

Long-term performance and transfer of shares on the Tunisian Stock Exchange

La performance à long terme des nouvelles introductions en bourse tunisiennes

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Volume 6, numéro 1, 2009

URI : <https://id.erudit.org/iderudit/1039096ar>

DOI : <https://doi.org/10.7202/1039096ar>

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Éditeur(s)

Centre d'études en gouvernance de l'Université d'Ottawa

ISSN

1912-0362 (numérique)

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Citer cet article

Rabah Gana, M. & El Ammari, A. (2009). Long-term performance and transfer of shares on the Tunisian Stock Exchange. *Revue Gouvernance / Governance Review*, 6(1). <https://doi.org/10.7202/1039096ar>

Résumé de l'article

Basée sur un échantillon de 32 entreprises sur la période 1992-2006, cette étude examine le phénomène de performance à long terme des nouvelles introductions en bourse tunisiennes. Une sous-performance à long terme significativement différente de zéro de l'ordre de 32 pour cent est repérée sur une fenêtre de 36 mois lorsque la méthode d'achat-conservation est appliquée. Cette sous-performance est précédée par une rentabilité positive et significativement différente de zéro de l'ordre de 20 pour cent sur les 5 premiers jours suivant l'introduction en bourse qui persiste jusqu'à 6 mois après. Les variables décrivant le comportement de cession d'actions par les actionnaires de contrôle expliquent de façon significative la rentabilité à long terme et penchent en faveur de la théorie d'agence. Par ailleurs, les résultats sont conformes à l'hypothèse de la « fenêtre d'opportunité ». L'incertitude ex-ante décrivant l'entreprise candidate participe, pour sa part, à la détérioration de la performance boursière à long terme.

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Introduction

A large number of studies provide empirical evidence of the long-term performance of initial public offerings (IPOs) in both developed and emerging markets. Most of them report that investors realize abnormally weak returns in the long-run.

This literature, produced since Aggarwal and Rivoli (1990), has demonstrated that the new American IPOs underperformed the market by 13 percent on average, a year after their IPO. Ritter and Welch (2002) and Ritter (1991) confirmed this result, later, with significant underperformances of -23.40 percent and -29.13 percent by the end of the 3rd year following the issue. Then, other works of research have been carried out on other international stock markets, such as the French (Jeanneret, 2005), Spanish (Alvarez and Gonzalez, 2005), Canadian (Kooli and Suret, 2004) and German (Kuklinski, 2003).

The negative aftermarket performance has also been documented on the emerging stock markets. For example, Aggarwal, Leal and Hernandez (1993) point out that the Brazilian IPO market presents an underperformance of -47 percent after the first 3 years. For the Chilean IPO market and for the same period it is of -23.70 percent; whereas on the Mexican IPO market it reaches -19.60 percent. This negative excess return has also been noticed by Dawson (1987) on the IPO market of both Hong Kong (-9.30 percent) and Singapore (-2.70 percent) during the period 1978-1984, but they aren't significantly different from zero. However, the Malaysian IPO market recorded a significant overperformance of 18.20 percent. Recently, Ahmad-Zaluki *et al.* (2007) also established a positive performance on the Malaysian stock market over the period 1990-2000, when they compiled an equally-weighted portfolio. However, they provide additional results regarding the value-weighted abnormal returns that are on average statistically negative. In Tunisia, Ben Naceur (2000) found a long-term over-performance of 11.04 percent over the period 1992-1997, that turned into an underperformance of -22 percent in the survey of Ben Naceur and Ghanem (2001) conducted over a longer horizon (1990-1999). This clearly highlights the results' sensitivity to the weighting scheme and to the period of the study. It is nonetheless true that most results converge and confirm that the long-term returns of these companies deteriorate significantly during the years following the IPO. Several authors including Barber and Lyon (1997) add that results depend on the measure of the long-run post-IPO performance used.

The long-term underperformance phenomenon has received several theoretical explanations in the financial IPO literature. Aggarwal and Rivoli (1990) specify that the stock market is not immediately efficient in evaluating newly issued securities and that the IPO abnormal returns observed after going public result from a temporary overestimation by investors in early trading days. This confirms the "impresario" hypothesis or the fads¹-hypothesis initially presented by Shiller (1990) and Debondt and Thaler (1985 and 1987). Miller (1977, 2000) mentions the hypothesis of opinion divergence as an explanation of the long-term underperformance of IPOs.

He suggests that the most optimistic investors constitute the potential purchasers of the newly introduced company's shares. If the uncertainty about the value of an IPO were important, the divergence of opinions between the optimistic and the pessimistic investors would be also. Miller (1977) demonstrates that this divergence of opinion leads to both short-run overvaluation and long-term underperformance of IPOs. Ritter (1991) and Loughran and Ritter (1995) mention the "window of opportunity" hypothesis to explain post-listing IPO abnormal returns in the United States. Companies going public in periods characterized by a substantial volume of trading are more likely to be overvalued in comparison with other IPOs and long-term negative performance follows. Jain and Kini (1994) add that the IPO timing makes investors formulate some optimistic expectations about the future growth of the IPO firm's profits. When real profits are known, a certain disappointment among investors results and makes shares' prices decrease (Teoh, Welch and Wong, 1998).

In spite of the multiple explanations, little research has been interested in the relationship that might exist between the long-term anomaly and the evolution of the shareholding structure. However, the IPO has an important effect on the shareholder structure. Indeed, this process generates a loss of the current shareholders' control since it consists of selling a large block of shares. Besides, the new shareholders intervene in the company management in order to maximize its market value, whereas the current shareholders try to maximize their remuneration and their personal wealth. With this in mind, the evolution of the current shareholder ownership structure can determine the listed companies' behaviour on the IPO market.

The purpose of this study is to examine the impact of shares' transfer by original controlling shareholders on the IPOs' abnormal long-term performance. Empirical evidence for the Tunisian IPO market is interesting for several reasons. Indeed, with the policy adopted by the Tunisian Financial Market Council (FMC) to promote the primary stock market and the alternative market,² the understanding of the impact of shares' transfer behaviour on the long-run IPO returns is of great interest. Moreover, this study seems to be especially interesting when applied to Tunisia, where most companies are of familial character and where nearly all IPOs are made through share transfers by original shareholders. In addition, we think that the divergent results obtained by the few studies undertaken about the Tunisian IPO market deserve to be explored further, especially as today we dispose of much more hindsight. The substantial underpricing characterizing the new Tunisian issues (Gana and El Ammari, 2008) incites us to verify whether it is followed, as in most studies made about the developed markets, by a long-term counter-performance. This will allow us to get a better understanding of the Tunisian IPO market in particular and of the emergent IPO markets in general. Finally, a better understanding of the Tunisian Stock Exchange (TSE) can help foreign investors and their international portfolio diversification.

