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The factors influencing the decision to list on Abu Dhabi securities exchange

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**The factors influencing the decision to list on Abu Dhabi securities exchange**Aktham I. Maghyereh<sup>a\*</sup>, Basel Awartani<sup>b</sup><sup>a</sup> Department of Economics and Finance, United Arab Emirates University, United Arab Emirates<sup>b</sup> Westminster Business School, Westminster University, 35 Marylebone Road London NW1 5LS, United Kingdom**Abstract**

The Abu Dhabi Securities Exchange is established to fund corporates, investments and economic growth. However, many companies operating in Abu Dhabi do not take the opportunity and list in the market. In this paper we survey a sample 145 chief executive officers and deputies of the CEO's in order to explain why firms refrain from going public and float their equity in the market. Our findings indicate that the poor quality of the Abu Dhabi equity market in terms of its inefficiency and inadequate liquidity plays a crucial role in discouraging firms to list in the market. Moreover, management do not list in order to avoid dilution of ownership as well as to retain control of the company. Finally, we find that knowledgeable managers in big companies are more likely to list in the market particularly when they operate in a competitive industry.

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**JEL Classification:** G32, G34, C25, O16

**Keywords:** Going public, Ownership and control rights, Stock market liquidity and efficiency, Information disclosure requirements, Abu Dhabi firms, Survey.

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## 1. Introduction

In the literature it is widely agreed that corporate growth needs quality and well-functioning secondary equity markets (e.g., King and Levine, 1993; Demirguc-Kunt and Maksimovic, 1996; Levine, 1997; Singh, 1997; Beck et al. 2000; Beck and Levine, 2002; Carlos et al. 2010; Demirgüç-Kunt et al. 2013; Durusu-Ciftci et al. 2017; Brown et al. 2017; among others). The role of these equity markets is crucial as they supply liquidity for shareholders and enable companies to raise funds successfully in the primary markets. Hence, the success of initial fund raising crucially depends on quality and liquid secondary markets. The disclosure requirements of listed companies allow information to flow thorough these markets and this facilitates price discovery and lowers the cost of information thus, empowering investors' decisions. Moreover, a sound stock market encourages corporate investment and it provides investors with suitable instruments that suit their risk preferences. In that sense quality equity markets may also help to increase savings.

To pursue these advantages, the Abu Dhabi Securities Exchange (the ADX hereinafter) is established by the government on the 15<sup>th</sup> of November 2000 to be the official stock exchange in the emirate of Abu Dhabi.<sup>1</sup> The market is expected to provide additional financing options for domestic companies and hence to promote growth and development. But the opportunity of having a stock market next door is not grabbed by domestic businesses and the listing of shares remains poor in the market. For instance, out of more than 500 non-financial operating private companies that are eligible to list, only 68 firms opt to list as of the end of 2016.

Poor listing led to poor market coverage of the wider economy. For instance, the traded market capitalization in the ADX constitutes a meagre of 40% of the emirate's GDP. This number is extremely low when it is compared to either emerging or even developed countries. For example, it is around 100% in Canada, the UK, the US, Sweden, Japan, Malaysia and Thailand. It is also much higher in Abu Dhabi

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<sup>1</sup> The Emirate of Abu Dhabi is one of the seven emirates that compose the United Arab Emirates (UAE). It is the largest by population, area and output. It accounts for 87% of the total lands of the UAE. Its GDP is around \$960 billion or 60 per cent of the aggregate GDP of the UAE.

neighboring countries such as Jordan, Kuwait and Saudi Arabia.<sup>2</sup> Therefore, one may conclude based on these numbers that the objectives of establishing the ADX are not fully achieved as domestic companies refrain from using the market to fund their long term strategic projects.

Theoretically, the limited number of listed companies in a financial market restricts information transmission and/or accuracy. This in turn reduces the incentives for private companies to list and it discourages investors from actively participating in the market. The resulting decrease in risk sharing increases in the cost to fund investment projects. On the contrary, in big stock markets with large number and variety of listed companies, accurate information transmission is encouraged and investors are provided with better diversification opportunities. The implications are lower cost of funds and enhanced ability to finance riskier projects.

Therefore, analyzing the reasons that discourage (encourage) companies from listing their shares in the ADX is an important issue because it has implications for company funding costs and growth. Hence, in this paper we aim to study the factors that influence the listing decision of companies operating in the emirate of Abu Dhabi.

