1

Introduction

A trader may, when it comes to rumors on stock exchanges, not even trust his own father.

André Kostolany (own translation)

A rumor can be everywhere, at any time, at any place. It is perceived as something mysterious, almost magical. A rumor frequently produces a hypnotic effect. It fascinates, overwhelms, entraps and stirs up people's minds. Rumors are the oldest mass medium in the world and their nature is still difficult to grasp. What is so special about rumors, that people get so excited, anxious and nervous? Why do companies release press bulletins stating, 'We don't comment on rumors'? People do not know too much about this important social phenomenon, especially from a scientific point of view. Where does it start, how does it develop, where and when does it end? How does it differentiate itself from gossip, legends and just ordinary information? How are rumors spread, when are they believed and what kind of an impact can they have? Everyone believes they are able to recognize a rumor when they are faced with one, but no one can give you a satisfying definition of it. The longer people think about rumors, the more they realize how difficult it is to set limits on what they are and what they are not. Why is it so difficult to capture the exact content and functionalities of a rumor? There are at least two possible explanations for that. The first explanation is that a rumor is not observable from the beginning to the end. When people start studying a rumor, it is usually already dead or in the final phase. In many cases it will be very difficult to find out its starting point and development process. The second possible explanation is that rumors, at least until a few years ago, have included a moral aspect. This prejudice has made people think more about the moral entitlement of a rumor than of actual functionalities.[1]

One of the most central elements of the Theory of Finance is the economics of information and how new information is updated to reallocate scarce resources. Rumors are a special form of information and their special characteristics have to be accounted for when applied to the Theory of Finance. Since rumors involve not only financial but also psychological and sociological elements, it is necessary to apply an interdisciplinary approach when analyzing rumors in financial markets. While the individual behavior when faced with rumors in financial markets is one aspect to be analyzed, probably the more interesting one is to search for behavioral mechanisms on an aggregate level. One of the goals of this work is to evaluate whether rumors lead to systematic behavioral patterns when trading assets in a financial market.

Unfortunately, from a scientific view, not too much is known about rumors, in particular in financial markets. This is somewhat astonishing, since rumors on the one hand have a very long history and are known to be a very efficient mass media communication channel, and on the other hand appear almost on a daily basis in technical newspapers and magazines.

One of the difficulties about research on rumors is their complexity in nature. A second argument for the poor research so far can be found in the difficulty of gathering sound quality data on rumors, in particular in financial markets. This work is an attempt to gain more insights into the topic.

The overall aim of the book is to provide insights into various aspects of rumors in financial markets. How can this be achieved? Since the subject is not easy to address and just about everyone has a different opinion on it, first of all it has to be clarified what exactly a rumor is and how it fits into other notions such as information, news and gossip. Secondly, since this is an investigation on rumors in financial markets, rumors have to be set in context to the existing finance literature. This includes aspects such as how rumors, as a quite special form of information, are used to allocate scarce resources from a Behavioral Finance point of view. In addition, many people claim that market participants act irrationally when rumors evolve in financial markets. This question has to be addressed as well. Furthermore, since rumors, in particular in relation to financial markets, are at the edge of being legal, the aspects of insider trading and market manipulation have to be clarified as well. However, to really get more insights on the topic, further research is necessary. As a first step, a survey was conducted in the financial marketplace to find out what the questions and hot topics are that market participants are faced with when rumors evolve. From the results of the survey, it became clear that certain aspects discussed were not very relevant to further analysis, while with other aspects more questions seem to have arisen than been clarified. The next step was to analyze the most suitable research methodology to try and answer these open questions. Research methodologies such as theoretical modeling, empirical analysis, field studies and experiments were considered. A review of that literature is discussed in Chapters 3 and 6. In the end, the choice fell on conducting financial experiments, for many reasons. The detailed arguments in favor of that research methodology are discussed at the beginning of Chapter 6. The overall goal of those financial experiments was to gain insights on why we observe what we observe when rumors evolve in financial markets. Why is it that stock prices all of a sudden perform wild swings, volatility rockets to the sky and market participants simply shake their heads because they aren't able to explain what is going on? Exactly these kind of questions the experiments try to find an answer for and discover what is going on in people's minds and whether there are any theoretically sound explanations for these phenomena. Therefore that chapter of this book is more devoted to theory and describes the financial experimental setup and results of the experiments conducted. The conclusions of all the results are drawn in Chapter 7, what open issues still remain and what kind of future research could be performed to better understand the fascinating happenings in financial markets, in particular when rumors appear.

