

# INFORM AND DEFORM

Do financial analysts mean what they say?

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名誉

*Meiyo*  
*Honor*  
*Честь*

良心

*Ryoushin*  
*Conscience*  
*Совесть*

高貴

*Kouki*  
*Nobility*  
*Доброе имя*

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*This book and all the effort it required are  
dedicated to Arianna and Donatella:  
the most tolerant, supporting and lovely wives*

*“Deinde quod nos eadem Asia atque idem iste Mithridates initio belli Asiaci docuit, id quidem certe calamitate doc memoria renere debemus. Nam tum, cum in Asia res magnas permul, amiserant, scimus Romae, soluone impedita, fidem concidisse. Non enim possunt una in civitate mul rem ac fortunas amiere, ut non plures secum in eandem trahant calamitatem. A quo periculo prohibete rem publicam, et mihi credite id quod ipsi vides: haec fides atque haec rao pecuniarum, quae Romae, quae in foro versatur, implicata est cum illis pecuniis Asiaticis et cohaeret. Ruere illa non possunt, ut haec non eodem labefacta motu concidant”.*

...

*“We have to keep in mind, as our fait thought us, of the lesson learned from Asia and from Mitridate at the beginning of the Asian war. We, in fact, know that whenever a great number of citizens in Asia lost their property, the suspension of all the payments determined a credit crunch in Rome. In a city where many lose their property, it is impossible to avoid the same prospect for many other [...]. Credit and financial issues discussed here in Rome are strongly related to the wealth in Asia. Shall the latter be lost, the former would follow the same destiny”.*

*Marcus Tulli Ciceronis,  
Orationes (79-77 B.C.)*

## PREFACE

This book deals with information.

Information is important, since it is the basic ingredient of human reasoning, knowledge and, therefore, action. Particularly it is important in social behavior. Investing in the financial market is definitely a social behavior, requiring skills and expertise, which combined, generate the “*art of market*” as William Sharpe said.

Individual investors, though competent and skilled, have to make complex decisions under uncertainty and act following their own subjective judgment. Thus, whenever investors do make mistakes, the size of the consequences are largely related to the extent of the confidence they have on their opinions and actions.

Such actions and behaviors are influenced by environmental signals and by many other individuals’ behaviors, collectively contributing to risk perception and investment decisions, often labeled *investors’ sentiment*.

All such signals are perceived and interpreted by market actors in the frame of structured information, coming from institutions established to produce and spread price sensitive information.

This kind of information tend to be rather homogeneous since is collected and processed by means of similar techniques and theoretical models, often using very similar datasets and time series.

Complexity limits investors’ possibility to run their own fundamental analysis, thus they tend to trust - rather passively - information coming from professional financial analysts, either independent or affiliated to big financial institutions. Clearly, such a relation between market actors and information providers represent the key factor for market efficiency to take place: the stronger is the trust relation, the faster adjustments in securities’ prices will be.

Therefore, dealing with information, straightforwardly means dealing with market theory and market efficiency.

Information represents the fuel for all human actions to the extent that it shapes the social environment.

The shaping function is in the term’s etymology itself ( $\mu\omicron\rho\phi\eta = Shape$ : *in-form-action is the action of shaping reality*). It denotes the active role involved in constructing and assessing directions of interactions between individuals in the social environment. In this sense, information are not a mere collection of data, coded in a way that make them intelligible by the social group they are meant to reach and influence, it is primarily what it takes to overcome uncertainty in a decision making process, by providing proper stimuli for appropriate actions.

Therefore, information is not in the data, nor in the context. Neither one is, as a matter of fact, enough to enhance action.

Information is instead a complex combination of many parts in which data, frame, language, credibility, metaphors, culture, traditions, and so on, contributes to determine individual and social decision making.

Thus understanding market theory imply a profound and critical approach to information, to how it is conveyed to investors, to behavioral drivers that influence professional information providers and related biases and, finally, to the way individual investors acquire and use it.

The introduction in the discussion of the idea of complexity raises the need to determine the conditions for the system to seek and, eventually, to find its equilibrium. This is the final goal of economic models and theories, while in the real life, disequilibrium and chaos seem to be the rule. If this is the case a useful interpretation tool is represented by entropy. Entropy is a thermodynamic quantity representing the unavailability of a system's thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system.

Systems, and social ones do not make exceptions, require a minimal amount of disorder to exist, but cannot pass the level over which a definitive equilibrium is reached and the system dissolve itself.<sup>1</sup>

No system can exist without disorder, and disorder fuels action inside it. In financial markets, the entropy level generated by information, its distortions and biases in perceptions, creates the positive conditions for value to be searched and enhanced.

At the same time, the existence of entropy makes systems tend to gradually increase their inside disorder level.

In financial markets, ethics, regulations, investors skills, their learning ability and theoretical precepts are opposing forces aimed at avoiding system disaggregation. Still crises occur, still meltdowns are possible.<sup>2</sup>

In a way, framing effects, overconfidence and all the other biases and heuristics have this function: they limit the entropy tendency to increase over the tolerable limit.

Though they may be interpreted as mistakes, they work as a barrier to keep the system safe.<sup>3</sup>

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<sup>1</sup> Cfr. SCHRODINGER E., *What is Life?* Cambridge University Press, Cambridge, 1944; WIENER N., *Cybernetics: or control and communication in the animal and the machine*, Wiley, New York, 1948; PRIGOGINE I., *From being to becoming: time and complexity in the physical sciences*, W. H. Freeman, San Francisco, 1980

<sup>2</sup> Cfr. PINKER S., *How the mind works*, W. W. Norton. New York 1997.

