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Determinants of Initial Public Offerings Subscription Level: Evidence from Egyptian Market

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Abstract

The main objective of this study was to identify the critical variables that affect the sum of money that investors pay to subscribe for an initial public offering (IPO) of a company listed on the Egyptian market. The vital need to understand the factors affecting IPO subscription levels, whether high or low, is the main driver for carefully examining this phenomenon in Egypt. The population from which the sample was drawn is the total number of IPO companies listed on the Egyptian stock exchange between 2005 and 2022, comprising thirty-nine companies. The study data were initially sourced from the Egyptian Stock Exchange Disclosure Department. To identify the factors that influenced the volume of investors' subscriptions during a company IPO, multiple regression analyses were conducted to examine the relationship between independent variables (offer price, issue size, firm age, financial leverage, return on assets, firm size, and market volatility) and subscription level. Ultimately, this study identified several significant relationships between the independent and dependent variables. There is a significant positive linear relationship between the IPO subscription level and issue size, firm size, firm age, profitability, and type of industry. Conversely, a significant negative relationship exists between subscription level and offer price, market volatility, and financial leverage.

Keywords

Initial Public Offerings (IPOs), Subscription Level, Egyptian Stock Market, Underwriters, Financial Regulatory Authority (FRA), Institute of Finance and Accounting (IFA), Egyptian Financial Supervisory Authority (EFSA), formerly known as the Capital Market Authority (CMA).

Article history

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1. Introduction

1.1. Overview

The primary objective of an initial public offering (IPO) is to successfully raise money to permit business expansion without increasing borrowing costs or depleting the company's cash reserves. Two additional reasons for conducting an IPO are to increase the business's revenue and the probability of mergers and acquisitions (Christopher, 2017). As governments in the region continue to advocate for privatization, the MENA is poised to maintain strong performance in initial public offerings (IPOs) in 2024. The total number of IPOs in the region decreased slightly from 48 in 2022 to 46 in 2023, remaining well above the 20 recorded in 2021. Proceeds from MENA issuers amounted to $10.8 billion in 2023, compared to nearly $23 billion the previous year. The increasing number of successful IPOs in the region has sparked greater investor interest. Following record activity in the UAE and Saudi Arabia in 2022, in 2023 these two Gulf countries ranked fourth and eighth, respectively, for full-year IPO proceeds in global markets. Much of the activity observed in recent years stemmed from various government initiatives, such as the UAE's national blueprint and Saudi Arabia's Vision 2030.

A secondary offering followed by a rights issue is a standard format for mixed IPOs, wherein shares are bought and sold at the IPO price then some of the sale proceeds are put back into the company in light of the distribution of the rights issue to the shareholders who are selling their shares at the IPO valuation. This structure is preferred because it guarantees that shareholders will have ownership of their shares as soon as trading resumes on the Egyptian Exchange (EGX); there is no wait for the laborious capital increase formalities to be finished (Angel et al., 2015). The oversubscription ratio, which Chowdhry and Sherman (1996) argued was a reliable indicator of a company's value, was crucial to the success of an IPO issuance because it served as a stand-in for investor demand. This study builds on the work of Low and Yong (2011) to learn more about investor demand for IPOs. The need to ascertain whether the study's variables (issue size, offer price, firm age, financial leverage, return on equity(ROE), firm size, market volatility, market condition, and industry type) influence the IPO subscription ratio for companies available on the EGX (a reputable stock exchange in the Middle-East and North Africa region (MENA)) illustrates the research gap. Consequently, the research question is as follows:

RQ: What elements influence investor subscription levels for IPOs in the Egyptian stock market whenever businesses go public?

2. Literature Review

Indicators of oversubscription discovered in the finance literature support the theories discussed regarding the level of IPO subscription. Researchers have used a variety of determinants as stand-ins to exemplify the theoretical foundations underlying the IPO subscription level. It is believed that IPO demand impacts the level of oversubscription (Low & Yong, 2011). The global IPO market hit a record in 2021,

both in volume and value, thanks to the recovery stage of the economy and government-supporting programs (Ernst & Young, 2021). The report stated that all regions showed optimism in IPO activity, such as the US and EMEIA markets, which experienced significant growth. At the same time, a moderate boom was seen in Asia-Pacific. However, it soon exceeded the boom period, in which total volume dropped by more than half in the next two years. This reduction can be attributed to the high interest rate, which is adjusted to combat inflation. The high borrowing rates make it more illiquid and affect the share price, causing a loss in confidence for companies to go public and investors to make investments. Moreover, the number of VC-backed IPOs has remained a small fraction of the total volume, with a peak of 22 in 2021.

Many researchers have used the oversubscription ratio as an independent variable to explain the IPO first-day returns. A number of researchers, including Agarwal et al. (2008), Boudriga et al. (2009), Chowdhry and Sherman (1996), and Kandel et al. (1999) found the subscription ratio and the IPO procedure's success to be positively correlated. To explain investor demand and the long-term performance of Australian IPOs, Dimovski and Brooks (2004) proposed 13 financial and nonfinancial characteristics. Bhabra and Pettway (2003) also considered the firm's financial, operational, and offering characteristics to determine a firm's oversubscription. Johnston and Madura (2002) explained the distinctions between market- and issue-related characteristics. Nevertheless, Ogden et al. (2003) unequivocally proved that all IPO characteristics can be categorized into two groups: those related to the offer (valuation statistics, offer price, primary shares, secondary shares, ownership statistics, underwriter spread, overallotment option statistics, and lockup statistics) and others specific to the firm (age statistics, leverage, firm size, and dividend policy profitability).

