markets can lead to a "fat tail" effect which generates an explosion of volatility and the destruction of risk models. Financial crises are an example of such volatility in the markets.

In other words, a major fall in prices will trigger a drastic fall in asset prices and hence a financial crisis. The difficulty lies in the impossibility of predicting such events. Adopting Taleb's analysis of complex systems means understanding the degree of complexity engendered by strong interdependence and therefore unpredictability. In short, knowing that we know that we cannot predict the unpredictable and accepting it in the construction of economic models and in the analysis of financial crises.

It's a vision that runs counter to the human tendency towards linear representation of the world and the desire to predict what tomorrow will bring. Accepting the possibility of "black swans" as a phenomenon inherent in complex systems means accepting the unpredictability and randomness of our economic representations.

As explained by Kvitting et al. (2022), “the ongoing COVID-19 pandemic provides a good illustration of how a black swan event (it is debatable whether the pandemic is a black swan) can change the rules of the game in society, and of how difficult it is to predict when and with what effect such an event will occur.” In conclusion, Taleb's analysis and contribution to complex systems are closer to an attitude in the research process than to a pure explanation.

2.7 The behavioural approach

The behavioural approach is a branch of economics and finance that has shown how the behaviour and psychology of actors influence our economic systems. This approach is opposed to classical economic theories, which do not take into account micro factors and the psychology of players.

Economists such as Robert J. Shiller, George A. Akerlof, Daniel Kahneman, Richard Thaler and Nicolas Barberis have made important contributions to the study of economics and challenged approaches to economics. As told by Güngör (2022), “Behavioural finance does not take into account the concept of homo-economicus, which is the basic assumption of traditional finance, instead it argues that people behave too irrationally to be homo-economicus, and that they are the subject of the market as a living and emotional organism, far from maximizing their own utility.” This perspective of an economy that cannot be modelled mathematically provides, as in the analysis of complex systems, a greater understanding of our economies.

In addition, their work has shown the effect of our psychological biases and decision-making errors in causing financial crises. For example, irrational behaviour such as overconfidence, anchoring, loss aversion and many others explain the excessive phenomena observed during a financial crisis. In this way, a myriad of biases have been discovered and are now being taken into account in the triggering of speculative bubbles. Finally, work such as that of Robert Shiller (2020) has highlighted the influence that economic narratives have on the development of economic behaviour and the exacerbation of financial crises.

However, we have previously detailed that other economists and other schools of thought incorporate the individual actor, his influence and his behaviour into their reasoning. Like the innovative entrepreneur in Schumpeterian analysis. However, behavioural studies focus more in depth on the role of actors, but also on psychological tendencies, behavioural biases which explain the economic decisions of actors. Studies in behavioural finance are not intended to replace existing economic models but to provide additional elements of analysis which are often little covered.

3. Problematisation

We began by looking at how the major economic currents provide answers to the causes of financial crises. To do this, we highlighted the theoretical responses of the Marxist and Neoclassical liberals - through the theories of the efficiency of financial markets. We have also seen that modern classical works analyse the economy and financial crises in a more nuanced and complete way than the pure and perfect equilibrium model. Also, we studied Schumpeterian approaches to the economy and crises which go beyond macroeconomic models. This systemic approach places at the center the role of economic agents such as the entrepreneur who influences the occurrence of economic cycles due to its impact. Finally, Kindleberger was already changing classic liberal economic models. He highlighted “irrational exuberance” and the importance of the multiplicity of factors in the occurrence of financial crises.

Some authors favour the study of the economy and financial markets as 'complex systems'. We were particularly interested in the work of Nassim Taleb on the place of unpredictability in an economy considered as a complex system. Taleb and others in the same approach, reject the liberal classic postulate of "efficient" markets and the vision of modelling the economy in the form of a simple statistical distribution (Gaussian distribution). According to those, markets are complex, interdependent and unpredictable systems. As we have seen from other economists before them, we qualify theories of pure market equilibrium in economics.

However, Taleb's particular contribution is that he emphasized our limitations in conceiving the unforeseeable. The main error lies in the human mind, which cannot shake off the "illusion of control" and the "prediction error", as well as its inability to grasp a random and complex world (Taleb & Blyth, 2011b). Finally, these authors analyse financial crises as unforeseen turbulence, "Black Swans" or "Fat Tails Events". Events which, when they occur, defy any conception of a financial system conceived as Gaussian and linear (i.e. mono-causal). It's a question of thinking about the economy and the financial markets outside the classical models, in order to study them as complex, non-linear systems.

Finally, we studied the contribution of behavioural finance theories. Behaviourist approaches are also opposed to classical theories. They postulate a form of 'irrationality' or at least a bounded rationality which influences players and the importance of cognitive biases in market decision-making. These theories do not aim to encompass the overall mechanisms of an economy, nor those of the financial markets; their sole aim is to understand the behaviour of market participants. However, behavioural finance studies are not intended to be a purely economic science, but also to incorporate models from other disciplines. In fact, following an initial overview of the theoretical field of study, there is a strong link between the study of complex systems and behavioural finance. Moreover, as Shiller says (2003), "Behavioural finance is finance from a broader social science perspective including psychology and sociology." (Shiller, 2003). Finally, works such as those by Robert J. Shiller, George A. Akerlof, Daniel Kahneman and Nicolas Barberis, provide us with a number of theoretical tools to help us better understand financial and speculative bubbles and crises.

In the remainder of this paper, we will look at the theoretical contributions and tools of behavioural finance in order to determine the causes of financial crises. We will also link them to work relating to the study of complex systems in the view of Taleb work on unpredictability. We choose this analytical perspective because it more fully incorporates the subtleties of human behaviour into economic analysis and political science. We also think that we are still too little aware of our cognitive functioning and our limitations. A more in-depth study of the behavioural aspects of financial crises will help us understand even more the reasons for this complex phenomenon.

Based on this theoretical work we can form our research question: ***«How did individual behaviour and the representations of economic players influence the causes of the 2007-2008 financial crisis?»*** Following this theoretical work, we will focus our research on the empirical study of the 2007-2008 financial crisis. We will apply the theoretical tools of behavioural

finance and Taleb's analysis of the economy as a complex system in an attempt to verify or not our hypotheses and answer our research question.

In order to better articulate our research, we will postulate several research hypotheses that we will seek to confirm in our research.

Our hypotheses:

- Classical liberal macroeconomic models are limited by their inability to take into account the functioning of complex systems as well as the behaviour of actors in the conceptualization of financial crises.
- The behaviour³ of economic actors is subject to errors of judgment and the influence of the narratives because actors are influenced by their psychology, and they have a bounded rationality⁴ which depends mainly on their human emotions.
- Among the many causes of the financial crisis of 2007-2008, the behaviour of the actors, their decisions, their bounded rationalities played a role in the origin of the crisis and in its accentuation.

4. Analytical framework

Secondly, in order to respond to our problem, we will develop an analytical framework that will detail all the theoretical tools that will be useful to us in the subsequent study of our empirical case. To do this, we have chosen to work from the behavioural approach. From a more global perspective, we will also study financial crises as part of a complex system subject to unpredictability.

We have chosen to adopt the behavioural approach for several reasons. Firstly, because it established for the first time a clear contradiction to the neoclassical liberal's models of the rational, utility-maximising agent, as well as to models of the efficiency of financial markets. By showing how individuals do not behave rationally through numerous simple experiments, behavioural finance has inferred these theoretical postulates, which have been so important in the academic world for many years. Secondly, through its behavioural focus, it shows that

³ The behaviour of actors is defined in behavioural finance as the decision-making process that is sometimes irrational because it is subject to numerous influences and cognitive biases. It is about seeing how the impact of emotions, cognitive errors and social influences impact individual decisions.

⁴ The idea of "bounded rationality" states that people make judgments in response to finite amounts of information, time, and cognitive capacity. In contrast to the conventional economic assumption of perfect rationality, people might not always make the best choices because of cognitive constraints and the complexity of real-world circumstances.

economics is not just about economics. Indeed, the idea that this discipline is a positive, mathematical science that could encompass all economic systems is, in our view, totally inaccurate. Of course, many economists do not see economics as a unique and pure mathematical discipline, however we want to qualify here the predominant models of classical liberals. As Shiller shows (2003): “we have to distance ourselves from the presumption that financial markets always work well and that price changes always reflect genuine information. Evidence from behavioural finance helps us to understand, for example, that the recent worldwide stock market boom, and then crash after 2000, had its origins in human foibles and arbitrary feedback relations and must have generated a real and substantial misallocation of resources. The challenge for economists is to make this reality a better part of their models”. Economics is therefore also the study of human behaviour and psychology, because it is the sum of the behaviours of its actors. It allows us to take into account the many psychological biases to which humans are subject. What's more, behavioural finance enables us to identify the warning signs of speculative bubbles as we shall see in the case of the tulip crisis or the dotcom bubble. The dot-com bubble sparked a speculative frenzy around online companies, causing stock prices to skyrocket despite the vulnerability of business models. And in the case of the tulip mania, have seen a dramatic increase, fuelled by speculation the prices of tulip bulbs. For example, at the top of the bubble, some bulbs were as valuable as a house. It also opens a door to the study of crowd psychology and the creation of narratives; narrative economics highlights the influence of narratives in the behaviour of actors and their economic decisions. We will also use the work of Nassim Taleb in understanding complex, unpredictable, non-linear and non-Gaussian systems to understand financial crises. This approach to complex systems connects easily with the study of our cognitive limits.

Finally, although we are aware of other economic models and theories, we have chosen to focus on studies in behavioural finance as well as the work of Nassim Taleb on complex systems. In our view, the previously mentioned models do not provide a detailed understanding of financial crises studied as a complex system because they not taking sufficiently into account the behavioural approach as well as unpredictability factors.

Briefly, we have seen that the Marxist approach provides an analysis for understanding the accumulation of production and capital by capitalists, which leads to the advent of a crisis. We also noted that the Marxist analysis indicated the innate character of the capitalist system, which always tends towards successive crises, since crises are an integral part of the system. The work of Schumpeter and Kindelberger also highlighted decisive factors in understanding crises. Both

developed the beginnings of a study of behaviour, highlighting the essential role of the entrepreneur in innovation and of panic in shaping the cyclicity of financial crises. Despite our more microeconomic approach, which focuses on the behaviour and psychology of actors, we believe that these more macroeconomic theories are essential to take into account in our analysis. Furthermore, although we prefer to focus on behavioural approaches, we do not neglect the importance of the theoretical contributions of these currents. For financial crises also depend mainly on macroeconomic and exogenous factors. For example, we'll keep in mind the work on cycles, the importance of innovation and creative destruction. There is a dialectic between macroeconomics and microeconomics, and the two come together. For example, you can't study the behaviour of financial market players without connecting it to the financialization of the world.

Also, neoclassical and classical liberal models explain that crises are external phenomena and therefore totally independent of the economy itself and the actors. We do not subscribe to this postulate. Also, as we have seen, other currents consider crises as intrinsic to systems (Schumpeter, Marx, Kindleberger) but we consider that their way of explaining this crisis is not sufficient because it does not sufficiently take into consideration the psychology and behaviour of actors as a central element of the financial crisis.

In conclusion, we believe that the economy is a complex system at the junction of different systems of ideas. Its study is at once political, sociological, anthropological and psychological. The turbulent phenomenon represented by the financial crisis cannot be fully represented in a single system, no matter how brilliant. The whole point of our study is to show that, while financial crises have important behavioural causes, they must be studied from a complex systems perspective. Where a considerable number of different factors interconnect. That's why we'd like to make a small contribution to the understanding of financial crises by studying the behavioural causes of the 2007-8 financial crisis.

4.1 The behavioural approach - The psychology of human misjudgement.

In this section, we'll take a closer look at the discoveries and theoretical tools put forward by behavioural finance. To do this, we'll begin by examining the two-system theory put forward by Daniel Kahneman (2003). We will then identify the most important cognitive bias in decision-making, which are at the root of our misjudgements. Next, we'll take a closer look at the Lollapalooza effect (Güngör, 2022), which occurs when several biases combine simultaneously. In addition, we'll look at how narratives economically influence our decisions

(Shiller, 2020). Finally, we'll look at how Benjamin Graham's allegory of "Mr. Market" (1949), and the behaviours characteristic of a speculative bubble, can help us understand the financial crisis of 2007-8.

4.2 System 1 – System 2

Daniel Kahneman is one of the founders of behavioural economics. In "Think fast and slow" (Kahneman, 2011) and "Maps of bounded rationality" (Kahneman, 2003), he revisits his theory of the two systems of the human mind. According to him, these two systems are at the root of our judgment and decision-making. He uses these two images to symbolize the "fictional characters" of our mind. To sum up his thesis in a nutshell, System 1 is our emotional brain, which needs to make quick decisions. System 2, on the other hand, is the slow, logical brain, requiring concentration and conceptualization.

Figure 1

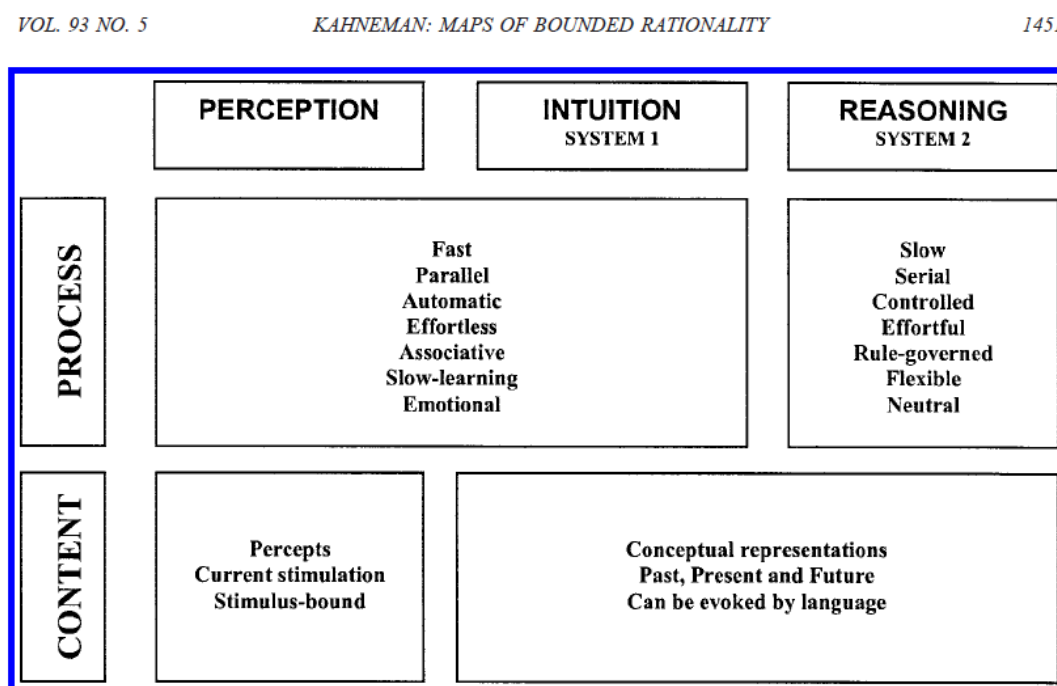


FIGURE 1. THREE COGNITIVE SYSTEMS

Reference : Kahneman, D. (2003). Maps of Bounded Rationality : Psychology for Behavioral Economics. The American Economic Review, 93(5), 1449-1475.