For that purpose, a bespoke survey questionnaire is designed to identify the managerial attitudes towards listing. In particular, the survey assesses the relative importance of the factors that motivate listing. It also evaluates the barriers of going public as well as the decisions against listing of some eligible companies. The survey is distributed to the chief executive officers (or the deputies of the CEO's) of a sample of large and medium cap public and private companies operating in Abu Dhabi.

The decision to go public is one of the most important in the company's life cycle and it is extensively studied in the corporate finance literature (for instance see Jain and Kini, 2003). While there is a well-developed body of theoretical literature that has addressed the different motivations of

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<sup>2</sup> The exact percentages are as follows: Belgium (70.91%), Canada (115.21%), Chile (90.29%), Japan (93.67%), Jordan (71.92%), Kuwait (72.96%), Malaysia (139.36%), Philippines (82.87%), Saudi Arabia (63.10%), Sweden (92.81%), Thailand (95.36%), United Kingdom (112.11%), and United States (146.28%). For more details, see the Global Financial Development Database, World Bank, (<http://data.worldbank.org/indicator/CM.MKT.LCAP.GD.ZS>).

why firms go public, the empirical evidence collected from CEO's is still scant and underdeveloped.<sup>3</sup> Moreover the focus in previous studies is placed on listing in developed markets and the evidence concerning emerging markets is largely ignored due to the challenges of obtaining a reliable data on private companies' listing decisions in these markets. Therefore, this paper aims to tackle this issue and overcome the difficulty by exploiting researchers' network to get information. In that sense, the inference in this paper is derived from a unique data set that reveals the major factors that affect listing decisions of companies in emerging markets such as the UAE markets.

In setting up the survey, we build on the earlier work of Pagano et al. (1998) who focused on corporate decisions in Italy and the US.<sup>4</sup> The build-up is adjusted to suit our purpose and in order to be compatible with the local environment of the UAE. The survey data covers a sample of private and public companies. From the sample of all companies, we create subsamples of similar characteristics. These are separated to create matched samples of the companies that go public and/or willing to go public over the next 3 years and samples of companies that stay private and not willing to go public. The inference is derived from these matching samples in order to provide evidence of why some companies go public and others remain private.<sup>5</sup>

To the best of our knowledge, this is the first study to attempt to explain the important issue of listing decisions in ADX. This work is also seminal in a MENA context as there are no previous studies on company listing decisions in any of the other regions' equity markets. The results of this work are insightful for domestic corporate managers, investors, the Security and Exchange Commission, regulators, academics and business researchers. Their implications are beneficial and

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<sup>3</sup> The decision to go public has been discussed in Zingales (1995), Mello and Parsons (1998), Pagano, et al. (2002) and Brau and Fawcett (2006) among many others. The empirical evidence on the determinants is provided by fewer studies; for instance, see Pagano et al. (1998), Burton et al. (2004), Brau and Fawcett (2006), Bancel and Mittoo (2009) and Acquaah (2015) among others.

<sup>4</sup> We have also integrated the works of Brau and Fawcett (2006a, b), and Acquaah (2015).

<sup>5</sup> Note that inferring from similar (matched) samples controls for the remaining characteristics.



applicable to similar countries in the Middle East and especially the countries of the Gulf Cooperation Council (GCC) that share with Abu Dhabi the same social, political and economic characteristics.

Our results indicate that the poor quality of the ADX, its inefficiency and insufficient liquidity are the main factors that discourage CEO's from listing their companies' shares in the market. This is crucial and implies that listing decisions are not independent of the quality of the Abu Dhabi Securities Exchange which plays an important role. Hence, the main policy implications lie in improving the quality of the ADX market and encouraging more companies to go public in order to facilitate the spread of benefits of having an equity market next door.

Moreover, we find that to avoid dilution and to retain control, firm management opt not to list. However, we find that knowledgeable managers in big companies are more likely to list than others particularly when they operate in a competitive industry. These results highlight the importance of educating managers on the value of floating company shares in the equity market.

The rest of the paper is organized as follows: In Section 2 we summarize the literature. Section 3 provides background information about the ADX. The theoretical framework and hypothesis development are described in Section 4. Then in Section 5 we outline the research method. The empirical results are included in Section 6. Finally, Section 7 includes concluding remarks.