Several studies on IPO oversubscription are beginning to be published (Low & Yong, 2011; Tajuddin et al., 2016). When researching the occurrences of oversubscription in Malaysia, Low and Yong (2011) discovered that the IPO volume, offer price, chance cost to the fund, and investor zeal are significant variables that significantly affect the ratio of oversubscription. However, Tajuddin et al. (2016) used the use of proceeds for investment to measure growth opportunity as a deciding factor in analyzing oversubscription. They also concluded that other variables, which were not looked at in earlier studies, such as firm size, financial leverage, offer price, and industry type, may likewise be factors in oversubscription. The oversubscription ratio (OSR), also referred to as subscription intervals, measures the public's interest in an IPO as measured by shares of the prospective company and significantly affects the stock immediately following the IPO.

The offer for public subscription is determined by dividing the total number of shares by the total number of IPO shares that have been requested (Rasidah et al., 2013). High subscription time, which is probably influenced by investors' optimism and confidence about the issue, is a sign of high investor demand for the new IPO issue. Therefore, researchers and participants in the Egyptian capital market are interested in learning more about the factor(s) affecting IPO subscription times. According to earlier

studies, there is much disagreement in academia regarding the impact of IPO oversubscription on the Egyptian market between 2005 and 2018, a topic that has not yet been studied. As a result, the analysis becomes more grounded in reality. In addition, a brand-new set of variables will be used to confirm the type and scope of its influence on IPO Oversubscription. Three main stakeholder groups exist in publicly traded companies: shareholders, whether retail or institutional investors, underwriters, and issuing companies. In most IPOs, one or more investment banks serve as the underwriters. The company issuing the shares, or the issuer, enters into a contract with a lead underwriter to sell its shares to the general public, or investors. The underwriter then approaches investors and makes them offers to buy these shares (Roosenboom, 2007).

A common determinant of IPO levels is the influence that board structures have on investors' decisions to buy stock in companies that are preparing to go public. A disadvantage of a developing market is that investors are unfamiliar with IPO companies. The idea that board prestige is viewed positively by investors as a sign of organizational legitimacy, reducing the risk of a new market entry and boosting IPO firm stock performance, is supported by the signaling theory, institutional theory, and sociological research on prestige. In addition, it can be contended that the characteristics of the board, particularly their sense of status, affect investors' perceptions of the board's prestige (Certo, 2003). Dhamija and Arora (2017) examined the connections between ownership structure, corporate governance, and the IPO process. They examined equity holdings by numerous institutions, including corporations prior to an IPO, using international and domestic financial institutions, venture capitalists, and banks with and without lending relationships. The authors also examined the connections between ownership structure and corporate governance. Using a unique data set of 152 Indian IPOs from 1999 to 2001, they examined share ownership by key shareholder groups.

The authors found a relationship between ownership structure and firm-specific variables like leverage, sales, profitability, and variables related to IPOs, for example, the percentage of equity locked up, gross proceeds, and exchange of listing. A strong correlation between ownership and various institutional types also exists. Ownership is also connected to bank lending relationships. Finally, Dhamija and Arora (2017) identified important relationships between various aspects of corporate governance and ownership. Businesses with foreign investors, for instance, are more likely to have an external CEO and offer an employee stock option plan (Hall & Murphy, 2003). Typically, at the time of a company's IPO, shares are held by venture capitalists, corporate investors, insiders, and angel investors. Angel investors provide equity funding in industries where venture capitalists are less likely to operate, and stockholders in companies with angel investment are more likely to sell shares during the offering. The fact that angel-backed IPO firms do not exhibit the same underpricing as venture capital-backed IPO firms suggests that angels may be the preferred investor for early-stage companies (Johnson & Sohl, 2012).

A significant IPO usually has a lead underwriter comprising several investment banks or syndicates. The underwriters keep a commission from the sale of the shares, that is, a portion of the shares' market value. According to Gao et al. (2017), the lead underwriters typically sell the most shares in an IPO. Practices ensure that issuers benefit from the marketing efforts of investment bankers. However, the pre-offer shareholders in the IPO may also benefit from the success of an investment banker's marketing efforts. It is customary for the issuing companies to conduct road shows. Roadshows are meetings between the underwriters and representatives of the company (typically the CEO, CFO, and possibly an investor relations specialist) and potential significant investors to market the offering (Mumtaz et al., 2016). Upon printing and distributing the initial prospectus, the road show for an IPO begins and may last 2 to 3 weeks. Depending on the size of the offering and how the company operates, the road show may include meetings in foreign cities. The price of the offer is fixed after the roadshow's completion and the registration statement's effective date (Gao et al., 2017).

