Introduction

The financial crisis, which originated in 2007 with the subprime mortgage *affaire* and continued in Europe with the turbulence of the Euro, is one of the most important events of this new century. This is not only due to its material effects (the greatest default in the history of the United States, the most serious recession in the recent history of developed countries, the crisis of the European institutions), but above all due to the profound changes it has provoked on a cultural, social, and political level. The debate around ideas in finance, economics, and politics has changed significantly.

Ten years after the financial crisis, with this book I will try to evaluate the legacy of those events.

If we go back to the debate that followed the Lehman Brothers default, we discover that the possibility for states to intervene to save the banks led to a rather surprising alliance: the most convinced supporters of the positive role of the market (and of the negative role of public intervention) rejoiced at the decision to let Lehman fail, and on the other side, the representatives of antagonist movements more or less followed the same line. For example, representatives of the "Occupy London" movement, which occupied the square in front of St. Paul's Cathedral in 2011 as a sign of protest against the City, expressed their intention not to pay for banking crises. Proponents of pure capitalism and anti-finance radicals agreed for once!

This is not the only surprising de facto alliance. Faced with the flop of the international financial system, an easy and necessary loophole seemed to be that of a recourse to ethics; an assessment shared by moral authorities, such as Pope Benedict XVI and the Archbishop of Canterbury, and by representatives of the financial system such as the governor of the Bank of England.*

If opposites meet, the events must be truly disruptive. In my analysis I want to start from the "easy" appeal to ethics, which too often becomes a travelling companion for the most extreme positions and populist campaigns that see the bailout of a bank as a favour to bankers rather than to depositors and companies that need credit.

In my experience, I have dealt with this issue in at least two different roles. First, as a finance professor who bears the responsibility of introducing students to the world of finance. I tell them that finance is a neutral technique and that individual conscience must be a watchdog in their professional experience, but the temptation to limit finance back to a technique that, like nuclear energy, is neither good nor bad in itself, has always struck me as not fully sincere. It is too easy to say that the value of finance depends on how we use it.

There is no doubt that finance is a technique that must be accompanied by a capacity of discernment and an ethical foundation established by people. These attitudes certainly provide a good service in general, but to me, a generic reference to the conscience of a person or to a generic "common good" has never seemed to be an adequate guide for those who must make everyday decisions in the world of finance. I have developed this conviction in my experience as an independent director of finance companies. Surely there are financial operators who have abdicated this responsibility while looking for easy gains, but "to separate the wheat from the chaff" is not always easy. There are plenty of directors of companies who, faced with unprecedented scandals, simply claimed that they did not have enough information to understand what was happening. How credible is this position and how much did they simply not want to see reality? It is not easy to answer. Even if a person has integrity and works conscientiously, an appeal to ethics is likely to be of little help. Just to give some examples: what is the fair fee for managing funds? What is the fair price in a transaction outside an organized market? What risks can an intermediary afford? How proper is it to insert and cancel orders suddenly on the market with the aim of influencing the trend?

While these are questions that often do not produce precise answers from a technical point of view, an ethical evaluation is even more difficult,

* Pope Benedict XVI (2009), *Caritas in Veritate*; Mark Carney (2014), I*nclusive Capitalism. Creating a Sense of the Systemic*, London, 27 May.

as it requires a clear identification of the values and rights of the people involved. These features are as foggy, or even more foggy, than the answers that the technique seeks to provide.

The call to ethics is therefore not very helpful; my belief is that the financial crisis has shown that the problem with finance is much subtler and more complex. In the case of nuclear energy, the terms of the problem from a technical point of view, and the values at stake, are well-defined. Evaluation from an ethical point of view can be very complex, but the terms of the question are well-posed. For example, the choice to use nuclear energy for civilian use requires comparing the cost savings in producing energy with the consequences of a possible accident and those related to the disposal of nuclear waste in the future.

Finance cannot be addressed in these terms. Of course we can reduce the whole debate to how much a CEO should earn compared to a bank teller, but if we follow this perspective we will not get very far because the proper functioning of the financial system is much more complex. The point is that the financial crisis has clearly shown that there is good finance and bad finance; the former is well-designed while the latter is not. It is good or bad technical methods, rather than human greed, that make finance good or bad. This is the point that I will try to investigate in this book. I believe that the misuse of some important cornerstones of finance theory (demonstrated in many books), the lobbying action of the financial industry and the myopia/powerlessness of the regulatory/political authorities, have ended up producing a badly constructed finance that has not been able to keep the promise to be useful to society. This is the theme that I will try to address in this work.

It is difficult to introduce ethics and moral considerations in finance. As an example, consider the meeting between Georgia Hale (Melissa Leo) of Standard&Poor's and hedge fund manager Mark Baum (Steve Carell) in the film *The Big Short*. Baum is questioning the ratings of structured products that are obviously not aligned with fundamentals. Hale defends herself by arguing that Baum is a hypocrite because his argument is due to his short position on structured products linked to subprime mortgages. Baum takes the blow but counterattacks saying that the fact that he is betting against the markets "doesn't make him wrong".

The book aims precisely to investigate what is "right" and "wrong", to build a financial system that is sound and useful (for society), disentangling this perspective from an ethical point of view.

