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AN EMPIRICAL INVESTIGATION OF INITIAL PUBLIC OFFERINGS (IPOs) SHORT TERM UNDERPRICING IN THE JORDANIAN STOCK MARKET

Key Words

Initial Public Offerings(IPOs); Short Term Underpricing; Amman Stock Exchange(ASE); Asymmetric Information Hypotheses; Signaling Hypotheses; Institutional Features Hypotheses.

Abstract

This research is an empirical investigation of Jordanian initial public offerings (IPOs) to provide evidence of short term under pricing of 53 firms that went public over the period from 1999 to 2008. Overall, the reported results are consistent with the overwhelming evidence found by most of the previous studies regarding the under pricing of IPOs; especially those conducted in emerging markets. This investigation of abnormal returns reveals significant first day under pricing in this market. A cross-sectional analysis is employed and it is found that Jordanian IPOs short term under pricing is primarily explained by the offer size which is used as a proxy of uncertainty. The results also show that insiders (government or founders) send signals on the quality of their issuances by the fraction of retained shares, which influence positively the under pricing level. In addition, institutional features hypotheses (prior market conditions and time gap) appear to have high explanatory power in explaining short term performance. Still, other factors such as reputation of issuance manager, firm's age and number of Seasoned Equity Offerings (SEOs), have no impact on explaining the level of under pricing.

Introduction and Problem

Initial Public Offering (IPO) is an important event in the history of a company as it is when a company first sells its shares to the public and thus changes its ownership structure to a publicly traded one.

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During some phases of the firm's development it is optimal to keep the company private. However, as the firm progresses through different stages of its life cycle, going public becomes more attractive. As this step represents a main channel through which private firms receive financing from public investors. In fact, there are a number of drivers that push private firms to go public; first, when they face growing competition and need capital to cover this growth, Initial public offerings (IPOs) provide a major source of equity funds (Brailsford, Heaneyand and Shi, 2004). Second, existing owners desire liquidity for their investments, this transition phase provides them with an attractive "exit strategy" (Zheng and Li, 2008). Third, an IPO creates a relation between firms and investors as well as it represents the first opportunity to observe the markets reaction toward firms and their strategies (Friesen and Swift, 2009), in addition to retrieve many value estimates from a large pool of analysts. The competitive trade following the IPO efficiently aggregates all information present in the investment community (Bradley, Jordan and Ritter, 2008). Finally, Mantecon and Poon (2009) referred to another important determinant of key IPO decisions, which is the liquidity provided by secondary markets through creating a public market for a firm's shares, leading to conduct acquisitions or to diversify the owner's personal wealth. Brau and Fawcett (2006) attained the same result in their survey concerning Chief Financial Officers (CFOs) of IPO firms.

This process is not without risks due to the high uncertainty surrounding these new issues and their performance either in the short or long term(1). Thus, the pricing and valuation of new issues has received a lot of interest in the academic and practiced community.

Researchers have produced a large number of theoretical and empirical literature to study the short term performance of IPOs - also called **"Underpricing"** phenomenon(2) - a term used when the issue price of a newly listed company's shares is below the price at which those shares are traded on the first day of listing -, while the causes of this large initial excess returns are not well understood.

Since the Jordanian IPOs market is still a fresh one and this research is the first - to the best of the researchers' knowledge - to investigate this subject. The primary purpose here is to provide new empirical evidence about

(1) For more discussion of the same idea see (Smith, 2008; Hughes and Thakor, 1992).

(2) For a complete list of countries, see http://bear.cba.ufl.edu/ritter.

short run underpricing of IPOs firms in the Amman Stock Exchange (ASE) with an attempt to give a convenient explanation of such a phenomenon by testing some theories proposed in previous finance literature under specific features of the Jordanian case.

Overall, this research contributes to the literature in at least three ways; *one*, using Jordanian IPOs data, a comprehensive investigation is conducted by including three types of IPOs (newly established firms, firms that change their legal status and privatized firms). The sample's diversity allows a deeper understanding through comparing sub-sample analyses. *Two*, this study provides interesting work on the underpricing phenomenon, with an attempt to provide explanation for this puzzle. *Lastly*, gives additional and further evidence to support or reject the existing theories that try to explain the IPOs performance.

Consistent with results from many previous studies conducted in emerging markets such as (AL-Hassan *et al.,* 2007; Yu and Tse, 2006; Chi and Padgett, 2005), high underpricing of Jordanian IPOs is found, as the average market-adjusted initial returns of these IPOs on the first day is 149%. Approximately similar results are obtained using different market indices as benchmarks. This underpricing is largely due to the institutional features related to Jordanian IPOs laws and instructions. The results also show that the offer size which is used as a proxy of ex ante uncertainty is a strong determinant of short term performance. Furthermore, during the offering, insiders (government or founders) send signals on the quality of their issuances by underpricing and through the fraction of retained shares.

However, other factors such as reputation of issuance manager, the firm's age and Seasoned Equity Offerings (SEOs), have no impact in explaining the level of underpricing.

The balance of this paper is organized as follow: *Section 2* introduces some features of Jordanian IPOs market; *Section 3* extracts the testable implications from literature related to theoretical explanation for IPOs performance. *Section 4* presents data and methodology for calculating short run returns, the results of the cross-sectional analysis are reported in *Section 5* and some concluding points appear in *Section 6*.

Features of the Jordanian IPOs Market:

The Process of Going Public in Jordan

The rules and procedures for the public offering of securities in Jordan

are explained in the **Securities Law No. (76) for the year 2002** where **(Article 5)** identifies the Jordan Security Commission (JSC) as the sole party authorized to regulate the process of issuing new shares and bonds. The issuer of securities needs to register them with the commission, as the official documentation of these securities. Relying on the law about **Instruction of Financial Services Licensing and Registration for the year 2005** an investment banking firm (or an issuance manager) should be selected in order to assist any company intending to go public in drafting a share prospectus through meeting with the founders committee, conducting financial and operational due diligence, compiling financial projections and preparing a five-year business plan, submitting the completed prospectus to the JSC and following up on its progress. The importance of a well-drafted prospectus is key to the success of any IPO, as it tells the companys "story", and gives it the opportunity to position itself in the investment community and its new shareholder constituency.

Once approval is granted by the JSC, it should be publicized in two local newspapers at least twice, for no less than seven days prior to the start of the subscription period in order to notify the potential investors. The advertisements should contain a comprehensive summary of the prospectus.

Moreover, the issuance manager of an IPO coordinates the IPO and subscription process with the designated receiving banks (subscription banks), monitors data gathering and share allocation, coordinates and manages the subscribers refunding process with the receiving banks, and finalizes the registration with the Securities Depository Center (SDC) and the ASE.

Going public in Jordan is strictly regulated and monitored by the JSC' laws and instructions. Especially when determining the offer price. Most of Jordanian IPOs follow the fixed-price issuance method, according to which the price[3] and quantity of shares are predetermined in prospectuses, while the common mode of shares distribution was via the subscription method.

The Jordanian framework is relevant for such a study due to several reasons. *First*; the Jordanian stock market is one of the oldest in the

(3) For the case of Jordan, the stock market is an important channel to push the economic development. To keep it growing and active, the JSC has to control the offer price and determine it with a low value of JD1 that is why motivate investors to subscribe more in new issues. A trend that makes the supply always much less than the demand, so, a level of underpricing is expected.

region, being established in 1978 with roots dating back to 1930's. As well, ASE is a well regulated emerging market with a modern and highly technological infrastructure. *Second*; the Jordanian IPOs market is relatively smaller than those in developed markets, which makes the extrapolation of others' results on small markets inappropriate. *Third*; an interest to highlight the behavior of Jordanian investors and their investment's climate with an attempt to find bases of such behavior.