The underwriters' promise to sell an IPO is not always a given. However, that decision is dependent on the type of underwriting chosen in conjunction with the stock's issuer. Depending on the type of underwriting, the underwriter assumes different amounts of risk and uses different payment methods. The most frequently employed underwriting techniques include bought and best-effort deals (Williamson, 2009). In a bought deal, an underwriter purchases a company's entire IPO issue and resells it to the investing public. The difference between the price the underwriter pays to buy the stock from the issuer (typically at a discount) and the price it charges to sell it to the general public represents the compensation the underwriter receives. The underwriter continues to hold any unsold shares, so it is in their best interest to sell the entire new issue because, in this scenario, they assume all of the risk associated with selling the stock issue (Chen, 2015). In a best effort agreement, the underwriter guarantees to sell the issue to the investing public at the best price feasible; the company issuing the stock must use its best efforts to do so without necessarily purchasing any of the IPO issue. Unlike a purchased deal, the issuing company keeps the shares that were not sold if a portion of the issue is not sold. In the best efforts scenario, the underwriter is compensated a flat fee, so even the underwriter's gains are constrained if the issue does well because less risk is involved (Chen, 2015).

3. Research Methodology

The study's population consists of all IPOs listed on the EXG between 2005 and 2022, which reached 39 cases. The data came from a website database that gathered information on the offer price, issue size, firm age, financial leverage, ROE, firm size, market condition, market volatility, and industry type and prospectus of IPO companies. This study also divided the population into five industry classifications: communications, banking and financial services, noncyclical consumer goods and services, industrial, and others. Ogden et al. (2003) unequivocally proved that all IPO characteristics can be categorized into two groups: those related to the offer (valuation statistics, offer price, primary shares, secondary shares, ownership statistics,

underwriter's spread, overallotment option statistics, and lockup statistics) and others specific to the firm (age statistics, leverage, firm size, and dividend policy profitability).

Multiple regression analysis was used to look at the factors that affect the IPO oversubscription ratio to evaluate the impact of investor demand on the Egyptian market process. The following equation was used to run the regression analysis:

Equation 1:

Regression Equation

$$IPO\_SL_{i,t} = \alpha + \beta 1\ IPO\_SL_{i,(t-1)} + \beta 2\ OP_{i,t} + \beta 3\ IS_{i,t} + \beta 4\ AGE_{i,t} + \beta 5\ LEV_{i,t} + \beta 6\ ROA_{i,t} + \beta 7\ SIZE_{i,t} + \beta 8\ MV_{i,t} + \beta 9\ MH_{i,t} + \beta 10\ S\_SECTOR_{i,t} + \beta 11\ M\_SECTOR_{i,t} + Error_{i,t}$$

OSR, or the oversubscription ratio, measures the demand from investors for an IPO. This ratio determines how frequently investors overdemand an IPO by using the following formula:

Equation 1:

IPO

$$IPO\_SL = \text{No. of shares subscribed} \div \text{total shares issued}$$

The following table clarifies how the independent variables were measured.

Table 1: *Measurements and Abbreviation of Independent Variables*

Variables	Abbreviation	Measurement
IPO offer price	OP	Offer price of the issue
IPO issue size	IS	The number of shares issued × the issue price
Firm age	AGE	Natural Logarithm of firm's age
Financial leverage	LEV	Total debts ÷ Total assets
Profitability	ROA	Net Profit ÷ Total assets
Firm size	SIZE	Natural Logarithm of firm's total assets in million EGP
Market volatility	MV	The standard deviation of daily market returns over the period before the closing date of the offer is 60 day.
Market Hotness	MH	Dummy variables, value '1' if hot ; '0' if cold
Service sector	S_SECTOR	Dummy variable that takes the value of 1 if a firm operates in service sector and zero otherwise.
Manufacturing sector	M_SECTOR	Dummy variable that takes the value of 1 if a firm operates in the manufacturing sector and zero otherwise.
Financial sector	F_SECTOR	Dummy variable that takes the value of 1 if a firm operate in financial sector and zero otherwise.

Table 2: *The Hypotheses Sources from Supported Theories*

Hypothesis	Supported Theories
H1: A relationship exists between the offer price of the issuing firm and the IPO subscription level.	(Allen & Faulhaber, 1989; Benveniste & Spindt, 1989; Chemmanur, 1993; Grinbatt & Hwang, 1989; Purnanandam & Swaminathan, 2004; Welch, 1989)
H2: A relationship exists between the issue size of the issuing firm and the IPO subscription level.	(Allen & Faulhaber, 1989; Benveniste & Spindt, 1989; Chemmanur, 1993; Denis & Mihov, 2003; Grinbatt & Hwang, 1989; Hogholm, 1994; Welch, 1989)
H3: A relationship exists between firm age and IPO subscription level.	(Allen & Faulhaber, 1989; Benveniste & Spindt, 1989; Chemmanur, 1993; Gregoriou, 2006; Grinbatt & Hwang, 1989; Purnanandam & Swaminathan, 2004; Welch, 1989)
H4: A relationship exists between the financial leverage of the firm and IPO subscription level.	(Beatty & Ritter,1986; Benveniste et al., 2003)
H5: A relationship exists between profitability and IPO subscription level.	(Beatty & Ritter,1986; Benveniste et al., 2003)
H6: A relationship exists between firm size and IPO subscription level.	(Beatty & Ritter,1986; Habib & Ljungqvist, 1998)
H7: A relationship exists between market volatility and IPO subscription level.	(Derrien, 2005; Ljungqvist & Wilhelm, 2002; Loughran & Ritter, 1995; Korajczyk et al., 1990; Loughran et al., 1994; Purnanandam & Swaminathan, 2004; Ritter & Welch, 2002)
H8: A relationship exists between IPO market hotness and IPO subscription level.	(Chan et al., 2004; Chowdhry & Sherman, 1996; Lee et al., 1996a,b; Loughran et al., 1994; Uddin, 2001, 2008)
H9: A relationship exists between Industry type and IPO subscription level.	(Chan et al., 2004; Chowdhry & Sherman, 1996; Lee et al., 1996a,b; Loughran et al., 1994; Uddin, 2001, 2008)

4. Results and Data Analysis

4.1. Descriptive Statistics

This section discusses the characteristics of both the continuous and discrete variables used in manufacturing research in Table (3), including the mean, the standard deviation, the minimum, and the maximum. According to the above table, the mean, which is the arithmetic average for the subscription level of the IPO, is 19.10, the standard deviation is 13.53, and the minimum and maximum values are 1.00 and 61.36, respectively. The minimum and maximum values for the offer price are sequentially 0.30 and 22.59, with the mean being 9.19 and the standard deviation being 6.27.