<sup>3</sup> Cfr. CHEN J., "An entropy theory of value", *working paper*, 2002; CHEN J., "An Entropy Theory of Psychology and its Implication to Behavioral Finance", in *Financiële Studievereniging Rotterdam Forum*, 6, 26- 31 2003

Financial markets, being formed by individuals, share most of their characteristics, particularly in their way to deal with information. The latter gain value, contradicting general economic theory that postulates complete and free access to it.<sup>4</sup>

Information, therefore, have the following properties:

- a. the most valuable usually is accessible at a higher price;
- b. coherently with the theory of entropy applied to information, the latter is equal to the information received minus the misunderstood one, such a difference leaves room to information asymmetries among participants;
- c. information value is negatively correlated to the number of actors possessing it.

As Maxwell pointed out in 1871, if information had no cost, entropy within the system would be reduced, but being this the case, the second law of thermodynamics would be contradicted, which is obviously impossible, therefore information has a cost, which must be lower than its value to keep equilibrium and, eventually, increase system's value.<sup>5</sup> Eighty years later, Shannon posits that information with higher value is usually more expensive too.<sup>6</sup> At the same time even assuming a full availability to all, not everyone would perceive the same information in the same way. Individuals have different sensibilities, different competences. They are exposed to different noise levels, their attitude toward risk can be very different, etcetera. Under such conditions, diversity of opinions emerges naturally. An entropy level inconsistent with a stable equilibrium characterizes individuals; they evolve gradually but steadily, passing from one partial equilibrium to the following one; so do their activities.<sup>7</sup> In this sense financial markets will incorporate all the entropy introduced by actors. Thus, many behavioral biases can, in our opinion, be interpreted within the market.

In this book, we present the results of years of research in the field of behavioral finance revising their previous contributions and merging their experiences under the light of latest turbulences in global financial markets.

Chapter one deals with some general issues on information and its role in market theory, both from a classical finance perspective and a behavioral finance

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<sup>4</sup> GROSSMAN S. and STIGLITZ J., "On the impossibility of informationally efficient markets", in *American Economic Review*, vol. 70, pp. 393-408, 1980.

<sup>5</sup> Cfr. MAXWELL J., *Theory of heat*, Green & Co., Longmans, London, 1871

<sup>6</sup> Cfr. SHANNON C., "A mathematical theory of communication", in *The Bell System Technical Journal*, vol. 27, pp. 379-423, 623-656, 1948; GEORGESCU-ROEGEN N., *The entropy law and the economic process*, Harvard University Press, Cambridge, Mass. 1971; BENNETT C. H., "Notes on the History of Reversible Computation", in *IBM Journal of Research and Development*, vol. 32, pp. 16-23, 1988.

<sup>7</sup> PRIGOGINE I., *From being to becoming: time and complexity in the physical sciences*, op. cit., 1980.

one. The core idea is that there's no real contradiction between the two, as far as rationality is properly considered and treated. The chapter also introduces the role financial analysts have in the information problem, starting from their main characteristics, highlighting rationales that explain why the market actors trust them and give value to their work.

In chapter two, we go back over the latest joint work with Olga Denti in which the real explanations of analysts' tendency in smoothing bad news and emphasize good news is investigated, using a multidisciplinary approach integrating linguistic and content analysis with the behavioral finance approach.

Chapter three focuses on the value of analysts' consensus, and on the market reaction to changes in recommendations. We present the evidence in the US and other countries, with particular regard to the Italian case. We show the methodology behind these studies, and we stress that some cross-country studies used a commercial dataset that biased the results. It is then important to take into account regulatory peculiarities when one compares distinct countries. Analysts recommendations seem to convey value to the market, even though it not always react efficiently, but sometimes with some delays, displaying price drifts. Thus, investors have to carefully take into account the problem of analysts' over-optimism, i.e., analysts do not always mean what they write in their reports. Of course, these evidences also have implications for policy makers and supervisory authorities that have to ensure transparency in financial markets.

Finally, in chapter four we propose some evidence on analysts' distorted valuations of hi-tech companies. We present the case of Tiscali, at the time of the internet bubble the most emblematic Italian internet company. Apart from underlining the existence of the three typical phenomena related to IPOs (hot issue markets, initial underpricing, long run underperformance), we stress how behavioral biases, in conjunction with conflicts of interest, distorted analysts' valuation of hi-tech companies. Since these firms are usually more difficult to evaluate, analysts tend to use valuation heuristics that, however, are not based on solid techniques like the discounted cash flow method. We compare the actual situation of the hi-tech sector in the US that recently saw the IPOs of some important companies. In particular, the case of Facebook is mentioned to stress how companies may exploit the window of opportunities caused by irrational over optimism.

The book doesn't come to a definitive conclusion. It was not in our goals to do so. It was, instead, in our goals to point out some of the reasons why financial markets tend to move toward efficiency while keeping "safely" away from it. Each considered aspect has been analyzed keeping in mind the numerous and different points of view and the many conflicting interests involved. Readers will find ideas and some evidence, is up to each of them to plot conclusions and eventually find solutions to specific problems. Just as any other book on financial market, this one can be considered as an incomplete instrument to interpret human behavior in

financial ecosystem, an evolutionary environment in which few species compete, not always successfully.

Although the book is the result of a continuous and close cooperation of both authors, chapters 1 and 2 are more directly attributable to Luca Piras, while chapters 3 and 4 to Enrico Maria Cervellati.

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