The remainder of the article is organized as follows. Section 1 contains a discussion about the relationship between the shares' transfer behaviour and the long-term performance. In section 2, the work sample is described. The third section presents the different measures of variables and describes the methodology. The empirical results are presented in a fourth section, followed by a conclusion.

The shares' transfer behaviour and the IPO long-term performance

The recent literature having examined the impact of shareholding concentration on the IPO firm performance suggests that the shareholding detained by the investors can influence the firm's behaviour and its market value (Bathala, Moon and Rao, 1994; Bhide, 1993; Holthausen, Leftwich and Mayers, 1990). However, most of these works were not interested in the sense of this relationship around the IPO date. Findings established on this topic have been obtained in an indirect way, while analyzing the firm's performance with variables describing the information

asymmetry or the ex-ante uncertainty characterizing the company (Rock, 1986; Carter and Manaster, 1990).

In accordance with the results found by Cai and Wei (1997), Kutsuna *et al.* (2002) demonstrate that the economic performance of the Japanese companies records a significant decline over the three years aftermarket and explain it by the dispersion of the shareholding structure. These results are concordant with those of Jain and Kini (1994) on the American IPO market. The underlying theory is that advanced by Jensen and Meckling (1976). The agency theory stipulates that the more concentrated the shareholding structure, the better managers are controlled in the sense of maximization of the firm's value.

The link between the performance and the shareholding structure can be also explained by the entrenchment theory. According to this theory, managers, in a merely opportunist process, will attempt to weaken the control mechanisms put in place by shareholders, which lead to an excessive increase of their discretionary power and of their managerial latitude. This can cause the deterioration of the company (Demsetz, 1983; Fama and Jensen, 1983). More recently, Chen and Kao (2005) find a negative and strictly monotone relationship between the proportion of shares held by managers and the performance of Taiwanese companies newly introduced in the stock exchange. Connelly *et al.* (2004) noted, however, that the proportion held by the top five controlling shareholders cannot explain the poor long-term performance of Thai initial issues. The results suggested by Mikkelsen *et al.* (1997) fail to show up a clear link between the operating performance evolution and the disengagement of the shareholding.

Kim *et al.* (2004) attempt to explain these divergent results when they demonstrate a non linear relationship between the performance and the shareholding structure: the agency hypothesis is proved when the detention level of shares is "low" or "high." Contrarily, for "intermediate" retention rates, the entrenchment hypothesis is demonstrated. More recently, the study of Wang (2005) highlights a non-linear relationship between the long-term Chinese IPO's underperformance and the detention level of the top ten shareholders. In Netherlands, Roosenboom and Van Der Goot (2005) show that the performance of candidate companies increases, then decreases, as the managers' property becomes concentrated.

Among the most recent works concerning the study of the relationship that may exist between the shareholder structure evolution of newly introduced companies in the stock market and their long-term performance, those of Goergen and Renneboog (2007) and Chahine (2007) are found. The former authors conclude that the IPOs' long-term performance is not associated with the variable describing shareholding structure of German and English companies. The latter highlights the presence of a negative but insignificant relationship between the shareholding concentration and the one-year performance of French companies. He adds that this relationship is of a non-linear type.

Data and study sample

Before presenting our results, data sources and the sample study are described.

Data sources

The IPOs listed on the Tunisian Stock Exchange (TSE) between March 1992 and March 2006 are identified. For all these firms, the nature of the issuer (sector, age, size, debt level, creation year) and of the issuance (introduction and issue dates, offer price, number of shares at the public disposal, raised capital and the financial mediator's identity) are gathered from the annual reports and the candidate's IPO definitive prospectuses collected from the Tunisian FMC. Data on the closing prices and the market index are taken from daily price data provided by the TSE. Information about the shareholding structure before and after going public comes from the IPO prospectus.

Study sample

Our original sample includes 47 candidate companies listed on the TSE. However, the IPO's prospectuses could be consulted for only 40 of them. Among these, only 32 have been selected, those which have published a detailed account of their shareholding structure.

Table 1 shows the sample distribution for each year in terms of the number of issues. It is clearly evident that the annual rate of new listings on the TSE by selling existing shares was increasing up to 1999. This coincides with the Tunisian government resolution to lighten its control of public companies. Furthermore, in the year 2000 and from 2002, very few new listings have been observed which shows that recourse to the stock exchange is not necessarily an alternative priority for financing. Finally, we see that, except for a lull in the mid 90s, resorting to the financial markets to raise capital remains modest compared to developed markets.

Table 1

Constitution and annual distribution of the study sample listing (1992-2006)

For each year the total number of IPOs firms in the Tunisian Stock Exchange, the number of available prospectuses, the number of the candidate companies in the study sample and the size of the offering are indicated.

Year	Number of IPOs	Available Prospectuses	Sample of work	Size of offering (000.Dinars)
1992	2	1	1	9 000
1993	3	2	1	6 412
1994	3	3	2	4 566
1995	6	6	3	31 757
1996	3	2	2	22 622
1997	6	6	4	16 530
1998	4	4	3	21 464
1999	6	6	6	30 859
2000	1	0	0	0
2001	5	4	4	28 515
2002	3	2	1	6 158
2003	1	1	1	5 544
2004	0	0	0	0
2005	3	3	3	19 783
2006	1	1	1	5 940
Total	47	40	32	209 153

Variables measures and methodology

The empirical methodology applied in order to study the shares' transfer impact on the degree of the long-run performance of the initial issues consists of regressing this last measure on variables describing the shares' transferred by controlling shareholders.

There are several methodologies that could be used to calculate the aftermarket performance of IPOs, and there is no consensus on which of them provides better results.³ Therefore, we think that it is better to combine several measures as it is specified that results are very sensitive to the chosen performance measure (Ahmad-Zaluki *et al.*, 2007; Purnanadam and Swaminathan, 2004...).