## **2. Literature review**

There is a large theoretical literature that attempt to explain and model the motivations of companies to go public, but the empirical evidence using a sample of companies is still rare and limited.<sup>6</sup> The focus of these empirical studies is on corporations in developed markets and the

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<sup>6</sup> The literature contains two major theories that attempt to explain owners' incentives to float their shares in an exchange: the life cycle theory which states that going public is one stage of company evolution and the market timing theory which postulates that owners go public and sell shares at times when markets are overbought and equities are overvalued. For more information on the life cycle theory see Ritter and Welch (2002) and on the market timing theory see Ritter (1991), Choe et al. (1993), Loughran and Ritter (1995), Brau et al. (2003), Pagano et al., (1998) and Baker and

emerging markets' companies have been largely ignored. For instance, Baker and Johnson (1990) conduct a survey of 284 companies listed on NYSE and they find that companies go public in order to improve visibility, prestige and marketability of their shares. In a more recent study of 438 CFOs of newly listed US companies, Brau and Fawcett (2006a,b) find that companies list mainly to raise capital for investments and to increase share liquidity<sup>7</sup>. Other factors such as the establishment of a market value and reputation enhancement are less important. Similarly, Burton et al. (2006) survey 102 managers of UK firms and reveal that increased visibility and reputation associated with IPO is the major motivation of the going-public decision. These conclusions are consistent with the subsequent study by Brau (2012) who reports from a sample of 984 CFOs of private companies taken from the original studies of Brau and Fawcett (2006a, b). His evidence suggests that the main incentives are to minimize the cost of capital, to achieve an optimal capital structure, to increase liquidity, to improve reputation, and finally to allow for more dispersion in ownership and control.

Bancel and Mittoo (2009) survey the CFOs of 78 European companies that decide to list their shares during the period 1994 to 2004 and find that companies list to increase their financial flexibility in addition to the other traditional reasons such as funding investments, increasing shares marketability and enhancing prestige and reputation.<sup>8</sup> In a survey of 48 managers of Italian family-held companies that floated shares during 1996 to 2001, Marchisio and Ravasi (2001) mention that these companies listed to finance growth and to improve image and reputation.

By using a large database of private Italian firms that listed over the period 1982-1990, Pagano et al. (1998) find that large growth companies with high market to book values are more likely to list.

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Wurgler (2000). For a comprehensive review of theoretical and empirical literature on why companies go public, See Brau (2012), Gómez-Mejía et al. (2001), Bancel and Mittoo (2013), Feldman (2015), and Gupta (2017).

<sup>7</sup> The theory of going public to raise capital is discussed in Pástor and Veronesi (2005). The virtue of increasing liquidity is discussed in Mello and Parsons (1998).

<sup>8</sup> Maksimovic and Pichler (2001), Stoughton et al. (2001) and Chemmanur and He (2011) argue that by going public companies gain greater prestige, competitive advantages and additional power in the market.

They also find that by going public companies seem to have reduced their costs of credit.<sup>9</sup> Kim and Weisbach (2008) used a big sample of 17,226 initial public offerings and 13,142 seasoned equity offerings from 38 countries between 1990 and 2003 and find that investment financing is the main motive behind the equity offers. Chemmanur et al. (2010) find that large cap growth companies are more likely to go public. They also find that listing tends to be more in capital intensive companies, companies with higher total factor productivity, higher markets' shares and in companies with greater access to private financing. Industry membership is found to matter. In particular, firms in the high tech industry are more likely to list than firms in other industries. In a more recent study, Bergbrant et al. (2017) provide time series evidence that greater availability of credit has a strong negative effect on the propensity to go public. Using a dynamic structural model, Gupta and Rust (2018) find also evidence that the going public decision is significantly affected by past performance, age and risk factors.<sup>10</sup>

Instead of studying the decision of going public, Block (2004) focused on why some public companies decide to go private using a sample of 236 US firms that are closed to public investment between January 2001 and July 2003. They find that the additional costs associated with being public in terms of financial reporting, monitoring pressures, time of the top management dealing with the exchange regarding equity issues, and the threats of delisting by the stock market are all factors that encouraged companies to delist their shares and to stop its trading in the market.<sup>11</sup>

Fewer academic studies investigate the question of why companies in emerging markets float their shares. Park (1990) focuses on Korean companies and he finds that the most important two

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<sup>9</sup> Amihud and Mendelson (1988), Chemmanur & Fulghieri (1999) and Becker and Paul (2008) report a reduction in the cost of capital after listing.

