

Behavioral Capital Structure: Is the Neoclassical Paradigm Threatened? Evidence from the Field

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We show that capital structure decisions and financial behavior in general seems to deviate from the traditional neoclassical paradigm. Behavioral finance and the post Keynesian financial behavior approach provide better explanations in “decoding” financial managers’ opinions and behavior. Specifically, our starting point is the analysis of qualitative corporate data from the Greek market. The data come from the answers in a detailed questionnaire, and in this paper we analyze capital structure determination and the relationship between capital structure and stock price. Results are in favor of the market timing approach and the managers’ opinions and behavior on issues concerning capital structure determinants, and the relationship between capital structure and stock price seem to be better explained under the behavioral finance proponents and within the post Keynesian paradigm.

Keywords: Capital structure, Behavioral finance, Post-Keynesian approach, Qualitative corporate analysis

1. INTRODUCTION

Capital structure is one of the most controversial issues in corporate finance. There are several different approaches that constitute the theory of capital structure; however, none of them so far seems to have prevailed in practice. The plethora of contradictive empirical evidence continuously raises questions about the validity of each approach, leading researchers to focus deeper into the real factors that determine capital structure in practice. During the last several years, researchers have started to focus more on understanding the very source of financial decision making, namely the human factor, than on analyzing series of numbers in trying to solve financial issues.

This specific analysis has led researchers to conclude that financial behavior relies on different assumptions from those that were supposed to hold, as assumed by the neoclassical financial theory. Specifically, there is much doubt that the rationality assumption holds in the realistic procedure of

practical decision making. This is exactly where behavioral corporate finance emerges. It replaces the traditional rationality assumptions with potentially more realistic behavioral assumptions concerning the various financial decisions. Furthermore, the validity of the neoclassical theory itself is seriously threatened by various results and conclusions that derive from the so-called qualitative methodology research, leaving more space for other financial behavior theories, for example, the post-Keynesian approach, to provide their own explanations on how decisions are made and consequently how financial behavior is shaped.

In this paper we investigate whether capital structure decisions and actual firm financing in general deviate from the traditional neoclassical paradigm. That is, we investigate whether capital structure determination is based on other than rational decisions. Note that these decisions are called rational under the neoclassical paradigm. Thus, if managers decide on different ways than they should according to the neoclassical financial decision making, then there is evidence that this paradigm is questioned. Note that although our starting point is the analysis of decision making regarding capital structure, one can also extend our findings in the broader sphere of financial decision making in general.

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The most important paper specificities are the following:

1. It analytically investigates corporate behavioral aspects, whereas most empirical research in behavioral finance is conducted in the field of asset pricing.
2. It uses qualitative corporate data to provide evidence of behavioral traces in financial decision making.
3. It is the first paper to combine behavioral finance theory with the post-Keynesian approach simply based on the fact that the main assumptions of these two approaches are closer to one another than behavioral finance to the neoclassical theory. It also goes one step further by empirically showing that this also seems to be the case in practice.

The analysis is organized as follows. In the second section, we refer to the behavioral finance approach, as well as to the main alternative of neoclassical theory in explaining financial behavior in practice, namely the post-Keynesian approach of financial behavior and decision making. In the third section, we present the data and the methodology used in our analysis. The fourth section analyzes the actual firm financing of the sample firms. The fifth section analyzes the relationship between capital structure and stock price according to the opinions of the respondents. The conclusions are presented and discussed in the last section of the paper.

2. BEHAVIORAL CAPITAL STRUCTURE AND THE POST-KEYNESIAN APPROACH

According to Ricciardi and Simon [2000], behavioral finance attempts to explain the what, why, and how of finance and investing from a human perspective. Baker, Ruback, and Wurgler [2004] state that behavioral corporate finance replaces traditional rationality assumptions with potentially more realistic behavioral assumptions. Shefrin [2001] denotes that there are two key behavioral impediments to the process of value maximization. The first impediment, which he calls “behavioral costs,” is internal to the firms and tends to undermine value creation. These costs are associated with errors of managers because of cognitive imperfections and emotional influences. The second impediment stems from behavioral errors by analysts and investors. These errors can create a wedge between fundamental values and market prices. Managers may then find themselves unsure of how to factor the errors of analysts and investors into their own decision making.

Baker, Ruback, and Wurgler [2004] state that behavioral finance research can be divided in two distinct irrationality approaches: the irrational investors and the irrational managers. Therefore, we can distinguish two possible states in behavioral finance: irrational investors and rational managers and irrational managers and rational investors.

In the irrational investors–rational managers approach, there are two key building blocks. First, irrational investors influence securities prices; second, rational managers identify mispricing and take advantage of investor exuberance. Mispricing identification is feasible for managers mainly because of information asymmetry, where managers are assumed to know more about the fundamental value of the firm than investors and, thus, can identify any emerging mispricings. Note that information asymmetry between managers and investors should be viewed more as an axiom rather than as an assumption, as managers do know more for the firm they manage than investors. An imminent application of the above state of behavioral finance may well be the market timing or window of opportunity approach. Specifically, prices are shaped at a higher level than fundamental values would justify, and smart managers take advantage of the open financing window of opportunity and issue new stock.

In the irrational managers–rational investors approach, most research in corporate finance has focused mainly on the positive illusions of optimism and overconfidence. Within this context, managers are assumed to be optimistic about the value of the firm’s assets and investment opportunities. Baker, Ruback, and Wurgler [2004] denote that an optimistic manager would never issue new equity, since the capital market is efficient and values the firm at its true fundamental value. In this case, optimism predicts a pecking order of financing decisions: The manager will rely on internal funds and debt and turn to equity only as a last resort.

Issuing new equity in favorable times reflects the relatively new theory of capital structure determination developed by Baker and Wurgler [2002], namely the market timing approach. Barberis and Thaler [2002] include the market timing approach in behavioral finance, denoting that the success of the market timing framework in predicting patterns of equity issuance offers the hope that it might also be the basis of a successful theory of capital structure, as most support for this view comes from survey evidence in practice. According to them, this consists of evidence that irrational investor sentiment affects financing decisions.

It is obvious that the existence of the market timing approach seriously threatens the neoclassical view of the efficient market hypothesis (EMH). During the last several years, researchers have tried to confront these two “rivals.” Kai [2004] reviews the most important literature to the historical evolution of the EMH, behavioral finance, and their interactions. He mentions that accumulating anomalies¹ caused a crisis in the EMH paradigm, and behavioral finance has emerged as a promising alternative, posing theoretical challenges to the EMH and embracing a series of empirical success. Shiller [2002] states that, in the 1980s, faith in EMH was eroded by a succession of discoveries of anomalies and finance literature suggests nowadays a more nuanced view of the value of the efficient market theory and a blossoming of research on behavioral finance. Lo [2005] tries to

reconcile efficient markets with behavioral finance, introducing the “Adaptive Market Hypothesis.” This new framework is based on some well-known principles of evolutionary biology, namely competition, mutation, reproduction, and natural selection, and he argues that the impact of these forces on financial institutions and market participants determines the efficiency of markets. In this paradigm, the EMH may be viewed as the “frictionless” ideal that would exist if there were no capital market imperfections.