More specifically, four methods for IPOs' long-term performance measurements are applied. The first is known as the "cumulative abnormal returns" (CARs). It adds the monthly abnormal returns within a T time after the IPO event. The second is the "buy-and-hold abnormal returns" (BHARs) which uses the shares purchased at the first trading day closing price and supposes their conservation over a three-year period. The third is based on calculating the "calendar-time abnormal returns" (MCTARs). According to Barber and Lyon (1997), this approach presents the advantage of providing more robust statistical tests, minimizing the problems related to the interdependence of the firms' stock returns. Finally, the fourth method is the wealth relative (WR) index. It compares the average buy-and-hold return of an IPO portfolio relative to a benchmark. A WR index greater than 1 means that the IPOs outperform the reference portfolio. These measures are calculated on an equally-weighted (EW) and value-weighted (VW) basis. As a benchmark, the Tunisian BVMT index is used.⁴

Measures of long-term performance are as follow:

(1)

$$\overline{CAR}_{1-q} = \sum_{s=1}^q \overline{AR}_s$$

With:

is the cumulative abnormal returns from the first trading day to the month q (q= 6, 12, 18, 24, 30, 36)

$$\overline{AR}_s = \sum_{i=1}^{N_s} x_{is} (R_{is} - R_{ms})$$

(2)

R_{is} is the return of the company i during the month s

R_{ms} is the return of the "benchmark" in the month s

x_{is} represents the weighting of each share in the total portfolio. It can be calculated on an EW ($x_{is} = 1/N_s$) or VW basis.

N_s is the number of firms for which returns at the date of event s are available (s = 1 to 36).

(3)

$$\overline{BHAR}_{1-q} = \sum_{i=1}^{N_q} x_{i,q} BHAR_{i,1-q} \quad (3)$$

Where:

is the return calculated from a buy and hold strategy from the first trading day to the month q (q = 6, 12, 18, 24, 30, 36) and

(4)

$$BHAR_{i,1-q} = \prod_{s=1}^q (1 + R_{i,s}) - \prod_{s=1}^q (1 + R_{m,s}) \quad (4)$$

(5)

$$MCTAR = \frac{1}{T} \sum_{i=1}^T \overline{CTAR}_s$$

With:

MCTAR is the mean of abnormal returns for each calendar month, from the first month to the month T.

(6)

$$\overline{CTAR}_s = \sum_{i=1}^{N_s} x_{is} (R_{is} - R_{ms})$$

N_s is the number of companies at calendar time s

(7)

$$WR_{i,q} = \frac{\sum_{i=1}^{N_s} x_{is} \left(\prod_{s=1}^q (1 + R_{is}) \right)}{\sum_{i=1}^{N_s} x_{is} \left(\prod_{s=1}^q (1 + R_{ms}) \right)} \quad (7)$$

Where:

$WR_{i,q}$ is the relative wealth ratio for the period q , going from month 1 to month q after issuance.

About the endogenous variables, they concern, first, that describing the fraction of existing shares proposed by controlling shareholders in the IPOs (LnTCONOWN). As did Connelly *et al.* (2004) and Broye and Schatt (2003), the corporate governance is described through the existing shares' transfer by original controlling shareholders, because they are more important and more frequent than the new shares' issues.⁵ Besides, it's interesting to complete this variable with that representing the shares percentage still held by controlling shareholders, since a large percentage of shares' transfer doesn't necessarily correspond to a smaller proportion of shares held by controlling shareholders. This idea is inspired by Mikkelson *et al.* (1997).

In other respects, the classical variables cited in the financial literature as explaining the long-term performance as control variables are introduced. They describe the firm ex-ante uncertainty which is negatively related to the stock performance of the IPO's (Miller, 1977, 2000). It is explained by the financial leverage (Lev), the financial intermediary reputation (Rep-UW) and the initial underpricing (RI). Market conditions also constitute another control variable since according to Loughran and Ritter (1995), companies newly introduced in hot periods show a weaker long-term performance than the others.

We proceed, first, to a univariate analysis of the long-term stock market returns then to a multivariate one according to the following regression model:

$$BHAR_i = b_{0i} + b_{1i} RI_i + b_{2i} Lev_i + b_{3i} LnSize_i + b_{4i} Rep-UW_i + b_{5i} CM_i + b_{6i} BM + b_{7i} LnTCONOWN_i + b_{8i} LnHCONOWN_i + e_i \quad (8)$$

· **Lev** represents the financial leverage which corresponds to the relationship between the book value of debts⁶ and the book value of total assets. It has been established that a high leverage ratio before going public, raises the ex-ante uncertainty (Venkatesh and Neupane, 2004). However, if the company's debt is used in order to reduce the asymmetric information (Leland and Pyle, 1977), the coefficient of this variable will be positive.⁷

· **LnSize** represents the logarithm of the firm's stock capitalization at the IPO date. It is commonly acknowledged that the ex-ante uncertainty is more important around small firms.

· **Rep-UW** is a binary indicator of the financial mediator reputation: It is equal to 1 if a candidate company is run by a well-known financial mediator and 0 (zero) otherwise. It is based on the size of the issues they run, as underwriters. Thus, if the underwriter runs a firm of which the issues' size is superior (respectively inferior) to the median, he is supposed to be a well-known introductory agent (non-reputed one). The most prestigious financial mediators are incited to maintain their reputation while exercising prudent choices in terms of issues' price.⁸ If so, issues put into practice by these agents will have, on average, good long-term returns, and the coefficient associated with the financial mediator variable reputation will be positive.

· **CM** is a dummy variable of the market condition. It is equal to 1 (one) if it indicates a "hot" market and to 0 (zero) to indicate a "cold" one. The sample is divided into strong activity periods (hot) and weak activity period (cold) working on the basis of the number of IPOs per year (Kooli and Suret, 2004; Bayless and Chaplinsky, 1996). So, if it is higher (lower) than the median, we suppose that the market is "hot" (cold). Numerous empirical studies show that when the initial issues are compiled in high activity periods, the long-term underperformance is considerable (Loughran and Ritter, 1995; Ritter, 1991) and this is related to the market correction after investors' euphoria. In this case, the associated coefficient will be negative.