1.1 Objectives of this book

From the statements above, five main objectives for this book were identified:

1. The first objective is to present an *overview* of the nature of rumors. This includes the definition and structuring of rumors in comparison to other terms such as information, news and gossip.
2. The second objective is to provide an overview of *rumors in relation to the Theory of Finance*. This includes how rumors can be related to Behavioral Finance and how they link to the concept of rational behavior. In addition, the second objective includes how rumors

and the existing studies can be classified and categorized. Concerning how rumors are modeled, the first category of models focuses on the determining factors for the intensity of a rumor. The second category models the rumor transmission process, while the third focuses on applied market microstructure settings.

3. The third objective focuses on the *legal aspects* of rumors in financial markets. The links from rumors to insider trading and market manipulation are analyzed in detail and the implications thereof are drawn up.
4. The fourth objective focuses on gaining *insights from industry experts*. Since up to now not very much is known about the appearance of and individual dealing with rumors in financial markets, a survey among practitioners should provide insights into various aspects thereof.
5. The fifth and last objective is to gain *experimental insights* into aggregate behavior when rumors are spread in financial markets. The goal is to find theoretical explanations for various empirically observable effects, such as a strong increase in price volatility and apparently unfounded movements in traded asset prices. In addition, whether the often-heard claim of herd behavior is legitimate when rumors appear in financial markets is also investigated.

1.2 STRUCTURE OF THIS BOOK

Reflecting on the main objectives formulated above, the book is structured into seven chapters:

Chapter 2: Definitions and Characteristics of Rumors begins with the various definitions and structuring of the notions of news, information, gossip and rumor. This is followed by a historical background to studies on rumors.

Chapter 3: Rumors and the Theory of Finance discusses how rumors can be integrated into the new theoretical approach of Behavioral Finance. Furthermore it analyzes how rumors can be applied to the concept of rational behavior. The various empirical studies of rumors in financial markets are reviewed, including a meaningful classification and categorization thereof. The different model categories are presented and put into structure. In addition, the limitations of the various models are analyzed and specified.

Chapter 4: Legal Aspects of Rumors in Financial Markets analyzes the links between rumors and both insider trading and market manipulations. They are put into structure to distinguish them clearly from one another, including several examples. Furthermore the chapter provides a discussion of the academic controversy about the regulation of insider trading. Models and implications thereof are also provided for insider trading as well as for market manipulation.

Chapter 5: Survey of Rumors in Financial Markets empirically surveys how industry experts, such as traders and sales people, perceive, value and trade on rumors. The focus of the study is the development of rumors, the speed of their transmission, what the factors are for believing them, how personal networks are of value and how they are traded on. The results are summarized and used as a basis for experiments performed and discussed in Chapter 6.

Chapter 6: Rumor Experiments describes the experiments performed and analyzes the results in detail. The experiments start by testing basic hypotheses of rumor characteristics and proceed to more complex experimental settings. Altogether four stages of experiments are performed. The first stage focuses on the question of ambiguity aversion, the second on varying informational contents, the third tests the hypothesis of herd behavior and the fourth stage analyzes the communication behavior of market participants.

Chapter 7: Conclusions and Outlook summarizes the results and considers the future role of rumors in financial markets.

1.3 Research methodology

The research methodologies applied vary according to the different parts of the book.

The first part (Chapters 2 to 4) is of a more descriptive nature. Therefore the research methods included gathering information from various books, articles and papers in journals, as well as speaking to people in the field such as traders, sales people and regulators, and attending conferences.

For the survey (Chapter 5), two methods were used to access both quantitative and qualitative data – online survey and personal interviews. The online survey was sent by e-mail to professional traders and sales people dealing with all asset classes (stock, bonds, FX and commodities) and financial instruments including derivatives. Personal interviews were held with selected traders and sales people.

The third and experimental part (Chapter 6) of the book uses the data raised from the experiments performed. All experiments were performed at the Institute for Empirical Research of the University of Zurich during the time period between May 2003 and January 2005. The details on exactly how the experiments were designed and why an experimental approach was chosen can be found at the beginning of Chapter 6 and in the appendices.