Glaser, Noeth, and Weber [2004] mention the following interesting remark: It is at least difficult, if not impossible, to test market efficiency, because it can only be tested using a specific asset pricing model; that is, a test of market efficiency is always a joint test of market efficiency and the assumed correctness of the asset pricing model. Thus, a security market anomaly can either result from market inefficiency or from the wrong asset pricing model. However, they do show that securities are obviously mispriced, providing examples in practice and proving that the law of one price is violated. Finally, neurofinancial science comes to strengthen these behavioral views, showing (Salzman and Trifan [2005]) that prices in financial markets could be seen more accurately as a thermometer of the market mood and emotions rather than as simple informative signals as stated in traditional financial theory. They conclude that there are situations where emotional investors appear to gain more money than the rational ones, implying that there is evidence for the possible survival and even dominance of emotional traders in the market.

The emergence and gradual acceptance of behavioral finance disputes the validity of the efficient market hypothesis but also severely questions the dominance of the neoclassical theory of financial behavior. The rationality assumption is a cornerstone in the neoclassical building block, and behavioral finance comes to “shake up” the foundations of the neoclassical theory. Within this framework, other theories of financial behavior offer different perspectives in explaining actual financial decision making. The main alternative of the neoclassical theory is the post-Keynesian theory of financial behavior. In the paragraphs that follow we describe the main differences between these two alternatives by referring to the main assumptions upon which these two theories are based.

The neoclassical theory assumes that the most important factor in financial decision making is to maximize the interests of the shareholders. It therefore assumes that the main goal of the firm is to maximize shareholders’ wealth, leading to the maximization of the stock price of the firm, *assuming that the markets are efficient*. However, it is very important to note that capital market efficiency is another main assumption of capital market functioning, simply because market participants are also assumed to behave rationally, under the neoclassical theory. Specifically, neoclassical theory assumes that agents can assign probabilities to all possible future economic states and create a probability distribution of expected returns that leads to knowledge, an assumption that is severely criticized by its rivals. Decision making is based

on this knowledge formed by the probability distribution of future outcomes.

The post-Keynesian financial behavior theory is based on different main assumptions. It recognizes agency relationships as the key in financial behavior and assumes that managers follow primarily their own goals when managing the firm. Consequently, the main goal of the firm is to maximize the probability of long-term survival of the firm. Managers are concerned about maintaining long-term reproduction, growth, and safety of the firm itself. By achieving these objectives, they assure their own status and security. The constraints they face derive in part from their desire to maintain decision-making independence from financial market “constituents,” including stockholders and creditors. Dividends, like interest payments, are a cost of maintaining managerial decision-making autonomy, a constraint rather than an objective to be maximized.

Furthermore, post Keynesian theory is based on uncertainty for the future, rather than the neoclassical knowledge. Kregel [1998] notes that individuals making decisions in the real world, unlike gamblers in Monte Carlo, will not be able to specify fully the relevant population of possible outcomes. Thus, the role of “imagination” introduced by Shackle [1955] is very important in making decision on less than complete information that change the population from which observations are drawn, and thus the potential outcomes in ways that are inherently unpredictable. However, agents must deal with this uncertainty and cannot avoid this decision-making dilemma. Keynes [1973, p. 124] notes, “We do not know what the future holds. Nevertheless, as living and moving beings, we are forced to act.” Decision making in post-Keynesian theory is conventional. Agents use an expectations formation process based on custom, habit, tradition, instinct, and other socially constituted practices. Kregel [1998] mentions that it is difficult to endogenize the process of expectations formation; Keynes [1973, p. 480] notes that “the state of long-term expectations . . . cannot be inferred from the given factors” suggesting that decision makers fall back on their common sense as reflected in “the actual observation of markets and business psychology” rather than on the calculus of statistical probability. Thus, managers will first consider their past experience and may presume that “the existing state of affairs will continue indefinitely, except in so far as we have specific reasons to expect a change.”

Gordon [1992] develops an investment model of what he calls the Keynesian theory of investment. Specifically, a realistic theory of investment should be based on the assumption that the firm is a semiautonomous agent with a preference function of its own. Under this assumption, the firm is expected to pursue growth in size or market share and in profits and avoid threats to its decision-making autonomy or its financial security.

To sum up, these two theories differ in their main assumptions and consequently presuppose a different procedure of decision making and actual financial behavior. In this paper,

we investigate whether financial managers seem to shape opinions and take decisions based, most times without even knowing it, on other than rationality assumption and whether irrational behavior of market participants affects their decisions. As a consequence we also investigate whether their behavior is better explained within the framework of the neoclassical or the post-Keynesian approach.

3. METHODOLOGY AND DATA

Concerning the research methodology followed, Glaser, Noeth, and Weber [2004] denote that there are two different approaches toward behavioral finance. In the first approach, the starting points are results from psychology describing human behavior in certain economic circumstances. These results are used to build new models to explain market observations. In the second approach, empirical deviations from predictions based on traditional finance theory are observed. Then psychological results of individual behavior are screened to find an explanation for the observed market phenomena. In this paper we use the second approach concerning the starting points of the analysis.

Our starting point is the analysis of the current capital structure of the listed firms in the Athens Exchange (ATHEX) that took part in our survey, conducted during the period of October 1, 2002, to January 31, 2003. Specifically, we constructed a questionnaire consisting of 24 questions to test several aspects of capital structure determination, and we sent it to all listed firms on the Athens Exchange. Prior to sending, the questionnaire was tested by a panel of academics, resulting in minor adjustments where necessary.

3.1. Delivery and Response Issues

Delivery and response issues were organized as follows. We formed several groups of graduate students in the "Corporate financial management" discipline of the Marketing Department of Athens University of Economics and Business. These groups were given a list of firms to contact and arrange an appointment with the financial manager of the firm. In case the appointment could not be arranged (usually due to workload of the financial managers), students were usually asked by the firms to send the questionnaire either by e-mail, fax, or single mail. One week after, students were asked to follow up on the mailing with a phone call to remind financial managers of the questionnaire. This procedure was followed several times by the students until the questionnaire was completed or until the deadline of January 31 passed.

The sample² comprises 89 firms, which represents 29.3% of the population³ (excluding banks and firms in the financial sector). The response rate is a good one compared with the response rates of corresponding surveys in foreign economies. For example, Scott and Johnson [1982] report a response rate of 21.2%, Pinegar and Wilbricht [1989] a rate of 35.2%,

Graham and Harvey [2001] a rate of 9%, Bancel and Mittoo [2004] a rate of 12%, and Brounen, de Jong, and Koedijk [2004, 2006] a rate of 5% for similar surveys.