· **RI** is the initial underpricing level. According to Shiller (1990) the undervalued shares are those which show substantial long-term negative post-IPO performance. The associated coefficient to this variable is then negative as the overreaction or fads explanations suggest.

· **BM** represents the book-to-market ratio of the company at its IPO date. Several studies including that of Brav and Gompers (1997) criticize the presence of this long-term anomaly and attribute it to growth titles characterized by a weak BM ratio. The associated coefficient of this variable should thus be negative.

· **LnTCONOWN** is the napierian logarithm of 1 (one) plus the existing fraction of shares proposed by original controlling shareholders. If we refer to the agency theory, in particular to the convergence of interests' effect, IPO long-run underperformance would be recorded when the number of shares' transferred by controlling shareholders increases. It corresponds to a negative coefficient. However, on the basis of the entrenchment theory, long-term outperformance would be expected when the number of shares' transferred by controlling shareholders increases. Thus, the coefficient will be positive.

· **LnHCONOWN** is the napierian logarithm of 1 (one) plus the shares' fraction held by controlling shareholders aftermarket and is interpreted as opposed of the **LnTCONOWN** variable.

To estimate this model, an ordinary least squares (OLS) regression is applied. As the distribution of the long-term returns deviates from a normal one⁹ and given the narrowness of our study sample, the "bootstrap" method is applied to obtain efficient estimators.

Since a problem of multi-colinearity is suspected among variables, the VIF¹⁰(variance inflation factor) coefficients are calculated. Values taken by this being superior to the unity suggest that the long-run performance is in fact a linear combination of s, the aforementioned explanatory variables.

Empirical results

The descriptive results concerning the different variables presented above are set out successively with those of the regression model.

Descriptive analysis of the explanatory variables

Panel (A) in Table 2 shows the characteristics of Tunisian IPOs that occurred from March 1992 to March 2006. Tunisian candidate companies wait an average of 20 years before being listed on the stock exchange, which is remarkably low compared to Italy and Japan IPOs, but similar to other European samples. It reveals also that these newly listed companies are underpriced as in most stock markets. The initial stock return made by an investor who is able to sell the stock acquired at the initial offering price after the first five trading days, is on average 19.22 percent. This underpricing is significantly different from zero at the level of 1 percent. Panel (B) reveals that half the companies in the study sample called on the services of a reputable underwriter.

Table 2

Descriptive statistics for study sample listed on the TSE between March 1992 and March 2006

This table presents the descriptive statistics (average, median, standard deviation) of the candidate companies carried out between March 1992 and March 2006 on the TSE.

Panel A- Continuous Variables: It describes the offer volume, the issue size, the age of the candidate company, its debts and its shareholder structure. The initial return (RI) is also presented. Age is calculated based on the number of years of operation before the IPO and RI is measured over the first 5 days as follows: (average closing price of the first five trading days - Issue price) / Issue price.

Characteristics of the IPOs firms on the TSE (N = 32)			
	Means	Median	
Offer volume (number of stocks)		398 369	324 150 283 332
Offering size (MD)		6 536	5 522 4 562
Candidate company age (in year)	20.20		19.08 15.99
Debts at the IPO time (in %)	40.35		42.38 26.65
Percentage (%) of old stocks proposed by the original shareholders	25.63		20.69 23.13
Percentage (%) of old stocks proposed by the controlling shareholders	21.36		20 15.71
Percentage (%) of old stocks proposed by the shareholders-managers	17.44		17.39 12.20
Percentage (%) of old stocks held by controlling shareholders post-IPO	66.82		66.89 12.33
Initial Returns (RI) (in %)	19.22		6.09 35.77

Panel B- Dummies Variables: *REP-UW* = 1 if the underwriter is renowned, and 0 otherwise.

Characteristics of the IPOs firms on the TSE (N = 32)

Sample Frequency (%)		
REP-UW = 1	16	50
= 0	16	50

Concerning the behaviour of the existing shares' transfer, it can be noted that the controlling shareholders are those who sell a large part of their shares: on average 21.36 percent of the stocks for a total of 25.63 percent of shares sold. In spite of this, a large proportion of the shareholding in Tunisian candidate companies persists after going public, given that the controlling shareholders still hold about 2/3 of the shares post-IPO. In fact, the first two controlling shareholders possess more than 40 percent.¹¹ This highlights clearly that controlling shareholders retain the majority of the capital after the IPO. We also notice that most controlling shareholders act as managers within the company since the proportion held by the shareholders-managers is comparable to that held by controlling shareholders.

Descriptive analysis of the IPO long-term performance

Panel (A) in Table 3 reports descriptive statistics of the cumulative abnormal returns (CARs) adjusted by the market returns on each of the months following the IPO. These returns are calculated from the closing price of the first trading day for all Tunisian IPOs. The initial issues have an average return slightly superior to that of the BVMT stock market index, which is of 7.62 percent for the first 12 months of listing. To the end of the 24th month, the long-term underperformance phenomenon is observed with an EW CARs of -7.57 percent. It reaches its maximum level by the 36th month with a return of -15.58 percent. However, these results are not statistically significant. The VW CARs confirm our findings. So, the overoptimistic behaviour of the investors observed up to the 6th month has a tendency to progressively disappear.

The panel (B) displays results obtained by the abnormal returns method calculated with the BHAR from the closing price of the first trading day for all Tunisian IPOs. On an EW basis, an initial investment in the issuing companies starts to generate a loss from the 18th month. The underperformance is of -6.80 percent rising to -3.97 percent at the 24th month. These results are not statistically significant. The aftermarket performance gradually deteriorates to reach the statistical level of -32 percent at the 36th month. This indicates that Tunisian initial issues underperform the market during the three years following the issues' date. The same results are found when described on the basis of VW returns.

The panel (D) shows the results obtained through the calendar time method over the 6, 12, 18, 24, 30 and 36 months after the IPO. These returns are calculated from the first trading day closing price. On an EW basis, the initial issues have, on average, a superior return to that of the market of nearly 0.72 percent during the first 12 months of listing. Then, the returns spread decreases to reach -0.54 percent at the 36th month. Nevertheless, these results are not significant. Besides, those obtained on the basis of the VW returns confirm the IPO counter-performance on the TSE with negative average abnormal returns during the next 24 (-2.53 percent) and 36 months (-0.70 percent).