Table3: *Descriptive Statistics for the Continuous Variables*

Variables	IPOs Subscription Level	Offer Price	LNISS (Issue Size)	LNINDT (Industry Type)	Firm Age	LNFS (Firm Size)	Financial Leverage	Profitability - ROA	Market Volatility
Mean	19.10	9.18	16.36	18.40	13.85	20.93	0.14	0.08	81.66
Median	19.00	7.35	16.39	18.48	13.00	20.99	0.14	0.06	82.04
Max.	61.360	22.59	18.84	21.54	33.00	24.18	0.33	0.19	123.83
Min.	1.00	0.30	13.30	15.52	1.00	17.95	0.01	0.003	43.23
Std. Dev.	13.52	6.27	1.18	1.32	8.35	1.55	0.10	0.05	18.93
Skewness	0.65	0.62	-0.13	-0.26	0.56	-0.06	0.39	0.69	-0.08
Kurtosis	3.53	2.20	2.98	3.02	2.65	2.67	1.76	2.45	2.52
Jarque-Bera	3.24	3.57	0.12	0.46	2.25	0.20	3.48	3.58	0.42
Probability	0.19	0.16	0.93	0.79	0.32	0.90	0.17	0.16	0.80
Observations = 39									

The minimum and maximum values for the issue size are sequentially 6.60 and 8.89, with a mean of 16.36, a standard deviation of 0.63, and a range in between. The mean for the firm age is 20.93, the standard deviation is 1.56, and the minimum and maximum values are 17.96 and 24.19, respectively. The mean for the value issues is 18.40, the standard deviation is 1.32, and the minimum and maximum values are 15.52 and 21.54, respectively. The minimum and maximum values for the firm size are 1 and 33, respectively, with 8.36 standard deviation. The minimum and maximum values for financial leverage are 0.01 and 0.03, respectively, whereas the mean is 0.01 and the standard deviation is 0.11. Profitability has a mean of 0.08, a standard deviation of 0.05, and minimum and maximum values of 0.0503 and 0.19, respectively. The market volatility's mean is 81.66, its standard deviation is 18.93, and its minimum and maximum values are respectively 43.24 and 123.83.

Table4: *Descriptive Statistics for the Discrete Variables*

Variables	IPOMH (Market Hotness)	Service Sector	Manufacturing Sector	Financial Sector
Mean	0.58	0.41	0.48	0.10
Median	1	0	0	0
Maximum	1	1	1	1
Minimum	0	0	0	0
Std. Dev.	0.49	0.49	0.50	0.30
Skewness	-0.36	0.36	0.05	2.61
Kurtosis	1.13	1.13	1.002	7.86
Jarque-Bera	6.52	6.52	6.50	83.06
Probability	0.03	0.03	0.03	0
Observations = 39				

The descriptive statistics for IPO market hotness, manufacturing, and financial dummy variables are as follows: From the above table, it can be concluded that the mean of IPO market hotness during the study period is 0.59, which means that in more than half of the sample, the number of IPOs was greater than the sample average. The mean of the firms in the service sector during the study period is 0.41, which means that less than half of the firms in the sample operate in the manufacturing sector. The mean of the firms in the manufacturing sector during the study period is 0.48, which means that approximately half of the firms in the sample operate in the manufacturing sector. The mean of the firms in the financial sector during the study period is only 0.10, which means that only four firms operate in the financial sector.

4.2. Normality Test

In order to determine whether the data is normally distributed, the researcher performed the Jarque-Bera test for normality.

Table 5: *Jarque-Bera Test for Normal Distribution*

Variable	Value	Probability
IPOs Subscription Level	3.25	0.20
Offer Price	3.57	0.17
LNISS (Issue Size)	0.13	0.94
LNIND-T (Industry Type)	0.47	0.79
Firm Age	2.26	0.32
LNFS (Firm Size)	0.21	0.90
Financial Leverage	3.49	0.17
Profitability - ROA	3.58	0.17
Market Volatility	0.42	0.81
IPOMH (Market Hotness)	6.53	0.039
Manufacturing Sector	6.53	0.039
Service Sector	6.50	0.039
Financial Sector	83.07	0

According to Table 5, using the Jarque-Bera test at a significant level higher than 0.05 helped determine the normality distribution of the research variables IPOs subscription level, offer price, LNISS (issue size), LNIND-T (industry type), firm age, LNFS (firm size), financial leverage, profitability ROA, and market volatility. However, the results of the research variables IPOMH (Market Hotness), the manufacturing sector, the service sector, and the financial sector showed that they are not normally distributed because the Jarque-Bera statistic's significance is less than 0.05. The data are not significantly skewed because the Pearson skewness coefficient for all research variables is less than 1 (Bluman, 2012).