We could have achieved a higher response rate if we had constructed a shorter questionnaire. However, our primary goal was to collect as much information as possible so that we could derive reliable results and conclusions. Most non-respondents did not answer the questionnaire due to heavy workload and no time. The secondary reason was the no-information-disclosure policy.

A simple calculation of the current⁴ capital structure of our sample firms shows that Greek firms generally avoid long-term debt financing, and this constitutes the starting point of this paper. Table 1 shows that 82% of the sample Greek firms have a long-term debt ratio of up to 19%. Only 3.6% publish a long-term debt ratio of more than 40%, and 31.33% do not use any long-term debt at all. The importance of these figures becomes even higher when we compare them with the figures of similar studies conducted abroad.

Table 1 summarizes sample characteristics of the studies of Graham and Harvey [2001], Bancel and Mittoo [2004], and Brounen, de Jong, and Koedijk [2006]. Specifically, Graham and Harvey examine the practice of corporate finance, analyzing the answers of 392 U.S. chief financial officers (CFOs) (time period, February 1999). Bancel and Mittoo analyze the practice of capital structure of 87 CFOs (time period, September 2001–January 2002) from 16 European countries (Austria, Belgium, Greece, Denmark, Finland, Ireland, Italy, France, Germany, Netherlands, Norway, Portugal, Spain, Switzerland, Sweden, and the United Kingdom). Brounen et al.'s sample consists of firms from the United Kingdom, the Netherlands, Germany, and France (time period, November 2002–January 2003). They analyze the answers of 313 CFOs on capital structure choice.

Another important conclusion is that Greek firms are much smaller compared to the respondents of the other surveys. In fact, more than 70% of Greek firms had sales (in 2002) of less than €99 m. This is rather expected, as the Greek market is considered a small market; also note that the Greek sample consists of firms that are listed in the ATHEX and thus are considered the largest firms in Greece. The distribution across industry is rather similar to the other surveys, in the sense that almost 40% consist of firms belonging in the manufacturing, mining, and construction sectors. Transportation and energy are underrepresented, whereas communication and media are overrepresented. Furthermore, almost three out of four firms are dividend payers.

However, the most striking conclusion is, as mentioned, that Greek firms do not seem to rely on long-term debt financing when compared to the average European and U.S. firms. Note that this conclusion also holds for the total population of all listed firms in the ATHEX, as shown in the Appendix. In this paper we first try to explain the above result and analyze

TABLE 1
Sample Statistics.

	GH Sample	BM Sample	BJK Sample	Greek Sample
Sales				
<€25 m	7.91%	0.00%	19.04%	40.96%
€25–€99 m	16.84%	1.15%	35.27%	33.73%
€100–€499 m	22.19%	9.20%	24.20%	20.48%
€500–€999 m	8.42%	8.05%	6.05%	2.41%
€1000–€4999 m	22.70%	41.38%	8.41%	2.41%
>€5000 m	18.37%	10.23%	7.04%	0.00%
Industry				
Retail and wholesale	9.95%	6.90%	15.41%	15.66%
Mining, construction	3.57%	16.09%	8.85%	24.10%
Manufacturing	37.50%	13.79%	40.07%	15.66%
Transportation, energy	11.22%	8.05%	10.71%	3.61%
Communication, media	5.10%	8.05%	8.19%	12.05%
Bank, finance, insurance	13.78%	18.39%	6.35%	8.43%
Tech (software, biotech, etc.)	8.42%	18.39%	10.41%	9.64%
Other*	n.a.	10.34%	n.a.	10.84%
Publicly listed firm	65.56%	100.00%	32.33%	100.00%
Dividend paying	56.38%	96.55%	64.61%	71.08%
Long-term debt ratio				
0%	9.06%	1.15%	18.21%	31.33%
1–9%	10.27%	17.24%	7.41%	36.14%
10–19%	12.99%	22.99%	14.96%	14.46%
20–29%	16.62%	14.94%	13.09%	9.64%
30–39%	16.92%	6.90%	15.90%	4.82%
40–49%	12.39%	8.05%	10.08%	1.20%
>49%	21.75%	28.74%	20.36%	2.41%
Number of firms	392	87	313	83**

*Other includes the following sectors: Chemicals (3 firms), Health Care (3), Change of Activity (1), Gaming (1), Travel & Leisure (1).

**We have completed data on published financial statements from the ATHEX database for 83 firms of the total 89.

the respondents' answers to the questionnaire to provide information on the issue of the actual financial behavior of Greek financial managers.

Results and conclusions in our paper are based on data derived by Greek firms operating in the Greek economic and financial environment. Thus, it is important to provide some information about this environment. The Greek market can be characterized as a small, developed market with relatively high growth rates.⁵ The *Fact Book of 2003* mentioned that the Greek economy continued to maintain increasing rates of development compared to other developed countries, mainly because of the preparations of hosting the Olympic Games in 2004 in Athens and also due to the resources from the European Union's (EU) third Community Support Framework.⁶ Regarding the Greek capital market, it entered the final stretch on the track to developed market status in June 2000 when the EU confirmed Greece's participation in the Eurozone beginning in 2001. FTSE Country Consultation Results on March 2004 placed Greece among the developed markets. However, it is considered as a small market. Specifically, the 2002 Annual Report of the Hellenic Capital Market Commission informs us that the Athens Exchange (ATHEX) General Index closed at year end at 1.748,4 units, and the daily value of transactions in the ATHEX was

on average 100.3 billion Euros. By the end of the year, total market capitalization amounted to 65,759.7 million Euros, which represents approximately 47% of the Greek GDP.⁷ There was a big boom in the ATHEX from 1998 until September 1999, which was followed by a great decline until 2002. Regarding the Greek bond market, if we look at the Daily Official List Announcements of the Athens Exchange for Tuesday, October 29, 2002, we will see that there were only three corporate bonds being traded in the bond market.⁸ Thus, the bond market was underdeveloped during the time period in which the questionnaire was sent to firms. Note that the underdevelopment of the bond market can by no means affect capital structure decisions as regards long-term financing. As a matter of fact, Greek firms do have the options to finance themselves by issuing either bank debt or corporate bonds or both. However, these bonds are not traded in the secondary market as investors are not interested in trading corporate bonds. Finally, Bancel and Mittoo [2004], based on LaPorta et al. [1998], classify Greece among the so-called French Law countries regarding its legal system (civil law).⁹ Beck, Demircuc-Kunt, and Levine [2001] mention that the German Civil Code was studied and used by Greece. As a matter of fact, the Greek legal system is influenced by both German and French Law.¹⁰

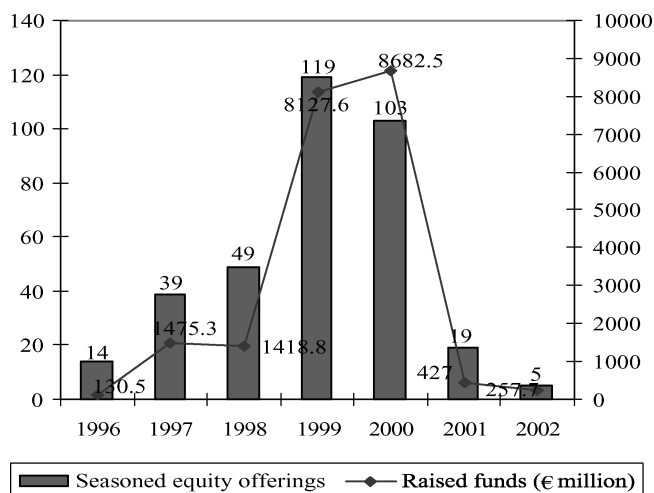


FIGURE 1 Seasoned equity offerings and the amounts of raised funds during 1996-2002.