As long-term performance variables are not normally distributed, the parametric test for the significant difference in mean should be interpreted with caution. A Wilcoxon signed-rank test statistic is thus calculated.¹² It confirms the statistical significance of the previous results except for the calendar time measure which becomes statistically significant.

Compared to other studies, we notice that the VW long-term underperformance is lower than the EW one, suggesting that small companies are more affected by this anomaly, probably because of their uncertainty.

In sum, our results agree on the fact that the IPOs can be a “good” short-term investment but not for the long-term. This is also confirmed by the WR values obtained in panel (C), since they are lower than 1 for the 18, 24, 30 and 36 months aftermarket. At the 36th month, the average value of WR in EW (VW) is of 0.786 (0.798), indicating that the investor must invest 27 percent (25 percent) more to obtain the same performance as the benchmark. The analysis of standard deviation shows, for its part, a large variability at the level of the long-term shares’ performance making first initial public offering risky.

Table 3

Descriptive statistics

Panel (A) shows the descriptive statistics of the cumulative abnormal returns (CARs) calculated on 6, 12, 18, 24, 30 and 36 months. The CARs are calculated from the first trading day closing price. The panel (B) provides the descriptive statistics of the BHARs excess returns where the investor buys and holds the share *i* during a period *T* aftermarket compared to a “benchmark.” The BHARs are calculated from the first trading day closing price until 12, 18, 24, 30 and 36 months after listing. The panel (C) shows the WR index. The panel (D) presents the descriptive statistics of the calendar-time abnormal returns (MCTARs) that correspond to the abnormal returns average for each calendar month. The average signification degree is determined using the Student-t statistic. EW (VW) indicates an equally-weighted (value-weighted) basis. *N* indicates the number of companies.

Panel (A): CAR

	<i>N</i>	Means (%)	Standard deviation	<i>Skewness</i>	<i>Kurtosis</i>
CAR (EW)					
Month 6	32	19.01**	0.486	0.968	2.868
Month 12	32	7.62	0.496	0.346	0.399
Month 18	32	-0.38	0.565	0.183	-0.038
Month 24	32	-7.57	0.701	0.407	0.215
Month 30	30	-7.54	0.755	0.439	-0.299
Month 36	30	-15.58	0.724	0.123	-0.702
CAR (VW)					
	<i>N</i>	Means (%)	Standard deviation	<i>Skewness</i>	<i>Kurtosis</i>
Month 6	32	17.45*	1.798	1.643	4.067
Month 12	32	7.34	1.738	0.887	3.339
Month 18	32	2.31	1.713	-0.043	1.535
Month 24	32	-4.78	1.867	-0.502	0.718
Month 30	30	1.95	2.569	1.547	5.924
Month 36	30	-4.30	2.533	1.280	5.469

Panel (B): BHAR

	<i>N</i>	Means (%)	Standard deviation	Skewness	Kurtosis
BHAR (EW)					
Month 6	32	24.26*	0.734	3.023	13.148
Month 12	32	4.39	0.658	0.609	1.872
Month 18	32	-6.84	0.812	0.738	2.012
Month 24	32	-3.97	1.626	3.782	18.190
Month 30	30	-9.23	1.332	2.208	7.359
Month 36	30	-32**	0.816	0.033	-0.108
BHAR (VW)					
Month 6	32	18.24*	1.853	1.568	3.471
Month 12	32	2.09	1.671	-0.164	2.987
Month 18	32	-10	1.653	-0.793	1.053
Month 24	32	-15.59	2.155	0.587	2.700
Month 30	30	-12.45	2.274	-0.219	1.331
Month 36	30	-22.33**	1.880	-0.416	0.388

Panel (C): WR

	Month 6	Month 12	Month 18	Month 24	Month 30	Month 36
WR (EW)	1.223	1.035	0.95	0.972	0.938	0.786
WR (VW)	1.172	1.018	0.918	0.873	0.889	0.798

Panel (D): MCTARs

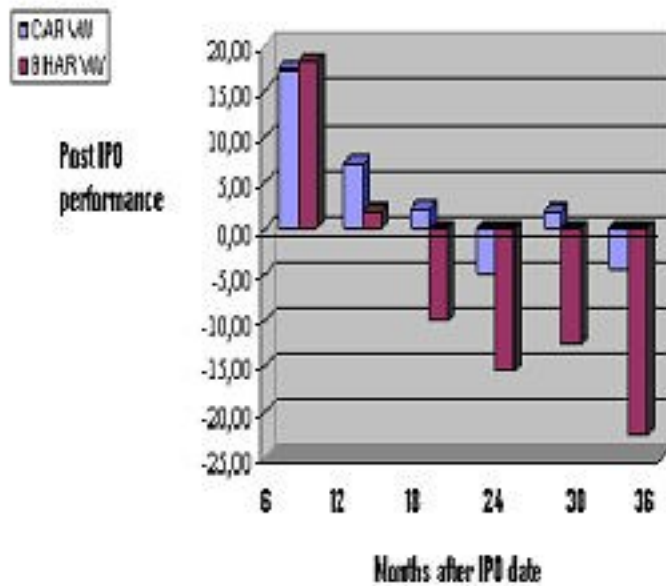
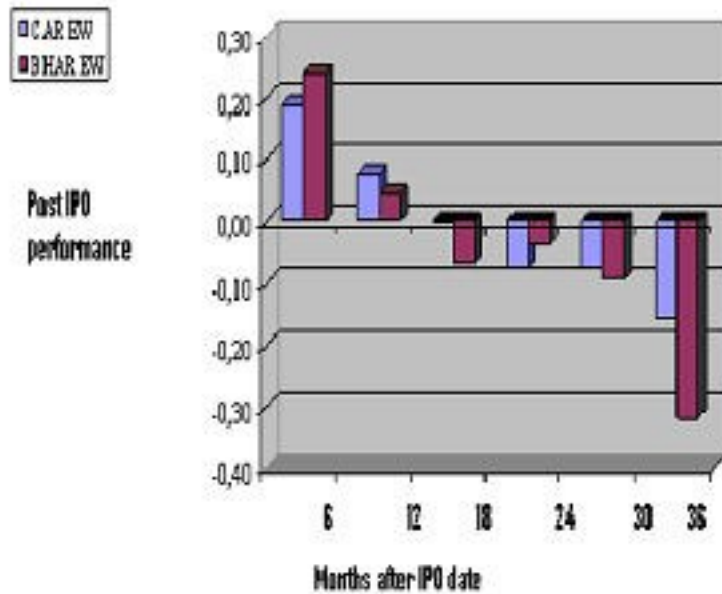
	<i>N</i>	Means (%)	Standard deviation	Skewness	Kurtosis
MCTAR (EW)					
Month 6	32	2.05	0.166	2.16	22.99
Month 12	32	0.72	0.123	5.40	48.61
Month 18	32	0.02	0.079	1.69	7.73
Month 24	32	-0.11	0.071	0.55	10.33
Month 30	30	-0.26	0.074	-3.27	22.31
Month 36	30	-0.54	0.068	-4.09	29.64
MCTAR (VW)					
Month 6	32	5.38	0.556	2.75	13.55
Month 12	32	4.65	0.935	4.29	28.01
Month 18	32	-0.17	0.328	2.70	21.86
Month 24	32	-2.53	1.240	2.19	18.01
Month 30	30	0.24	0.241	0.43	9.14
Month 36	30	-0.70	0.212	-0.18	11.40