<https://doi.org/10.1257/000282803322655392>

As shown in figure2, Kahneman makes a central dichotomy in human cognition. This separation has its origins in the study of neuroscience and evolutionary theories. On the one

hand, the human brain naturally tends towards direct, intuitive response - system 1 - while on the other, thinking, which requires more time and energy, is system 2. As Kahneman (2003) explains, “The architecture of cognition distinguishes two modes of thinking and deciding, which correspond roughly to the everyday concepts of reasoning and intuition. Reasoning is what we do when we compute the product of 17 by 258, fill an income tax form, or consult a map. Intuition is at work when we read the sentence “Bill Clinton is a shy man” as mildly amusing ... Reasoning is done deliberately and effortfully, but intuitive thoughts seem to come spontaneously to mind, without conscious search or computation, and without effort. (Kahneman, 2003). This first observation is fundamental and should be kept in mind as confirmation that rationality and logical thinking are not instinctively self-evident. Rather, they are the result of a conscious, counter-intuitive effort (as opposed to system 1).

4.3 The major cognitive bias

Now that we've established an initial dichotomy in the mechanisms of our cognition, we're going to detail several of the cognitive biases that have been discovered. These play a fundamental role in our everyday lives. What's more, the distinguishable evidence of errors of judgment will be extremely useful when it comes to analysing players' behaviour during the financial crisis. To do this, we'll look at the following biases: confirmation bias, anchoring bias, contrast and framing bias, loss aversion bias, mental accounting bias, overconfidence bias, commitment and consistency bias, herd tendency, and cultural difference bias. However, this list is non-exhaustive and includes only some of the major biases studied and discovered in financial markets. These will help us to study the behavioural errors relevant to our case study.

4.3.1 The confirmation bias

There is a human tendency to seek out and see only those elements that reinforce our beliefs. As Leković explains (2020), “the Confirmation bias or self-confirmation bias – Refers to “collecting information in order to confirm one’s previously existing beliefs or ideas, rather than acquiring new knowledge or perhaps changing one’s attitude or beliefs”. Following this logic, the human mind seems to unconsciously give too much weight to the elements that confirm its beliefs, and meticulously obliterate all other information that contradicts them. Another facet of this bias takes the form of psychological denial: when reality is too heavy to bear, we unconsciously prefer not to accept it. In the case of the subprime crisis, this confirmation trend developed in different ways. For example, « When investors believe the market is going up, they look for facts that support their bullish view. When investors believe the market is going down, they look for facts to support their bearish outlook and ignore signs

of hope...One model, based on the principles of behavioural finance, reveals that investors prone to confirmation bias contribute to bubbles and crashes.” (Feldstein & Mauboussin, 2018).

4.3.2 The anchoring bias

Anchoring is found in the tendency to be reluctant to change. In many ways, this bias can be linked to confirmation bias. Indeed, accepting a new reality presupposes risk, fear, adaptation to change and the discomfort of a paradigm shift. (Leković, 2020) It's easy to see why we often prefer to stick to our positions. In the case of the subprime crisis, many players relied solely on price data, both for real estate and for the market. Yet economic reality diverged from the prices that players used as an anchor. As Hens & Meier (2015) point out, economic agents « tend to base their decision on the price at which the original or last position in a stock was purchased. This purchase price is the anchor and causes irrational decisions” (Hens & Meier, 2015). For example, just before the US real estate bubble burst, benchmark prices were rising, despite a real market that didn't seem to be keeping up. In this vein, we'll now look at the psychology of speculative bubbles and their occurrence.

4.3.3 The effect of contrast and framing bias

The framing bias can be summarized as follows: « The manner of formulating, framing and presenting a problem or a situation affects the ultimate outcome or final decision of an individual.” (Leković, 2020). Indeed, it has been shown that our minds always tend to base themselves on reference points. For example, this error of judgment is the basis for most of the promotions used in stores. When we are subjected to this error of judgment, we will be more inclined to buy two items if it says, "two for the price of one". (Leković, 2020). The contrast effect can be seen as the twin of framing bias. The famous "three buckets of water" experiment, for example, simply demonstrates this effect. A student places his left hand in a bucket of cold water and his right hand in a bucket of hot water. He then takes his hands out of the water and dips them into a third bucket, this time at room temperature. The result is dazzling: the cold hand feels hot, and the hot hand feels cold. As Cialdini points out (1993), « When you are presented with two things in succession, what you experience two things in succession, your perception of the second is influenced by the first.” Another experiment by Kahneman (2003) shows in another way how a referent influences our cognition. In Figure 3, we see that although the two central squares share the same colour, the simple act of changing the reference contour changes our perception of the colour of the second central square. Thus, "this show that intuitive evaluations of outcomes are also reference dependent." (Kahneman, 2003). These two simple experiments show just how easy it is to deceive our senses and our cognition.

Figure 2

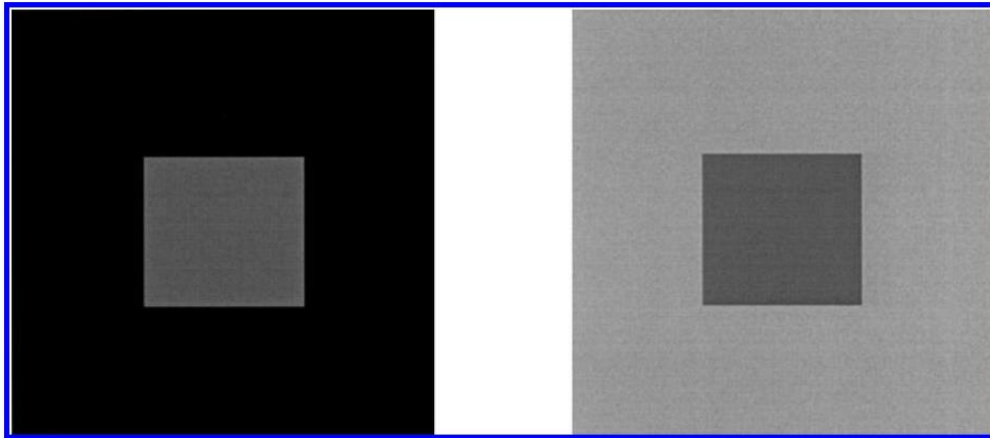


FIGURE 5. REFERENCE-DEPENDENCE IN THE PERCEPTION OF BRIGHTNESS

Reference: Shefrin, H., & Statman, M. (2003). The contributions of Daniel Kahneman and Amos Tversky. The Journal of Behavioral Finance, 4(2), 54-58.

4.3.4 Loss aversion bias

We fear losing what is ours, but also what is dear to us. Richard Thaler (2015) demonstrated that the loss of money provokes the same sensation as physical pain. But also, that « loss aversion, meaning the observation that losses hurt us twice as much as gains make us happy. When we talk about a painful financial loss, we are not exaggerating. Financial losses are processed by parts of the brain responsible for the pain network.” (Thaler, 2015) This is why humans are so keen not to lose, and yet make serious errors of judgment. The example of the bank run phenomenon - the panic withdrawal of money in the event of a crisis - is one of the main reasons for this (Krugman, 2015).

4.3.5 Mental accounting bias

The mental accounting bias consists of a mental separation that economic agents make of themselves, by separating their expenditure into different accounts fictitiously separated in their minds. For example, « Many families have household budget for food and household budget for entertainment. Dinner at home is financed from the budget for food, while dinner in the restaurant is financed from the budget for entertainment. When choosing between lobster and fish, the family will opt for fish for dinner at home because it is cheaper. However, when eating at the restaurant, that same family will order lobster despite the high price. If the family instead ate lobster at home, and fish in a restaurant, they could save a large sum of money, therefore the described behavior is considered irrational. The obvious cause of irrational behavior of the

family is mental accounting, i.e. the separation of food account and entertainment account.” (Nikolic, 2018). This fictitious distinction can lead to disastrous decisions for agents without them even realizing it. As recounted by, Hens & Meir (2015), « A second form of mental accounting is the distinction between money in the bank and money we made on the financial market. The latter, known as house money, is often placed at a greater risk than bank balances, which usually come from savings. So mental accounting makes us think that a franc is not worth a franc”. This is dangerous behavior that can lead to irrational decisions.

4.3.6 The overconfidence bias

Another common mistake is to overestimate our strength, our intelligence, and more generally what we are capable of. Also, luck can accentuate the phenomenon without our realizing it (Kahneman, 2012). Overconfidence has led financial institutions to build risky financial products (debt tritrisation) and to behave without fear of error, to unreasonable leverage and indebtedness. (Akerlof & Shiller, 2010) This effect of overconfidence is clearly reflected in the triggering of a financial bubble: « Many investors are too confident. This is often seen when the markets are on the rise. The sweet smell of success quickly clouds our own judgment. It is also known that men overestimate themselves more often than women do. The opposite (underestimation) does not exist. There are merely varying degrees of overestimating oneself.” (Hens & Meier, 2015)

4.3.7 The commitment and consistency bias

The trend towards commitment is probably one of the strongest in our social and interpersonal relationships. We don't want to go back on our word or lose face. We're constantly trying to defend what we like or our positions, even if these mean we don't want to admit our mistakes. As Cialdini explains (1993), “Once we make a choice or a stand, we will encounter personal and interpersonal pressures to justify our earlier decision.” These behaviours led many financial players to refuse to admit their mistakes once the crisis broke.

4.3.8 The herd effect

This tendency to follow the "herd" is well known and has long been studied. The sheep effect, or the conformist effect, leads us to adapt our behaviour to that of our fellow human beings. This tendency can be found in animal behaviour (Akerlof & Shiller, 2010b), in crowd psychology (Bon, 1896) or in the formation of narratives (Shiller, 2020), as well as financial bubbles (Shiller, 2016). As Leković demonstrates (2020), “Similar to many animal species who are herding because safety is in numbers, investors are monitoring and copying the moves of the largest group of investment public, thus trying to reduce the risk when making financial

decisions and achieve security.” This crowd behavior provides an interesting explanation for the waves of financial cycles, but also for the acceleration and subsequent bursting of financial bubbles.

4.4 The Lollapalooza effect

First theorized by the famous financier Charlie Munger (1995), the Lollapalooza effect has subsequently been further studied by the financial world. The Lollapalooza effect explains how a combination of cognitive biases can lead to logical errors. Studying biases helps us to shed light on the errors of judgment we make, yet we find it hard to grasp the totality of these phenomena. As Güngör shows (2022), « The main problem with these biases, which is the area of interest of the science of psychology, is that they are handled one by one in all psychology experiments and the assumption that other conditions are constant. However, human behaviour or behavioural errors during the experiment cannot be based on a single prejudice. The influence of many different prejudices on the formation of this behaviour can be mentioned. The Lollapalooza effect is a concept that tries to explain this issue.” (Güngör, 2022) To fully grasp the complexity of behavioural reactions when a crisis occurs, we need to remember that biases don't always operate separately; on the contrary, they can combine to make us do crazy things.

4.5 The narratives economics

"The narratives economics is a branch of behavioural economics developed by Robert Shiller (2020). His thesis focuses on the impact of narratives on economic behaviour. Through various examples, he shows how stories can create and influence our beliefs, ultimately having a real economic impact. One famous example is Bitcoin, which was built on a specific narrative of "free money" and "counter-power", but without this virtual currency being based on any tangible economic reality. (Shiller, 2020). This study of narratives may help us to understand how financial deregulation has its origins in the construction of economic narratives. The vision of an open, liberal world, in which markets are only loosely regulated, is an important response to the onset of the 2007-2008 financial crisis.

4.6 The financial bubbles and “Mr Market”

The study of financial and speculative bubbles highlights several phenomena that seem to recur when a financial crisis hits the markets. This period of "irrational exuberance", as Shiller (2016) explains "referring to periods when investors become overly optimistic and drive asset prices to unsustainable levels." However, this phenomenon of exaggerated optimism is unexpectedly transformed into a bursting of the bubble, leading to a plunge in stock prices and a general

panic. Because of the many interlocking biases, speculative bubbles can be said to be an incarnation of the Lollapalooza effect. Moreover, exuberance and optimism lead to an overvaluation of real economic value. A speculative bubble can also be defined as "A cumulative difference between the market price and the fundamental value of an asset." (Broihanne & Capelle-Blancard, 2018) This distinction between real value and overvaluation has its origins in the work of Benjamin Graham (1949). A precursor of "Value Investing", he theorized the opposition between the true value of an asset and its market value. He also developed the concept of "Mr. Market", a fictional character whose reactions and behaviour represent the financial markets. According to him, "Mr. Market" is driven by panic, apathy, euphoria, optimism and pessimism, just like the rest of us. He was thus one of the first to theorize about the emotional nature of market movements (Graham, 1949). Numerous examples, such as the Dotcom bubble, the tulip bubble or the over-prime crisis, seem to attest to the theses of Shiller (2016) and Graham (1949). Going against the grain of most classical economists, these authors emphasize the unstable and "emotional" nature of the market.

4.7 The “Black swans” and the unforeseeable

Taleb & Blyth (2011b) show that there is a cognitive impossibility for humans to accept unpredictability (black swans), statistical exuberance and the impossibility of prediction. As Makridakis & Taleb (2009) recount "Humans, driven by over-optimism and wishful thinking, often underestimate uncertainty even more than statistical models." Our natural tendency is to believe in stability and linearity. However, complex systems are neither stable nor linear. What's more, we have an inability to think mathematically, to understand probabilities, and to conceptualize randomness. As they describe it, « In complex systems, there is an absence of visible causal links between the elements, masking a high degree of interdependence and extremely low predictability. Nonlinear elements are also present, such as those commonly known, and generally misunderstood, as "tipping points." Imagine someone who keeps adding sand to a sand pile without any visible consequence, until suddenly the entire pile crumbles. It would be foolish to blame the collapse on the last grain of sand rather than the structure of the pile, but that is what people do consistently, and that is the policy error.” (Taleb & Blyth, 2011b). The work of Taleb & Blyth (2011) allows us to understand financial crises as part of complex systems and thus to move away from classical theoretical models.

5. Research Design

In this second part of our research work, we will try to use the theoretical tools developed previously in order to answer our research question: "***How did individual behaviour and the***

representations of economic players influence the causes of the 2007-2008 financial crisis?"

To do this, our empirical study will focus on the case study of 2008 financial crisis.

In the first part of our state of the art, we gave a brief genealogy of the major theoretical narratives that have shaped the financial world and attempted to explain financial crises. We then moved on from system approaches to the study of financial markets based on Taleb's work on complex systems and unpredictability.

In order to study the causes of financial crises from a different angle, we will use behavioural studies that have shown the psychological workings of actors, as well as the behavioural biases that influence them. Our aim is to introduce a heuristic of individual behaviour and choice into the understanding of financial market crises. We will limit our work to the specific space of actors' behaviours, and to the importance of their representations in the functioning of complex systems. A larger task seems to us either impossible, or the work of a lifetime. So, in our small way, we shall try to contribute an element of understanding; a stone to the edifice of understanding financial crises.

In order to achieve our research objectives, we will adopt a hypothetico-deductive approach. In this work, we intend to develop several hypotheses relating to the irrationality of actors, but also to postulate the error of explanation of the so-called "traditional" economic approaches, in order to explain the behavioural causes of financial crises. To achieve this, we aim to validate our hypotheses by attempting to demonstrate causally why they can respond to our problem. Indeed, in the theoretical study we have identified concepts and theoretical tools that suggest explanatory relationships; we will use them to try and verify them in the specific case of the 2007-8 financial crisis.