Description of the Market

Total number of IPOs in the Jordan equity market during the period of 1999 to 2008 is 53 firms - see **Figure (1)** and **Table (1)** -, where the total Jordanian dinars raised through these IPO firms into the same period reached an approximate amount of JD 588 million.

Since 1999, the IPOs activity knew a progress pattern characterized by slow path (with 0 IPOs in some years), until 2006 which saw a significant increase in public offerings despite a market decline in the ASE, the number of deals reached 19 (35.8% of total number deals) with offer value equals to JD129.52 million. Despite the drastic price decline witnessed in stock markets across Arab countries, a continuous surge in IPO activities was recorded in 2007 and 2008. The market saw 17 (32.1%) and 13 (24.5%) IPOs during these two periods, with a total offer value of JD294.8 million and JD67.8 million, respectively.

Further inspection of **Table (1)** reveals that Jordanian IPOs market showed clear evidence of clustering. For example, 49 of the 53 IPOs' offers (92.5%) occurred in 2006, 2007 and 2008. 83.7% (JD492.08 million of the JD588 million total) of the aggregate gross proceeds in the market were

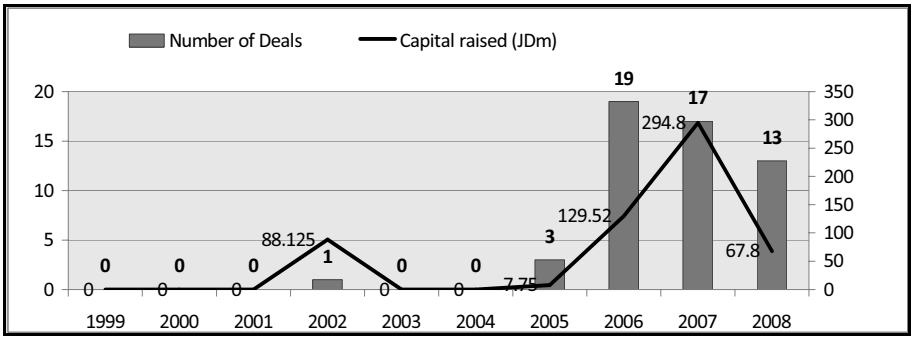

Figure 1. Jordanian IPOs Activity by Year

(Source: Prepared by the researchers based on collected data.)

Table 1
Description of Jordanian IPOs market

Year	Num. of IPOs	Num. of IPOs%	Num. of Shares Offered (in millions)	Offer Size (in JD millions)
2002	1	1.9	37.500	88.125
2005	3	5.7	7.750	7.750
2006	19	35.8	128.277	129.520
2007	17	32.1	170.200	294.800
2008	13	24.5	67.212	67.800
Total (a)	**53**	**100**	**411**	**588**

Source: Prepared by the researchers based on collected data.

raised in these 3 years alone, and the rest (16.3% or JD95.875 million of the JD588 million total) was raised by only the 4 IPOs that occurred over 1999 and 2005. This tendency is consistent with the notion of the hot issue market (Ritter, 1984). As a result, the years 2006, 2007 and 2008 are considered as hot periods, where 2002 and 2005 are representing cold periods.

A survey of *pricing mechanisms* reveals that the average offer price is considered to be quite small which is equal to JD1.1 per share, a fact resulting from the Jordan Security Commission's (JSC's) laws. In Jordan, the offering price of newly established firms is set by the JSC at their par value of JD1 that represents 47 IPO of the entire firms, means 88.7% of Jordanian IPOs are offered to the public with only JD1. Contrary to privatized firms, this kind of IPO submits to another scenario of offer price determination. The final offer price is not known before, rather a specific range is presented, general public can buy the offered shares with the high bound, and when the subscription process takes place the offer price is defined relying on number of shares sold. If the final price is lower than the maximum bound, the difference will be returned to subscribers in the form of additional shares and/or cash. A process leading to a relatively high offer price comparing with newly established firms.

Concerning the distribution of IPOs via various sectors, the financial sector took the center position in terms of number of deals with a rate of 69.8%, followed by service sector with 22.7%, and industrial sector in the last place by low rate equals to 7.5%. The superiority of the financial sector guides to a significant sectored clustering in the market. The IPOs in Jordan are characterized by the dominance of newly established firms with

88.7% - more than three quarters of the total -, pursued by 7.5% of firms that change their legal status from private to public shareholdings while the privatized firms represent just 3.8% of the market.(4)

Literature Review and Hypotheses

In this section, the possible IPOs' explicative underpricing theories are discussed and the hypotheses to be examined are formulated, through a development of a theoretical analysis in order to extract the testable hypotheses which are summarized in **Table (2)**. While the first hypothesis is subject of a direct statistical testing, the second one needs more theoretical development. In general, literature distinguishes between three major categories of hypotheses that show an ability to explain IPOs underpricing: - Asymmetric information hypotheses; - Institutional features hypotheses; and - Ownership and control hypotheses. Researchers have tested all of these assumptions using different samples and methodologies, and reached either consistent or contentious results. The present research empirically investigates asymmetric information hypotheses and the institutional feature ones.(5)

Asymmetric Information Hypotheses (AIH):

In fact, the complexity of the process of public offering is due to two essential factors: The first includes the existence of different participants; the issuer, the investment bank, and the investor. The second represents the information that circles amongst them. As a result, each part may own special information which renders the possibility of information asymmetry high and creates some implications. Kennedy and his colleagues (2006) concluded that information asymmetry is a reasonable characterization of the IPOs environment. Thus, the following part offers a comprehensive discussion regarding these insights.

(4) Some comments on this inequality of IPOs kinds can be of great interest: -Firms that change their legal status follow two stages when they go public. Listing and letting develop a public market in the firm's existing shares (introduction phase), and selling new shares to the public in the second stage. Nevertheless, Jordanian firms rely more on *private placement* to increase their capital rather than public offer which makes their contribution in the IPOs market small. - Unlike other countries in the region, Jordan privatized most of its companies through direct sales to strategic investors rather than through public offerings. This deprived IPOs market of many of the best candidates for listing, and explains the relatively small number of privatized IPOs during the research period.

(5) Ownership and Control hypotheses need some specific information about pre- and post-ownership structure of IPO firms, and since the Jordanian context is characterized by the dominance of newly established IPOs, the investigation in such category of hypotheses cannot be applied.

Ex ante Uncertainty Hypotheses (UH)

The information asymmetry situation creates a kind of uncertainty about the future performance of IPOs. As a consequence, the new issues will be underpriced as an insurance form. "Ex ante uncertainty" refers to the risk faced by an investor in determining the intrinsic value of an IPO, the risk is not directly observable and thus the IPO literature had used several proxies for ex ant uncertainty like the reputation of an investment bank, the offer size and the firm's age (Bayley *et al.,* 2006). In general, the higher the ex ante uncertainty on the value of an IPO, the higher the expected underpricing (Su, 2004b; Beatty and Ritter, 1986).

The importance of the relation between issuer and investment bank causes many previous studies to examine the function of this as a proxy for ex ante uncertainty in the IPO process. Accordingly, it is chosen to be the first issue treated here. Carter and Manaster (1990) showed that more prestigious investment banks are associated with less risky IPOs. To preserve its reputation, the prestigious underwriter screens the firms that go public and selects the less risky ones, using information unavailable to the general public. This in turn reduces the ex ante uncertainty between investors, who know that by subscribing in issues of reputable investment banks, they will face less risk and consequently the initial day return is lower for these issues.

An empirical finding that is well identified in the earlier famous hypothesis of (Baron, 1982) related to information asymmetry, suggested that *underwriters have superior information* about the market and the level of demand for the issuer's shares. In compliance, Michaely and Shaw (1994) attained a comparable result and found that reputation plays an important role in explaining the initial excess day return, while IPOs underwritten by reputable investment banks experience significantly less underpricing.