4. ACTUAL FIRM FINANCING

Table 1 shows clearly that Greek firms avoid long-term debt financing. This finding raises an important question. How do firms finance their investments and actually shape their

capital structure? If firms do not use long-term debt financing, they must turn to other sources of finance. They may turn to short-term borrowing for instance. Vasiliou and Daskalakis [2005] show that firms do use much short-term debt; however, there is no proof that these funds are used in investments and nevertheless they should not.¹¹ The other main source of financing for firms is equity, either old (undistributed earnings) or new (seasoned equity offerings).

First we checked for new stock issues (i.e., seasoned equity offerings). The results are presented in Figure 1.¹² Looking at Figure 1 we see that Greek listed firms raised large amounts of funds mainly in 1999 and 2000. As a matter of fact, almost 70% of the listed firms during that period raised new funds by issuing new stock. Firms actually acted as the market timing theoretical approach suggests. They raised large amounts of funds during the period when stock prices were high. Figure 2 shows closing prices of the Athens General Index during January 2, 1997–December 31, 2002.

Figure 2 shows that prices in the ATHEX were relatively high in 1998 and 1999 when compared with past prices. Closing prices for the Athens General Index rose from 954.54 units on January 2, 1997, up to 6,355.04 on September 17, 1999, and back to 1,748.42 on December 31, 2002. This was the most intense boom and recession in the history of ATHEX. Regarding the seasoned equity offerings (SEOs),

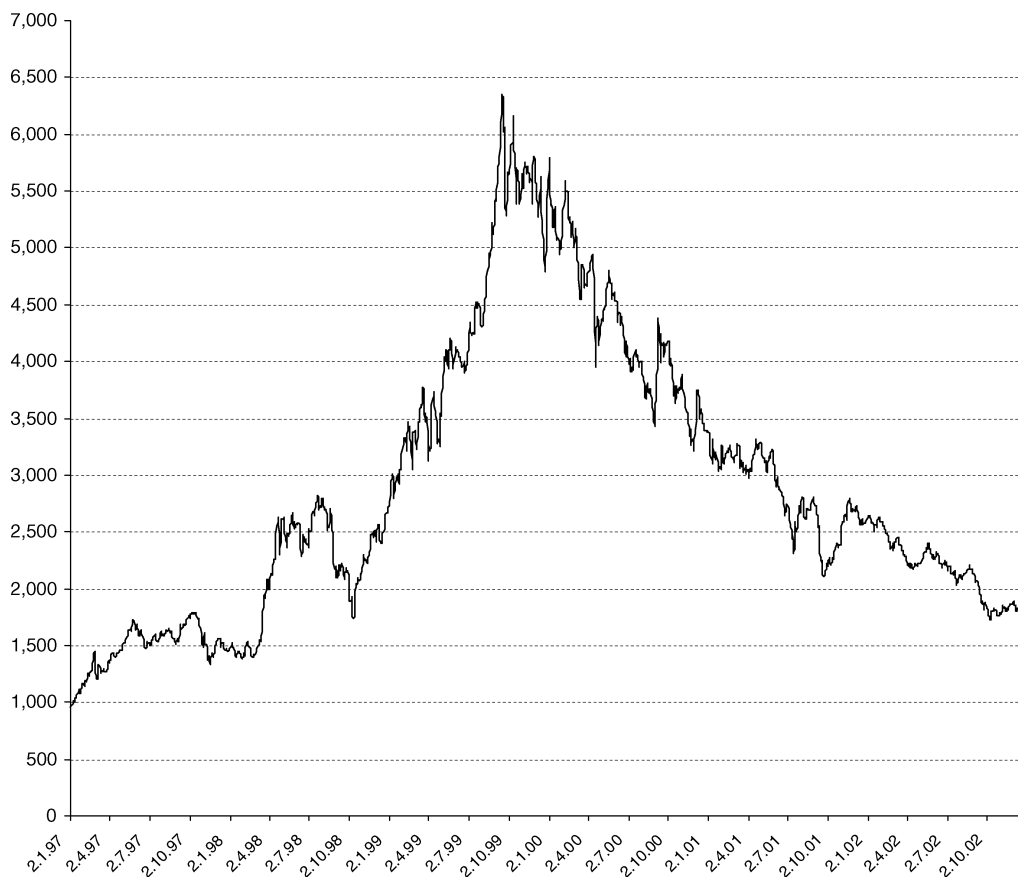


FIGURE 2 Closing prices for the Athens General Index of the Athens Exchange.

according to the Annual Report of 1999, they increased 472% within a year (i.e., from 1998).¹³ Specifically, there were 119 SEOs¹⁴ in 1999 and only 49 in 1998. The 2000 Annual Report mentions that despite the decrease in investor demand for securities, listed companies continued to raise new funds. As a result, total capital raised by listed companies increased 6.8% in 2000, reaching 8.68 billion Euros. These funds corresponded to 7.4% of total ATHEX capitalization in 2000 against 4.4% in 1999. The majority of share capital increases in 2000 were concluded in the Main Market.¹⁵

The 2001 Annual Report mentions that there was a substantial decrease in both the number of SEOs and the amount of raised funds during 2001. There were only 19 SEOs in 2001, and the raised funds were 427 million Euros. The Hellenic Capital Market Commission attributes this shrinkage of listed company funding to the following factors:

- The decline in share prices increased investor cautiousness and discouraged listed companies' managements from asking the General Assemblies to approve any further increase of shareholder capital.
- The cost of borrowing from financial institutions has been reduced to such a great extent that it was often cheaper to borrow than to raise funds through the capital market.
- The funds that had been raised from the capital market during the past two years had been used to a great extent to finance long-term investments, which have not yet yielded the expected results, while at the same time, a small portion of the raised funds still remained unused.¹⁶

Figure 1 shows that there were only five SEOs in 2002 and only 257.7 million Euros raised. The Hellenic Capital Market Commission denotes that the main reasons seem to be the uncertainty that prevailed in capital market, the decrease in the cost of borrowing from banks, and the issuance of alternative securities, such as corporate bonds.¹⁷

This boom has led listed firms to raise large amounts of capital via public offering as Marsh [1982] and Korajczyk, Lucas, and McDonald [1991] predicted. According to them, firms tend to issue equity following abnormal price appreciation. Therefore, as share prices continued to rise and remained at relatively high levels, firms did not miss the opportunity to raise large amounts of capital due to the high stock price via issuing new equity. They issued new equity covering their funding needs at least in the mid term and ended up with huge funds derived from public offering. The result was that the current capital structure of the firms was shaped during that period and was not altered thereafter, perhaps because the raised funds were adequate to cover the financial needs of the firms at least in the mid term.

