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# THE INFLUENCE OF RUMORS AND ITS CONSEQUENCES IN DYNAMICS OF STOCK MARKET PRICES

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## ABSTRACT

This work is part of an ongoing study that aims to analyze the influence of rumors on the price dynamics in the stock market, through a case study of companies whose shares are traded much among financial agents. For this purpose we used historical prices of securities traded in the spot market of Sao Paulo Stock Exchange in the years 2007 to 2011, from files available in its website. A sample of 10 companies was selected among the stocks with higher trading volume during this period to collect the documents presented for communication of relevant facts and clarifications in stock exchange's site. Only communications presented on the period specified that provide clarification related to news and unverified information disclosed in the press were brought within the scope of data collection. Until now, only the company communications with the most actively traded stocks were collected, whose analysis allowed the categorization of information and creation of a diagram for representing information about the rumors treated on these documents. This diagram was applied to a database where the information collected was stored for later retrieval and analysis. From this information, asset prices were retrieved to analyze the influence of rumors reported by the press in the price fluctuation of the asset. The authors Kapferer, Müller and Martins form the theoretical framework. As a result, the research has identified some rumors that interfered in the stock prices, as well as classified the rumors about the issues they address. So, as many times the rumor rises from the void of knowledge and information asymmetry, it is noted that there is no perfect competition among financial agents.

**Keywords:** Rumor; Stock Market; News; Price Fluctuation; Sao Paulo Stock Exchange.

## 1 INTRODUCTION

This work is part of an ongoing research that aims to examine the influence of rumors in the dynamics of prices in the stock market, through a case study of companies whose shares are traded much among financial players. The short time available for decision-making creates a sense of urgency and an incessant search for information that may reduce uncertainty. This causes investors to be susceptible to rumors circulating in the financial market that often arise as a way to fill the void of knowledge caused by the lack of information. The financial rumor, unverified information on the performance and financial situation of publicly traded companies, is also speeded up and gains more credibility when reported in the press which often publishes information that have not been confirmed with official sources (KAPFERER, 1993, p.58).

As part of the policy for information transparency, companies are obliged to disclose any material fact that might occur. Thus, when news contains information that affects a company's securities and the company has not yet released it, the stock exchange requires this company to provide clarifications to the market. Though, until the company comments it, the rumor may gain credibility among many investors, especially those with greater appetite for risk, generating more speculation and price fluctuation as official sources are slow to respond.

This paper is organized into four items beyond this introduction which addresses changes in the financial market with the advent of digital technologies, rumor theories, financial rumors, methodology used, results and concluding remarks.

## 2 THE INFORMATION SOCIETY

Information gained importance in organizations and institutions in the search for more productivity and competitiveness. Furthermore, technological advances in recent decades have resulted in social, economic and cultural transformations that led to so-called information society.

Due to advances in information and communication technology, Le Coadic (2004, p.7) puts as remarkable features for the future: quantitative explosion of information and implosion of its communication time. The World Wide Web has become increasingly used as a mean of communication and consumption of goods and services. Though, as stated by Barreto (2007, p.30, our translation), "[…] the


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digital world creates facilities for everyday activities, research and teaching, but also creates monsters that haunt our security and privacy”[1].

Regarding financial markets, digital technologies have brought many changes such as electronic trading, the online broker and interdependence among economies of countries. The electronic trading replaced the trading floor operators, making control and disclosure of transactions more transparent and agile. The Home Broker system allows investors to emit orders to buy and sell directly from their Internet-connected computers. In addition, digital technologies permit capital flows are globally transported creating interdependence among different economies (CASTELLS, 1999, p.143).

## 3 RUMORS AND STOCK MARKET

### 3.1 Rumor Theory

Knapp (1944, p.22) defined rumor as “[…] a proposition for belief of topical reference disseminated without official verification”. For Peterson and Gist (1951, p.159), “[…] ‘rumor’, in general usage, refers to an unverified account or explanation of events, circulating from person to person and pertaining to an object, event, or issue of public concern”. May be observed from these definitions that rumor is unverified information that interests the public that spreads it.

Allport and Postman (1947) argue that importance and ambiguity of a fact or event motivate people to spread rumors in attempt to find better answers and explanations to understand the situation. For Prasad (1935), in addition to these elements, anxiety and belief are also necessary for the dissemination of rumors. Moreover, the speed of rumor diffusion can be significantly enhanced when it is reported in the media, because they usually have credibility with the public (KAPFERER, 1993, p.58).

There are some circumstances that favor the reappearance of rumors causing them to become recurring. Recurrent rumors arise when an ambiguous and distressing fact resembles another experience lived by the group.Besides, some


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rumors return due to lack of a convincing explanation about the facts that originated them (KAPFERER, 1993, p.113).