<sup>10</sup> Similarly, Jackowicz et al. (2017) used database that covers 3,570 non-financial private and public companies from Poland and find that larger and more profitable firms are more likely to go public. In addition, Signori (2018) used database of 2432 non-financial firms going public in Europe during the period 2002–2014. His empirical evidence documented that zero-revenue firms go public mainly to invest in R&D projects.

<sup>11</sup> Pour and Lasfer (2013) and Thomsen and Vinten (2014) show that firms with negative earnings are more likely to delist voluntarily. At the same time, they show that companies' growth and profitability depends on its ability to raise equity financing from the markets. For a comprehensive review of the empirical literature on the reasons for delisting see Martinez and Serve (2017).

benefits of going public is getting access to additional funding and gaining market credibility; however, he also finds that firms refrain from listing mainly due to the fear of losing control over the company. Similarly, focusing on an emerging market, Steffen and Zanini (2012) study 32 Brazilian IPOs over the period that extends from 2004 to 2008. They find that the main reason of going public is to optimize the capital structure of the company.<sup>12</sup> They also report that managers do not perceive the loss of control and confidentiality as a binding disadvantage of listing.<sup>13</sup> In a similar study, Steffen and Zanini (2014) survey 113 Brazilian CFOs to get their incentives of floating company shares over the period from 2004 to 2010. They find that the main motivation for going public is to reduce the cost of capital. They also find that companies remained private to preserve decision-making and ownership in the first place. Szyszka (2014) carried out a survey of 166 CEOs of companies that recently went public at the Warsaw Stock Exchange in Poland and he finds that financing needs is the most vital reason of going public.

In a relatively recent study of Ghanaian companies, Acquah (2015) survey 110 CFOs that list shares over three time-periods from 2002 to 2009. He shows that knowledge of the benefits of listing is a key factor in changing attitudes and encouraging managers to take their companies public. However, he also finds that the cost of providing additional information to comply with disclosure requirement after listing and the loss control to be important factors in discouraging companies from listing their shares in the market.<sup>14</sup>

As mentioned, most previous studies focus on developed markets and the evidence from emerging markets is largely ignored. The main reason is the limited data regarding private

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<sup>12</sup> The benefit of optimizing capital structure through listing is discussed by Scott (1976).

<sup>13</sup> Note that this result is inconsistent with the first formal theory of going public by Zingales (1995) and Mello and Parsons (1998) which argues that management refrain from going public to, protect against any potential takeover attempts and control acquirers.

<sup>14</sup> However, Chaplinsky et al. (2017) find no evidence that the relaxed disclosure requirements under the “Jumpstart Our Business Startups (JOBS) Act” has any effect on the direct costs of going public in United States. Similarly, Barth et al. (2017) and Agarwal et al., (2017) find that the reduction in mandated disclosure under the Act increases information uncertainty and underpricing for emerging growth companies.

companies and the difficulties associated with surveying CEOs in these countries. As emerging markets have varying legal and institutional environments, it is expected that the relative importance of the theoretical factors influencing the motivations of going public to differ across these locations (Degeorge and Maug, 2006; La Porta et al. 1998). Therefore, in this study we use our network of companies to collect a unique data set and to contribute in filling this gap by investigating the factors that affect listing decisions in Abu Dhabi securities exchange. We turn now to give some background information about Abu Dhabi Securities Exchange.

### **3. Abu Dhabi Securities Exchange**

The ADX is established on the 15<sup>th</sup> of November and it is located in Abu Dhabi, the capital city of the United Arab Emirates. The emirate of Abu Dhabi is a major global oil exporter and it depends heavily on oil to generate revenues. The income of the emirate is a major contributor to the whole of the UAE and it constitutes 60% of the whole country's GDP.

In Table 1, we present some indicators on the ADX and the macro economy of Abu Dhabi. As can be seen in the table, the contribution of oil and gas revenues to the GDP is substantial and it is around 50%. This reflects the high sensitivity of the Abu Dhabi economy and its stock market to global cycles, and oil price fluctuations. The table shows that there are only 68 listed companies with a total market capitalization of \$119 billion by December 2016. Similar to most emerging stock markets the shares of public companies that are available for investment are very limited and the market suffers from poor liquidity. This is characterized by the low trading volume and turnover ratios. For example, the value traded in 2016 is less than 0.676 billion of USD which is less than 0.2% of the emirate's GDP. The turnover ratio stands low at 0.56% of the market capitalization which is lowest even when compared to other emerging markets.<sup>15</sup> Furthermore, the ADX is highly concentrated in terms of market capitalization and trading volume. For instance, the capitalization of

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<sup>15</sup> See Global Financial Development Database, World Bank.

the largest five listed firms account for 55 percent of the total market. Similarly, 66.6 percent of the trading volume of the ADX can be attributed to transacted shares of only 5 of the listed firms.