Turning to other source of equity, the "old" equity, we examine whether firms use retained earnings to finance their investments. Specifically, we ask firms if they retain their earnings to finance their investments and, if so, how much. The results are presented in Table 2.

TABLE 2
Do You Retain any Part of Your Earnings to Finance Your Future Investments?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	22	24.72	24.72	24.72
Yes	67	75.28	75.28	100
Valid	89	100	100	
Missing	0	0		
Total	89	100		

All firms responded in this question. The results can be considered as expected, as almost 75% of all firms retain part of their earnings to finance future investments. This percentage (75.28%) is quite high considering that, according to Greek laws, firms are obliged to retain 5% for statutory reserves. Also, they are required to distribute at least 35% as a first dividend and then may pay director fees and bonuses, the second dividend, hold up special reserves, distribute earnings to the personnel and so on. Table 3 presents the amount of earnings that firms denote they decide to retain.

The answers we receive from financial managers show us that the most popular percentage is 21-30%. It is also quite interesting that almost 15% denote that they hold a retained earnings percentage of more than 50%.¹⁸ The conclusion is that firms seem to consider retained earnings as a very important source of their new investment funding. Vasiliou, Eriotis, and Daskalakis [2006] say that firms prefer internal funds to raising new capital, showing that retained earnings come first in preference order regarding investment financing among all other alternatives.

The main conclusion of the above analysis is that there seems to be an explanation concerning the low levels of long-term leverage for the Greek firms. It is verified that Greek firms took advantage of the high prices during 1998-2000 and raised adequate funds to finance their long-term investments. Furthermore, firms use retained earnings as a primary source of financing. To summarize, there is no doubt that

TABLE 3
Retained Earnings.

	Frequency	Percent	Valid Percent	Cumulative Percent
Up to 10%	8	11.94	12.31	12.31
11-20%	9	13.43	13.85	26.15
21-30%	20	29.85	30.77	56.92
31-40%	10	14.93	15.38	72.31
41-50%	8	11.94	12.31	84.62
51-60%	4	5.97	6.15	90.77
61-70%	4	5.97	6.15	96.92
71-80%	2	2.99	3.08	100
Valid	65	97.01	100	
Missing	2	2.99		
Total	67	100		

Greek managers acted exactly as the market timing approach suggests and that the current capital structure of the firms was shaped during that period and was not altered thereafter. Considering that market timing fits comfortably within the behavioral finance paradigm, it seems safe to conclude that there is strong evidence of “behavioral capital structure” determination for the Greek firms.

5. CAPITAL STRUCTURE AND STOCK PRICE

One of the major issues in capital structure theory is the interrelation of financial leverage with firm value. Theoretical background and empirical studies have proven that capital structure and firm value and, consequently, stock price are related. Several researchers look at capital structure from different aspects and develop theories that are tested by empirical investigations.

The question is *how* capital structure and stock price are related. For instance, signaling theory¹⁹ states that an announcement of a new stock issue is considered a negative signal to investors and will drive stock prices down. Indeed, Asquith and Mullins [1986], Masulis and Korwar [1986], Schipper and Smith [1986], and others have shown that stock price decreases on announcement of equity issues. Furthermore, according to the pecking order theory, an underpricing may set financing frontiers upon a firm even in accepting positive net present value (NPV) projects, influencing indirectly its value. Note that the above conclusions are based on rationality assumptions and market efficiency. On the other hand, stock price seems to affect capital structure as well. Baker and Wurgler [2002] show that capital structure determination is actually a matter of market timing, raising questions about the validity of efficient market hypothesis. An interesting view is also that stock prices may be less related to firm value than the neoclassical theory addresses. For instance, as already mentioned, Salzman and Trifan [2005] imply that prices in financial markets could be seen more accurately as a thermometer of the market mood and emotions. The conclusion is that it is quite difficult to set the assumptions that actually drive firms and investors in their actual financial behavior.

The market value of a firm can be calculated by multiplying the stock price of the firm with the number of outstanding shares. However, market value represents a firm's real value only by assuming that the stock market is efficient. Thus, we first examine if the Greek market is considered to be efficient. The questionnaire includes a specific question which asks managers if they believe that stock price in the stock exchange reflects the real market value of their firms. Financial managers appear to be the right persons to ask such a question, as they are the only ones who know best the real (fundamental) value of the firms they manage. The results are presented in Tables 4 and 5 for the common and the preferred stocks, respectively.

TABLE 4
How Often During a Year Do You Think That the
Market Values the Price of the Common Stock of
Your Company According to the Real Value?

	Frequency	Percent	Valid Percent	Cumulative Percent
More than 80%	7	7.87	8.64	8.64
Between 50% and 80%	24	26.97	29.63	38.27
Less than 50%	50	56.18	61.73	100.00
Valid	81	91.01	100.00	
Missing	8	8.99		
Total	89	100.00		

Looking at Table 4, we see that 81 out of the total 98 firms answered this question. Most of the respondents (61.73%) believe that the market values their common stock according to the real value less than half of the time during the year. Only a few firms (8.64%) denoted that the stock price reflects the real value at a percentage of over 80% of the time during the year.

We get similar results and conclusions by analyzing the question that refers to the preferred stock. At a first glance, we see that 71 out of the 89 firms (79.78%) did not answer this question. This is because most of the firms had not issued any preferred stock. From the remaining 18 firms, most (83.33%) believe that the market values their preferred stock according to the real value less than half of the time during the year. Note that no firm denoted that stock price reflects the real value at a percentage of over 80% of the time during the year.

The above results are rather expected. The recent fluctuations of the ATHEX during 1997–2002 do not resemble the fluctuations of an efficient market. More specifically, there was a vast increase in the General Index of the ATHEX during 1997–1999, which was followed by a steady, gradual fall during 1999–2002. These great fluctuations show that the market did not, most of the time, depict the real value of the firms. Moreover, investors were hesitant afterwards (if not suspicious) to trust any kind of information and to invest

TABLE 5
How Often During a Year Do You Think That the
Market Values the Price of the Preferred Stock of
Your Company According to the Real Value?

	Frequency	Percent	Valid Percent	Cumulative Percent
More than 80%	0	0	0	0
Between 50% and 80%	3	3.37	16.67	16.67
Less than 50%	15	16.85	83.33	100.00
Valid	18	20.22	100.00	
Missing	71	79.78		
Total	89	100.00		

in stocks. The result was that stock prices were not shaped according to their real value.