Secondly, we intend to use secondary data. In the case of the 2007-2008 financial crisis, there are numerous sources available to us to support our analysis. For example: commission of inquiry reports, documentaries, interviews/testimonies of key players, etc. The variables we will study will be both at an individual level, in terms of analysing the behaviour of individuals during the crisis, but also at an organizational level, when we study the behaviour of large organizations such as banks. Furthermore, our study is intended to be synchronic, i.e. it will seek to establish relationships between our variables studied at a given point in time; this point in time being the period of the 2007-8 financial crisis. We don't intend to create our own data, but rather to draw on what is currently available: it exists, is plentiful and easily accessible. Indeed, the event was of such magnitude that journalists, organizations such as the European

Commission, the various central banks, as well as commissions of inquiry have been working on the causes and reasons for this crisis.

As for our method of analysis, we will try to verify whether or not our research hypotheses are correct. Our central approach will remain hypothetico-deductive, looking for positive or negative relationships between the concepts and variables studied. However, if explanations that had not been initially envisaged surface in the course of our research, we will bring them to light. Our analytical framework will be based on behavioural theories, narrative economics and the study of complex systems. These theories will provide us with the theoretical tools we need to find answers to our research question. But our analysis will remain fundamentally a behavioural approach to the causes of financial crises.

Finally, if we are studying actor bias in the role of financial crises, it seems naive to believe that the researcher cannot also be subject to it. We believe that our subject does indeed require positional reflection. As explained in greater detail above, we do not adopt a positivist economic approach. Although our background is in economics, this dissertation is structured within the framework of political science research. Our aim is to adopt a structuralist approach, which implies a plurality of interpretations of the phenomenon. As we have said, behavioural finance studies are at the crossroads of several disciplines, such as sociology, psychology and anthropology. We will therefore leave aside the macroeconomic models and their mathematical equations that seek to represent economic reality. For the plurality and complexity of human systems make studies in political science and economics all the more difficult. In conclusion, it seems to us that the individual, in all his plurality, must be put back at the center of the analysis of financial crises.

6. Empirical analysis

7. The major periods of the causes of the 2007-2008 financial crisis

The first moment is that of understanding our case study. Indeed, in order to best analyse the crisis using a behavioural approach, we must fully understand it. A financial crisis is a complex phenomenon that requires an autopsy of the events that took place. To do this, we are going to focus on the main periods that we believe were the causes of the 2007-2008 financial crisis.

Moreover, we will focus on the moments and key players who contributed to accelerating the crisis. With regard to psychology and studies in behavioural finance, we will try to analyse these roles in the remainder of our research work. Because these actors have impacted the phenomenon, through their position, their authority and their decisions.

7.1 The end of Bretton Woods and the early 1990s.

The financial crisis of 2008 has a much earlier origin. Indeed, the financial troubles of 2007-2008 stem in part from policies implemented a decade earlier. Among the first causes we can mention among the first causes we can put forward the particular political and economic context of the period before the 90s. Indeed, a world that was emerging from a significant period of growth based on reconstruction and massive investment plans in response to the destruction of the Second World War. This moment marks the end of the glorious thirties and an economic slowdown in the wake of a Cold War context between the liberal capitalist Western world and a communist world. Secondly, the timing was the end of the era of the Bretton Woods system which had dominated the entire post-war period. The Bretton Woods Agreement was a series of international economic agreements signed in 1944. These agreements established a system of constant exchange rates between the world's major currencies and the US dollar, which was converted into gold at a fixed rate. In an increasingly expanding world, and out of a need to increase monetary liquidity, the President of the United States, Richard Nixon, decided on 15 August 1971 to end the convertibility of the dollar into gold. The end of the gold standard led to monetary easing through the printing of banknotes (quantitative easing), which at the same time stimulated the economy, which had begun to slow. (L'éclatement du Système Monétaire de Bretton Woods, s. d.)

Then, years later the Clinton/Greenspan period will mark an accentuation of monetary and financial deregulation in the United States. Greenspan was appointed chairman of the United States Federal Reserve in 1987. Also, this period marked the continuation of a period of liberalization of the economy and more specifically of the financial markets. Initially, the

Reagan period, Thatcher had launched this new momentum of economic opening and deregulation, Bill Clinton would subsequently continue them. It's worth noting that we're concentrating here on the great moments and political figures of the period. We are aware that the political and economic changes are not exclusively their doing. There are multiple influences, lobbies and considerable political and economic logic at play. However, we believe that political leaders such as Thatcher and Reagan are representative figures of the political and ideological changes to come.

Bill Clinton succeeded in ending the isolation of the banking sector that had prevailed during the two wars. For example, the Gramm-Leach-Bliley Act of 1999 repealed the formal division of many financial activities, including the distinction between commercial and retail banking activities that dated back to the Glass-Steagall Act of 1933. This measure was initially put in place in response to bank failures caused by speculative investments made by banks during the stock market boom of the 1920s, followed by the crash of 1929. In addition, the repeal of the 'Glass-Steagall' law of 1933 was followed by the removal of regulations on 'credit default swaps' as well as on trading on electronic energy commodity exchanges.

Concerning Alan Greenspan, many consider that his decisions and his influence have played a significant role in the evolution of the financial world. Indeed, we must consider that the former president of the FED was a fervent supporter of economic individualism. As a staunch liberal, Greenspan strongly believed in the positive morality of capitalism. The state had to reduce any form of intervention. He also played an “important role in the Fed’s strategy of non-intervention in the markets to prevent the development of speculative bubbles” (Sowels, 2016).

Finally, it was during the Clinton administration that new legislation was passed by Congress that required the large government-sponsored mortgage companies, Fannie Mae and Freddie Mac, to allocate a portion of their loan proceeds to affordable housing. This policy aimed to allow American citizens better accessibility to housing: the idea defended by the policies of a house for every American made it possible to grant mortgage loans more and more easily.

As a result, more and more loans are being globally packaged, securitized or offered to other investors as financial instruments. A credit derivative known as a credit default swap (CDS), which can serve as insurance for the investor against default, was first introduced by J.P. Morgan two years later. So, “over the next decade and a half, CDSs become the most widely traded credit derivative product globally. The CDS market proves to be a major source of

systemic risk to the U.S. financial system when the crisis hits more than a decade later.” (McBride, 2018b)

Another major moment preceding the crisis was that of the expansion of the subprime market, so “subprime mortgage originations increased from \$65 billion in 1995 to \$173 billion in 2001” (Subprime Lending, s. d.) Because it was at this point that the massive increase in subprime mortgages weakened the system as it became increasingly connected to debts and mortgages that were becoming more and more suspect because they were often of poor quality.

In 1995, the American government defended changes to the Community Reinvestment Act. This act was originally passed in order to end discrimination against low-income borrowers. This change allowed mortgage lenders to purchase subprime assets in order to meet their commitments to provide affordable housing loans. We can therefore say that it was in 1995 that the American authorities opened for the first time a financial Pandora's box of which they were unaware of the contents.

Thus, according to some economists, the subsequent increased demand for subprime mortgages led to an increase in the number of risky real estate loans in the second half of the 1990s, allowing the formation of the speculative bubble. Following this, in September 1999, “Fannie Mae eases credit requirements to encourage banks to extend loans to people whose credit is lower than what is required for conventional loans, furthering growth in the subprime lending industry.” (McBride, 2018b)

7.2 Intensification of the real estate bubble

In the wake of the dotcom crisis, which saw new technology companies attract global capital only to collapse due to a lack of real value creation, the property market has continued to rise in value. Also, as we said earlier, the economy is suffering from a slowdown and investors, both institutional and private, are looking to grow their assets, so they are going where the most attractive yields are. What's more, eleven times the benchmark interest rate was lowered by the US Federal Reserve under the leadership of Alan Greenspan due to the recession that followed the collapse of the dot-com bubble. An easy credit climate caused by falling interest rates encouraged lending practices that later in the decade proved unsustainable. Let us add that CDOs and the numerous securitized products contribute to the emergence of the construction of the future real estate bubble. In short, “The ensuing credit bubble plays a large role in the run-up to the financial crisis.” (McBride, 2018b)

In this context of low rates, absence of strong regulation and the possibility of using structured products offering high profitability, financial and banking institutions are rushing for the goose that lays the golden eggs. Attracted by the lure of profit and encouraged by American recovery policies, banks are granting mortgage loans that are less and less guaranteed and less and less expensive. Thus, the interest rates on these loans go from 20%, to 5% and 2% to reach almost 0%... This political and economic context has enabled many American citizens to have access to property. However, this facilitation has seen the development of dubious and dangerous financial products (subprimes) with few guarantees. The explosion of the American property market has allowed many financial institutions to enrich themselves by amplifying the property bubble and weakening the financial system under cover of the political support of the American government and the low-interest rate policies of the FED.

In April 2004, another element was added to the trend of market liberalization. Indeed, the net capital regulation, which limited brokers and investment banks to a leverage effect (net capital regulation) of 12 to 1 (the debt/equity ratio) on investments, is relaxed in April by the Securities and Exchange Commission (SEC). The amendment allows companies with assets exceeding \$5 billion to exercise almost infinite leverage. At the time, Bear Stearns, Lehman Brothers, Merrill Lynch, Goldman Sachs and Morgan Stanley were among the eligible companies. These companies optimize their investments to the extent that they regularly use thirty times greater leverage.

Let us also add that among the different types of debt, residential loans are treated more favourably under Basel regulations. So, with only 4% equity required for residential mortgages, a leverage ratio of 25 to 1 is implied. However, securities considered low risk have a capital requirement of less than 1.6%. « This means that the permissible leverage ratio for low risk securities is about 60 to 1. » (Gwartney & Connors, 2009)

We therefore observe, during this period, a significant increase in leverage in large American financial and banking institutions. Moreover, during the outbreak of the financial crisis, “none of the five firms survive the 2008 credit crisis intact as independent investment banks.” (McBride, 2018b)

Added to this is the decision of the Federal Reserve and the particular context of interest rates. The Federal Reserve's low-interest rate policies from 2002 to 2004 helped drive up housing prices, while the Fed's decision to raise short-term rates in 2005-2006 led to the fall of the real estate market. For more than three years, the Fed has injected additional reserves into the

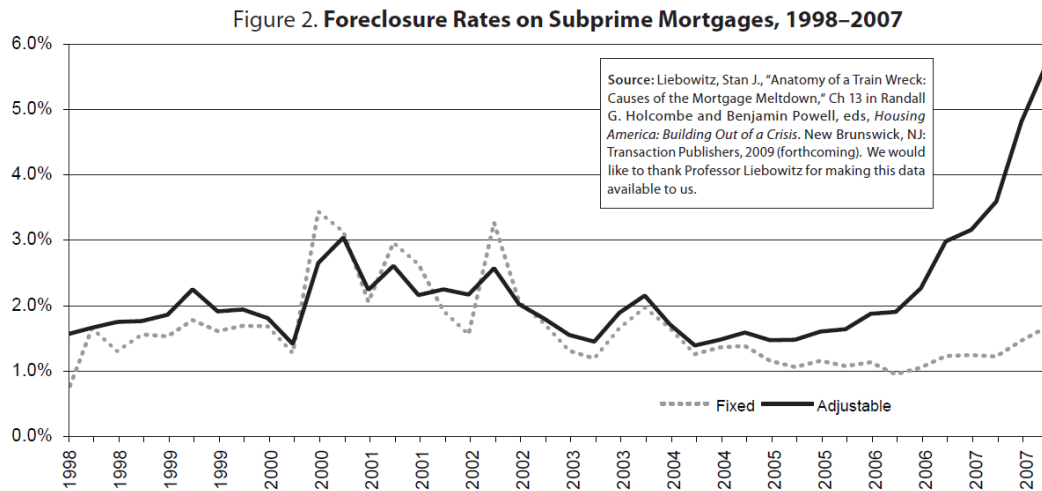
banking system while keeping the federal funds rate at 2% or less. These prolonged and historically low short-term interest rates have made borrowing money easy and attractive. (Gwartney & Connors, 2009)

Additionally, lenders and borrowers overwhelmingly subscribed to adjustable-rate mortgages (ARMs), which reflected low interest rates. These adjustable-rate mortgages constantly change based on an index that reflects the lender's cost of borrowing in the credit markets. These are very attractive in the early 2000s.

For illustration, they represent 11% of all outstanding mortgage loans in 2002 to 22% in 2006-2008. Thus, in the space of a few years, variable rate mortgage loans have seen a significant increase. Homebuyers have been able to afford larger and more expensive monthly payments due to ARMs' low starting interest rates and the economic environment we previously discussed. At the same time, this contributed to the rise in real estate prices, as did the relaxation of lending criteria. However, the end result of the Fed's manipulation of short-term interest rates, low down payment loans, and a general deterioration in lending standards was disastrous in the formation of the housing bubble.

Added to this is the strengthening of speculation, the lure of gain and easy profit. Indeed, the combination of ARMs allowed owners to take risks with other people's money. Buyers could benefit from a substantial financial gain given the rise in housing prices between 2000 and 2005. As shown in Figure 3, we can see a considerable increase in subprime rates revealing intense speculative activity. You became an owner without having to risk a large part of your own liquidity. Many of these buyers planned to make a profit on the sale of their home by only keeping it temporarily. Finally, "this combination provided households with the incentive to use ARMs both to undertake imprudent amounts of debt and purchase more housing than they could afford." (Gwartney & Connors, 2009)

Figure 3



Gwartney, J., & Connors, J. (2009). *The crash of 2008: Causes and lessons to be learned*. *Social Education*, 73(2), 63-67.

7.3 The burst of the bubble.

In February 2007, the surge in real estate prices that had accelerated for several years in the United States suddenly reversed. The year 2007 will be marked by the worst decline in U.S. home sales in decades. The US “subprime” mortgage market, as we have seen, which provided loans to borrowers with bad credit – sometimes even with no down payment – is collapsing due to the economic crisis. The Dow Jones Industrial Average, which calculates the total value of the shares of the thirty largest American companies, is shaken by the crash occurring on the markets. The Dow Jones suffered its biggest one-day drop since September 11 and lost 416 points. At the same time, « More than twenty-five subprime lending firms declare bankruptcy in February and March 2007.” (McBride, 2018b)

We identify four major factors that explain the outbreak and explosion of the real estate bubble in the United States.

First, the decline in lending standards. The American government's desire was to allow “Ninja” borrowers (no income, no jobs and no assets) to access property as easily as possible. « The stated intention was to promote the socially desirable government policy of home ownership.” (Barton, 2009).

Indeed, lenders were encouraged to make risky loans that they would never have made if they had not been able to be packaged into securities and passed on to others as a financial product.