So, through the choice of the issuance manager, the firm can reduce some of the uncertainty about its prospects, and therefore reduce the need for underpricing. This idea constructs the first hypothesis:

UH1: The level of underpricing is negatively influenced by investment banks reputation.

To test this hypothesis, a construction of two groups on the basis of investment banks reputation is conducted. Since the reputation is a qualitative concept, therefore, a variable to rank issuance managers is needed. By following (Michaely and Shaw, 1994; Chang, Chen, Chi and Young, 2008), a rank according to "The number of IPO

deals" they have done is proposed. In short, investment banks with high a number of contracts has more to lose from a loss of reputation, and as a result, they tend to underprice less.

Twenty eight Jordanian investment banks have acted as issuance managers during the research's period. The number of issues deals is clarified in - **Appendix (1)** -. So, only four [4, 5, 16 and 20] of them have accomplished 29 (equal to 54.7% of total IPOs) contract of new issues in the sample as follow: 6, 6, 8 and 9, respectively, these investment banks were considered to be reputable issuance managers. The remaining twenty four issuance managers have realized 20 deals (equivalent to the 37.7% of total IPOs), thus, they are classified as not reputable issuance managers, while the remaining 4 IPO firms (equal to 7.6%) went public with no issuance managers.

Additional proxies are tested by another trend of researchers, they have found underpricing higher in younger firms (Ritter, 1984; Bayley *et al.,* 2006), and smaller new issues (Beatty and Ritter, 1986). Relying on these papers, two further alternatives of uncertainty are used: - offer size; and - a firm's age at the time of offering, resulting in developing the next two hypotheses:

UH2: The level of underpricing is negatively influenced by the offer size.

UH3: The level of underpricing is negatively influenced by the firm's age.

Signaling Hypotheses (SH)

The second group of information asymmetry studies suggested that the *issuing company has superior information*. For that reason, the signaling hypotheses argued that underpricing is a deliberate attempt by the issuer to signal its quality to the market. In (Allen and Faulhaber, 1989; Welch; 1989; Cao and Shi, 2006) good firms try to distinguish themselves from bad firms by incurring a cost that is less successful that firms cannot profitably sustain, this cost is the underpricing of the new issue. Then, they may well recoup their underpricing through subsequent issues when the quality of the IPO firm is discovered after listing.

Since the IPO is the first stage of a multi-stage selling scenario of a successive raise of capital through SEOs, Welch (1989) hypothesized that high quality issuers underprice to signal values in order to be rewarded by getting better prices for the following SEOs. In its part, when investigating the signaling hypotheses Su (2004a) found that this effect of market price

allows a high value issuer to quickly return to the market with SEOs and thereby recoup the return from underpricing its IPO. In addition, Chi and Padgett (2005) tested the profitability of listed companies by the number of SEOs within two years after IPOs and the market adjusted initial returns, he reached that firms with higher underpricing should have higher profitability and raise more funds after listing.

SH1: The level of underpricing is positively influenced by the number of subsequent seasoned equity offerings.

Another control variable of a firm's quality is the issuers' fractional ownership. Mok and Hui (1998) argued that in emerging markets with high information asymmetry, domestic investors interpret a high percentage of equity retention by the state as confidence in the firm, while such interpretation leads to huge demand and consequently high underpricing in the first day of trading. An empirical implication of (Leland and Pyle, 1977) in the Chinese context is that insiders (including managers and board of directors) may retain a large stake of the firm to credibly signal its quality and commitment to future pro-market policies and activities.

SH2: The level of underpricing is positively influenced by the fractional insiders' ownership.

Institutional Features Hypotheses (IFH):

Chan, Wang and Wei (2004) found that cross-sectional variations of initial abnormal IPO returns in China can be explained by institutional characteristics such as the time lag between offering and listing, and the number of stock investors in the IPO firm province, which is a proxy for the stage of development of the province from which the IPO firm comes. In confirming this idea Chi and Padgett (2005) reported that with less experience in pricing IPOs in the early years, the China Security Regulatory Commission (CSRC) tended to underprice to a greater degree in order to encourage the growth of the primary market.

Lyn and Zychowicz (2003) tested whether the initial abnormal performance is constrained to the period prior to public trading and found that the strongest determinant of underpricing within IPOs market is observed to be the momentum of the market prior the equity offerings. Moreover, risky firms have an incentive to go public when market conditions are favorable.

Table 2
A Summary of Research Hypotheses and Results

Hypothesis' number	Testable implications	Theoretical model and source	The expected coefficient sign	Results
Hypo. 1:	**H1: The average market-adjusted initial return is significantly different from zero.**	**This hypothesis tests whether the returns generated shortly after the IPO's issuance are significantly different from zero?**		**Accepted**
Hypo. 2: Determinants of short term performance				
UH1	- The level of underpricing is negatively influenced by investment banks reputation.	**Asymmetric Information Hypo. / Ex ante uncertainty Hypo.**	**(-)**	**Rejected**
UH2	- The level of underpricing is negatively influenced by the offer size.	**Asymmetric Information Hypo. / Ex ante uncertainty Hypo.**	**(-)**	**Accepted**
UH3	- The level of underpricing is negatively influenced by the firm's age.	**Asymmetric Information Hypo. / Ex ante uncertainty Hypo.**	**(-)**	**Rejected**
SH1	- The level of underpricing is positively influenced by the number of subsequent seasoned equity offerings (SEOs).	**Asymmetric Information Hypo. / Signaling Hypo.**	**(+)**	**Rejected**
SH2	- The level of underpricing is positively influenced by the fractional insiders' ownership.	**Asymmetric Information Hypo. / Signaling Hypo.**	**(+)**	**Accepted**
IFH1	- The level of underpricing is positively influenced by market returns in prior one month from offering.	**Institutional Feature Hypo.**	**(+)**	**Accepted**
IFH2	- The level of underpricing is positively influenced by the time gap ranging from offering day to the first day of trading.	**Institutional Feature Hypo.**	**(+)**	**Accepted**

Table 2 summarizes the testable implications in the alternate form and shows the links between the testable hypotheses and the underlying theoretical models.
Source: Prepared by the researchers based on the research hypotheses and results.

To test whether Jordanian IPOs are more heavily underpriced when the market is performing well, the researchers follow (Yong, 2007) to measure the prior market conditions as the percentage change in the local market index one month prior to the offering day.

In addition to the previous study of (Chan *et al.,* 2004) that confirmed this relation, Su (2004b) found similar evidence using newer Chinese data set of 348 non-financial firm commitment IPOs between January 1994 and December 1999. The coefficient of the regression model of time gap was significantly positive at the 10% level. The fact that funds are tied up for a long time increases the investors' risk and thus a large underpricing is expected (required).

IFH1: The level of underpricing is positively influenced by the market returns in prior one month from offering.

IFH2: The level of underpricing is positively influenced by the time gap ranging from the offering day to the first day of trading.

Data and Methodology

This research is concentrating on the **Jordanian** experience, by narrowing the focus and testing the performance of IPOs in a single country, worthwhile insights are added into this topic as data tends to be more homogeneous.

Sample Construction

The recognition of new issuing firms for the data base is made through the use of annual reports published by ASE - that include new listing firms -. The researchers bounded all IPOs of common stock by domestic Jordanian firms that went public on ASE from 1999 to 2008.(6). The initial sample is composed from three sub-components:

- **Newly established firms;**
- Firms that **change their legal status**; from limited liability companies to public shareholding companies.
- **Privatized firms;**

From the original list and aiming to set out with an accurate sample, the latter is filtered by applying some screening criteria. The sample screening process is summarized in - **Table (3)** - where the final sample generated contains a number of 53 IPOs.

(6) The stratifications of IPOs by years that constitutes this period, leads to drop some years from the study, since the years records was (0) IPOs. Hence, the final research period includes the years of 2002, 2005, 2006, 2007 and 2008.