### 3.2 Financial Rumors

The stock exchange requires that information on the business performance or any material fact that comes to change the future prospects of companies are made available to all investors. Nevertheless, as stated by Müller (2006, p.113, our translation), many investors try to "[...] get information before it becomes official or public domain, otherwise it does not give any gain to those who holds it"[2]. But market authorities may punish those who use inside information to guide their investments. Thus, Carvalho (2008, p.138, our translation) says, "[…] information asymmetry in the financial market is object of great discussions"[3].

The emergence of rumors in the stock market is favored by uncertainty and little time to make decisions. Investing in stocks is a bet on the future, so people consult experts, talk and ask hints and tips from friends and acquaintances in order to seek ways to dilute that uncertainty. Kapferer (1990, p.205) adds that:

> This bet on the future causes investors to become] hypersensitive to the least indications that reduce the uncertainty of forecasts, even indications that are but tangentially related to the problem. Hence the attention given to rumors that seek to give meaning to the slightest market fluctuations.

The stock market is very dynamic, in a matter of seconds the price trend may change. So, the need for speed in the negotiations causes a wild search for information and there is not enough time to check its origin and accuracy. This situation leads investors to such a state of nervousness and tension that ends up feeding the spread of rumors. But the credit given to rumors in the stock market is also linked to investors' attitude towards risk (KAPFERER, 1993, p.191).

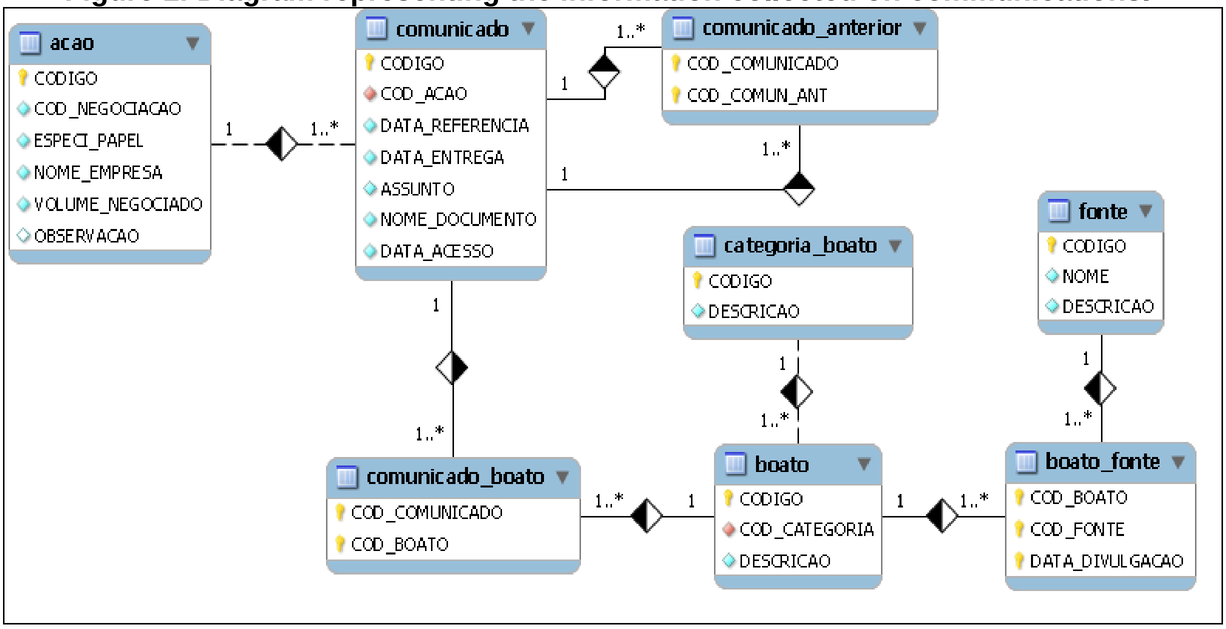
Thus, as the stock investment is a bet on the future performance of companies, rumor often arises to fill the knowledge gap experienced by investors eager for more information to make decisions. Therefore, "[…] the financial market has the rumor as its structuring element, defining a new configuration of its behavior and its dynamics, and consequently influencing the course of society"[4] (MARTINS, 2008, p.17, our translation).

## 4 METHODOLOGY

This research is classified as a case study focused on ten shares of companies listed in Sao Paulo Stock Exchange with higher trading volume in the years 2007 to 2011. The study uses historical prices to identify the most actively traded shares and, following, companies' communications to the market were collected. Both items are available on stock exchange's website. The communications collected are only those that provide clarification regarding news and unverified information disclosed in the press about the companies. Also, content analysis is used to qualitatively interpret the obtained data.