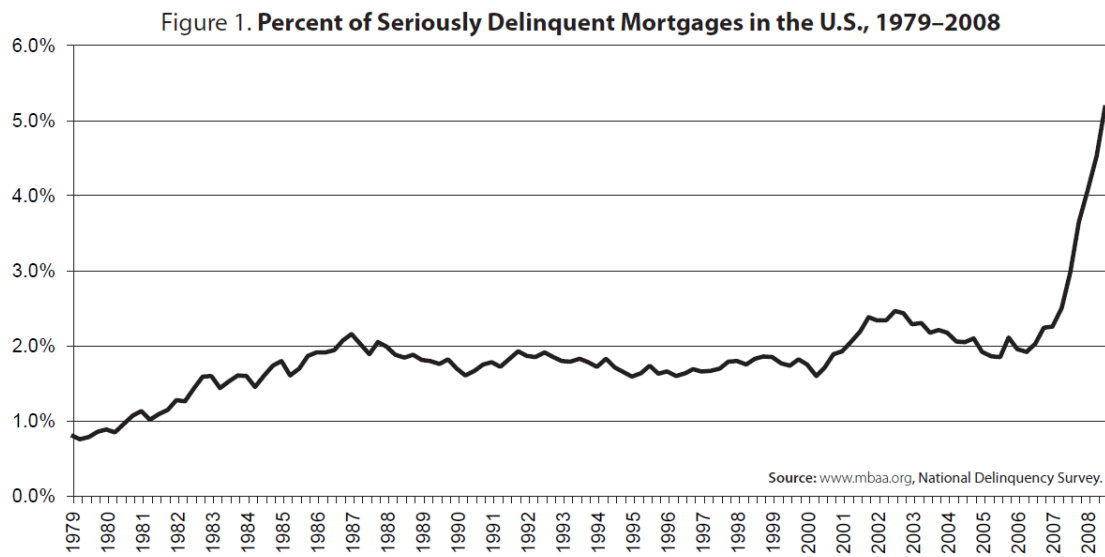
Also, investors were allowed to raise their capital irresponsibly because regulations treated housing loans more favourably than other loans. Because of rising house prices, the potential for short-term financial gain and a narrow view of their situation, almost everyone failed to see the obvious: low down payment loans granted to buyers with increasingly large mortgages relative to their incomes were risky and would soon lead to higher default rates.

Second, the Federal Reserve's policy of lowering rates also encouraged debt, under ideological motives and thinking of revitalizing the economy, the Fed's monetary policy led to the acceleration of the real estate bubble.

Third, toxic 'financial innovations' have accentuated the use of excessive leverage, as well as the trading of securitized debt products. These will be massively used in financial institutions from then on. When a crime is discovered, investigators seek to determine the purpose of the murder. In the case of the financial crisis, we can say that it was securitized debt products, CDOs. In effect, subprime mortgages were packaged and sold to global investors through collateralized debt obligations (CDOs). Moreover, these debt securities were often rated AAA by the rating agencies even though the underlying securities were unreliable and high risk (we will later detail the behavioural reasons for the rating agencies' misdirection). In addition, many institutions that subscribed to these financial products were incapable of assessing the real value of these products: what financier George Soros described as "toxic waste" (Soros, 2009). Added to this is also the great diversification of the implementation of these products throughout the financial system. Unfortunately, in this situation, diversification did not effectively protect against the risk of default but on the contrary accentuated it.

Fourth, household debt and high default rates played a crucial role in the financial collapse (see figures 4, 5). Indeed, the granting of easy loans without real conditionalities makes the credit market extremely fragile. This fragility of the American real estate market will ultimately lead, at the start of the crisis, to high rates of payment defaults and property foreclosures. As shown in Figure, "mortgage default rates began increasing nearly a year and a half before the onset of the recession." (Gwartney & Connors, 2009)

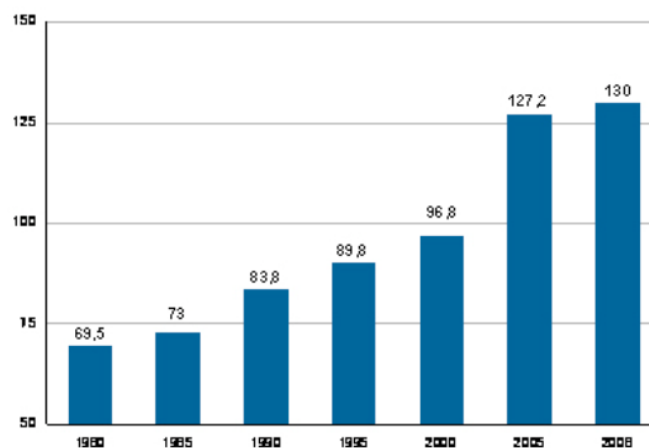
Figure 4



Gwartney, J., & Connors, J. (2009). *The crash of 2008: Causes and lessons to be learned. Social Education*, 73(2), 63-67.

Figure 5

▲ **Graphique 1 Dette des ménages comme % du revenu disponible, 1980-2008 [3]**



CADTM. (2015, 10 avril). *Les Etats-Unis de la dérégulation financière à la crise globale* – CADTM.
<https://www.cadtm.org/Les-Etats-Unis-de-la-deregulation>

Finally, in an environment marked by fraud and lack of controls, many factors combined to create an immense speculative bubble. The real estate crisis which will give rise to the financial crisis, as we have seen, did not appear overnight. On the contrary, it is the consequence of a process extending over almost a decade earlier.

After more than 60 years of price stability in residential real estate, they increased significantly, to the point of doubling between 1996 and 2006. During these years, a vicious circle was established: the increase in price led to an increase in mortgage credit which in turn reinforced the trend of increasing real estate values nationwide. Subsequently, the financial crisis, the beginning of which was marked by the collapse of the housing bubble in the United States, produced recessions, rigorous regulations and political unrest that would run deep.

7.4 The financial crisis becomes global

We will now turn our attention to other factors that we believe are behind the amplification of the crisis. As we saw earlier, there are major factors that led to the implosion of the financial crisis. We now believe that we need to focus on secondary factors. These explain how the US property crisis was able to degenerate into a global financial crisis.

On April 1, 2007, New Century Financial Corporation filed for bankruptcy due to concerns raised by experts. These concerns concerned its solvency but also its large exposure to subprime loans. At the start of the collapse of structured products relating to subprimes, New Century Financial Corporation suffered the full brunt of the shock. « It is one of the first signs of major problems in financial markets beyond the subprime loan industry.” (McBride, 2018b)

How did this localized real estate crisis in the United States become a global financial crisis? The French bank BNP Paribas announced on August 9 that three of its hedge fund assets lacked market liquidity. The reason is that investors have rejected these assets, which quickly lose value and are called “toxic”. Thus, problems with subprime mortgages are expanding globally as banks and hedge funds reveal substantial holdings of mortgage-backed securities across the world.

This is the beginning of a domino effect. This trend can be explained by the herd effect, which causes players to flee and follow the movement in the event of market panic. Similar announcements from other banks then spread across Europe. In response, the European Central Bank immediately intervenes to help these institutions by offering credit lines at low interest rates and trying to strengthen market confidence. As credit markets dry up around the world,

the central banks of the United States, the European Union, Australia, Canada and Japan are working together to inject liquidity into credit markets to first time in many years.

The first big domino to fall was that of the investment bank Bear Stearns. Indeed, this financial institution is experiencing a huge liquidity problem and is paying the consequences of its massive investment in the American real estate and housing sector which has just collapsed. However, the case of the American bank is not isolated, the first months of 2008 were marked by the beginning of financial troubles linked to the bursting of the subprime bubble. For example, in February, HSBC, a major British bank, reported losing \$10.8 billion in mortgage lending in the United States. The case of Bear Stearns illustrates what a crisis of confidence looks like. Because when the real estate markets begin to collapse and the bank finds itself heavily exposed, a crisis of confidence ensues and a massive withdrawal of liquidity from the institution. (McBride, 2018c)

In response, Ben Bernanke (President of the Fed) and Henry Paulson (Secretary of the United States Treasury) contacted Jamie Diamond in order to find a private financing solution. According to the reasoning of Bernanke and Paulson, a takeover by another banking actor would be doubly positive: it would make it possible to avoid involving the authorities and to avoid panicking the financial markets in the event of the bankruptcy of a large American bank. Thus, avoiding state intervention and favouring private intervention seems the perfect solution. (Maggio, 2018)

However, public authorities must act quickly. And James Diamond at the head of JP Morgan was initially not interested because “He does not have sufficient guarantees”. (Maggio, 2018) In response, the Federal Reserve Bank of New York provides a twenty-eight-day emergency loan worth \$30 billion to finance dangerous assets. In an emergency, the response of the monetary authorities aimed at reassuring the markets of the solvency of Bear Stearns. Indeed, investors fear that if the company fails, the financial sector will implode.

However, two days later, JPMorgan Chase will pay \$2 per share to acquire Bear Stearns in a bailout because that buyout is now backed by \$30 billion in federal money. The takeover of one of the best-known companies on Wall Street at a fire sale price is beginning to raise many concerns about the sustainability of the financial sector. Let us also add the particular context in which the financial crisis emerged. We are in the middle of a presidential election pitting Obama against McCain. Also, the period is difficult for outgoing President Bush because he is suffering the consequences of an Iraq war which is unpopular, and which drags on.

On September 7, 2008, the American government placed the two American financial giants under supervision. From this moment, we understand that the crisis is much more serious than we thought. Considered the most extreme credit crisis measure taken by Washington, the US government announces that it will take control of federal mortgage insurers Fannie Mae and Freddie Mac, “Between them, Fannie and Freddie held and guaranteed \$5.4 trillion in mortgage loans - the heart of the subprime system - representing 45% of all such loans in the United States and the equivalent of one-third of American GDP.” (Carceller, 2008).

Added to this are the political difficulties involved in rescuing these large financial institutions. Indeed, in a situation of economic crisis, where many people have lost their jobs, as well as their homes, the billions spent are less and less accepted by public opinion. Indeed, how can we accept that the American government could spend taxpayers' money to save those who had both plunged America into a recession, but who had also profited handsomely from it? As we will analyse below, the factor of public opinion was decisive in the management of this crisis. We will also see how opposition to bank bailouts pushed the American government to let Lehman Brothers disappear; a disappearance which will also be the tipping point in the spread of the financial crisis all this in a context of presidential election.

On September 15, 2008, the largest bankruptcy in American history occurred. Lehman Brothers, a global investment bank, surprisingly announces the collapse of its institution (see figure 6). The astonishment was twofold because the collapse of such an actor was catastrophic for the entire banking and financial system, but also because many investors thought that the American government would intervene in this bankruptcy.

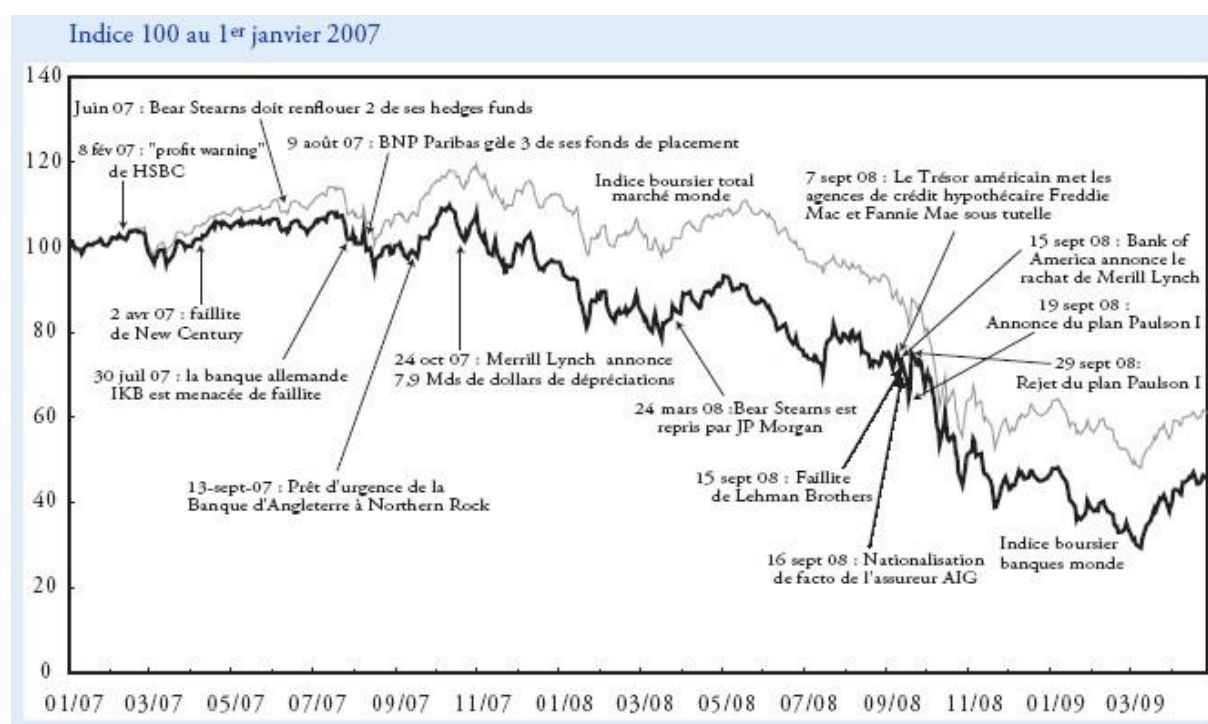
The first explanation for the bankruptcy is to be found in the behaviour of the investment bank itself. The financial crisis revealed the concept of "moral hazard", which refers to the propensity of people or institutions to take excessive risks when they are not aware of bearing responsibility for the negative impact of their actions. Indeed, in the past, government protection during previous crises has created a sense of false security, pushing financial institutions to take excessive risks without considering the potential consequences. In doing so, actors used financial products linked to financial premiums in order to satisfy their quest to obtain more and more returns.

This second explanation is to be found in the non-intervention of the American government but also, in the particular interests of other institutions that had a lot to gain from letting Lehman collapse. Indeed, banks like Goldman and JP Morgan could have recovered market share. In our

view, it was precisely at this point, with the collapse of Lehman Brothers, that the financial crisis became truly global and reached a point of no return as a result of the panic that became systemic and the collapse of major banking institutions. Indeed, as we saw previously, the government had begun to save the first banking institutions. So why not have saved Lehman Brothers like Fannie Mae, Freddie Mc or Bear Stearns?

The reason for Lehmann's non-intervention can be explained, in our opinion, in the study of human decisions and behaviour. Indeed, numerous testimonies and facts seem to tend towards an error of decisions but also towards an influenced and “irrational” reaction of the regulatory actors (in particular by the particular political context of the time). Note that the global consequences of this decision were unknown at the time. We will study the reasons for this decision in more depth later in our analysis.

Figure 6



Plane, M. & Pujals, G. (2009). *Les banques dans la crise*. *Revue de l'OFCE*, 110, 179-219.

<https://doi.org/10.3917/reof.110.0179>

8. Analysis of behavioural and representative root causes

One of the first major elements to emerge from the analysis of major periods of our case study is the importance of ideology and economic narratives (Shiller, 2020) in the origins of this crisis. We have seen that well before 2007 an environment was developing that was conducive to the emergence of financial deregulation and disastrous behaviour in financial institutions. In our view, the first deep-seated behavioural causes can be found in two major periods of economic and political history. Obviously, as we explained earlier, our focus here is more on the narrative and ideological era marked by the political leaders of the time than on their actions themselves. We are aware of other interests, other structural, economic and political influences. But we have chosen to concentrate on the study of the narratives of this period, which we believe reveal the behavioural causes of the financial crisis.

8.1 The influence of narrative in the development of the crisis.

Firstly, the Reagan and Thatcher Era left their mark on the world with their neo-liberal economic and political reforms. The Reagan/Thatcher period marked a paradigm shift in the global economy and financial markets. The two heads of state were in favour of opening up the economy, reducing the role of the state, deregulation and the application of "laissez-faire". As we explained earlier, this movement followed the Bretton Woods agreements and a period of deregulation and opening up of world trade. Globalisation is accelerating and financial institutions and large companies are becoming increasingly globalised.