Table 3
Sample Selection Criteria

Total number of domestic Jordanian IPOs in the raw sample	103
Less: Observations deleted because they are a result of merging operations.	6
Less: Observations deleted because shares are not a subject of trading in the secondary market.	3
Subtotal (1)	94
Less: Observations deleted because the capital listed is not followed by public offerings (just private offerings or right issues).	36
Less: Observations deleted because there is no increase in the capital after the listing.	5
Subtotal (2)	53
Final sample	**53**

Data Sources

For each of these IPOs, data is collected from a variety of sources due to the composite process until the firm is listed in the stock market. The prospectuses existing at the JSC level presented the principal source of data, where "offering data"- prospectus information related to the issue characteristics - is manually extracted from them. The introduction of e-IPO service at SDC level - during the third quarter of 2007 - makes the collection process easier. This service provides most of the required information regarding public subscriptions. Furthermore, a number of other secondary sources are useful to describe Jordanian IPOs market like annual reports of JSC, SDC and ASE, newsletters, investments law and regulations. By combining these sources either hand collected or using the web site, accurate data is ensured.

Methodology

1 - The initial return of an IPO issue is calculated as the return on the closing price of first trading day relative to the offering price. So each IPO's initial return $\mathbf{r_{i,0}}$ is calculated as follows:

$$\mathbf{r_{i,0}} = \frac{\mathbf{P_{i,c}}}{\mathbf{P_{i,0}}} - \mathbf{1} \qquad (1)$$

(Chan *et al.,* 2004; Omran 2005)

Where:

$\mathbf{r_{i,0}}$: The initial (gross) return for stock i from subscription period to the closing of first trading day. Or the raw return of the IPO on the first day of trading (day 0); $\mathbf{P}_{i,c}$: The closing price of stock i at the first trading day (day 0); $\mathbf{P}_{i,o}$: The offering price of stock i on the last day of subscription (day S).

2 - The initial return should be adjusted for the market effect. An operation which is completed by

calculating the return on the corresponding market index $\mathbf{r_{i,m,0}}$ over the relevant period, and then subtract it from the initial return $\mathbf{r_{i,0}}$ as follows:

$$\mathbf{r_{i,m,0} = \frac{P_{i,,m,c}}{P_{i,m,0}} - 1} \qquad (2)$$

$$\mathbf{Adj\ r_{i,0} = r_{i,0} - r_{i,m,0}} \qquad (3)$$

(Chan *et al.,* 2004; Omran 2005)

Where:

$\mathbf{r_{i,m,0}}$: The return on the corresponding market index from the subscription period to the closing of the first day of trading; $\mathbf{P}_{i,m,c}$: The closing value of the corresponding market index on the first trading day of stock i (day 0); $\mathbf{P}_{i,m,o}$: The closing value of the corresponding market index on the last day of subscription of stock i (day S); $\mathbf{Adj\ r_{i,0}}$: The market-adjusted initial return for stock i on day 0.

3 - The market-adjusted initial return has the same meaning as the abnormal return, which is equal to the gross or raw return on an IPO minus the benchmark return that is represented here by the market index. That is referred simply to underpricing level.

4 - Since it is not a conclusive with what index the IPO returns should be compared, several benchmarks are used in order to measure underpricing. Hence, the use of the general indices (GFFI, VWI) in order to control for market movements, and sector indices in order to control for industry classification effects (SFFI).

Where:

GFFI: The General Free Float Index;
SFFI: The Sector Free Float Index;
VWI: The Value Weighted Index.

5 - After the abnormal returns are calculated using the general market index of each corresponding as a benchmark. The parametric one sample t-test is used to examine whether IPOs obtain abnormal returns in the short term is significantly different from zero (testing of Hypotheses "1"). The t-test conducted follows a student's t-distribution if the sample is normally distributed as follows:

$$t\ Adj\ r_{i,0} = \overline{Adj\ r_{i,0}} / (\sigma Adj\ r_{i,0} / \sqrt{n}) \qquad (4)$$

(AL-Hassan *et al.,* 2007; Omran, 2005; Kooli and Suret, 2004)

Where:

$\mathbf{t\ Adj\ r_{i,0}}$	t-value calculated for Adj $r_{i,0}$.
$\overline{\mathbf{t\ Adj\ r_{i,0}}}$	The sample average of market adjusted initial return for stock i on day 0.
$\sigma\mathbf{Adj\ r_{i,0}}$	The cross-sectional sample standard deviations of market adjusted initial return for stock i.
n	The sample size.

6 - To check for the robustness of results, some non-parametric testes are conducted in each situation of analyses. (7)

7 - A multiple linear regression model is constructed to examine the explanatory power of the proposed theories: asymmetric information, signaling and institutional features. The dependent variable is presented by market-adjusted initial returns, where the independent variables are the proxies for the theories cited above. The researchers model the dependent variables as a function of the proxies as follows:

Underpricing = □ (different proxies of UH, SH, IFH)

$$UNDERPR = \alpha + \beta 1REPU + \beta 2OSIZE + \beta 3AGE + \beta 4SEOs + \beta 5INSIDER + \beta 6BFRMKRET + \beta 7TIME. \quad (5)$$

In the above equation, the market adjusted initial return for each IPO is used as the dependent variable. In order to evaluate the effect of issuance manager on underpricing, the researchers introduce a dummy variable [REPU], taking a value of 1 if the firm has been advised by one of reputable issuance manger and 0 otherwise.

Empirical Results and Analysis

Short term underpricing results (Hypothesis "1")

Applying the methodology outlined in previous section to estimate the returns on Jordanian IPOs in the final sample is proceeded. The researchers compute raw returns, index returns, market-adjusted initial returns and the associated t (z)-tests. In order to capture the trend of short run returns, it is chosen to stratify them by years mentioning different descriptive statistics. The results for the entire sample of 53 firms and also separately for IPOs in each year are reported in **Table (4); Panel A**, where **Panel B** in the same table is devoted to significance tests. An additional examination of short run returns takes place by looking at their movement using different corresponding indices as market benchmarks, the results are shown in **Figure (2)**.

(7) The non-parametric Wilcoxon signed-rank test is carried out where the assumption of normal distribution is not fulfilled as a complement for one sample t-test. To analyze the differences of abnormal returns between two samples after splitting them by period (hot and cold) and reputation of issuance managers (reputable and not reputable). A parametric independent sample t test is conducted. Also, its non-parametric counterpart the Mann-Whitney test is used to compare the relevance of differences in medians between these sub-samples. When the difference in abnormal returns concerns many classes composed the sample (more than two subsamples). One-way ANOVA is appropriate as a parametric test. In addition to its complement the Kruskal-Wallis test that is employed for differences in medians for non-parametric side.

Table 4
Basic Descriptive Statistics of Short Term Jordanian IPOs Returns

Panel A; Basic descriptive Statistics for IPOs' average market-adjusted initial returns (%) stratified by year of listing.