4.3. Pearson Correlation Matrix

The correlation matrix examines the strength and direction of the relationship between the variables under study. The Pearson correlation lies between 1 and -1. The

negative value denotes a negative relationship between the study variables, while the positive value denotes a positive relationship. Table 6 displays the Pearson Correlation results.

Table 6: *Pearson Correlation Matrix*

Probability	IPOs Subscription Level	Offer Price	LNISS (Issue Size)	Firm Age	Financial Leverage	Profitability – ROA	LNFS (Firm Size)	Market Volatility	IPO Market Hotness	Service Sector	Manufacturing Sector	Financial Sector
IPOs Subscription Level	1.00											

Offer Price	-0.43	1.00										
	0.006	-----										
LNISS (Issue Size)	0.46	-0.11	1.00									
	0.002	0.49	----									
Firm Age	0.39	0.11	-0.04	1.00								
Financial Leverage	-0.42	-0.08	-0.06	0.09	1.00							
	0.006	0.61	0.71	0.56	-----							
Profitability - ROA	0.45	0.41	-0.1	0.09	0.17	1.00						
	0.003	0.008	0.39	0.54	0.29	-----						
LNFS (Firm Size)	0.53	0.16	0.50	-0.20	-0.06	-0.05	1.00					
	0.0001	0.30	0.001	0.21	0.71	0.75	-----					
Market Volatility	-0.42	0.31	-0.03	-0.002	0.25	0.46	-0.12	1.00				
	0.007	0.05	0.84	0.98	0.12	0.003	0.43	-----				
IPO Market Hotness	-0.24	0.04	-0.23	0.15	0.12	-0.04	-0.28	0.19	1.00			
	0.99	0.80	0.15	0.34	0.45	0.76	0.07	0.23	-----			
Service Sector	0.31	-0.08	0.13	-0.24	-0.24	-0.09	0.15	-0.14	-0.47	1.00		
	0.05	0.62	0.41	0.12	0.13	0.55	0.36	0.37	0.00	-----		
Manufacturing Sector	0.003	0.48	0.50	0.06	0.01	0.08	0.29	0.05	0.07	0.00	-----	
Financial Sector	0.25	-0.05	-0.03	-0.09	-0.22	-0.30	0.03	-0.27	0.28	-0.28	-0.32	1.00
	0.11	0.71	0.82	0.55	0.16	0.05	0.81	0.09	0.08	0.08	0.04	-----

According to the aforementioned table, there are significant positive linear relationships between the independent variables LNFISS, firm age, profitability, and service sector, and the dependent variable IPO's subscription level, with a significance level less than 0.05. Consequently, businesses in the service sector have seen an increase in subscription levels. At a 5 percent level of significance, there is no correlation between the level of IPO subscription and the financial sector. A strong negative correlation exists between the IPO subscription level and the offer price, financial leverage, market volatility, and manufacturing sector. As a result, the manufacturing sector's companies have low subscription levels.

4.4. Equilibrium or Cointegrating Equation Model

Using the Engle-Granger Co-integration test, the following non-stationary time series variables, both dependent and independent, are examined to see if there are any long-run equilibrium relationships.

Table 7: *Co-integrating Model for Dependent and Independent Variables from 2005 to 2022*

Dependent	Tau-Statistic	Prob.*	z-Statistic	Prob.*
IPOs Subscription Level	-8.22	0.0009	-48.19	0.001
Offer Price	-5.56	0.13	-34.79	0.12
LNISS (Issue Size)	-5.05	0.26	-31.31	0.24
LNIND-T (Industry Type)	-6.33	0.03	-39.68	0.03
Firm Age	-7.19	0.007	-44.39	0.006
LNFS (Firm Size)	-7.30	0.006	-44.76	0.005
Financial Leverage	-3.77	0.77	-21.11	0.78
Profitability - ROA	-6.64	0.02	-41.45	0.01
Market Volatility	-3.13	0.94	-15.89	0.94

*MacKinnon (1996) p-values.

Table 7 shows that, based on the Tau-statistic and z-statistic, at a significant level less than 0.001, there are no long-term equilibrium relationships between the dependent (IPOs subscription level) and independent variables (offer price, LNISS (issue size), LNIND-T (industry type), firm age, LNFS (firm size), financial leverage, profitability - ROA, and market volatility) from 2005 to 2022.

4.5. Stationary Time Series Test (Group unit root test)

The value of the covariance between two time periods only depends on the distance between them and not the actual time at which the covariance is computed for the research variables in terms of IPO subscription level and offer price, LNISS (issue size), LNIND-T (industry type), firm age, LNFS (firm size), financial leverage, profitability—ROA, and market volatility.

Table 8: *Group Unit Root Test from 2005-2022*

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-12.50	0.00	9	340
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-12.54	0.00	9	340
ADF - Fisher Chi-square	165.26	0.00	9	340
PP - Fisher Chi-square	165.97	0.00	9	342

Table 8 shows that the time series of the dependent and independent variables is stationary at level 1 (0) based on the constant level through the following criteria: LLC, IPSW, PP, and ADF, at a significant level less than 0.001.

4.6. Hypothesis Testing

The statistical analysis was conducted using E-views. The researcher conducted OLS regression for the study variables to identify the determinants of successful IPOs in the Egyptian market.