In the 1980s, the Reagan/Thatcher period marked the end of Keynesian policies of state intervention in the economy and protectionist trade policies. At this time, the United States was preparing to win its battle against the USSR. The alternative Soviet economic model was about to fail. The time was ripe for the development of economic and commercial globalisation. The Western countries are massively relocating their production to third countries where labour is cheap, taking advantage of an open, globalised economy where they are the sole masters. Moreover, this is another element of global macroeconomic causality that can explain the weakening of the financial system.

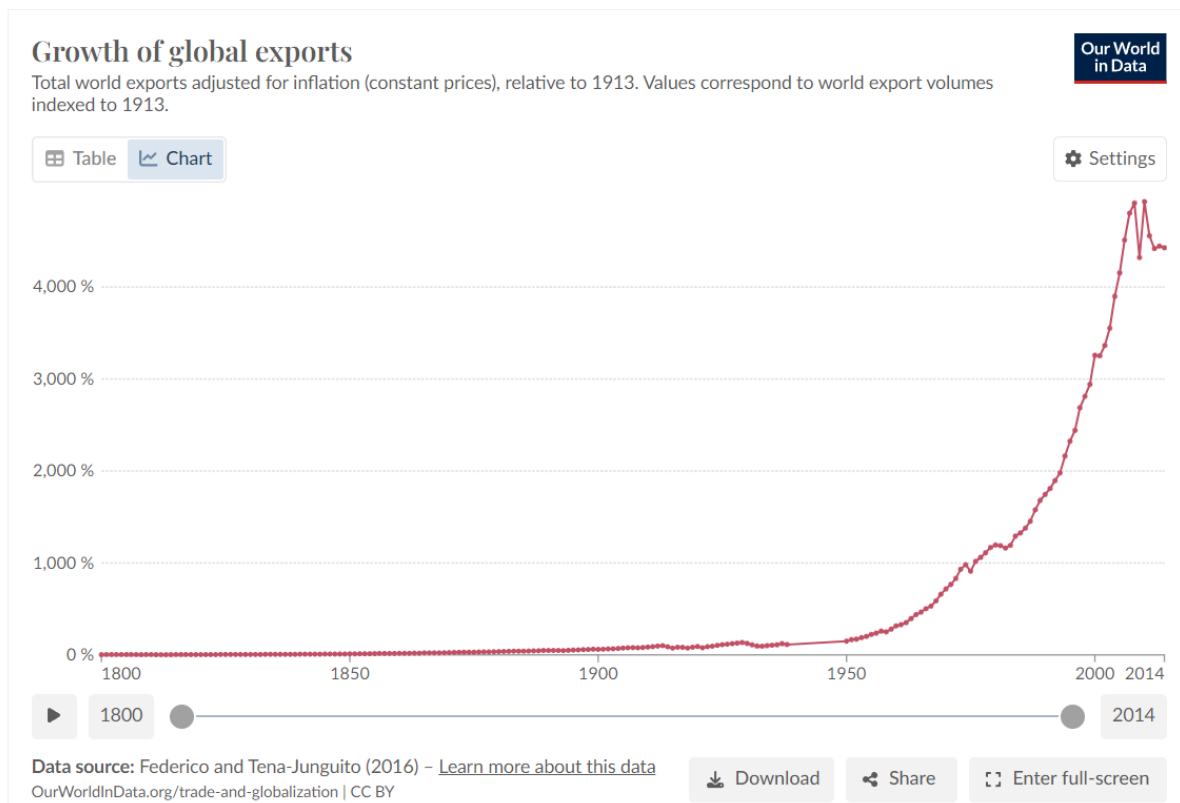
The two leaders were representative of an increasingly shared narrative. They were "both strongly anti-government, anti-Keynesian, and advocates of the private market sector and tax reductions." (Deeds, 1986) According to the neo-liberal narrative, government intervention in an economy tended to lead to disruption and uncertainty in business. (Deeds, 1986) It was

therefore necessary to reduce them as much as possible. The idea was simple: less government and laissez-faire.

This liberal "laissez-faire" philosophy is also spreading in the United States, in both economic and political circles. An ideological influence and narrative that are pushing the US government to deregulate the financial markets, as we have already seen. The obvious reasons for the crisis include a lack of regulation, poor risk management and the greed of bankers. All these factors were the result of political decisions taken during the laissez-faire period. After the fall of the Berlin Wall in 1989 and the collapse of the Soviet Union shortly afterwards, the credo of the market became even clearer. It was a time of American domination and hegemony. Moreover, the period marked by the Bush and Clinton presidency continues the development of the neoliberal narrative. As we developed previously, the period of the 2000s continues the trend towards deregulation and financialization of the economy.

This period of economic globalization is thus reinforced by a powerful narrative which argues that the only desirable political and economic development requires an opening of the economy, a reduction in customs tariffs and the unconstrained movement of capital. So, for example, if we look at the evolution of world trade figures, particularly through the Growth of global exports we see an exponential increase in world trade which is accentuated following the end of the Second World War (see figure 7).

Figure 7



Ortiz-Ospina, E., Beltekian, D., & Roser, M. (2023, 28 décembre). *Trade and Globalization*. Our World In Data. <https://ourworldindata.org/trade-and-globalization>

To conclude, we can say that the many market liberalisation and deregulation reforms have their roots in a particular worldview. Professor Robert Shiller (2020) has highlighted the importance of 'narratives' and 'storytelling' in setting economic policy. In his view, stories can go viral and have an impact on the psychology of economic and political players. Sociologists, anthropologists and historians have often highlighted the connection between narratives, religions, shared values and the development of past societies. The examples are numerous. Whether we are talking about Athenian democracy, the Roman Empire or the French Revolution, it is ideas, ideologies and narratives that largely shape the societies of the day. The philosopher Arthur Schopenhauer (1896) rightly explained that "the world is my representation", meaning that we apply to reality a representation that "makes the world". So the human tendency to 'transform' reality according to the representations we make of it helps to explain why the context is so favourable to the outbreak of the crisis and the development of neo-liberal ideas.

Also, as Akerlof & Shiller (2010) explain, stories are incredibly powerful and spread from country to country, mind to mind. Capitalism "does not just sell people what they really want; it also sells them what they think they want. Especially in financial markets, this leads to

excesses, and to bankruptcies that cause failure in the economy more generally. All of these processes are driven by stories. The stories that people tell themselves, about themselves, about how others behave, and even about how the economy as a whole behaves all influence what they do. These stories are not stable but vary over time” (Akerlof & Shiller, 2010).

These narratives and decisions have weakened the financial system. They have pushed to reform the economy towards a neo-liberal model which “increased the power of capital (or the owners of capital) over labour.” (Kirkland, 2015). In this way, the almost total 'laissez-faire' attitude has authorised the most deleterious and irrational behaviour and decisions in financial institutions. We will then try to determine how financial players have been able to engage in such behaviour.

8.2 Analysis of behaviours

We have highlighted the state of political and economic thinking that was conducive to the emergence of the crisis. We must now consider the decisions and behaviour of financial players, which were also conducive to the outbreak of the financial crisis. To do this, we will highlight these decisions and behaviours by analysing them in terms of behavioural analysis. We will highlight other factors that led to the 2007-2008 financial crisis, such as the role of rating agencies and accounting fraud. In the remainder of this empirical analysis, we will highlight the behaviour of institutional actors but also of individual actors. We will identify the key explanatory elements which, in our opinion, are the behavioural factors of our case study. We will use theories, behavioural trends and psychological biases to provide explanations for our case study.

8.3 The proliferation of derivatives

The famous investor and financier Warren Buffet described derivatives as "financial weapons of mass destruction". (Kenton, 2023a). The Omaha investor knows his stuff, and even found himself rushed to the head of the giant Salomon Brothers, the precursor of securitised products, in 1991 following a scandal of fraud and financial abuse. The famous investment bank was in some ways the early 'twin' of Lehman Brothers in the sense that, long before the financial crisis erupted, the institution was also accustomed to the same excesses: excessive bonuses for traders and managers, trading in dubious derivatives (notably CDOs - collateralised debt obligations), insider trading, a lack of risk culture, excessive indebtedness, etc. When the scandal broke, Warren Buffet had to save a financial institution that was in peril and about to be closed down by the US Treasury. What is interesting to note, in addition to the deleterious behaviour of

financial institutions, is the reason for Salomon's rescue. The bank was saved because of the confidence shown in the famous investor by US Treasury Secretary Nicholas Brady. What's more, according to Charlie Munger, Warren Buffet's partner and associate, "because he trusted him it saved Solomon. It shows how having a good reputation is really helpful". Provided, of course, that the institution is cleaned up and reformed.

This example interests us in the analysis of our case study for two reasons. Firstly, it shows us the importance of interpersonal relationships in major economic decision-making. For, as obvious as it may seem, the choice faced with a major problem is settled by psychological and behavioural issues and rarely by pure logic.

Secondly, it gives us a glimpse of the role that certain figures from the world of finance can play in the economic system. Just as George Soros played a role in the collapse of sterling in 1992, we have already seen that Warren Buffet also played a role in our case study. We will go on to describe the role of other individuals.

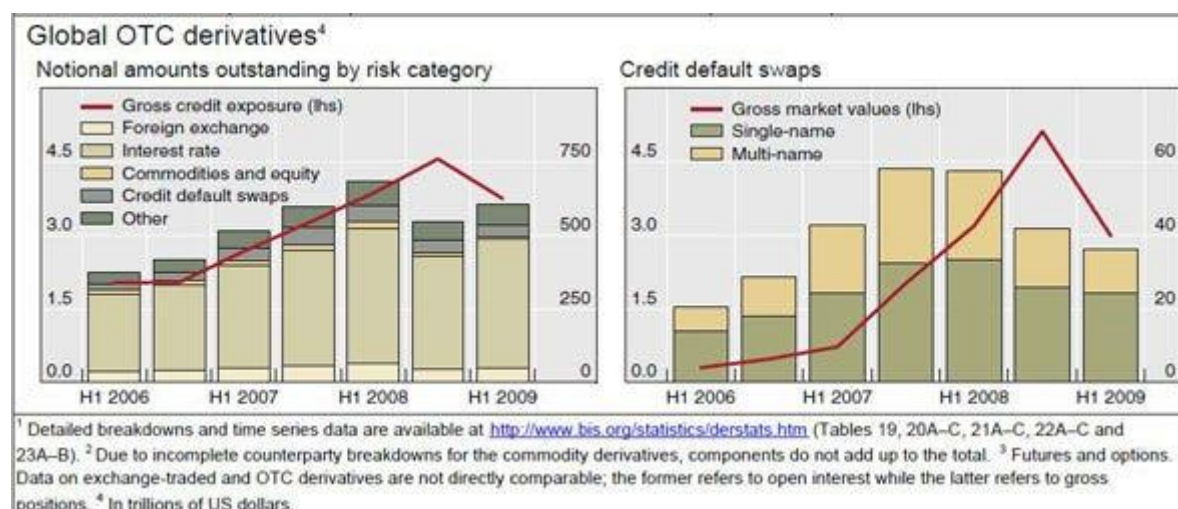
Before delving deeper into the subject of behavioural considerations, we need to dwell for a moment on derivatives. Because, as we have seen, they played a crucial role in the formation of the property bubble and the spread of risk. So, what exactly are we talking about?

Derivatives boomed in the 1990s. In theory, derivatives were invented to provide financial players with protection against various types of financial risk by hedging against adverse market movements. In short, derivatives are financial assets based on market values, also known as 'underlying'. And so, over time, the value of a derivative is influenced by that of its underlying. Another more likely explanation is that derivatives were invented for investors who did not know where to invest in a period of low growth and low profits. As we indicated previously, capital flowed massively towards subprime derivative products because they offered a high return, this phenomenon of influx and lure of gain accentuated the bubble effect on the American market.

In the specific case of our case study, these were derivatives whose underlying assets were essentially based on mortgage debt claims. Moreover, a major cause of the outbreak of the crisis was the unreasonable accumulation of these dangerous and unstable financial products, particularly through mortgage securitisation. Simply put, securitisation involves a bank converting its receivables into negotiable securities. In this way, banking institutions have bundled these mortgage loans into complex financial instruments such as collateralised debt obligations (CDOs) and mortgage-backed securities (MBSs). These instruments, once sold to

investors, spread the risk throughout the financial system. For example, in June 2006, “Merrill had amassed \$41 billion in subprime CDOs and mortgage bonds, according to Fortune. As the subprime market unwound, Merrill went into crisis, and Bank of America swooped in to buy it.” (TIME, s. d.) As we can see in the graph in Figure 8, we observe a considerable increase in derivative products, OTC derivative contracts are officially valued at over \$604.6 trillions, which is more than 10 times the global GDP of \$57.53 trillion. (Hera, 2022)

Figure 8



Hera, R. (2022, 15 juin). Forget about housing, the the real cause of the crisis was OTC derivatives. Business Insider. <https://www.businessinsider.com/bubble-derivatives-otc-2010-5>

However, when the property market collapsed, the quality of mortgage loans was often compromised, resulting in significant losses. What's more, the crisis was exacerbated by these financial products, which were considered to be "innovative" and advanced. Ansi, "Mortgage-based derivatives became the main cause of the unbelievably strong domino effect that characterized this crisis." (Szyszka, 2010)

However, the true quality of these products was overestimated because this market was largely based on Mortgage-Backed Securities which as we have seen were part of one of the major causes of the financial crisis. This situation led to large losses when the value of the underlying assets fell. The effects of the crisis were reinforced by the abusive use of leverage, i.e. the commitment of borrowed funds to investment. The argument put forward by financial institutions was that these financial 'innovations' made it possible to avoid risk by diluting potentially risky underlying, but also that these products offered a considerable return at low cost because they were 'risk-free'. In so doing, the diversification that was supposed to guarantee

risk only accentuated it. And the financial capitalist system of the time « was a huge derivatives industry (mortgage-backed securities being but one small part) was allowed to grow up largely unchecked and unsupervised.” (Wachman, 2008)

Unfortunately for the banks and for the entire financial system, these products did not dilute the risk but spread it carefully throughout the system. In fact, in a banking and financial environment where key interest rates are minimal and the search for yield is the spearhead, almost all institutions wanted these 'innovations'. On paper, they offered virtually no risk and, more importantly, a considerable return on investment. As George Soros explains, « Most investors did not understand them. Their losses were catastrophic, and they became known as ‘toxic waste’”. (Soros, 2009) Of course, we are not denying here that some players really knew what they were dealing with. These few players were acting rationally in pursuit of profit. As for the majority of financial players whose evidence suggests that they were unaware of the reality of these financial products, they too were acting in the belief that they were being rational. However, these behaviours clearly show that there were serious errors of judgement among the players in this situation. Indeed, their rationality was limited by the simple short-term gain, while the growth of the derivatives market based on poor-quality assets already seemed objectively to be leading the entire financial system to disaster.

In doing so, many financial institutions have become more exposed to market fluctuations. The massive use of derivatives has made the system more unpredictable and more interconnected, exacerbating the problem. All this has happened as if the financial players did not want to be aware of the obvious danger of such products. What we have here is a fine example of the characteristics of a complex system that can be considered 'fragile' because it is interconnected and can break down and deteriorate at the first sign of stress and chaos. (Taleb, 2012).

So how can we explain the proliferation and unreasonable use of such financial tools? Based on research in psychology and behavioural studies, we will attempt to provide other explanations as to the causes of the behaviour that led to the outbreak of the 2007-2008 financial crisis. To do this, we will use the tools and theoretical concepts that we have already studied in our first theoretical section based on concepts and theory in behavioural finance.