*** significant at 1% level, ** significant at 5% level * significant at 10% level.

The Figure 1 presents the long-term returns evolution over the 36 months following a new listing. It highlights the persistence of the under performance since the 18th month for CARs and BHARs EW returns as well as for VW BHARs returns.

Figure 1: CARs and BHARs returns

This figure shows the returns temporal evolution aftermarket. The long-term performance is calculated from the closing price of the first trading day. CAR EW (VW) and BHAR EW (VW) indicate respectively the cumulative abnormal returns and the buy-and-hold abnormal returns calculated on the basis of the equally-weighted (value-weighted).



Cross-sectional analysis

A cross-sectional regression is hereafter estimated to identify the significance of the predetermined exogenous variables in explaining the aftermarket abnormal returns of Tunisian IPOs. Our conclusions are based on results obtained with the use of the EW BHAR's method over 36 months.¹³

Several studies stipulate that the long-term return is linked to the initial underpricing. This has been calculated through measuring the return achieved by an investor who intends to buy the share at the issue price and sell it on the first trading day. Table 4 shows that the initial underpricing is on average 19.22 percent. During the first three years of the IPO, as well as the initial undervalued issues, the over-valued ones record a negative mean excess return significantly different from zero. It is however larger within the over-valued group of issues. This result could be due to the market prices' keeping procedure applied by the brokers, which is more important for the less undervalued IPOs. It could also be due to a bigger speculative bubble surrounding over-valued issues. Their market price being kept high in the short term, a returns decline should be observed later. We notice also, that long-run underperformance is less accentuated for the IPOs introduced by prestigious underwriters. Large issues show a more severe underperformance compared to smaller ones. The difference between the two groups is not statistically significant. In order to check if the aftermarket underperformance is not associated with the overvaluation of growth stocks, firms were grouped by BM ratio. The aforementioned hypothesis cannot be confirmed as there isn't any significant difference between the two groups.

Other studies including those of Kooli and Suret (2004) and of Bayless and Chaplinsky (1996) show that the long-term underperformance closely depends on the market condition (cold or hot). In the 36th month aftermarket, an average BHAR of -29.94 percent for "hot" issues is found whereas it is of -36.78 percent for "cold" issues. We cannot conclude that this result contradicts that of Loughran and Ritter (1995), since the difference between the two groups (hot and cold) is not significantly different from zero. The results of the underperformance distribution according to the part of shares sold by the controlling shareholders, show that on the 36th month post-IPO date, a substantial number of shares' transfers results in a greater underperformance (BHAR = -49.91 percent) compared to the opposite group (BHAR = -14.08 percent). So, the greater the transfer of shares by the controlling shareholder during the IPO, the weaker the long-term return. This result is confirmed when the shares' percentage still held by controlling shareholders after the IPO is used with a significant difference between the two groups. Finally, the long-term performance doesn't seem to be sensitive to the leverage of the issued firm since no significant difference is found between the two groups of the most and the least leveraged firms.

Table 4

The BHARs distribution

This table shows the BHARs distribution according to the following variables: initial returns, underwriter's reputation, the issue's size, the book-to-market ratio, the market condition, the percentage of the shares either sold or hold by controlling shareholders. The BHARs exclude initial returns of the first IPO day and are calculated on an equally-weighted basis. t-statistic/Z-Wilcoxon test the difference between the two groups.

BHAR Sample	BHAR Month 12 (%)	BHAR Month 24 (%)	BHAR Month 36 (%)
BHAR	4.39	-3.97	-32**
Total Sample	32	32	30
Over-valued emissions	-14.91	-44.62*	-52.76*
N	5	5	5
Undervalued emissions	7.96	3.56	-27.84*
N	27	27	25
t-statistic/Z- Wilcoxon	(1.01)/(-0.40)	(1.39)/(-2.03)**	(2.06)*/(-2.02)**
Renowned Underwriter	6.54	22.24	-23.39*
N	16	16	15
Non-reputed Underwriter	2.23	-30.19*	-40.70**
N	16	16	15
t-statistic/Z- Wilcoxon	(0.15)/(-0.20)	(0.874)/(0.00)	(0.603)/(-0.11)
Large sizes emissions	-7.05	-38.93**	-44.72**
N	16	16	14
Small sizes emissions	15.82	30.99	-20.86
N	16	16	16
t-statistic/Z- Wilcoxon	(1.13)/(-0.98)	(1.28)/(-0.87)	(0.94)/(-0.72)
High Book to Market	12.49	17.78	-30.96
N	16	16	15
Low Book to Market	-3.71	-25.72	-33.03*
N	16	16	15
t-statistic/Z- Wilcoxon	(-0.67)/(-0.36)	(-0.67)/(-0.15)	(-0.065)/(-0.34)
Hot period	-9.21	0.22	-29.94*
N	22	22	21
Cold period	34.31*	-13.2	-36.78*
N	10	10	9
t-statistic/Z- Wilcoxon	(0.96)/(0.96)	(-0.01)/(0.05)	(-0.34)/(-0.29)
Transfer of a high % of shares	-6.89	-1.23	-49.91*
N	15	15	15
Transfer of a low % of shares	14.34	-6.39	-14.08
N	17	17	15
t-statistic/Z- Wilcoxon	(-1.06)/(-0.62)	(0.16)/(-1.64)	(-1.28)/(-1.30)
Possession of a high % of shares	20.44	10.54	3.14
N	16	16	15
Possession of a low % of shares	-11.67	-18.48	-67.13**
N	16	16	15
t-statistic/Z- Wilcoxon	(-1.30)/(-1.29)	(-0.47)/(2.12)**	(-2.68)**/(-2.27)**
High financial leverage	-4.76	15.94	-29.96
N	16	16	16
Low financial leverage	13.54	-23.88	-34.32
N	16	16	14
t-statistic/Z- Wilcoxon	(1.47)/(-1.29)	(0.74)/(-0.10)	(-0.74)/(-0.34)