Year	Mean	Median	Std. Dev.	Min	Max	Skewness	Obs.
2002	3.93	3.93	-	3.93	3.93	-	1
2005	456.28	354.07	207.04	320.21	694.55	1.68	3
2006	245.04	179.21	221.53	-8.69	862.68	1.31	19
2007	84.71	58.27	85.22	-2.47	291.68	1.41	17
2008	32.94	13.60	44.64	-32.78	117.36	0.71	13
Total Sample	**149**	**71.28**	**187.81**	**-32.78**	**862.68**	**1.90**	**53**

Panel B; Significance tests of IPOs' (mean and median) raw returns (ri,0), corresponding market returns (ri,m,0) and market-adjusted initial returns (Adj ri,0). (Test of Hypothesis 1)

$r_{i,0}$ (%)			$r_{i,m,0}$(%)			Adj $r_{i,0}$ (difference) (%)		
Mean [*t*-test]	**Median [*z*- test]**	**Std. Dev.**	**Mean [*t*-test]**	**Median [*z*- test]**	**Std. Dev.**	**Mean [*t*-test]**	**Median [*z*- test]**	**Std. Dev.**
150.25	71.00	185.85	1.25	-0.28	11.91	149	71.28	187.81
[5.885***]	[-6.210***]		[0.760]	[-0.102]		[5.776***]	[-6.060***]	

Table (4), Panel A reports the market-adjusted initial returns for 53 Jordanian IPOs over 1999 to 2008 stratified by years. Returns are calculated using Equation (3) based on the general free float index (GFFI), and taking the average in each year. Some basic descriptive statistics (measures of central tendency, variability and shape) for these initial excess returns are also reported.
Table (4), Panel B provides mean and median values of raw returns, corresponding market returns and market-adjusted initial returns. The t-statistic for returns is computed using Equation (4). The z-statistic is based on the Wilcoxon signed-rank test. Both statistics are in brackets accompanied with the level of significance. For the parametric (nonparametric) test, results listed under the null hypothesis that the mean (median) market-adjusted initial returns = 0 versus the alternative hypothesis (Hypothesis "1") that the mean (median) market adjusted initial returns$\neq$ 0.
All returns are calculated basing on general free float index (GFFI).
***, ** and * stands for statistical significance at the 1, 5 and 10 percent level, respectively.

The average market-adjusted initial return of 53 IPOs on the first day is 149% for the entire sample which represent the average return that would be obtained by an investor who bought IPOs at the offer price and sold them at the end of the first trading day. It belongs to a range existing between minimum value of -32.78% (2008) and maximum value of 862.68% (2006).

When comparing the market-adjusted initial returns based on years, it is noticed that they considerably decrease form 2005 to 2008 - except the year of 2002 that contains only one IPO - from 456.28% to 32.94%, so, it appears that underpricing was exceptionally high during the cold issue periods (2002-2005) and low during the hot issue periods (2006-2008). With regardsto the skewness factor, it seems that excess initial returns for the entire sample (skewness = 1.907) are not normally distributed, however it still within the allowed range of [-3, +3] recommended by (Html1).

The observations cited above are substantially similar when returns are calculated using different indices (GFFI, SFFI and VWI) in ASE. The average market-adjusted initial return is approximately the same with little differences - see **Figure (2)** -, in addition to the same decreasing pattern following the three indices through years where the year of 2008 had the lowest level of returns. The average (mean) raw and market-adjusted initial return is positive and highly statistically significant at 1% using t-test - **Table 4; Panel B -**, regardless of the existence of sub-observations within the sample that demonstrates some negative values.To ensure the accuracy of this significance and since returns are positive skewed, a non-parametric Wilcoxon Signed test is run. Similar results are obtained and the average (median) raw and market-adjusted initial return is also positive and highly statistically significant, accordingly, hypothesis **"1"** is supported.

Comparing with the average excess initial returns in other studies conducting in Gulf Cooperation Council (GCC) countries markets

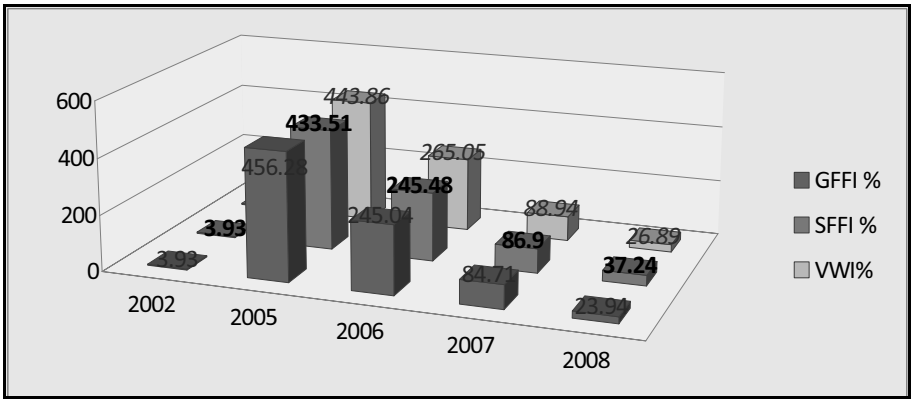

Figure 2. Short term underpricing of IPOs computed with different indices

(Source: Prepared by the researchers based on computed results.)

(Al-Hassan *et al.,* 2007), which were around 290%, the reported level of underpricing obtained here (149%) is lower. However, the high magnitude of these returns is consistent with empirical evidence on the underpricing phenomenon in emerging markets like (Chi and Padgett, 2005; Su, 2004b; Yu and Tse, 2006).

To more recognize and comprehend the Jordanian underpricing level, some sub-analyses are carried out - see **Table (5)** - based on various selected factors detailed in the same table under different **Panels** [8]. Both parametric t-tests and appropriate counterparts non-parametric tests are applied to check the strength of significance, ever since skewness scores of the calculated returns indicate an approximate normal distribution.

Differences reported among Jordanian IPOs classified by their sector - **Panel A** - reveal a high average (mean and median) market-adjusted initial return for financial firms with 182.91% and 106.84%, respectively. Followed by the service firms (87%; 47.83%), and in the last position the industrial firms (21.30%; 29.86). However, this variety is not statistically significant where the (Sig-F = 0.112). A contradictory result is reached using the Kruskal-Wallis test, a non-parametric test for differences in medians, therefore the differences in medians through sectors is significant at 5% level (Asymp.Sig = 0.010) that can be explained by the high number of financial IPOs going public (69.8% of the entire sample). This clustering effect gives a sentiment of high quality performance which increases the demand of these kinds of IPO firms, and consequently their closing prices on the first trading day are increased, meaning high level of underpricing.

Panel B in its part sheds light on the differences in average (mean and median) of market-adjusted initial returns between IPOs based on their nature. Where the highest level is devoted to new established firms (165.13%; 28.98%) as is expected, then firms that change their legal status with (33.48%; 14.50%) and finally privatized firms with (0.73%; 5.5%). Surprisingly the significance of these differences is rejected by F-test for differences in means (Sig-F = 0.214). Despite the significance of the Kruskal-Wallis test at 5% level

(8) All the rest of analyses done throughout this research are based essentially on GFFI. Due to two reasons: - The similarity obtained when comparing short term performance using different indices. - Relying on a following recommendation concluded by (-Sma'el, 2007): "Financial managers and investors in ASE who use market index as a market proxy should use free float index (FFI) if their investments are composed from a variety of stocks." that corresponds to the present research's sample characteristics.

Table 5
Sub-analyses of IPOs' Market-adjusted Initial Returns Based on some selected factors. (Obs. = 53 IPOs)

Panel A; Comparison of IPOs' market-adjusted initial returns (%) based on firms' sector.

Sector	Number of IPOs (Obs.)	Mean of IPOs	Median of IPOs	*F*-test for differences in means (ANOVA)	Kruskal-Wallis test for difference in medians
Industrial	4	21.30	29.86	F = 2.290; Sig. =	Chi-square = 9.285;
Financial	37	182.91	106.84	0.112	Asymp.Sig =
Services	12	86.99	47.83		0.010**

Panel B; Comparison of IPOs' market-adjusted initial returns (%) based on firms' nature.

Nature	Number of IPOs (Obs.)	Mean of IPOs	Median of IPOs	*F*-test for differences in means (ANOVA)	Kruskal-Wallis test for difference in medians
New	47	165.13	28.98	F = 1.589; Sig. =	Chi-square = 7.268;
Changed	4	33.48	14.50	0.214	Asymp.Sig =
Privatized	2	0.73	5.50		0.026**

Panel C; Comparison of IPOs' market-adjusted initial returns (%) based on year of listing.