8.4 Overconfidence and Lack of financial literacy

The first behavioural explanation is "lack of financial literacy". This trend can be explained by a lack of financial knowledge. People are unaware of the complexities and the many issues and entanglements of the financial system. In short, they think they know what they're doing, but

they're wrong. What's more, this trend is similar in many respects to the 'overconfidence' bias that we'll be looking at next.

This 'false knowledge' was particularly evident in the major financial players, who were unable to grasp or manage risk. The notion of risk is fundamental in the financial world, as its study must protect major banking institutions from losing money or even going bankrupt, as in the case of Lehman Brothers. Also, "Finance is the economy of time and risk. For financiers, risk is their raw material: it is managed, traded and passed on. Modern financial theory is essentially based on a model of risk represented by the normal distribution". (Albouy, 2009). As we said earlier in our theoretical section, certain economic currents argue that economic models are too "simple" and cannot express the complex and plural reality of the economic world.

Thus, a representation of risk in the form of a statistical normal distribution presupposes an equal and measurable distribution of risk. However, Nassim Taleb's work on black swans and the unpredictable shows us that unforeseen events can occur and explode all the models used to represent financial risk. Of course, models are essential for understanding the economy and establishing investment strategies and policies. However, there are many errors in models, because they either do not reflect reality or do so poorly. For example, it is difficult to understand behaviour, the psychology of players, pandemics, wars and so on. There is an inability to even predict what might happen, due to the unpredictability and complexity of human systems. In short, the models are effective for simple modelling, but regarding risk in financial markets, there is a « misunderstanding of elementary notions of probability » (Taleb & Martin, 2012). Because we do not know how to clearly express that a crisis is occurring on the markets. In doing so, players in the financial world “may not recognize the red flags and instead focus on the enticing promises.” (Donen, 2023)

The “Overconfidence” bias is also another strong psychological tendency which influences actors and which can be understood in parallel with what we have just explained. Indeed, the “overconfidence” effect occurs when subjective confidence in a person's judgment systematically exceeds the objective accuracy of their evaluations, particularly when that confidence is strong. In short, overconfidence is an example of a poor calibration of subjective probability. As Nassim Taleb explains, “the problem with experts is that they do not know what they do not know” (Taleb, 2015)

Thus, the excessive use by financial actors of leverage via derivative products can also be explained by the fact that individuals often overestimate the possibility of positive results and

underestimate the possibility of negative results, or risks. In games of chance, for example, players often overestimate their chances of winning while underestimating their chances of losing. For example, it is well known that financial asset portfolio managers overestimate their ability to outperform the market. According to De Bondt and Thaler (1995), when people say that they are 90% sure that some statement is true, they may only be correct in 70% of the cases. Also, "nearly all people consider themselves above average in their ability to get along with others." (Leković, 2020)

Even today, financial players rely on classic theories and complicated mathematical models to calculate risk. However, despite the presence of irrational or poorly informed actors in financial markets, the way financial assets are valued "does not take into account investor sentiment in traditional financial theory." (Zouaoui & Nouyrigat, 2011)

But also, just because we create complicated mathematical models to protect ourselves from risk does not mean we avoid it. On the contrary, it is only when we understand the limitations of financial models that we can fight against the tendency towards overconfidence. Let us add that the illusion of knowledge, « is the false belief that larger volume of information necessarily means a higher level of knowledge. Correctly interpreting the information is much more important than the information volume, however many individuals do not have the required ability, skill and experience to do so. (Leković, 2020)

Research indicates (Jlassi et al., 2014) that the primary factor that started and extended the global financial crisis in the US market and on other continents was an overconfidence bias. The results indicate that overconfidence persisted during the recession, albeit to varying degrees. This paper studies investor's overconfidence effect on dynamic market volatility provide robust Thus, "empirical evidence on the existence of overconfidence with different degrees among global financial markets (...) This finding shows that the investor reasons only over the short term and the decisions are often dictated by their psychological forces. Thus, a large part of excessive and asymmetric volatility in the global financial markets is explained by the overconfidence bias. The latter is a dynamic factor that engenders an aggressive asymmetric trading volume and increases stock prices fluctuation, especially during the global financial crisis 2007-2009." (Jlassi et al., 2014)

8.5 Group pressure and conformity bias

Numerous behavioural studies have proven the psychological strength of group and conformity in human societies. For example, conformity bias and the human tendency to follow the group

can help us understand our case study. So, what is this human tendency leading to conformity bias? This behaviour refers to our inclination to follow the opinion of the majority in order to integrate socially. We also speak of herd instinct when a group of people acts synchronously but without precise direction, like Panurge's sheep.

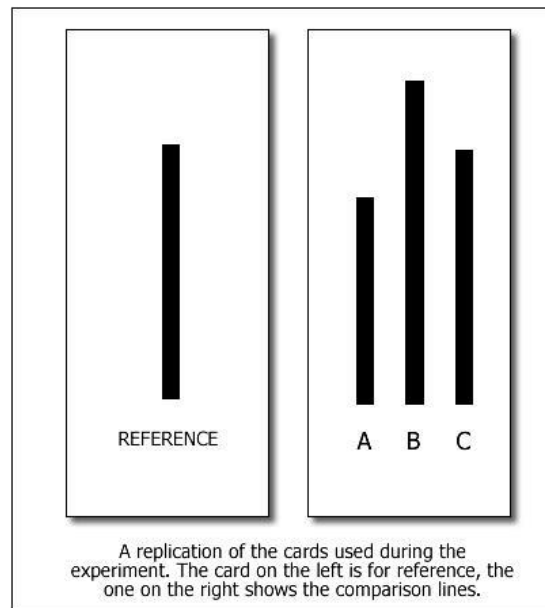
In several experiments, Muzafer Sherif asked participants how far a point of light moved in a dark room. In reality, the point was stationary, but it seemed to move following the autokinetic effect phenomenon. In fact, the movement of the light point in the dark room is due to eye movements. After being questioned individually, the participants responded in a very diverse manner. On the other hand, Sherif noticed that the responses converged toward a group average. Sherif's results showed that in an ambiguous situation, individuals comply with the group, providing an example of social influence.

A social influence that can be defined as “ all the processes involved in developing, maintaining, disseminating or modifying belief systems during conflictual interactions” (Girandola & Demarque, 2019). What stands out strongly is the difference between an individual response and a group response. Indeed, Sherif "found that there was a large variance in estimates of the magnitude of light movement when participants were interviewed individually, but that once they were given the opportunity to discuss in small groups, the variance of the estimates was much lower.” (The Decision Lab, s. d.)

There is a natural tendency for groups to tend toward conformity. In our case study, the group, the environment in which financial actors operate is that of banks, hedge funds, traders where behaviors such as the search for returns and risk-taking are behaviours that become compliance. From Lehman Brothers to Salomon Brothers we find the same behaviours because they are those of the majority in the financial environment of that era.

But is this enough to explain why the financial system launched into the trading of dangerous derivative products, leading to the establishment of a real estate bubble which would lead to the financial crisis a few years later? Another element that could explain this tendency towards conformity in the financial sector of the time can be found in the 1950s with the psychologist Solomon Asch.

Figure 9



Shuttleworth, M. (s. d.-b). Figure de l'expérience de Asch. <https://explorable.com/fr/figure-de-l'experience-de-asch>.

During this series of experiments Solomon Asch asked participants to complete what they considered a simple perception task. They were asked to select a line whose length was equal to that of one of the three lines. (See Figure 9) Interestingly, when participants were asked individually, they selected the appropriate line. However, in the presence of other members who participated in the experiment and who chose the wrong line, approximately 75% of the participants followed the group... This experiment convincingly illustrates the normative influence that the group exercises on the individual. To the very point where the objective errors of the group lead us to adopt what we know as obviously something non-logical, irrational. (Louapre, 2013)

Thus, the participants' responses conformed to the group in order to avoid any demarcation with the group. In a context with significant social conformity, it is proven that it is more than difficult not to fall into the tendency of group conformity. In another study on the behavioural and psychological causes of financial crisis, researchers showed that the psychological factor is the main cause of the financial crisis that broke out in 2008. Through examples including Standard & Poor's, Citigroup, Merrill Lynch, UBS and the SEC. The study showed that framing effects played an important real role in the choices and evaluations made by financial institutions, government regulators, rating agencies, elected politicians and institutional investors. during the events that led to the crisis. (Shefrin, 2009)

8.6 Operant conditioning

Another behavioural theory confirms our explanation. This is operant conditioning discovered by Burrhus Frederic Skinner. According to this concept, an individual learns to associate a given behaviour with a positive or negative stimulus, which influences the likelihood of repeating or decreasing the behaviour in the future. (Clément, 2013) The players in financial institutions at the time experienced a positive reinforcement of their actions. Because they were both supported by the leaders of the big banks, but also rewarded with large financial bonuses. For example, the use of leverage as well as the use of derivative products played the role of positive reinforcement in a logic of operant conditioning for actors in the financial world.

In many ways, Pavlov's findings on conditioning can also be connected to Skinner's work. Pavlov's conditioning experiment had already demonstrated that any positive reward after a stimulus made it possible to achieve classical conditioning. Pavlov succeeds in associating a neutral stimulus with a meaningful stimulus. The most famous example is conditioning on dogs. Indeed, it succeeds in associating a neutral stimulus (the sound of a bell) with a significant stimulus presentation of food (significant stimulus) in order to provoke a salivary reaction in the dog. There are two main categories of conditioning: traditional conditioning and operational or operant conditioning. In the first situation, the stimulus causes a reaction, in the second situation, it causes an action. (Bitterman, 2006) In conclusion, it seems that many psychological trends and forces influence actors without them knowing it, pushing them to pursue behaviours that, in this case, will push them towards financial disaster or bankruptcy.

8.7 The financial incentives

For now, we have tried to provide answers to the not-so-simple question: why do people behave the way they do? Applied to our case study, we still need to provide more elements in order to be able to draw up a correct picture of the behavioural causes leading to the crisis. To do this, we must first address the question of “financial incentives” which have had a considerable behavioural role on financial players. It is commonly accepted that among the causes of the 2007-2008 financial crisis are the absence of a risk culture, excessive over-indebtedness as well as the proliferation of derivative products in financial institutions. These factors allowed the spread of a risk that had become excessive.

“Incentives” are external stimuli that enhance or serve as motivation for behaviour. They are of two types: positive or negative. According to some behavioural theories, the need for “incentives” or rewards from external sources is the main factor that influences human

behaviour. This implies that we act in specific ways because we believe it will result in positive things. (Psychology, 2024). The expression “the carrot or the stick” well illustrates the mechanism of this psychological tendency.

In the world of finance post-financial deregulation, “financial incentives” have a considerable place. Remember that in the majority of large banking institutions, financial bonuses granted to traders or fund managers are based on their performance. Let us also remember that the primary objective of a bank is to make a profit by putting its customers' capital to work. Let us add that the overall pre-crisis context was guided by monetary policy with low interest rates, with interest on capital also being low. The period of the 2000s was one of stagnant economy. This context led financial players to adopt risky behaviours in order to obtain higher returns. Also, as everyone subscribed to derivative products linked to subprimes because they guaranteed a higher return, many players amplified the trend.

The incentive to subscribe to derivative products, to use considerable leverage and to take dangerous bets was thus largely rewarded by the very functioning of the financial world. Managers knew well that the best way to motivate employees was through the prospect of receiving a carrot proportional to the performance achieved. Indeed, “generous and specific financial incentives can help drive and sustain a rapid performance improvement (...) Financial incentives are one of the most effective tools available for executives to motivate employees.” (Bachmann et al., 2022)

Also, it must be understood that a strong “incentive” works in humans thanks to the dopamine mechanism which it generates in the body once obtained. Dopamine is a neurotransmitter, which generates a feeling of reward-related pleasure in our brain. For example, the addictive properties of sugar, coffee, smartphones or drugs also activate dopamine mechanisms. And so this mechanism applies, “dopamine drives us to “want” incentives” (The Decision Lab, s. d.)

So, when bank employees saw their friends and colleagues benefiting from increasingly large bonuses, they began to adopt the same methods. “Winning is contagious. It becomes addictive, and people don’t just want to sit on the sidelines.” (Bachmann et al., 2022) This has considerably accentuated the phenomenon of derivatives and bonuses serving as “incentives”. Additionally, banks have benefited from high profits from traders who incentivize them to exceed their limits, as well as from those responsible for selling CDO securitized debt. One of the main causes of the financial crisis was therefore this incentive compensation plans in the sector, which encouraged people to take even more risk. Indeed, “It is now generally understood

that compensation practices, which feature a short-term bonus culture with no clawbacks for long-term performance are problematic.” (Murray et al., 2017) As demonstrated by Murdock (2014), “rating agencies that are paid by the person seeking the rating reflect not only an irresolvable conflict of interest, but also a very entrenched system. Credit default swaps, where the purchaser of insurance has an informational advantage over the provider of insurance make no rational sense.”

8.8 Principal agent problem and moral hazard

This situation also highlights an agent-principal problem. Agent-principal theory explains that an agent-principal problem arises when one party's incentives conflict with those of the party it represents, thereby creating a conflict of interest. In the case of derivatives, investors relied on banks to guarantee the solvency of the loans issued and guarantee the other securitized products put in place. However, because banks, in theory, no longer bore responsibility if loans failed, they had little incentive to cautiously assess a borrower's risk of default.

In addition, the financial context was also conducive to moral hazard. Moral hazard occurs when a person or company that is insured against a risk act in a riskier manner than if it were fully exposed to the risk. Because first of all, the banks thought they bore no risk due to the diversification of subprime derivative products. Then, many banks considered themselves “systemic”, that is to say so big that they considered themselves unable to fail because of their size. “Too big to fail” has led to unreasonable exposure to subprime risk. Here again, the banks' behaviour is rational in the sense that it is in their interest. However, we see how these behaviours come from behavioural and psychological influences. And once again, the rationality in the pursuit of an agent does not necessarily make it a rational and reasonable choice for the long term and for the economy in general. As we have seen, there are different levels of rationalities because actors have bounded rationality.

Let us add that brokers and financial advisors are ethically and legally required to offer only “appropriate” assets to their clients. This is just one example of information asymmetry that has occurred between bond derivatives buyers and investment bank representatives. In doing so, « the information asymmetry created a moral hazard for the investment banks' agents, as they were insulated from civil lawsuits based on alleged violations of fiduciary duty to investors » (Murray et al., 2017)

Also, certain behaviours provide us with concrete examples in our case study. Accounting fraud through the misrepresentation of accounting balance sheets. This criminal behaviour was found

in large companies, banks, investment funds and auditing firms. We will cite, for example, the famous case of the company Enron which inflated its profits thanks to an accounting process which hid the debt and transferred it off the balance sheet. Another example is given to us by the Lehman Brothers case which we will study in more detail later. Lehman Brothers employed an accounting method known as Repo 105 to temporarily remove assets from its balance sheet to make it appear that its financial position was stronger than it actually was.

Likewise, the Bernard Madoff case is infamous because it provides a representation of the financial context of the time. By developing a Ponzi scheme (a pyramid scheme and financial fraud which involves remunerating clients' investments mainly from funds provided by new entrants), Bernard Madoff said he could offer exceptional returns. In a context of easy money, low rates and economic growth everyone wanted to make easy money like their neighbours. In this pre-crisis context, audit companies supposed to monitor and ensure the viability of the accounts showed almost total negligence by ignoring the poor fundamentals of derivative products and ignoring accounting manipulations.