This opinion has been verified by empirical studies already conducted for the Greek market. Dockery and Kavusanos [1997] denote that their Wald test statistics reject the random walk hypothesis for stock prices, which is a necessary condition for market efficiency. Niarchos and Alexakis [1998] state that it seems that in the Greek market there are factors, other than news, which influence the price behavior of stocks. Vasiliou, Eriotis, and Papathanasiou [2005a] conclude that technical analysis in the Athens Exchange could yield abnormal returns to the investors, implying lack of efficiency in the weak form. Vasiliou, Eriotis, and Papathanasiou [2005b] conclude that there are technical anomalies in the Athens Exchange and provide strong support for profitability of those technical trading rules. All the above studies lead us to the conclusion that the Greek capital market does not seem to be efficient, even in the weak form.

At this point it is important to mention that, as Glaser, Noeth, and Weber [2004] also note, bubbles and crashes occur from time to time and seem to reject the notion of efficient markets. For example, the NASDAQ index rose from about 1,000 in late 1995 to more than 4,500 in March 2000 before declining to 1,000 in March 2003. In Germany, the New Market index (Nemax50) rose to more than 9,000 in March 2000 and stood at about 310 by the end of March 2003. Therefore, the ATHEX bubble and crash is no new incident at all.

The conclusion from the above analysis is that the Greek market, according to the views of the financial executives, appears to be inefficient. What managers actually imply is that market participants, at a great extent, fail in pricing correctly financial securities in the market and specifically stock, implying investor irrationality.²⁰ This situation is exactly the second impediment as expressed by Shefrin [2001], which stems from behavioral errors of analysts and investors and is described in the theoretical background of the paper. The result of this impediment is shown in the next question's results, where we see that managers do find themselves unsure of how to factor the errors of analysts and investors into their own opinion shaping and consequently decision making. Furthermore, it is clear that, according to Baker, Ruback, and Wurgler [2004], that the irrational investors-rational managers approach is in effect. Irrational investors did influence security prices and rational managers did identify mispricing and took advantage of investor exuberance.

This conclusion significantly affects any suggestion about the relationship between capital structure and stock price within the neoclassical paradigm. If most financial managers believe that the market is inefficient, then any change in the capital structure of the firm will either cause no change in the stock price, or the change it will cause may not lead to the correct stock price that should prevail in the market.

One may argue that scientific conclusions that either support or refute market efficiency could not be drawn from ask-

ing corporate executives whether they think their stock was mispriced, as it is predictable that managers would believe their stock is worth more than it is valued by the market. However, first, to the authors' knowledge, there is no scientific work to prove that managers have a falsified opinion about the true value of their stock compared to the valuation by the market. Second, it is common sense that managers do know more about the value and the real prospects of their firms. Nevertheless, the main implication of the asymmetric information theory is that corporate insiders have a better knowledge concerning firm values and future prospects compared to outside investors. Combining both rationales mentioned above, asking corporate executives whether they think their stock was mispriced seems to be a good way to test whether the market fails in pricing stocks or not.

In the following question we ask firms how a new stock issue announcement will affect the stock price. There are three potential answers: a new stock issue announcement will either cause a rise in the stock price, a fall in the stock price, or no price fluctuations at all. The answers of the firms are presented in Table 6.

Eighty-four of the total 89 firms responded to this question. First, we see that almost 31% of the firms believe that an announcement of a new stock issue will have no effect on the stock price at all. Thus, a large number of managers do not believe that changes in capital structure can affect stock prices. This may resemble much of the Modigliani and Miller [1958] widely known "separation theorem"; however, it is more than obvious that the preconditions that drive managers to their opinions are far from the assumptions needed, so that the Modigliani and Miller theorem must hold.

Regarding the signaling theory, the empirical results from this study show that this theory does not hold for the Greek market. According to the signaling theory, an announcement of a new stock issue is considered as a negative signal to investors. Note that the signaling theory was developed within the neoclassical paradigm, thus assuming that markets are efficient and investors are rational.

TABLE 6
When You Announce a New Stock Issue, What Effect
Do You Expect That This Announcement Will Have on
the Stock Price of Your Company?

	Frequency	Percent	Valid Percent	Cumulative Percent
The stock price will increase	32	35.96	38.10	38.10
The stock price will decrease	26	29.21	30.95	69.05
No effect on the stock price at all	26	29.21	30.95	100.00
Valid	84	94.38	100.00	
Missing	5	5.62		
Total	89	100.00		

Looking at the results we see that the managers' answers are actually almost equally dispersed among the three potential answers we have provided, while the stock price increase is a bit more popular among managers. The question that arises is why managers have shaped their opinions that way? A reliable answer can be given within the post-Keynesian framework.

Specifically, the opinions of financial managers seem to be mainly based on their personal, past experience regarding the effects of the announcement of new stock issues on the stock price. On the one hand, for financial managers that issued new stock in 1999, when prices continued to rise, they may have noticed that most of the times they announced a new stock issue, the stock price increased. Bearing in mind the big boom of the Athens Stock Exchange in 1997–1999, when regardless of announcements the vast majority of stock prices increased, it is reasonable to believe that the opinions of most financial managers can be justified by the above explanation. On the other hand, for financial managers that issued new stock in 2000 when prices started to fall, remaining though at high levels, they may have noticed that most of the times they announced a new stock issue the stock price fell. The remaining managers may have simply thought that prices in stock exchange seem to be moving regardless of capital structure announcements,

which also seems to be the case, at least for the period we are analyzing.

This behavior is much like what Keynes [1973] predicted. As already mentioned in the theoretical section of the paper, managers actually considered their past experience and presumed that the existing state of affairs would continue indefinitely, perhaps because they had no specific reasons to expect a change. Another explanation for this “anorthodox” opinion, according to the neoclassical theory, is that managers' opinions are probably affected by the errors of investors and shape an opinion that is “wrong” according to the neoclassical theory, “understandable” according to behavioral finance, and “acceptable” according to the post-Keynesian approach. The point is that in this case, the post-Keynesian approach offers a reliable explanation, whereas the neoclassical paradigm seems to fail in providing any answers at all.

Additional evidence that favors the post-Keynesian approach of financial behavior comes from the answers of managers in another important question in the questionnaire. Specifically, we ask financial managers which factors affect their investment funding decision. The results are presented in Figure 3.