Year	Number of IPOs (Obs.)	Mean of IPOs	Median of IPOs	*F*-test for differences in means (ANOVA)	Kruskal-Wallis test for difference in medians
2002	1	3.93	3.93	F = 7.842;	Chi-square = 3.041;
2005	3	456.28	354.07	Sig. = 0.000***	d.f = 4;
2006	19	245.04	179.21		Asymp.Sig =
2007	17	84.71	58.27		0.000***
2008	13	32.94	13.60		

Panel D; Comparison of IPOs' market-adjusted initial returns (%) based on issuance period.

Number of IPOs in HOT period [COLD period]	Mean of IPOs in HOT period [Median]	Mean of IPOs in COLD period [Median]	Difference in means of HOT vs. COLD [≠ in medians]	t-test for differences in means	Mann-Whitney test for difference in medians average rank
49	133.14	343.19	-210.05	t = -2.231,	z = -1.414
[4]	[70.37]	[337.14]	[-266.77]	Sig.-t = 0.030**	Exact Sig. = 0.169

Panel E; Comparison of IPOs' market-adjusted initial returns (%) based on issuance manager reputation.

Number of IPOs conducted by reputable Issu. Man. [not reputable]	Mean of IPOs conducted by reputable Iss. Man. [Median]	Mean of IPOs conducted by not reputable Iss. Man. [Median]	Difference in means of reputable an9d not Iss. Man. [≠ in medians]	t-test for differences in means	Mann-Whitney test for difference in medians average rank
29	131.7738	169.81	-38.0362	t = -0.708	z = -0.393
[24]	[70.12]	[85.00]	[-14.88]	Sig.-t = 0.483	Asymp.Sig = 0.694

***, ** and * stands for statistical significance at the 1, 5 and 10 percent level, respectively.

(Asymp.Sig = 0.026) which seems to be more logical and more powerful due to the sensitivity of parametric test to any violation of its assumptions. Thus, essentially two reasons cause such significant differences: - The dissimilar pricing process among kinds of IPOs firms; and - The risk surrounding each kind.

Concerning the pricing process, a low offer price which is equal to JD1 characterized the new category - obliged by authorities -, while the offer price of firms that change their legal status may contain a premium. Contrary to privatized firms, here the issue price is substantially high and belongs to a specified range. As a result newly established firms offer their IPOs with very low prices that enhance the range between offering price and closing price, the range that decreases moving to the second and third kind of IPOs.

High reputation of privatized firms makes them less risky (Std. Dev. = 4.52). So, a high level of underpricing is not needed. As opposed to newly established IPOs where no pre-information is known by investors which creates high risk investments (Std. Dev. = 193.43) and as a result high excess initial returns. In the moderating stage comes the second category (Std. Dev. = 33.96) where markets enjoy some information about these firms before they change their status and go public. A result consistent with (Derrien and Kecskes, 2007) study, where they confirmed that for this kind of introduction IPOs, trading reduces the valuation uncertainty of them before they issue equity.

The year by year results - except for the earliest year 2002 - show that the average (mean and median) of market-adjusted initial return decreases. It is reduced substantially to reach an average of (32.94% and 13.60%) in 2008 - see Panel C -. A t-test for the equality of means shows that the excess short run returns through years are statistically different from each other at a high level of significance (1%). The Kruskal-Wallis test, a non-parametric test for differences in medians validates the previous result also at a high level of significance. Three reasons seem to be suitable for this difference. First, the high level of underpricing coincides with the earlier years of the research's period. At that time, Jordanian IPOs market was very immature and volatile and the supply of IPOs was very limited (0 IPOs in 1999, 2000, 2001, 2003, 2004; 1 IPOs during 2002 and just 3 IPOs for the year 2005), with the huge demand, the initial returns were tremendously high. Second, a remarkable decrease in shares' close market price from year to another, a mean close price was as follows: JD 5.64, JD 3.47, JD 1.98 and

JD 1.48 for 2005, 2006, 2007 and 2008. Third, this difference may be due to the effectiveness of the regulatory change in instructions and regulations that control the new issues.

Panel D shows that the average (mean) market-adjusted initial return is higher for cold periods than for hot periods, while it is equal to 343.19% for only 4 firms that went public in the cold issue market compared to 133.14% for 49 firms that went public in the hot issue market. Despite that *t*-test indicates that the mean difference is significantly different at the 5% level (Sig-t = 0.030), non-parametric Mann-Whitney test contradicts this and provides no significant difference between medians for cold and hot periods (Exact Sig. = 0.169). This result disagrees with outcomes reported in other studies, for example (Bayley *et al.,* 2006; Loughran and Ritter, 1995; Ritter, 1984). On the other hand, it seems to be in compliance with the explanations cited above about some characteristics of the Jordanian IPOs market; immaturity, decrease of closing price and effectiveness of regulations.

Results reported in **Panel E** suggest that issuance managers with a better reputation tend, on average, to decrease initial underpricing (131.77%) vs. (169.81%) as compared to non-reputable ones. However, results of both parametric and non-parametric tests (Sig.-t = 0.483; Asymp.Sig. = 0.694, respectively) reveal no significant differences between average returns of IPOs underwritten by reputable issuance managers and IPOs underwritten by less reputable issuance managers. This conclusion looks to be somewhat acceptable due to the limited role of Jordanian issuance managers in going public process, they act only as best effort that doesn't motive them to care about pricing of new issues. It is noticed too that the number of IPOs accomplished by reputable issuance managers (29) is somewhat equivalent to those conducted by non-reputable issuance managers (24).

Determinants of Jordanian IPOs Underpricing

Descriptive statistics of variables

Table (6) presents a summary statistics of the main variables that are proposed to explain cross-sectional variations of Jordanian IPOs performance.

It shows the value of shares offered (in million of JD), this value has been computed by multiplying the number of shares issued by the offer price, named as [OSIZE]. The mean size of the 53 offerings was around JD11.1 million sold at a mean offer price of JD 1.1 per share. The largest of values was JD184.51 million and the smallest was

Table 6
A Summary Statistics of Main Explanatory [(a)] Variables

Variables (b)	Mean	Median	Std. Dev.	Minimum	Maximum	Skewness	Obs.
OSIZE (in JD millions)	11.1	3	29.01	0.125	184.51	4.77	53
LnOSIZE						**0.22**	
AGE (years)	1.89	0.00	7.29	0.00	44	5.10	53
LnAGE						**2.32**	
SEOs (number)	0.66	0.00	1.86	0.00	11	4.32	53
LnSEOs						**1.15**	
INSIDER (%)	61.64	73.40	20.73	0.00	75.00	-1.76	53
BFRMKRET (%)	-0.26	-0.40	8.47	-21.77	17.37	-0.15	53
TIME (days)	94.72	92	41.63	13	238	0.89	53

Frequencies of Dummy variables used as explanatory variables.

Variables	Value	Frequency	Percent	Valid percent	Cumulative percent	Obs.
REPU	0	24	45.3	45.3	45.3	53
	1	29	54.7	54.7	100	

The table displays measures of central tendency, variability and shape on the entire sample of 53 Jordanian IPOs in order to describe the main explanatory variables that are employed in the regression models. So, the mean, median, minimum, maximum, standard deviation and skewness are provided. Due to the specify characters of dummy variables, a separate appropriate description is given. Thus frequencies and percents are showed.
(a): UNDERP is considered as an independent variable for IPOs long term performance. However it in not included in the table, since it is discussed earlier.
(b): To ensure the homogeneity among variables, an additional regression model is run with AGE transformed from years to days, same results (not reported) are obtained. Also, BFMKTRET is calculated based on general free float index (GFFI).

JD0.125 million, this later value coincide with the maximum level of underpricing (862.68%). The large dispersion existed between these extremes rises the score of skewness factor to reach 4.77 which is in fact outside the allowed range.