Finally, we must also note the crucial role of rating agencies in the emergence of the crisis. Indeed, as we have seen previously, numerous behaviours have led to excesses, fraud and the financial destabilization of the system. Among the many actors who participated in these activities, the CRAs (Credit rating agencies) played a key role. Rating agencies evaluate debts, as well as the solvency of governments and companies in order to assess financial risk. To do this, their role is to determine whether or not an issuer will be able to repay its debt. Depending on the economic situation of the entity, the agencies assign a rating which assesses this solvency and therefore the level of risk.

In theory, rating agencies provide a guarantee of security through their work. However, in our case study, it turns out that these agencies made errors which encouraged the entire financial world to use so-called risk-free financial products because they were positively evaluated by the rating agencies. Rating agencies played an important role in encouraging investors to stock up on collateralized debt obligations (CDOs) that were effectively unsaleable. Agencies have awarded an AAA label (the best score) to a significant fraction of loans, even the riskiest. Also, the largest agencies, Standard & Poor's, Moody's and Fitch, have guaranteed for more than a decade the solvency of more than fragile financial assets.

However, as previously discussed, rating agencies came under significant pressure from government policy at the time. The government's stated social objective was to encourage citizens to acquire property.

The conflict of interest seems the most likely explanation. The rating agencies have in fact largely benefited from the context and the absence of regulation, which allowed them to encourage the trend by taking advantage. To make yourself, “CDOs were used extensively to bundle up sub-prime property mortgages and resell them to financial investors around the world, frequently with AAA ratings, when they were really junk bonds. During the housing property boom in the United States, many mortgage loans were made to ‘ninja’ borrowers (no income, no jobs and no assets) on honeymoon interest rates and principal repayments.” (Barton, 2009).

For many analysts, rating agencies and issuing institutions were aware of the dangers associated with mortgage lending. This is why they grouped them into complex CDOs in order to diversify the risk, and why they tried to sell them as quickly as possible to unwary investors. Also, the rating agency market has few players and not guaranteeing problematic derivative products meant sending them to competitors. It was therefore better to participate in the trend than to lose market share. Also, “A glaring conflict of interest is one possibility: these outfits are paid for their ratings by the bond issuer. As one S&P analyst wrote in an email, “A bond could be structured by cows and we would rate it.” (The Financial Crisis - TIME, s. d) To conclude, all these factors led to an explosive situation, where the actors participated, sometimes without knowing it, in the construction of an extremely fragile house of cards.

8.9 The failure of Lehman Brothers and the deepening of the financial crisis

We have previously highlighted behavioural causes aimed at explaining the advent of our case study. In order to determine in more depth, the causes of the financial crisis we will now focus on the specific case of Lehman Brothers. We believe that among the many episodes that marked our case study, the Lehman Brothers case is the most illustrative. There are two fundamental reasons for this. First, it was at the time of the bankruptcy of Lehman Brothers that the financial system became aware of the real catastrophe by causing a global panic. Secondly, the Lehmann example allows us to illustrate the importance of the individual and decision-making factor from a behavioural angle. Previously, in the section on the major phases of the crisis we highlighted the importance of the behaviour of actors in the crisis. Finally, we wondered why

the American authorities had let Lehman Brothers go bankrupt unlike Bears Stearns, Fannie Mae and Freddie Mc. We believe that Lehman Brothers could have been rescued like the Bear Stearns bank which was saved at the last minute. However, it turns out that some key political actors chose not to save Lehman. We will therefore try to highlight the behavioural reasons for this decision which could have changed the course of economic history.

To do this, we will focus our attention on a small number of individuals who played a key role. Among these: George W. Bush president of the United States at the time of the facts, Ben Bernanke president of the Federal Reserve, Timothy Geithner president of the New York Fed, Henry Paulson Secretary of the Treasury of the United States, Jamie Dimon director general of JPMorgan Chase, Richard Flud director of Lehman Brothers.

Our objective here is to show the behavioural causes that could explain the decision to let Lehman Brothers fall. We also believe that the collapse of Lehman Brothers was not only a consequence of the crisis but also a cause of its accentuation, since it was after its collapse that the crisis took on even greater proportions. The collapse of Lehman Brothers is an additional element in the causes of the financial crisis of 2007-2008. Also, as we indicated earlier, we are aware that certain players had a rational interest in letting Lehman Brothers go bankrupt. However, among the actors involved we will look at the decisions, behaviours and psychology of the actors who could have caused the collapse of Lehman Brothers.

8.10 Political and economic context

First of all, it must be understood that when the real estate bubble burst, the most exposed banks suffered from a serious liquidity problem. Derivatives built on real estate debts defaulted and collapsed. At that time, as Paulson explains, “it was a huge liquidity problem, the bank inter-lending market was drying up.” (Maggio, 2018). At the time of the Bear Stearns bailout, panic was starting to set in because if the banks started to default there would be a domino effect. Bankruptcies that could reach as far as Goldman Sachs and Morgan Stanley. Also, American citizens were worried about their pension, the famous 401K which depends on the vagaries of the market. We must therefore not neglect here again the strength of opinion and of the group in the reaction of the actors.

In a speech to Wall Street in March 2008, as Bear Stearns began to fall drastically, George Bush declared that there would be no bailout of Bear Stearns. However, his statements had a counterproductive effect on the markets and accentuated the feeling of panic. However, Paulson managed to convince Bush of the economic disaster that was unfolding. It should be noted that

this was a normal position for Bush who was a supporter of “laissez-faire” and the free market, therefore opposed to state intervention. As he tells it himself, “I was unhappy about it you know, I was a freemarketer, I told people that, and I firmly believed it and still do by the way, but Hank (Paulson) is a persuasive guy and I trusted him.” (Maggio, 2018)

Note that the risks of exposure of banks to subprimes were becoming out of control. Paulson had to explain the situation to the President, according to him: « this was a for alarm fire, it cleared us bear stearns wasn't going to exist on Monday if there wasn't a solution. The markets were so fragile and so interconnected in that were going to have to do some pretty repugnant things, if we were going to save the American economy for the American people (...) this was a for alarm fire, it cleared us bear stearns wasn't going to exist on Monday if there wasn't a solution. The markets were so fragile and so interconnected in that were going to have to do some pretty repugnant things, if we were going to save the American economy for the American people” (Maggio, 2018)

Like many economists, President Bush was surprised by the bursting of the housing bubble. Bush later declared, « I had some of the smartest people in American couldn't explain to me what some of these instrument meant. And it's just like inventing more and more product in order to achieve higher and higher returns. It was taking bigger and bigger risks.” (Maggio, 2018).

Concerning Bear Stearns, Paulson managed to convince Bush to follow him in a rescue. As the former President himself tells it: “He (Paulson) said that bear stearns is failing and we got to do something about it. My first reaction was why ? They made bad investment... And sadly the people that invested in Bear Stearns and those who worked for bear stearns are going to pay the price of working for an entity that made bad investment. He said, you don't understand, if they fail, it's going to affect the international financial system.” (Maggio, 2018).

It is important to remember the counter-intuitive nature of state intervention at this time. In retrospect, it is easy to say that refinancing financial institutions was the only thing to do to prevent the entire system from collapsing. However, at the very moment of the crisis, decision-makers acted against their personal beliefs, their narratives that we analysed previously.

We owe the first rescue to Ben Bernanke. Indeed, before becoming president of the Federal Reserve, he was a professor of economics at Princeton specializing in the Great Depression of 1929. He therefore knew the disastrous consequences for the entire economic system if the State did not act as guarantor. Because, in the case of the Great Depression, he did not act and the

banks went bankrupt one after the other, triggering a panic (bank run) which caused the world economy to collapse.

Initially, Bernanke, like Bush, was against the bailout. As he tells it himself: “I was a registered Republican I believed in market solutions to economic problem. But I was a student of the Great depression ... about a third of all the banks in United States Failed and that in turn created a tremendous contraction in the amount of credit available to ordinary households and businesses. My grandfather’s drug stores kept going out of business in the 1930s and it created enormous hardships for many many years. Later on when I was a policy market took to heart the idea that allowing the financial system to collapse and the credit system to collapse was going to be extremely dangerous for the whole economy and that was why it was so important to make the loan.” (Maggio, 2018).

However, if the decision makers understood the stakes of the situation and decided to save Bear Stearns why not Lehman Brothers ?

Certainly, the State had decided to intervene, but the decision-makers were unaware that they would have had to subsequently approve the financing of several hundred billions. Bear Stearns, due to its exposure to the real estate market, had a great need for liquidity or it would go bankrupt. Paulson initially contacted the larger, more resilient banks that could have bailed out Bear Stearns. For Paulson it was necessary to act quickly, « the financial system was so concentrated and so intertwined that if you want to stop the bleeding you’ve go to go to the source and the source is wall street. And if you don’t stop the bleeding at Wall Street you kill the economy.” (Maggio, 2018).

To do this, he urgently asked Jamie Dimon CEO of JPMorgan to save Bear Stearns by buying the bank. Initially, Dimon was strongly opposed to this possibility because, according to him, the bank did not have sufficient guarantees. In other words, he didn't think Bear Stearns was a wise financial investment. It was at the last minute and this time with a government guarantee on Bear Stearns that JP Morgan saved Bear Stearns.

Thus, the rescue of the first institutions was done in collaboration with other private actors. This was a much more ideologically acceptable solution for supporters of the free market who were opposed in principle to any intervention. The idea was to provide “The implicit guarantee”. Initially these guarantees had nothing real and were only agreements in principle. As explained Paulson, “there was no guarantee, but the market assumed that there was, so you had management teams and shareholders making money off a government guarantee. (...) This was

a tactic, plain and simple, we didn't communicate that all the other Wall Street banks would believe that the fed, you know would be there to put capital in." (Maggio, 2018).

This arrangement worked to save the first institutions that were beginning to fall. In the case of Lehman, the government wanted to find a similar agreement with private actors. The idea was that the British Bank Barclays or the Bank of America would take responsibility for Lehman's bad assets so that the government could then withdraw its guarantee. Except that no bank wanted to get involved in the Lehman disaster because the bank was overexposed to subprimes, which would have placed these banks in an impossible situation. The initial plan was therefore for private actors to save the system. In addition, the consequences of Lehman's bankruptcy will make the American government realize its mistake in not having saved Lehman.

We must now focus on the question of the particular context of the time explaining the failure of the Lehman Brothers rescue. We have already previously highlighted the context of neoliberal policies, anti-regulation trends, the environment favourable to derivatives, risk-taking and excessive over-indebtedness. However, one last element of context has not yet been addressed: the 2008 presidential election pitting Barack Obama against John McCain. Note that McCain will even interrupt his campaign to return to Washington to find out about the state of the situation. The moment of crisis was crucial in the lives of Americans. In addition to a disastrous economic situation, financial institutions were collapsing one after the other. At this precise moment, a national anti-bank bailout sentiment is spreading among the population. Moreover, this anti-bailout sentiment was legitimate for many politicians and citizens. Because, if the banks had taken the risk of subprimes and had plunged the country into a serious recession, it was logical for them that they would pay the consequences. The situation became more and more complicated as the public demanded that the banks be allowed to fail. In short, let heads roll to pay for economic disaster.

Thus, politicians experienced enormous political and popular pressure. The end of Bush's mandate was marked by a very strong feeling of unpopularity. It was a bad period because the administration was suffering the consequences of the Iraq War which had become largely unpopular. Also, as Bernanke explains, "I think there's still many people who believe that we bailed out companies and helped Wall Street because we were trying to help our friends in the financial industry and not out of our interest in defending the US economy." (Maggio, 2018)

However, Bernanke, Timothy Geithier, Henry Paulson did everything to save the bankrupt banks because they knew the risk of the Great Depression type scenario of 1930. In doing so, going

against their neoliberal ideological principles where bankruptcy is a reality in the economic world, they saved Bear Stearns, Freddie and Fannie. The moment was extremely stressful with crucial issues both economically and politically. As Bernanke explains : “I think people need to appreciate that all these decisions had to be made in real time and very time pressured situations.” (Maggio, 2018)

Also, the three people at the head of the Fed and the United States Treasury were subject to numerous criticisms and political attacks. For example, Paulson was called the “Bailout King”, a difficult situation for a supporter of “Laissez-faire”.

However, on September 15, 2008, following the failure of an agreement between the banks and the government, Lehman Brothers went bankrupt. The bankruptcy of Lehman Brothers will plunge the world into a global economic crisis from which it will take several years to recover. For many analysts, those in charge knew what they were doing by letting Lehman fall: it was necessary to send a message to all the banks that the American government would not be the guarantor of everything, it was “Lehman's desire to do an example.” (Quoidbach, 2013) Paulson will declare, “We didn’t know how bad it was going to be, but we knew it was bad.” (Maggio, 2018)

8.11 Cognitive dissonance theory

The theory of “cognitive dissonance” can help us better understand the reasons for this dramatic political decision.

“Cognitive dissonance” consists of an internal tension that “produces a feeling of mental discomfort leading to an alteration in one of the attitudes, beliefs, or behaviors to reduce the discomfort and restore balance. For example, “when people smoke (behavior) and they know that smoking causes cancer (cognition), they are in a state of cognitive dissonance.” (Mcleod, 2023) We saw previously how, as soon as the real estate bubble burst, it was counterintuitive for the political leaders in place to save the failing banks. We believe that thanks to the unfolding of events, as well as the statements of those responsible, we can say that there was a strong internal tension between what had to be done and what those responsible decided in the case of Lehman Brothers.

According to Festinger’s (1957), “cognitive dissonance theory suggests that we have an inner drive to hold all our attitudes and behaviour in harmony and avoid disharmony (or dissonance). This is known as the principle of cognitive consistency.” (Mcleod, 2023) Initially, officials found reasonable accommodations by finding a rescue plan in collaboration with private actors.

Indeed, “cognitive dissonance” provides us with a possible explanation explaining the internal conflict among political leaders at the time of the bankruptcy of Lehman Brothers.

8.12 Reasoning Mechanisms

Another behavioural avenue is to be found in our reasoning mechanisms. As Professor Kahneman (2016) has demonstrated, we do not always have uniform and rational thinking. On the contrary, according to him our brain is based (schematically) on a distinction between two systems, system 1 and System 2.

System 1 is about intuition, perception, “heuristics”. System 2 is that of mathematical and logical reasoning, more difficult and requiring sustained attention. The merit of Kahneman's analysis, despite its limitations, is to have highlighted that the human brain is subject to a “bounded rationality”.

We thought that the choice not to save Lehman Brothers was more a matter of system 1, an instinctive and heuristic choice in order to make an example. Indeed, the economically rational choice (system 2) would have been to save the Bank at all costs due to its key role in the global financial system. We believe that the example of the Lehman bankruptcy demonstrates that it is a mistake to believe that political decision-makers or experts always act rationally because, despite what classical economic theories say, humans undoubtedly have a “bounded rationality”. (Kahneman, 2016)

In our view, Lehman's failure is to be considered in heuristic thinking software: software that Paulson, Bernanke and the others clearly adopted when deciding the fate of Lehman.

Heuristic reasoning are « Mental shortcuts, i.e. rules of thumb, are employed in order to find a satisfactory solution to the problem in a short period of time” (Leković, 2020).

Additionally, the benefits of using heuristics as intuitive and empirical techniques offer savings in time, energy and cost to the brain. As Kahneman demonstrated, these are streamlined mental techniques that greatly simplify the decision-making process. However, these mental shortcuts often lead to faulty financial judgments and persistent mistakes. Investors who take mental shortcuts end up making hasty judgments that are not demonstrated by a systematic analysis of all available data.