It is difficult to discern what is "right" from what is "fair". The two things are not always aligned. The end of the film shows this point clearly: having bet against structured products, Mark Baum has the possibility to make a huge amount of money by closing the position. Finally, he accepts it, but he also says that in doing so they will be like all the others. This difficult decision makes the limits of ethics in finance explicit: Baum was acting correctly, but he was making money by betting against the market and the economy as a whole. Was this ethical? It is difficult to say, and maybe his reaction after the collapse renders the difficulty of the choice: he becomes gracious and never says "I told you so" to anyone.

What I propose to do is to reflect on the mechanisms behind what happened. The aim is not so much to identify the culprits but to investigate the root causes of the crisis, to evaluate its legacy and to identify possible solutions, including the technological Fintech revolution.

My analysis will focus on four themes: commoditization of risk, industrialization of finance, deregulation, and ineffectiveness of institutions.

To make the journey easier, I will start from the two phases of the crisis: that of subprime mortgages in United States, and that of banks and the Euro in Europe. Chapter 1 is dedicated to investigating the origin of the crisis in the United States. I will focus on three aspects that will assist us in our analysis: subprime mortgages, their securitization, and the functioning of the markets during the crisis, when liquidity evaporated overnight. Then, I will deal with the Euro crisis, its connection with the subprime mortgage crisis, and the ineffectiveness of European institutions and supervisory authorities in ensuring the stability of financial intermediaries and banks.

The subsequent chapters will go to the heart of the analysis of the four themes that I believe have been brought to the fore by the financial crisis.

In Chapter 3, I will go deeply into the nature of the ultimate object traded on financial markets: risk. Risk deals with two dimensions: the probability with which an event could occur in the future, and the damage associated with that event. It is not easy to provide a definition of risk, in part because it has a multifaceted nature. As a matter of fact, we do not refer to a fact but to something that could happen in the future, whose effects are unfortunately only observed too late (after the uncertainty has been resolved). Its perception by people is strongly influenced by ex post evaluations. Basically, addressing risk requires making assessments and choices today, but the effects will only be felt tomorrow; a difficult situation to face, also because a uniform ex ante measurement of risk does not exist. The true origin of the financial crisis is ultimately to be found in the assumption used in modern financial theory and industry that treats risk as a measurable entity and thus as a commodity with objective characteristics that can be traded in the market and regulated.

In Chapters 4 and 5, I will analyse how the improper commoditization of risk has had a significant impact on the proper functioning of intermediaries and financial markets. An object such as risk, which is difficult to define and evaluate, makes managing a financial company very complex. The classic goal of "maximizing profit" does not fit financial companies well either because of intrinsic limits on large companies, or because of the peculiarities of their activities. Starting from the examples offered by the financial crisis, I will focus in particular on three issues: governance, business models, and non-traditional banking.

The financial crisis showed all the limits of the functioning of the markets, that were unable to fulfil their aims: to define an appropriate price for the assets obtained from the securitization of subprime mortgages, to provide the most basic liquidity and transparency requirements in the case of derivatives, and to punish non-virtuous companies and provide sufficient protection to savers. The financial markets did not work properly, and the "Invisible Hand" suggested by Adam Smith did not reveal itself.

Finally, in Chapter 6, I will focus on the limits of action by institutions: monetary policy, regulatory and supervisory authorities, and state intervention. The issue is controversial, but it is time to conduct an assessment by determining what worked and what did not.

According to the Governor of the Bank of England, Mark Carney, "finance has to be trusted... A sense of self must be accompanied by a sense of the systemic", and it can also be said that "For markets to sustain their legitimacy, they need to be not only effective but also fair...". Not to be outdone, Pope Benedict XVI wrote: "Without internal forms of solidarity and mutual trust, the market cannot completely fulfil its proper economic function. And today it is this trust which has ceased to exist, and the loss of trust is a grave loss". This is the challenge that must be seized without slipping into abstract principles that do not represent a workable perspective. The point is to understand how much room there is to build good finance. In Chapter 7, I will try to identify the legacy of the financial crisis for a wide range of actors: politicians, moral authorities, economists, technical operators, regulators, and bankers.

At the end of the crisis, what we could consider God's true punishment for finance, suddenly showed up: the Fintech revolution. Fintech presents some characteristics that have fuelled the imagination of those who were critical of the financial system, often belonging to the two extremes that merged during the crisis. The new technologies applied in finance could lead to a disintermediation of classic actors with bitcoins that could replace the Euro, Amazon, or decentralized platforms (like blockchain) that could allow for money transfers at a lower cost than banks offer. Big data and machine learning could allow for more effective advisory activity and financial products closer to customer needs. Fintech has a vague anarchist flavour, and is synonymous with the democratization and personalization of finance, two interesting features after the financial crisis.

Will Fintech be the solution to all problems? Probably not, but it will be part of the future by opening up very interesting perspectives. The financial world as we knew it before the crisis with the centrality of the banks, is undergoing profound changes. Nothing will be the same as before; we must try to glimpse the future having learned the lessons of the financial crisis. This is what I will try to do.