Firms also vary in the length of their operating history. The years of operating history variable is calculated by the difference between the year that firms were established and the year that the firms went public, denoted as [AGE]. The diversity of

IPOs included in the sample creates two traits. - First, since the majority of firms are start-up ones, this makes the average (mean and median) age small and equals to 1.89, 0.00, respectively. Second, the dispersion is high (skewness = 5.10) due to existing of privatized firms characterized by old historical life that reached 44 years which represents the maximum value. Opposing to new firms where sometimes went public in the same year of offering leading to mark 0 years which is the minimum value.

Table (6) also reports some other firms' characteristics at the offering. Like the percentage of shares kept by government or founders, which is reported in the variable named [INSIDER]. It shows a considerable high mean that equals to 61.64%, and belongs to a range within a minimum value of 0% and a maximum value of 75%. It is interesting to note that around 49% (26 firms from the total of 53) of insiders prefer to remain the maximum ceiling percentage allowed (= 75%).

Concerning the number of offers after two years from going public denoted as [SEOs], the path appears to be slow with a low mean (median) 0.66 (0.00). With 73.6% of IPOs (39 firms from the total of 53) do not come back to the market means 0 SEOs, where the rest of them marks a largest value of just 11 SEOs. This by consequence raises the skewness factor to 4.32.

About the conditions before going public measured by [BFRMKRET], the results demonstrate some bad conditions with a negative mean (median) that equals to -0.26% (-0.40%), eve, the largest value seems to be low (17.37%). In fact, the inadequate conditions surrounding initial offerings are the cause of the research's period that matches the general worldwide decrease in market indices.

The mean number of days between offering and listing denoted as [TIME] is 94.72 day. This average was 135 days in 2005 and declined to 94 days in 2008, indicating that the time gap between offering and listing became shorter in the more recent years. Except the privatized firms, their average is very small (equal to 14 days) due to the different policies followed by the government, where the listing procedures are done simultaneously with the offering process.

The same table accounts in addition the descriptive statistics of the dummy variable [REPU] used in regression model. The use of dummy variables is the vehicle which permits the researchers to consider qualitative explanatory variables as part of the regression model (Berenson and Levine, 1986). Since dummy variable follow a Dichotomy Distribution, fre-

quencies and percentages are more suitable to illustrate them.

Results of cross sectional analysis

After checking the main assumptions of multiple regression[9]. The hypotheses testing section can be executed since the researchers ensure that variables meet the statistical conditions necessary for such process.

Regression results of short term performance (Hypotheses "2")

Table (7) below offers the multiple regression's results related to short term underpricing. The reputation dummy is not statistically significant determinant of underpricing level (t = -0.072; Sig. = 0.944). In other words, going public by a reputable issuance manager seems to be without any influence on IPOs short term performance.

Contrary to the offer size that shows a negative impact matching with highly statistical significance at 1% level (t = -4.525; Sig. = 0.001). This result is the most remarkable one where offer size can be considered as a strong predictor of short run performance with a coefficient of (-44.717). On average every Jordanian dinar increase in the offer size leads to 44.717 decreases in initial excess returns. Given that, high offer value contributes to expect good financial health for Jordanian IPOs which presents less risky investments for investors. Thus, low underpricing is needed.

The hypotheses about age[10] and SEOs are not accepted which means

(9) There are several assumptions for multiple regression that should be fulfilled in order to ensure the accuracy of its results. The main assumptions comprise: Normality, Multicollinearity, and Autocorrelation. Since some variables at hand are positively skewed, logarithmic transforms are appropriate to correct this case of normality violation assumption, the transformed variables are reported in Table (6). Hence, all the Skewness factors are within the +3 to -3 range advised by (Html1). The Multicollinearity problem is checked using the Variance Inflation Factor (VIF) for each variable where all values are extremely under the allowed value of 10 - advised by (Cooper and Schindler, 2001) - Thus, it is concluded that there is no reason to suspect any multicollinearity for the data. To see whether serial correlation is present in the error terms in a regression, the Durbin-Watson test statistic is used (Mansfield, 1999). The tabulated tests are computed and critical lower and upper bounds [dL, dU] are extracted. Accordingly, the null hypothesis that the residuals from an Ordinary Least Square regression are not autocorrelated against the alternative that the residuals are positively autocorrelated is accepted.

(10) Since the impact of the age on initial excess returns for firms with no operating history is ineffective and worthless. An additional regression model is conducted. As the same model explained before, despite the drop of variable measuring the age that is excluded from the model means [AGE = 0], a number of 33 IPOs fulfilled this condition. The regression results appear to be quite similar.

no significant influence on underpricing is detected with (t = -0.449; Sig. = 0.661) and (t = -0.093; Sig. = 0.928), respectively.

Concerning the rest of signaling hypotheses about the effect of insiders' retained shares, it is accepted at low level of significance of 10%. So, a positive and significant effect by insider variable (t = 1.757; Sig. = 0.104) is located on short term performance of Jordanian IPOs. This means Jordanian mangers keep a maximum number of shares in order to send signals to common investors about high quality - less risk - of their firms.

A significant effect is reached by the before market returns which mark a negative and highly statistical effect on underpricing level (t = -3.741; Sig. = 0.003). Another negative and statistically significant influence on underpricing level is scored by time variable (t = -1.845; Sig. = 0.090). Both variables constitute the institutional features hypotheses (IFH), which leads to notice the high power of specific characteristics of Jordanian market in explaining the IPOs short term performance. Surprisingly, unanticipated signs are recorded.

On the whole, the ex ante uncertainty has some explanatory power in explaining the Jordanian IPOs underpricing, while the hypotheses of offer size (UH2) is supported. Contrary to (UH1) and (UH3), these theories cannot explain the level of underpricing.

Table 7
Cross-sectional Regression on Short Term Performance

	Intercept	REPU	LnOSIZE	LnAGE	LnSEOs	INSIDER	BFRMKRET	TIME
Coeff.	810.702	-2.780	-44.717	-9.591	-0.720	1.290	-10.167	-1.137
***t*-value**	4.144***	-0.072	-4.525***	-0.449	-0.093	1.757*	-3.741***	-1.845**
Sig.	0.001	0.944	0.001	0.661	0.928	0.104	0.003	0.090
R Square				0.819				
Adjusted R Square				0.714				
F				7.769				
Sig.				0.001				

The table shows the results from multivariate cross-sectional regression analyses of the determinants of initial excess returns. The model expressed by Equation (9) is employed. t-values to test the significance are also reported.
Predictors: (Constant), REPU, LnOSIZE, LnAGE, LnSEOs, INSIDER, BFRMKRET and TIME while the dependent variable is UNDERPR.
The table also contains fitness of the Model to Regression Analysis where the following goodness-of-fit statistics are displayed: R-Square and Adjusted R-Square. Adding to F-value and the p-value of significance.
***, ** and * stands for statistical significance at the 1, 5 and 10 percent level, respectively.

A mixture of results are obtained by testing signaling hypotheses (SH) with accepting of insider effect (SH2) on Jordanian IPOs short term performance and refusing the impact of SEOs (SH1) on such performance. While the institutional features hypotheses (IFH) offer very high explanatory power to explain the underpricing level in Jordan by accepting both related hypotheses (IFH1 and IFH2).

Lastly, the regression' results obtained can be expressed as:

UNDERPR = 810.702 - 2.780 REPU -
44.717 LnOSIZE
- 9.591 LnAGE
- 0.720 LnSEOs
+ 1.290 INSIDER
- 10.167 BFRMKRET
- 1.137 TIME.