Vasiliou and Daskalakis [2006] provide an extensive analysis of managers' answers. In this paper we examine the

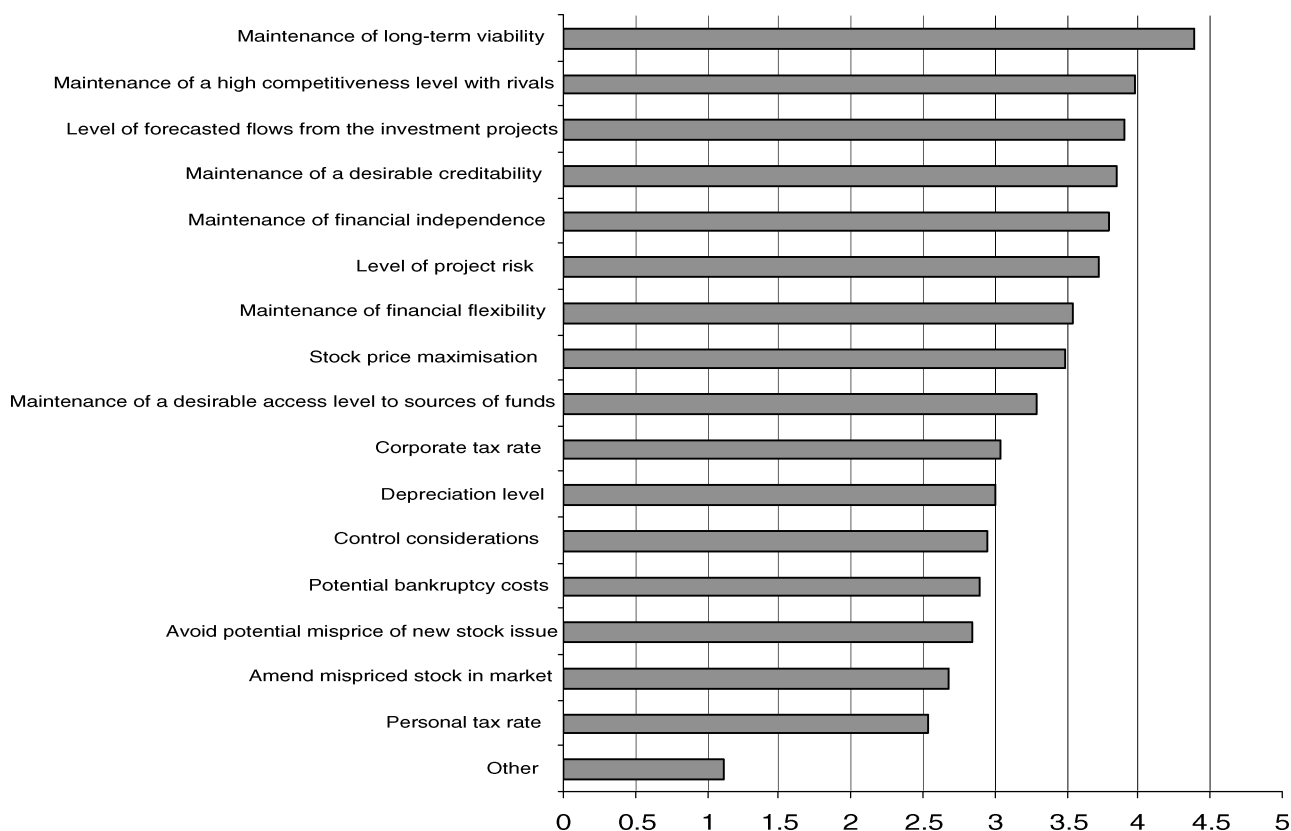


FIGURE 3 Which of the following factors affects your investment funding decision?

hierarchy of the answers from a financial behavior point of view. We see that according to managers, the first priority on their funding decision is the maximization of probability of long-term survival of the firm. This opinion fits exactly the post-Keynesian financial behavior approach. Specifically, Crotty [1992] argues that the relevant nonneoclassical literature (managerial, behavioral, institutional) characterizes top managers of large nonfinancial corporations as concerned with the long-term reproduction, growth, and safety of a firm itself. By achieving these objectives, managers assure their own status and security. The constraints they face derive in part from their desire to maintain decision-making independence from financial market “constituents,” that is, stockholders and creditors. For the “managerial” firm, dividends, like interest payments, are a cost of maintaining managerial decision-making autonomy, a constraint rather than an objective to be maximized.

Furthermore, according to Gordon [1992], a firm is a semi-autonomous agent with a preference function of its own and is expected to pursue growth in size or market share and in profits and avoid threats to its decision-making autonomy or its financial security. If we look at the hierarchy of the answers, these objectives seem to be followed by Greek managers as well. On the other hand, note that the closest objective, according to the neoclassical paradigm, is stock price maximization, which actually leads to the maximization of shareholder wealth. This objective comes eighth in the answers hierarchy.

To summarize, the answers that managers provided in some specific questions in the questionnaire as well as their financial behavior in capital structure determination have led us to inconsistent conclusions according to the neoclassical financial behavior paradigm. Trying to understand and explain these “inconsistent” views, we realized they were better explained in a context different than what the neoclassical theory describes. The behavioral finance approach and the post-Keynesian financial behavior paradigm provided explanations that fit exactly to our results and seemed to drive us safely in drawing reliable conclusions about the financial behavior of the Greek managers. Though our questionnaire was primarily constructed to test solely the capital structure determination procedure, meaning that there were no questions related to neither behavioral finance nor the post-Keynesian paradigm, results showed clear evidence that these approaches can provide better explanations first in capital structure determination and, more important, in understanding the managers’ financial behavior.

6. CONCLUSIONS AND DISCUSSION

In this paper we use qualitative data to explain the financial behavior of Greek managers. Our starting point is capital structure determination and the relationship between capital structure and stock price. The sample consists of 89 listed

corporations at August 31, 2002, in the Athens Exchange and the data derived by the answers in a detailed questionnaire.

The results show that firms avoid using long-term debt, thus their capital structure consists mainly of equity. The main reason seems to be the big boom of the stock exchange during 1998–2000. Indeed, there is strong evidence that Greek firms have followed the market timing approach of financing by issuing new stock during 1999–2000 when the prices in the ATHEX were high. This result questions the existence of the efficient market hypothesis and favors the behavioral finance approach and specifically the irrational investors–rational managers approach, as expressed by Baker, Ruback, and Wurgler [2004]. Perhaps the market inefficiency argument is itself a result as well, more than a cause in the general financial behavior framework. As a matter of fact, this inefficiency may be explained by the behavioral approach of finance. Proponents of behavioral finance argue that market prices often deviate from fundamental values.

Regarding the relationship between capital structure and stock price, results continue to be inconsistent when viewed within the neoclassical paradigm. Most of the managers believe that a new stock issue announcement will either lead to an increase or to no effect in the stock price, cancelling the signalling theory and raising questions as to why managers have these opinions. It seems as if the post-Keynesian approach provides an acceptable explanation addressing how opinions are shaped based on past experience and, presumed that the existing state of affairs would continue indefinitely, that there is no specific reason to expect a change.

Additional evidence in favor of the post-Keynesian approach comes from managers’ answers about the factors that affect their investment funding decisions. The most important factor (out of 16 total) is the maintenance of long-term viability, whereas the objective of stock price maximization that comes closer to the neoclassical paradigm ranks eighth. Even the low debt ratios could be explained within this theoretical framework. Specifically, the time period of our survey can be characterized as pessimistic, following a crisis in the Athens Exchange and a downturn in economical and financial practice worldwide. Note that in post-Keynesian theory, the conventional decision making is much affected by optimism or pessimism about future prospects; therefore, it is reasonable to observe low debt ratios for the Greek firms.