Table 9: *Regression Analysis between Covariate Variables and the Dependent Variables*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IPOs Subscription Level(t-1)	-0.72	0.19	-3.81	0.0009
Offer Price	-0.68	0.34	-1.97	0.06
LNISS (Issue Size)	4.69	1.49	3.13	0.002
Firm Age	1.08	0.35	3.02	0.003
Financial Leverage	-27.33	13.11	-2.08	0.04
Profitability - ROA	102.40	24.73	-4.14	0.0003
LNFS (Firm Size)	2.52	1.18	2.12	0.04
Market Volatility	-0.35	0.11	-3.11	0.002
IPO Market Hotness	-7.04	4.34	-1.61	0.09
Service Sector	6.22	3.49	1.78	0.08
Manufacturing Sector	-8.12	4.04	-2.007	0.05
Financial Sector	17.14	28.20	0.60	0.54
R-squared	0.47	Mean dependent var		19.58
Adjusted R-squared	0.45	S.D. dependent var		13.37
S.E. of regression	11.51	Akaike info criterion		7.97
Sum squared resid	3448.20	Schwarz criterion		8.49
Log likelihood	-139.57	Hannan-Quinn criter.		8.16
F-statistic	2.17	Durbin-Watson stat		1.58
Prob(F-statistic)	0.05	Wald F-statistic		27.46
Prob(Wald F-statistic)	0.00			

Equation2:

Regression Equation Substitution

IPOS_SUBSCRIPTION_LEVEL = -0.726392*IPOS_SUBSCRIPTION_LEVEL(-1) - 0.688410*OFFER_PRICE + 4.697976*LNISS(ISSUE SIZE) + 1.080546*FIRM_AGE - 27.33920*FINANCIAL_LEVERAGE - 102.4092*PROFITABILITY_ROA + 2.527060*LNFS(FIRM SIZE) - 0.352613*MARKET_VOLATILITY - 7.044649*IPOMARKETHOTNESS + 6.224719*SERVICE_SECTOR - 8.127642*MANUFACTURING_SECTOR + 17.1475505441

According to the multiple regression model using ordinary least squares, it can be concluded that the covariate variables, in terms of the interactions between offer price, LNISS (issue size), firm age, financial leverage, profitability, LNFIS, market volatility, IPO market hotness, service sector, and manufacturing sector, explain 0.48 of the total variance in IPO subscription level.

The researcher drew the following conclusions because the "F test" value is significant at a level lower than 0.05. The above table shows that:

- The first hypothesis (H1), which states a significant relationship between offer price and IPO's subscription level, is rejected.
- The second hypothesis (H2), which states a significant relationship between issue size and IPO's subscription level, is accepted.

- The third hypothesis (H3), which states a significant relationship between firm size and IPO subscription level, is accepted.
- The fourth hypothesis (H4), which states a significant relationship between firm age and IPO subscription level, is accepted.
- The fifth hypothesis (H5), which states a significant relationship between financial leverage and IPO subscription level, is accepted.
- The sixth hypothesis (H6), which states a significant positive relationship between profitability and IPO's subscription level, is accepted .
- The seventh hypothesis (H7), which states a significant negative relationship between market volatility and IPO's subscription level, is accepted.
- The eighth hypothesis (H8), which states a significant relationship between IPO market hotness and IPO's subscription level, is rejected.
- The ninth hypothesis (H9), which states a significant relationship between the industry type and the IPO's subscription level, is rejected.

4.7. Parameter Estimators Tests

The researcher conducted a VIF test for multicollinearity to determine whether there is a high correlation between the independent variables.

Table10: *VIF Test*

Variable	VIF
IPOs Subscription Level(t-1)	6.36
Offer Price	9.03
LNISS (Issue Size)	3.13
Firm Age	9.62
Financial Leverage	3.19
Profitability - ROA	9.32
LNFS (Firm Size)	3.31
Market Volatility	7.20
IPO Market Hotness	4.24
Service Sector	3.40
Manufacturing Sector	8.61
Financial Sector	NA

If the VIF is less than 10, there is no multicollinearity problem. Thus, the above table concludes that there is no multicollinearity problem. The researcher conducted the Breusch-Pagan test for heteroskedasticity to determine whether there is a problem.

Table11:
Breusch-Pagan Test for Heteroskedasticity

F-statistic	0.39	Prob. F(11,26)	0.94
Obs*R-squared	5.44	Prob. Chi-Square(11)	0.90
Scaled explained SS	3.69	Prob. Chi-Square(11)	0.97

There is no heteroscedasticity problem if the p-value is more than 0.05. Thus, it can be concluded from the above table that there is no heteroscedasticity problem.

Since the significance value of the BG test statistic (≥0.05), the null hypothesis would not be rejected (H0: There is no serial correlation up to lag order $p(2)$).