Certainly, this error did not persist; the American government subsequently financed the entire sector to stop the bleeding. Decision-makers readapted logical reasoning, even if it was too late. Finally, let us add that other behavioural and interpersonal factors must also be taken into

consideration, such as, for example, the known poor relations between Paulson and Dick Fuld, boss of Lehman. According to several observers, poor interpersonal relations did not facilitate the development of a compromise and a rescue of the institution. (Quoidbach, 2013).

In conclusion, we can say that the choice to leave Lehman Brothers was a mistake. However, this error is better understood by considering the numerous environmental, psychological and behavioural factors that took place during this tragic episode for the economy. In our opinion, the facts and the statements of the actors seem to demonstrate that part of this decision finds its origin in bad decisions, as well as a certain irrationality of the actors regarding the case of Lehman Brothers. We believe that all of these psychological and decision-making factors and certain errors of judgment combined in a psychological effect of Lollapalooza (Güngör, 2022) that could provide an explanation for the choice not to save Lehman Brothers.

9. The global panic

To complete the analysis of our case study, we will focus on the case of the global panic which spread to the entire system and actors following the bankruptcy of Lehman Brothers. To do this, we will try to highlight the factors that contributed to the acceleration of the global panic. We have previously focused mainly on the empirical analysis of institutional players, in other words professionals in the financial sector, but also on the role of individual players, particularly through the reasons for the explosion in subprime lending. Here, we will strengthen our analysis of individual non-professional actors by focusing on their behaviour as part of an overall analysis of crowds and panic in financial markets.

First, the collapse of Lehman Brothers in 2008 had a profound impact on the global financial system. This bankruptcy triggered a global financial crisis that led to a credit crunch, a collapse of stock markets and a sharp decline in the global economy. Also, this disappearance has also led to job losses, property foreclosures and a decline in consumer confidence.

Then, such an impact pushed governments to propose major bailout packages in order to stabilize financial markets and put an end to further economic damage. This situation led to the Greek debt crisis and a strengthening of regulation of the banking sector. Thus, over the year 2008, the CAC 40 recorded a drop of 42.7%, the Euro Stoxx 50 of 44.3%, the S&P 500 of 38.4% and the Nikkei of 42.1%. The collapse of the financial markets was massive and caused a massive sell-off. Banks, hedge funds and savers have massively disinvested from the markets in order to escape the collapse.

9.1 Law of supply and demand

The first explanation of the phenomenon is found in the “simple” law of supply and demand. Indeed, prices on financial markets are the results of supply and demand, that is to say that if a large number of people want a good, prices rise. Conversely, if the players no longer wish to keep this good and sell it massively, prices fall. During a massive sell-off, prices collapse creating a downward snowball effect.

The speculative bubble is based on the opposite effect. In fact, the more you buy, the more the prices increase. For example, in the case of the speculative bubbles of tulip bulbs or Dotcom, prices only rose massively because buyers driven by desire and the lure of profit continued to buy bulbs of Tulips in the markets. In doing so, prices reached historic highs, generating even more hope of easy enrichment.

However, markets are intrinsically tied to fundamentals. In our example, the fundamentals behind prices are tulip bulbs and companies active on the internet. However, at some point, prices have reached a "critical mass", that is to say, prices have moved so far away from the fundamental value that the slightest downward movement in prices in the market can cause the explosion of the speculative bubble. In short, an unforeseen move can bring down the house of cards. (Chavagneux, 2020). What's more, "It emerges that investor sentiment has a positive influence on the probability of stock market crises. The higher investor sentiment is, the more overvalued stock prices are and the greater the likelihood of stock market crises". (Zouaoui & Nouyrigat, 2011).

How can we reasonably justify that a tulip bulb can cost the price of a house in Amsterdam? Or even that a Dotcom company which loses money massively could be valued at several billion?

In the case of the market collapse following the crisis, the phenomenon is the opposite. Because the massive sale leads to a massive fall in prices, which encourages investors and financial players to sell to save their money. This is a “self-fulfilling prophecy” mechanism where “economic agents adapt their behavior to the forecasts they make of the economic situation.” (Fontaine, 2024).

That is to say that the psychology of panic or greed is produced among economic actors (investors, consumers or businesses) through beliefs, amplifications which can amplify economic reality. In one case, it is believed that the tulip bulbs will be worth more than a house. In the other, we believe in the collapse of the financial system and the dramatic consequences

of the crisis. Thus, “The price of a security only reflects the way in which agents represent the opinion of the market and its future developments.

9.2 Psychological factors

Psychological factors also seem to play an important role in the formation of stock prices, “It seems that investor sentiment is behind the sharp fluctuations in financial asset prices” (Zouaoui & Nouyrigat, 2011). In other words, simply believing that something will happen causes it to happen in the markets.

Emotions are also important in actors’ decision-making. In the markets, two major emotions influence courses of action: fear and desire. Indeed, “according to the behavioural portfolio theory, people are guided by two kinds of emotions when investing: fear and greed (...) Because of greed, investors fail to properly diversify their investment and accept often unnecessary high risk in the hope of gaining high profits, often betting on investments in selected financial instruments as if on lottery numbers.” (Szyszka, 2010).

The American economic situation following the real estate crisis has considerably impacted the financial stability of households. At the time of the crisis, they were indebted beyond reasonable limits. Subprime loans have ruined a significant portion of the American population and had a lasting impact on their savings. In doing so, the crisis has accentuated the emotional fragility of the actors.

Regarding this panic phenomenon, other behavioural analyses can be considered. For example, the similar effect of “Panic Selling” where during a period of crisis, investors can panic and sell their assets in mass, often irrationally. These risks making the crisis more serious by causing a negative spiral of sales. But also, the phenomenon is amplified by the effect of “Herding». And Herding can be defining as “the phenomenon of individuals deciding to follow others and imitating group behaviours rather than deciding independently and autonomously on the basis of their own, private information.” (Baddeley, 2010)

Transposed to our case study when many investors act in the same way, by crowd effect, this can accentuate downward market fluctuations. As we saw earlier, during the tech bubble period, many investors followed the Herding effect by investing heavily in tech stocks without worrying about their poor intrinsic value. (Fontaine, 2024). Therefore, investors “neglect the information that they have and blindly follow the behaviour of the majority of market participants. Similar to many animal species who are herding because safety is in numbers,

investors are monitoring and copying the moves of the largest group of investment public.” (Leković, 2020).

We have seen that the phenomenon of a speculative bubble could be formed inversely in “panic selling”, a bubble is theoretically defined as “A cumulative difference between the market price and the fundamental value of an asset.” (Broihanne & Capelle-Blancard, 2018). In this mechanism, investors constantly seek to optimize their profits and minimize their losses. However, several studies, including that of Tversky and Kahneman (1992), demonstrate that the level of dissatisfaction caused by a financial loss is two to three times higher than the level of satisfaction caused by an equivalent percentage of victories. (Novemsky & Kahneman, 2005). This phenomenon is that of the bias of “Loss Aversion”, who “refers to the fact that people treat gains and losses differently in terms of giving greater importance to potential losses” (Leković, 2020).

Also, the potential for losses is twice as powerful a motivator as the prospect of making the same absolute profit. This human behavioural tendency to take advantage when losing may explain how quickly markets collapsed. A speculative bubble can take months, and sometimes even years, to form, while a market collapse can occur in a day due to seller pressure and “panic selling”.

The context of all the factors previously cited, such as the anxiety-provoking climate, bank bankruptcies, the collapse of stock prices, etc. have also accentuated the phenomenon of global panic.

According to the principles of behavioural finance, investor sentiment is inversely proportional to market results. Indeed, as we have seen, stock market bubbles form at times when investors are increasingly optimistic. Due to the price correction, these periods of over-optimism (market overvaluation) will inevitably be followed by sharp declines in stock prices (stock market crises). However, the numerous historical examples of financial crises were not enough for actors to protect themselves against panic. In this, we return to the work of Kahneman (2016) and the concept of “Bounded rationality”, our rationality is fundamentally limited. Also, humans, subject to significant emotions and external influences, are afraid of “losing control” by giving in to their emotions and thus tend towards reasoning by intuition.

Let us add that this group effect, of “social conformity” exerted considerable pressure on the actors by accentuating panic. Other behavioural theories confirm this human tendency. For example, “groupthink” or “Janis effect” influence behaviour in the same direction. The “Janis

effect”, “is a way of thinking that people use when they are deeply involved in a close-knit group, when the members' desire for unanimity overrides their motivation to conceive other solutions realistically, to the detriment of the individuals' personalities”(Pensée de Groupe, s. d.)

Another trend corroborating our analysis is that of “social contagion” which is a manifestation of feelings, opinions or behaviours initially expressed by individuals which spreads to an entire group in a particular context. Shiller (2020) had already highlighted the relationship between the propagation of narratives and the spread of epidemics. Thus, ideologies, stories, collective fears or diseases also seem to follow a trend of exponential diffusion when a particular context allows it.

Finally, Akerlof & Shiller (2010) noted the animal nature of the behavioural mechanism. It seems that humans are easily subject to the contagion of emotions, to fear, to envy, to greed. So, « the idea that economic crises, like the current financial and housing crisis, are mainly caused by changing thought patterns goes against standard economic thinking. But the current crisis bears witness to the role of such changes in thinking. It was caused precisely by our changing confidence, temptations, envy, resentment, and illusions—and especially by changing stories about the nature of the economy. These intangibles were the reason why people paid small fortunes for houses in cornfields; why others financed those purchases; why the Dow Jones average peaked above 14,000 and a little more than a year later fell below 7,500” (Akerlof & Shiller, 2010).

One way of visualising the levels of extreme fear at the start of the crisis is to use the information provided by the VIX indicator (figure 10). The VIX is an index of volatility on the financial markets. If we look at the peak in volatility at the time of the financial crisis, we can see a drastic increase in the fear and panic taking place on the markets. It is difficult to provide figures that can quantify individual psychology and behaviour. However, the VIX provides us with useful information about the increase in volatility and investors' sense of fear.

Figure 10



Third way. (s. d.). <https://www.thirdway.org/report/the-vix-measuring-uncertainty-in-financial-markets>

10. Conclusion

Throughout this research work, we tried to determine “How did individual behaviours, as well as the representations of actors, influence the causes of the 2007-2008 financial crisis? ”.

In order to be able to answer our research question, we analysed our case study, the financial crisis of 2007-2008, using a behavioural finance approach. To do this, we first established a step-by-step a timeline of major periods of our case study. This allowed us to recall the essential macroeconomic reasons to take into consideration. But also, we noted the key role of actors and institutions in each of the stages of our case study. We therefore focused on the behavioural causes of the decision-making choices of professional players and institutions in the financial world, but also of non-professional players, particularly through crowd and panic movements.

Thanks to this, we exposed the influence of economic narratives from the neo-liberal schools of political science and economics, which advocate “laissez-faire” and non-intervention by the state in economic affairs. These narratives have had a considerable influence not only on financial players but also on decision-makers and regulators over the last few decades. We have highlighted the role of previous administrations in the causes of deregulation and the massive development of derivative products linked to subprimes throughout this period. Finally, this study of the major phases allowed us to identify excessive and dangerous behaviours, such as excessive debt, risk-taking, leverage, as well as the establishment of increasingly important

interconnections of the financial system via securitized real estate loans. Next, we deepened our analysis of behaviour within large financial institutions. Thus, we tried to provide behavioural responses to the development of excesses and the proliferation of dangerous derivative products.

Consequently, we have identified a series of psychological tendencies and cognitive biases that can provide elements of response to the establishment of the crisis: tendencies such as “Overconfidence”, “lack of financial literacy”, false knowledge, the false representation of risk, the trap of prediction and mathematical models, but also the inability to understand complex adaptive systems. In addition, our analysis highlighted the importance of other factors linked to group pressure, such as conformity bias, operant conditioning, financial incentives, and finally principal agent and moral hazard.

Next, we analysed the Lehman Brothers bankruptcy episode in more depth. We have shown that the failure to rescue Lehman Brothers was not just a consequence, but another causal element of the crisis, since the collapse of Lehman Brothers amplified the crisis by making it global. We have also studied risky behaviour and errors of judgement throughout the process of triggering the crisis. Thanks to this study, we have highlighted the behavioural reasons for the choice of the government actors in charge at the time of the facts, not to rescue the Lehman Brothers bank from bankruptcy, unlike other institutions such as Bear Stearns.

Through an analysis of the speeches and testimonies of the key institutional players as well as investors in our study of crowds and global panic, we noted the importance of the individual factor in decision-making with global consequences. This analysis also noted the influence of the particular context of the time (American presidential election and dramatic economic crisis following the explosion of the American bubble).

The study of the role of interpersonal relationships and the power of narratives and ideologies in decision-making allowed us to show the counterintuitive nature of rescue policies for American leaders of the time as well as the failure of a bailout agreement for Lehman Brothers between private sector and government.

We have also seen how theories of “cognitive dissonance”, as well as our “bounded rationality” push us to tend towards intuitive and heuristic reasoning rather than purely rational. Which, in

our opinion, allows us to provide explanations for the decision-making error that was the failure to rescue the Lehman Brothers bank. Finally, we analysed the causes of the development of global panic with regard to crowd psychology and the functioning of speculative bubbles. We also noted numerous psychological factors that contributed to the acceleration of the global panic, such as emotions, investor sentiment, the influence of the environment in a panic selling movement, the limitations of our mind, our “bounded rationality” and finally social conformity and social contagion.

To conclude, following our analysis we believe we have shown confirmation of our theoretical research hypotheses. Namely, that economic actors make errors of judgment and are influenced by their psychology because they have a limited rationality which mainly depends on their human emotions.

Classic macroeconomic models are also limited by their inability to take into account the functioning of complex systems and more particularly financial crises which are events that often occur unpredictably. We also noted that among the many causes of the financial crisis of 2007-2008, the irrational behaviour and decisions of economic actors played a role. And finally, that economic and political stories could shape financial models and allow the establishment of crisis factors. We believe that this research shows the importance of studying the psychology and behaviour of actors in understanding phenomena that have an impact not only on the economy but also on the geopolitical and political state of our societies.

However, this brief research work would require considerable in-depth study. Indeed, we lack tangible evidence to be able to clearly state that there is a direct causality between the irrationality and the behaviour of actors and the financial crisis of 2007-2008. Also, by choice, we have only briefly addressed the fundamental macroeconomic causes, although these are essentially the major causes of the financial crisis. Although we have provided our analysis of studies and empirical evidence, it remains difficult to demonstrate through figures and statistics the psychology of players, their decisions and their behaviour. Studies in behavioural finance are still in their infancy, and there are still many psychological, sociological and political aspects to the study of financial crises that we do not yet understand.

However, we believe that behavioural finance has a place in the analysis of financial crises because it pinpoints factors that are too often neglected in classic mathematical and scientific

models. At the center of the economy is the individual and as we have sought to show throughout this work, certain human tendencies can lead to the worst excesses and abuses.

Therefore, we must ask ourselves, how work in behavioural finance could help us establish the rules and regulations of the financial sector of tomorrow in order to be able to protect against new crises?

Indeed, political decision-makers are probably too often unaware of the biases and behavioural trends that impact them and the economy. We believe that financial regulation must be able to include behavioural realities to be able to better protect against the advent of financial disasters.

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