Reading these communications enabled categorize their information, build a representation thereof (Figure 1) and implement it in a database for later retrieval and analysis.

**Figure 1: Diagram representing the information collected on communications.**




**Source: Prepared by the authors - 2012.**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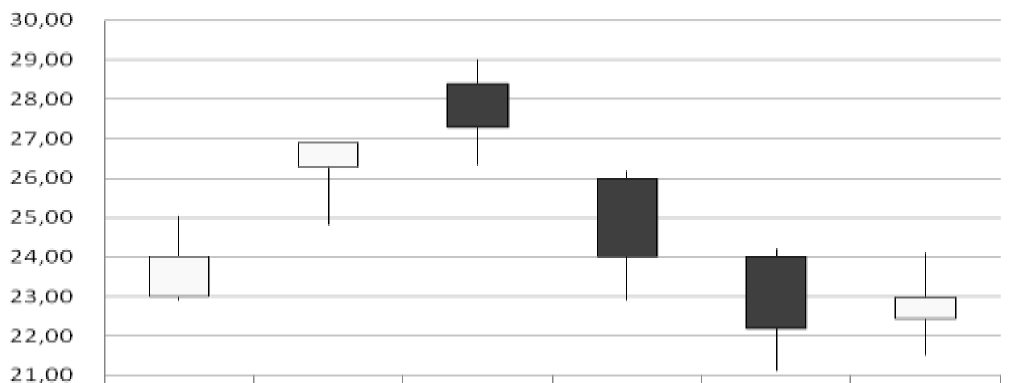
This diagram (Figure 1) represents items of information that were extracted from communications and shows how they are related. A share may have multiple communications and these, in turn, might mention other communications prior to them. Furthermore, a communication may address various rumors and vice versa. Also subjects addressed by rumors were used to classify and group them by topic.

Asset prices in the range of two days prior and after the communications date were plotted in candlestick charts in order to analyze the influence of rumors. The candles representing the opening and closing prices (body) and the maximum and minimum prices (shadows) facilitate the visualization of both high and low trends (MATSURA, 2007).

## 5 RESULTS AND CONCLUSIONS

This is a study in progress for which were collected all communications from Petrobras, the company with the most traded shares. There were 108 communications related to 117 rumors arisen in the years of 2007 to 2011. The chart below (Figure 2) shows PETR4 prices, preferred shares of Petrobras, from October 10, 2008 to October 17, 2008.

**Figure 1: PETR4 prices from October 10, 2008 to October 17, 2008.**




| | 10-out | 13-out | 14-out | 15-out | 16-out | 17-out |
|---|---|---|---|---|---|---|
| preco_abertura | 23,01 | 26,30 | 28,40 | 26,00 | 24,02 | 22,44 |
| preco_maximo | 25,05 | 26,90 | 29,00 | 26,20 | 24,20 | 24,11 |
| preco_minimo | 22,90 | 24,82 | 26,33 | 22,91 | 21,11 | 21,50 |
| preco_ultimo | 24,00 | 26,90 | 27,30 | 24,00 | 22,20 | 22,99 |

**Source: Based on historical prices of BMF&Bovespa - Prepared by the authors - 2012.**

On October 14, newspaper O Globo reported a rumor that Petrobras had found oil in a well. On this day, opening price of PETR4 was well above the previous day closing price. According to Kapferer, under uncertainty and the possibility of failing to make a financial gain if the company were to confirm the information later, investors with higher risk appetite chose to buy the shares. The company's delay in respond to the rumor also helped it to create great excitement causing increasing prices. But, there was a strong movement of sale on the 15th, when the company delivered a communication to the market stating that information disclosed by *O Globo* was unfounded.

It is intended to carry out the collection of communications dealing with rumors about the other nine companies whose shares had the highest trading volume in the period already marked. Subsequently, it is intended to make a content analysis of the influence and importance of rumors for the price fluctuation on such assets. The study of rumor in the stock market permits to see it differently than is emphasized by the stock exchange and the media. So, how often the rumor comes from the void of knowledge and information asymmetry among investors, we note that there is no perfect competition among financial agents.

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## NOTES

[1] “O mundo digital cria facilidades para as atividades cotidianas, atividades de pesquisa e de ensino, mas cria, também, monstros que assombram a nossa segurança e privacidade”.

[2] “[...] obter as informações antes que elas se tornem oficiais ou de domínio público, pois quando isso acontece, não conferem mais nenhuma vantagem para quem às detém”.

[3] “[...] a assimetria de informação no mercado financeiro é objeto de grandes discussões”.

[4] “O mercado financeiro tem no boato um de seus elementos estruturantes, definindo uma nova configuração de seu comportamento e de sua dinâmica e, consequentemente, influenciando os rumos das faces sociais”.

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