Table 12: *Serial Correlation LM Test*

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	0.01	0.01	0.01	0.90
. | . |	. | . |	2	-0.05	-0.05	0.12	0.93
. | . |	. | . |	3	0.02	0.03	0.16	0.98
.* | . |	.* | . |	4	-0.10	-0.10	0.64	0.95
.* | . |	.* | . |	5	-0.14	-0.14	1.67	0.89
.* | . |	.* | . |	6	-0.10	-0.11	2.21	0.89
. | . |	. | . |	7	-0.01	-0.02	2.23	0.94
.* | . |	.* | . |	8	-0.07	-0.09	2.50	0.96
. | . |	. | . |	9	0.06	0.03	2.74	0.97
. | . |	. | . |	10	0.03	-0.02	2.80	0.98
. | . |	. | . |	11	0.00	-0.02	2.80	0.99
. | . |	. | . |	12	0.05	0.01	2.98	0.99
. | . |	. | . |	13	-0.03	-0.05	3.05	0.99
.* | . |	.* | . |	14	-0.11	-0.11	3.82	0.99
.* | . |	.* | . |	15	-0.10	-0.11	4.59	0.99
. | . |	.* | . |	16	-0.06	-0.08	4.85	0.99

The researcher conducted the Ramsey Reset Test for model specification to determine whether variables should be included in the model, even though they were not taken.

Table 13: *Ramsey Reset Test*

	Value	df	Probability
F-statistic	2.63	(2, 24)	0.09
Likelihood ratio	7.55	2	0.02

The model is well specified if the p-value is more than 0.05. Thus, the above table shows that the model is well specified, as the p-value is 0.09.

Equation3:

Research Model

IPOS_SUBSCRIPTION_LEVEL = -0.726392*IPOS_SUBSCRIPTION_LEVEL(-1) - 0.688410*OFFER_PRICE + 4.697976*LNISS(ISSUE SIZE) + 1.080546*FIRM_AGE - 27.33920*FINANCIAL_LEVERAGE - 102.4092*PROFITABILITY_ROA + 2.527060*LNFS(FIRM SIZE) - 0.352613*MARKET_VOLATILITY - 7.044649*IPOMARKETHOTNESS + 6.224719*SERVICE_SECTOR - 8.127642*MANUFACTURING_SECTOR + 17.1475505441

- There is a significant positive linear relationship between the IPO subscription level and LNFISS.
- There is a significant positive linear relationship between the IPO subscription level and firm age.
- There is a significant positive linear relationship between the IPO subscription level and profitability.
- There is a significant positive linear relationship between the IPO subscription level and LNFS (Firm Size).
- There is a significant positive linear relationship between the IPO subscription level and the industry type.
- There is an insignificant relationship between IPO subscription level and financial sector at a 5% significance level.
- There is a significant negative relationship between IPO subscription level and offer price.
- There is a significant negative relationship between IPO subscription level and financial leverage
- There is a significant negative relationship between IPO subscription level and market volatility.
- There is a significant negative relationship between IPO subscription level and the manufacturing sector. This means that firms that operate in the manufacturing sector have a low subscription level.

5. Recommendations

In order to stay competitive, businesses engaged in a neck-and-neck race to develop innovations and release their stock to the public shortly after their rival. Collectively, the results show that a firm's propensity to go public is significantly influenced by the IPO decisions of its direct rivals. A novel mechanism — R&D competition— was identified as the mechanism of this effect. For smaller, younger, high-tech, and VC-backed firms, the motivation for going public in the form of improving firm reputation and attracting analysts' attention is significant. Privatization could reinforce existing gaps in size, wealth, and market shares between large, capital-intensive firms and SMEs. The announced privatization plan suggests that the government prefers to “go big” rather than address the constraints presently preventing the growth of SMEs. If concerned with the latter, the government would prefer IPOs on the Egyptian Stock Exchange over sales to anchor investors. Stock flotations would attract local capital, presumably from within market sectors, thus helping to integrate SMEs by lowering the cost of capital, insiders cashing out (venture capitalist exit), carrying out takeovers, and implementing strategic changes.

If a company is aware that the market undervalues it, it will delay its IPO until it is more competitive to secure higher prices. When no other reputable companies are issuing new shares, the companies should avoid going public. A company that makes its capital available may gain a competitive edge and increase market prestige. For instance, raising its market value may inspire more confidence in other

investors, clients, and creditors. The Egyptian Stock Exchange's positive performance can be attributed to several factors, including the government's efforts to improve the investment climate in Egypt, the country's stable political situation, and the successful implementation of economic reforms. Additionally, the increasing number of IPOs and the growing interest of foreign investors in the Egyptian market have contributed to the positive trend.

6. Future Studies

Future studies on the current topic are therefore recommended. Further research in different market settings seems warranted. Splitting the IPOs' sample into hot and cold market sub-samples can extend the study. It is aimed to allow comparisons of underpricing levels under different market conditions. It also allows for investigation into the differences in IPO initial returns between hot and cold markets as characterized by Ritter (1984), where the initial IPO return is observed to be generally higher in hot markets than cold markets. This paper aimed to assess the performance of Initial Public Offerings (IPOs) in Egypt. This is an important issue for future research to see if the effect of IPO size, market volatility, underwriter status, and reciprocal IPO price on the performance of IPOs in other Islamic countries is a country-specific characteristic. More firms need to be examined to identify the market characteristics that drive the returns, but this requires time, so that more IPOs can take place.

Offering new companies on the stock exchange will also work to achieve the greatest degree of stability in the market and reduce price fluctuations, which currently suffers from the control of a limited number of shares, indicating that the stock exchange management is working on a strategy to promote in order to attract new companies and work to increase trading from by stimulating the demand side. Based on what was announced in the government companies' offering program, which started in 2017, and only a small percentage of it was achieved, it is clear that the new offerings will lead to an increase in liquidity rates and the attractiveness of the Egyptian market to foreign investors. Foreign securities could have a dual primary listing in Egypt in addition to a listing in a recognized exchange and should also apply the requirements for eligibility as mentioned above. Moreover, foreign exchange should be under the supervision of an authority similar to the authorities of the EFSA. For the Egyptian issued depository receipts for offshore issuers to be registered, which is common in practice, the following issues should be considered:

- The EGX should monitor listed or non-listed shares.
- The licensed member firm only has the right to issue orders on the EGX, and through its rules, trades may be carried out through protected transactions under the rules and procedures of the EGX approved by EFSA.