Conclusion

This research studies the short term underpricing of 53 Jordanian IPOs issued in ASE between January 1999 and December 2008. Consistent with results from many previous studies conducted in emerging markets such as (AL-Hassan *et al.,* 2007; Yu and Tse, 2006; Chi and Padgett, 2005), high positive and significant underpricing of Jordanian IPOs is found, as the average market-adjusted initial return of these firms on the first day is 149%. Approximately similar results are obtained using different market indices as benchmarks. This underpricing is somewhat due to the institutional setup in Jordan. The variety of IPOs included in the sample allows the detection of some notable features as follows:

- The clustering effect of financial IPO firms leads to high significant level of underpricing when compared to other sectors.
- The newly established IPOs record the largest values of initial excess returns on the first trading day, a distinction just reflecting a pricing discrepancy and surrounding risk.
- The earliest years of the research that coincide with the cold period of IPOs market present at their part very far above underpricing level, this is due to regulatory changes in instructions and regulations that control these new issues.

Based on the cross-sectional regressions undertaken for a number of determinants on short term performance, four major reasons for IPOs underpricing appear to be of high importance.

1 - The strongest determinant of underpricing within Jordanian IPOs market is observed to be the offer size. This result is compatible with ex ante uncertainty hypotheses (UH), the same conclusion is reached by (Chan *et al.,* 2004),

while high offer value contributes to realize good financial health for Jordanian IPOs and presents less risky investments, thus low underpricing is needed. A close look for Jordanian context implies another argument that of demand-supply law(11). So, underpricing is negatively related to the value of shares being offered for the new company, suggesting that the high underpricing is due to the limited supply of new shares.

2 - The second factor is associated with the ownership structure of the firm, while large retained shares by insiders (government or founders) results in greater underpricing, consistent with (Su, 2004a; Su, 2004b). High percentage reserved of total shares leads to increase: - Confidence toward these IPOs; and - Demand for the first day of trading. As a result the closing price increases meaning underpricing level will increase. In addition to this traditional interpretation of signals, other causes appear to be more fitting to the Jordanian environment:

- Since most of IPOs included in the sample are start-up firms, it is logical to expect high percentage of shares held by founders, because they establish these firms to practice a new business, so, they cannot consider the process of going public as an exit strategy.
- High fraction retained by insiders leads to increase the agency costs on one hand, and a reduction of shares liquidity on the other hand, so as a compensation a greater underpricing is required in ASE.

3 - The third cause is prior market conditions, measured by market return before 30 days of offering. The influence is significant, but an inverse negative sign is noticed. The literature (Lyn and Zychowicz, 2003; Yong, 2007) predicts that firms are more likely to do an IPO when market conditions are favorable, namely, when the market level is high. The inverse effect obtained here may due to the special events characterized by the period of the study where financial markets are descending.

(11) The only way to set the opening price of an IPO is to float it on the market at a price determined by supply and demand by investors, speculators and flippers. Excess demand on the stock drives up the share price on the first day of trading, rendering the issue price "underpriced". This proposed explanation is suggested - and very accepted - by the actual Jordanian practitioners like Mr. Majed A.K. Hejab (Head of Corporate Finance in Jordan National Bank), Mrs. Hana'a S. Al-Harassis (Manager of Brokerage Dep. in Jordan Investment & Finance Bank) and Mr. Zein Alkhas (Research Analyst in Arab Cooperation Financial Investment Co.)

Also, the absence of time planning to determine the right timing to run an IPO by Jordanian managers and their advisors is a rational reading for such results.

4 - Finally, the great length of time expanding between offering date and listing date is not a reflection of risky firms, rather it shows the regulatory procedures until the shares are tradable in ASE.

The Jordanian IPO market has many unique features which make it an interesting environment to investigate. The results at hand clearly show a very high level of underpricing, a number of reasons for this price behavior are established. Jordan's equity market is expected to expand rapidly in the coming years. Therefore, it will become a major investment destination for both domestic and foreign investors. One concern investors have is their lack of knowledge about Jordan's market. Hopefully, this research will provide some insight and understanding on the short term underpricing of IPOs in Jordan.

Appendix (I)
List of Jordanian Issuance Managers during the research's period

No.	The Name of the Company (a)	Best Effort	Firm Commitment	Number of IPO Deals (a)
[1]	Arab Cooperation Financial Investment Co. "ABC Investement".	/		0
[2]	Al- Arabi Investment Group.	/		1
[3]	Global Investment House.	/		3
[4]	Portfolio Management & Investment Serv. "Amwal Invest".	/	/	6
[5]	International Brokerage & Financial Markets.	/		6
[6]	Investment House for Financial Services.	/		2
[7]	Jordan Investment Trust "Jordinvest".	/	/	4
[8]	Capital Investments.	/		1
[9]	Al-Omana'a Portfolio and Investment.	/		0
[10]	Tadawol for Securities & Financial Services.	/		0
[11]	Jordan Kuwait Bank.	/	/	1
[12]	Bank of Jordan.	/	/	1
[13]	Jordan National Bank.	/	/	3
[14]	Union Bank for Saving & Investment.	/	/	0
[15]	The Housing Bank for Trade and Finance.	/	/	1
[16]	Jordan Investment & Finance Bank "Investbank".	/	/	8
[17]	Jordan Islamic Bank for Finance & Inv.	/	/	0
[18]	Al-Bilad for Securities and Investment.	/		0
[19]	Arab Jordan Investment Bank.	/	/	3
[20]	Arab Consultants for Financial Services.	/		9
[21]	Al-Awael International Securities.	/		0
[22]	Arab Bank.	/	/	0
[23]	Ithmar invest.	/		0
[24]	Jordan Commercial Bank.	/	/	1
[25]	Ernst & Young for financial consulting.	/		0
[26]	Kuwait & Middle East Financial Investment-JO.	/		0
[27]	Sabaek Invest.	/		0
[28]	Expert for subscription management.	/		0
	Total number of IPO deals			**50(b)**

(a): The above order of issuance managers is taken from the source, where based on the research's classification: [4, 5, 16 and 20] account for 54.7% of deals are considered as reputable issuance managers, others with the rest 37.7% of contracts are categorized as not reputable issuance managers.
(b): Throughout the research's period, 4 IPOs are conducted without an issuance manager while one of them is co-managed by two issuance managers.
Source: The Jordan Security Commission's law about "Instruction of Financial Services Licensing and Registration for the year 2005".

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الملخص

دراسة تطبيقية في الأداء السعري قصير الأجل للإصدارات العامة الأولية – من واقع سوق الأسهم الأردني

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البحث عبارة عن دراسة تطبيقية للإصدارات (الاكتتابات) العامة الأولية الأردنية، يتناول الأداء السعري قصير الأجل لـ ٥٣ شركة طرحت أسهمها للاكتتاب خلال الفترة الممتدة من ١٩٩٩ إلى ٢٠٠٨. وقد جاءت النتائج عموما متماثلة مع نتائج أغلب الدراسات السابقة، ولا سيما تلك التي تمت بالأسواق الناشئة. فقد أظهر اختبار العوائد غير الاعتيادية دلالة إحصائية لظاهرة التسعير المخفض في اليوم الأول للتداول. وقد أظهر التحليل المقطعي أن حجم العرض يأتي في المقام الأول لتفسير هذه الظاهرة بالأجل القصير، حيث استعمل كدلالة على حالة عدم التأكد، كما بينت النتائج أن المطلعين (الحكومة أو المؤسسين) ومن خلال الاحتفاظ بجزء من الأسهم المصدرة حديثا فإنهم بذلك يرسلون إشارات إيجابية حول جودة إصداراتهم، وهو الأمر الذي يؤثر إيجابيا على ظاهرة التسعير المخفض. إضافة إلى ذلك، أظهرت الفرضيات المتعلقة بالخصائص المؤسسية والمتمثلة في (الظروف القبلية للسوق وفجوة التوقيت) قوة تفسيرية عالية، أما بقية العوامل الأخرى؛ كسمعة مدير الإصدار، وعمر الشركة، وعدد طروحات الأسهم اللاحقة، فلم يثبت لها أثر في تفسير هذه الظاهرة.

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