***, ** and * denote statistical significance at 1, 5 and 10 percent level, respectively.

Multivariate analysis and robustness tests

In this section, the results of the regression model (8) are exposed. They are based on the EW BHAR variable over the 36 months from the IPO date.

The results obtained are illustrated in Table 5. They confirm that shares' transfer by original controlling shareholders has a negative influence on the average return recorded for the 36 months following the issues. Like Kutsuna *et al.* (2002) and Morck *et al.* (1988), this result proves the disciplinary role played by controlling shareholders. This seems to conform to what Leland and Pyle (1977) have advanced about the behaviour of controlling shareholders when selling stocks according to growth opportunities of the IPO company. Thus, these transfers being more important when growth opportunities are low, justify the negative relationship between the *LnTCONOWN* variable and the long-term performance. However, the lack of significance should be interpreted with caution. The coefficient associated to the *LnHCONOWN* variable corroborate our result, since it is positive and statistically significant, indicating that when the shares percentage held by controlling shareholders after the IPO is substantial, the long-term performance improves.

Concerning the relationship between the long-term performance and the control variables, our results show that there's a positive and non-significant relation between the BHAR measure and the initial underpricing variable. Concerning the ex-ante uncertainty variables, results show that when it increases (size decreases) the long-run performance deteriorates. Moreover, we notice that value stocks perform better over the 36 months aftermarket. Financial leverage seems to contribute to the deterioration of the long-term returns and the reputation of the financial intermediary seems to improve it. However, these results are not significant. The negative coefficient related to the leverage variable is in line with the fact that debt is a factor which strengthens the degree of uncertainty characterizing the IPO firm and not one which reduces the information asymmetry. A significant negative relationship between the long-term performance and the market conditions (hot or cold periods) is detected, proving the "window of opportunity" hypothesis. This highlights the importance of market sentiment on the TSE.

Finally, it is interesting to notice that the adjustment quality of the regression model is relatively good with a R^2 of 45 percent. However, the presence of a constant significantly different from zero shows that other variables could explain the IPOs long-term performance.

Table 5

Results of the multiple regression

Our sample consists of 30 IPOs listed on the TSE between March 1992 and March 2006. The applied regression model is of the following form:

$$: BHAR_i = b_{0i} + b_{1i} RI_i + b_{2i} Lev_i + b_{3i} LnSize_i + b_{4i} Rep-$$

$UW_i + b_{5i} CM_i + b_{6i} BM_i + b_{7i} LnTCONOWN_i + b_{8i} LnHCONOW_i + \varepsilon_i$; where RI = [(average of the closing prices of the first five trading days - issue price)/issue price]; Lev : the debts book value divided by total assets book value before the IPO; $LnSize$: the neperian logarithm of the market capitalization of the company; $Rep-UW$: takes the value 1 if the underwriter is reputed and 0 otherwise; CM : takes the value 1 if it's a "hot" market and 0 if it's a "cold" market; BM : the book to market ratio at the IPO date; $LnTCONOWN$: the neperian logarithm of 1 plus the proposed fraction of existing shares by controlling shareholders; $LnHCONOW$: the neperian logarithm of 1 plus the shares fraction still held by controlling shareholders. The returns are calculated according to the EW-BHAR method. The estimation is based on the bootstrap method. The Student-t statistics is shown in bracket. Adjusted R^2 represents the explanatory model power and N the number of observations.

Dependent Variable	Independent Variables										
	Intercept	LnTCONOWN	LnHCONOWN	RI	Lev	LnSize	Rep-UW	CM	BM	R ²	N
BHAR 36	-9.480	-1.84	4.741	0.013	-0.822	0.500	0.079	-0.630	0.213	0.4492	30
	(-2.00)**	(-0.94)	(2.18)**	(0.02)	(-1.21)	(1.72)*	(0.23)	(-1.66)*	(0.36)		

** and * denote statistical significance at 5 and 10 percent level, respectively.

As some empirical studies such as those of Connely *et al.* (2004) conclude with a curvilinear relationship between the transfer of shares and long-run performance, this can explain the weak significance of our results. For that reason, the cubic shaped model of Kim *et al.* (2004) is applied by introducing in the previous model the square and the cubic shapes of the shares' fraction sold by all the controlling shareholders, either $(LnTCONOWN)^2$ or $(LnTCONOWN)^3$ variables. The results presented in Table 6 show that the nonlinear relationship between the transfer of shares and the IPO long-term performance is not significant. Thus, it appears that the pre-established conclusion concerning the impact of the behaviour of share transfer by the control shareholders over the aftermarket performance is thoroughly a linear relationship. More precisely, the agency theory hypothesis is confirmed. Consulting Gana and El Ammari (2008) concerning the impact of the controlling shareholders' transfer behaviour on the initial underpricing, it should be pointed out that their observed short-term entrenchment behaviour doesn't persist.