7. Conclusion

Primary, seasoned, or mixed IPOs are all possible in Egypt. Most IPOs are mixed offerings, which means they incorporate components from both primary and secondary offerings. Due to this, investors are assured that a portion of the IPO proceeds will be

used to reinvest in the company. It also ensures shareholders who partially exit through the IPO realize value (subject to the applicable lock-up requirements). Egypt conducts IPOs according to a public subscription notice approved by the Financial Regulation Authority (FRA). FRA approval requires the inclusion of adequate disclosures regarding all pertinent legal, financial, and tax information of the company, which necessitates thorough due diligence in all those areas. The IPO valuation must be based on a fair value assessment created by an independent financial adviser (IFA) to price the shares to be offered on the EGX. This assessment requires approval from the FRA and the annual meeting of the company's shareholders. The IPO price is provided as the upper end of the IFA valuation's price range (Loughran & Ritter, 1995). An IPO often comprises two parts: a public part and a private portion offered through a private placement to qualified retail or general public investors. Pricing and budgetary allotments for the private component are chosen in accordance with an exercise called book building, which establishes the IPO price for the private component. According to the PSN, the IPO price for the public component may be reduced or the same as the private component.

References:

Agarwal, S., Liu, C., & Rhee, S. G. (2008). Investor demand for IPOs and aftermarket performance: Evidence from the Hong Kong stock market. *Journal of International Financial Markets, Institutions and Money*, *18*(2), 176-190.

Allen, F., & Faulhaber, G. R. (1989). Signalling by underpricing in the IPO market. *Journal of Financial Economics*, *23*(2), 303-323.

Angel, J. J., Harris, L. E., & Spatt, C. S. (2015). Equity trading in the 21st century: An update. *The Quarterly Journal of Finance*, *5*(01), 1550002.

Beatty, R. P., & Ritter, J. R. (1986). Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics*, *15*(1-2), 213-232.

Benveniste, L. M., & Spindt, P. A. (1989). How investment bankers determine the offer price and allocation of new issues. *Journal of Financial Economics*, *24*(2), 343-361.

Bhabra, H. S., & Pettway, R. H. (2003). IPO prospectus information and subsequent performance. *Financial Review*, *38*(3), 369-397.

Boudriga, A., Ben Slama, S., & Boulila, N. (2009). *What determines IPO underpricing? Evidence from a frontier market* (Working Paper, No. Defi 2009-02). University of Tunis. http://efaidnbmnnnibpcajpcglclefindmkaj/https://mpra.ub.uni-muenchen.de/18069/1/MPRA_paper_18069.pdf

Chowdhry, B., & Sherman, A. (1996). International differences in oversubscription and underpricing of IPOs. *Journal of Corporate Finance*, *2*(4), 359-381.

Derrien, F. (2005). IPO pricing in "hot" market conditions: Who leaves money on the table? *The Journal of Finance*, *60*(1), 487-521.

Dhamija, S., & Arora, R. K. (2017). Determinants of long-run performance of initial public offerings: evidence from India. *Vision*, *21*(1), 35-45.

Dimovski, W., & Brooks, R. (2004). Initial public offerings in Australia 1994 to 1999, recent evidence of underpricing and underperformance. *Review of Quantitative Finance and Accounting*, *22*, 179-198.

Gao, S., Meng, Q., Chan, K. C., & Wu, W. (2017). Earnings management before IPOs: Are institutional investors misled? *Journal of Empirical Finance*, *42*, 90-108.

Johnston, J., & Madura, J. (2002). The performance of internet firms following their initial public offering. *Financial Review*, *37*(4), 525-550.

Kandel, S., Sarig, O., & Wohl, A. (1999). The demand for stocks: An analysis of IPO auctions. *The Review of Financial Studies*, *12*(2), 227-247.

Korajczyk, R. A., Lucas, D., & McDonald, R. L. (1990). Understanding stock price behavior around the time of equity issues. *Information, Corporate Finance, and Investment*, *257*, 257-278.

Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *The Journal of Finance*, *50*(1), 23-51.

Low, S. W., & Yong, O. (2011). Explaining over-subscription in fixed-price IPOs: Evidence from the Malaysian stock market. *Emerging Markets Review*, *12*(3), 205-216.

Ogden, J. P., Jen, F. C., & O'Connor, P. F. (2003). *Advanced corporate finance: Policies and strategies*. Prentice-Hall.

Purnanandam, A. K., & Swaminathan, B. (2004). Are IPOs really underpriced?. *The Review of Financial Studies*, *17*(3), 811-848.

Ritter, J. R., & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *The journal of Finance*, *57*(4), 1795-1828.

Tajuddin, A. H., Mohd-Rashid, R., Abdullah, N. A. H., & Abdul-Rahim, R. (2015). An empirical examination of over-subscription in the Malaysian IPO market. *International Journal of Economics and Management*, *9*(1), 81-102.