This “deviation” of the survey results, mainly regarding capital structure and stock price compared with the traditional theoretical framework, raises important questions about the general framework of financial behavior of the firms. Bearing in mind the analysis presented in this paper, financial behavior seems to be better explained by the behavioral finance paradigm and to fit more comfortably in the post-Keynesian theoretical framework.

One may argue that we are using a nonrepresentative sample period where managers could well be biased by the

bubble and subsequent decline of the stock markets around the world, not just in Greece. Let us first analyze the word “biased.” A “biased situation” first presupposes a “correct—nonbiased situation” and second should be caused by an anomaly. In other words, there can be no bias unless something happens to provoke it. Furthermore, it is the assumptions set in every situation that lead to a bias or to a correct situation. The bubble and subsequent decline of the stock markets around the world could bias managers *under the neoclassical paradigm*. Because a bubble and subsequent decline of a stock market are anomalies *under the neoclassical paradigm*, they could bias managers in their opinions. However, as Glaser, Noeth, and Weber [2004] note, bubbles and crashes occur from time to time, which raises questions if this situation should be viewed as an anomaly in the real life of markets or as a natural incident. Also, under the neoclassical theory, bubbles and crashes should, in theory, never exist. To summarize, managers could be biased under the neoclassical theory, but the neoclassical theory does not seem to hold. Regarding our sample period, from our point of view, it is a common period that every market experiences quite often and should not be viewed as nonrepresentative. Nevertheless, if during different periods market participants behave differently, then we should find an economic theory that holds regardless of the period, so that the notion of “nonrepresentative period” could not exist.

In addition, according to the post-Keynesian conclusion, we need to pay attention to the following fact. It is managers who complete the questionnaires. They present their opinions on issues about financial behavior. Thus, it makes absolute sense that the results and conclusions of this survey are affected by the managers’ opinions, which tend to resemble the post-Keynesian theory and assumptions. On the other hand, if individual managers are indeed responsible for corporate decisions, then they affect corporate behavior and performance and their decisions and behavior are the firm’s decisions and behavior. Therefore, the main question that has to be answered is whether these opinions are applied in practice and consequently shape the practical financial behavior of the firms. Bertrand and Schoar [2003] show that management style is significantly related to manager fixed effects in firm performance. Van den Steen [2005] models the vision of the chief executive officer as an important determinant of firm policy. Research should focus more on the possible role that individual managers may play in corporate behavior and performance.

So, the questions are, first, *who has the control*, and, second, *how does he or she decide*. Do managers shape firms’ financial behavior following—most probably—the post-Keynesian approach, or are their opinions prevented by the decisions of the owners, whose objectives *should* resemble more to the neoclassical approach? Whoever has the control, how does that person really decide? What if owners are managers, too? We hope these questions will provide

useful hints for future research in the ambiguous field of practical financial behavior.

NOTES

1. Examples of anomalies are the size effect, the turn-of-the-year effect, the weekend effect, the value (P/E ratio) effect, and the momentum effect.
2. Sample characteristics are presented in the Appendix.
3. The sample is representative of the population. Tables are presented in the Appendix.
4. Note that with the term “current” capital structure, we refer to the capital structure of the survey firms calculated by their published financial statements.
5. Note that we refer to 2002–2003.
6. *Fact Book 2003*, published and edited by the Department of Information Dissemination Marketing Division of the Athens Exchange, p. 19.
7. Hellenic Capital Market Commission, Annual Report 2002, p. 21.
8. Athens Exchange, Daily Official List Announcements, vol. 204, Tuesday, October 29, 2002, p. 13.
9. According to LaPorta et al. [1998], the legal system is the primary determinant of the availability of external financing in a country. More precisely, they argue that the common law system provides better quality of investor protection than civil-law systems, and among the civil-law systems the French system provides the least protection.
10. For instance, the Commercial Code is a translation of the original French Code, whereas unfair competition is governed by Law No. 146/1914, which is modeled after the 1906 German statute.
11. Vasilioiu and Daskalakis [2005] provide an extensive analysis on the issue of the debt-equity choice of the Greek firms.
12. The data are provided by the Annual Reports of the Hellenic Capital Market Commission.
13. Hellenic Capital Market Commission, Annual Report of 1999, p. 40.
14. Six firms proceeded to two SEOs during 1999.
15. Hellenic Capital Market Commission, Annual Report 2000, p. 45.
16. Hellenic Capital Market Commission, Annual Report 2001, p. 53.
17. Hellenic Capital Market Commission, Annual Report 2002, p. 56.
18. Note that the distribution of at least 35% as first dividend is mandatory unless the General Assembly of the stockholders decides differently. For instance, they may decide that no earnings will be distributed because of investment funding requirements.
19. The seminal contribution in this area is that of Ross [1977].

20. Another reason that could account for this wedge between prices and fundamental values is the lack of adequate information flow. However, we believe that this situation alone is not enough to explain such a large deviation. Nevertheless, laws and regulations for listed firms force them to provide adequate information to the markets.

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7. APPENDIX

7.1. Sample Representativeness

We also tested whether our sample is representative of the population, which refers to all listed firms (banks and firms in the financial sector excluded) in the Athens exchange. There are several criteria according to which we could test representativeness, for example, industry and size criteria. Bearing in mind that the study is focused on capital structure, we decided to use the criterion of capital structure. To do so, we first calculated the debt to equity ratio of the 89 sample firms and of the 304 population firms. The data were extracted from the ATHEX database, which contains the published financial statements of all listed firms. Second, we grouped the firms according to their capital structure (Table A) and then we applied the appropriate statistical test.

The appropriate statistical test to apply was the chi-square, goodness-of-fit test. The null hypothesis is that there are no

statistical differences between the percentage groups of the sample and the population. Thus:

$$H_0 : \pi = p$$

$$H_1 : \pi \neq p$$

where π is each group percentage of the population and p is the corresponding of the sample. The results of the chi-square test are presented in the following table.

Statistical Test.	
Chi-square ^a	0.912
Degrees of freedom	6
P-value	0.989

^a 0 cells (0%) have expected frequencies less than 5.

The results show that the null hypothesis cannot be rejected. Thus the sample is representative of the population according to the capital structure criterion.

TABLE A
Capital Structure of the Firms Belonging in the Sample and the Population.

Population Firms			Sample Firms		
	Frequency	Percentage		Frequency	Percentage
No long term debt	106	35.22%	No long term debt	30	34.09%
Up to 10%	73	24.25%	Up to 10%	20	22.73%
11–20%	27	8.97%	11–20%	10	11.36%
21–30%	21	6.98%	21–30%	6	6.82%
31–60%	31	10.30%	31–60%	10	11.36%
61–100%	23	7.64%	61–100%	7	7.95%
Over 100%	20	6.64%	Over 100%	5	5.68%
Total	301	100.00%	Total	88	100.00%

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