Table 6

Test of the non-linear relationship

This table shows the regressions' results in cross-section of the IPOs long-term returns of the IPO on the ownership and control variables. We introduced the square and cubic forms of ownership at the level of these models to test the non-linearity of the relationship between the shareholders' structure and the IPOs' long-term performances. The regression is of the form: $BHAR_i = b_{0i} + b_{1i} RI_i + b_{2i} Lev_i + b_{3i} LnSize_i + b_{4i} Rep-UW_i + b_{5i} CM_i + b_{6i} BM_i + b_{7i} LnTCONOWN_i + b_{8i} LnHCONOW_i + b_{9i} LnTCONOWN^2 + b_{10i} LnTCONOWN^3 + \epsilon_i$; where $RI = [(average\ of\ the\ closing\ prices\ of\ the\ first\ five\ trading\ days - issue\ price)/issue\ price]$; Lev : the debts book value divided by total assets book value before the IPO; $LnSize$: the neperian logarithm of the market capitalization of the company; $Rep-UW$: takes the value 1 if the underwriter is reputed and 0 otherwise; CM : takes the value 1 if it's a "hot" market and 0 if it's a "cold" market; BM : the book to market ratio at the IPO date; $LnTCONOWN$: the neperian logarithm of 1 plus the proposed fraction of existing shares by controlling shareholders; $LnHCONOW$: the neperian logarithm of 1 plus the shares fraction still held by controlling shareholders. $LnTCONOWN^2$ and $LnTCONOWN^3$ represent respectively the square and cubic shapes of the shares' fraction sold by the controlling shareholders. The returns are calculated according to the EW-BHAR method. The estimation is based on the bootstrap method. The Student-t statistics is shown in bracket. Adjusted R² represents the explanatory model power and N the number of observations.

Dependent Variables	Independent Variables												
	Intercept	LnTCNONWN	LnTCNONWN ²	LnTCNONWN ³	LnHCNONWN	RI	Lev	LnSize	Rep-UW	CM	BM	R ²	N
	10.070	8.954	32.813	38.931	5.074	0.132	0.931	0.552	0.102	0.603	0.099	47,12%	30
BHAR (1,36)	(-2.18)**	(-0.62)	(0.33)	(-0.20)	(1.94)*	(0.13)	(-1.25)	(1.85)*	(0.30)	(-1.73)*	(0.18)		

** and * denote statistical significance at 5 and 10 percent level, respectively.

Conclusion

Several authors such as Loughran and Ritter (1995) warn the investors of the inherent risks on the purchase of American companies' shares at an IPO date. This result has been confirmed through several stock exchanges rejecting their efficiency. The present survey, completed for the period 1992-2006 on a sample of 32 Tunisian IPOs, contributes to this debate by indicating a deterioration of the long-term performance, regardless of calculation methods. When the buy-and-hold return is used, a significant underperformance of -32 percent is detected over the following 36 months. This finding brings us to think that investing in issuing Tunisian firms is hazardous to investors' wealth. This underperformance is however preceded by a positive and significant return of 19,22 percent during the first 5 days of listing and which persists for 6 months aftermarket. The long-term performance deterioration seems to reflect the adjusting process of the market after the short-lived euphoria. This can be explained by the small size of institutional investor, the small free-float of shares and the lack of financial culture among individual Tunisian investors. Our results are robust to the weighting scheme of portfolios and to the application of the non-parametric test of Wilcoxon. However, the results are less significant when the long-term return is measured as being the cumulative abnormal return. Overall, these results suggest that the Tunisian investors take up to three years to take into account all the available information about shares. The results of this research are thus the first to demonstrate the existence of a commonly called "new issue puzzle" phenomenon on the Tunisian IPO stock market using all the history available about the TSE.

In this study, we have particularly focused on the impact of the shares' transfer behaviour by controlling shareholders on the degree of their counter-performance. We believe that such a survey finds its relevance in a context where Tunisian firms are characterized by a concentrated shareholding in the hands of owner-managers and which have a familial character. Among theories explaining the acquirement behaviour of shares newly introduced on the stock market, we must mention that of the agency theory. This has enlightened us about the attitude adopted by original controlling shareholders. The inclusion of the controlling variables shows that the "window of opportunity" hypothesis also explains this underperformance and that the ex-ante uncertainty, measured through the candidate company's size, contributes to the deterioration of the long-term performance.

From a practical viewpoint, the present study shows that the transfer behaviour of controlling shareholders can be used, in addition to the other variables, to predict the future company's performance after the IPO. It allows us to analyze the conditions that participate in the success

of the new issue. The study of the candidate companies' performance on the Tunisian IPO stock market contributes also to the understanding of the introduction process, in order to conclude whether it is worth investing in the initial issues in Tunisia. Concerning the methodological contribution of this work, it shows through the different tests of robustness to which we proceeded. The "bootstrap" method used to estimate the regression models coefficients as well as the application of the non-parametric tests constitute another aspect of it.

Finally, our results could be tributary of the benchmark choice. The consideration of other reference indicators or of some factors describing the specific risk of the IPO stocks would help improve our understanding of the long-term performance of the Tunisian IPOs. The long-term performance on a further horizon (5 years) deserves to be studied as well. Considering the government presence in the shareholding structure of the Tunisian firm could also lend itself to future research.

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- 1 A fad is defined as a temporary overvaluation caused by investor's over-optimism.
- 2 The alternative market is intended to give small and medium-sized enterprises and those with promising prospects, an alternative that gives them access to financial market in eased conditions.
- 3 For a detailed description of the long-term performance measures, see Barber and Lyon (1997).
- 4 TUNINDEX was not chosen since it appeared only in 1998.
- 5 25.63% vs. 2.78% on average.
- 6 Short and long-term debts as they appear in the audit report of the candidate company before listing.
- 7 A high debt may indicate the company's financial health. In this context, the manager must work in order to maximize the company's value given the commitment of their company to the bankers.
- 8 Booth and Smith (1986) also suggested that the choice of a renowned underwriter allows the issuing company to report its quality to the market.
- 9 Shapiro Wilk's statistics were calculated. The probability p which is associated, leads us to reject the null hypothesis of normality. These results are available on demand.
- 10 These results are available on demand.
- 11 The detailed results concerning the development of the original shareholders structure and the two controlling shareholders before and after listing on the stock exchange are available on request.
- 12 This measure is the most commonly used. We have also chosen to use the equally-weighted returns, because the problem of bad evaluation particularly affects the issues of small-size companies.
- 13 Fama and French (1998) report a difference between the average returns on global portfolios of high and low BM stocks of 7.60% per year, and value stocks outperform growth stocks in 12 markets including Japan, Britain, France, Germany, Italy, Netherlands, Belgium, Sweden, the Australia, Hong Kong and Singapore.