The ADX is a segmented market with significant restrictions on capital mobility and foreign ownership compared to other stock markets in either developed markets or even emerging economies. The disclosure of listed companies in the market suffers occasionally from the lack of common requirements of accounting standards, the lack of transparency and reliability in terms of information. There are also inherent structural weaknesses in the market that include among other things, large institutional holdings, limited number of listed companies across sectors which inhibits diversification, deficient corporate governance and disclosure standards, and the continuing weaknesses in banks' supervision and regulations.

**[INSERT TABLE 1 HERE]**

#### **4. Hypothesis development**

Based on literature we formulate four hypotheses that are likely to answer our research question on why eligible companies refrain from listing in the ADX market. These conjectures are related to four theoretical arguments: (1) Knowledge about the benefits of going public, (2) Valuation and signaling, (3) Disclosure requirements and costs, and (4) Ownership and control.

##### ***4.1. Knowledge about the benefits of going public***

There exists a well-developed theory that discusses the benefits that underline the decision to go public.<sup>16</sup> These benefits are many and include among others the following: releasing borrowing

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<sup>16</sup> An overview of these theories can be found in Pagano et al. (1998).

constraints, diversification, liquidity, stock market monitoring, enlarged set of potential investors, efficient merger and acquisition strategy, enhanced company image, publicity, increased bargaining power with the banks, exploiting mispricing to create value, transferring control, and finally attracting foreign capital.<sup>17</sup> Moreover, IPOs generate cash that can be used in acquiring other companies (Brau et al., 2003, 2012). Hence, we can argue that knowledge about the benefits of going public by managers and owners may influence their attitudes toward taking their companies public.

Based on the foregoing discussion, we develop our first hypothesis by stating that:

**H1:** *CEOs who are knowledgeable about the benefits of going public are more likely to go public by enlisting on the stock market.*

However, to realize these benefits, managers and owners must understand the costs of going public. There are direct costs such as the money spent on registration of the issue and the fees charged to the listing firm by the underwriting bank. In addition to these, there are other costs that influence the firm indirectly such as the cost of preparing the information that must be disclosed by listed companies per market regulations. In addition, there are the fees paid to auditors, the publication cost of disclosures, the expenses of establishing investor relation department, the cost of the accounting oversight committees in the board of directors, and other compliance costs that the firm pays in order to meet the regulatory and the corporate governance standards of listing (Booth, 2007; and Djama et al. 2015).

#### **4.2. Valuation and signaling**

Listing in the market allows price discovery and provides a great opportunity for owners and managers to get an independent valuation of their equities (Röell, 1996; Welch, 1989, 2000; Bommel, 2002; Subrahmanyam and Titman, 1999; and Chemmanur and Fulghieri, 1999). It also

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<sup>17</sup> See also Ritter and Welch (2002) and Bradley et al. (2003).

allows for the incorporation of all available information in shares valuation, thereby making it more precise and efficient. Moreover, listing signals a good quality company that has no fears from being closely scrutinized and analyzed by outsider analysts and investors (Stoughton et al. 2001).

However, in small segmented and illiquid capital markets, equity supply tends to be inelastic and shares are likely to be undervalued for a long period particularly when demand is poor (Saudagaran, 1988). This chronic undervaluation of shares discourages companies from going public even when they over perform their competitors (Mehran and Peristiani, 2010).

If companies are still able to finance their strategic investments with internal cash flows, then the incentives to go public declines due to its relatively high costs. The market segmentation, the poor liquidity and the market undervaluation enforces this direction.

Thus, in the second hypothesis we state:

**H2:** *CEOs who perceive that the stock market is inefficient and illiquid and does not value their shares properly will be less likely to take their companies public by enlisting on the stock market.*

#### **4.3. Disclosure requirements and costs**

The problem of undervaluation is not the only cost associated with going public. There are other direct costs of going public such as underwriting fees, registration, filing fees and the cost of preparing audited statements. Booth (2007) argues that both registration and ongoing administrative costs are real inhibitors and that most companies cannot afford to go public unless they grow to a certain size and stage of development.

The high disclosure requirement of company information due to listing and public trading of its shares in the market are expected to increase its reputation and credibility. This in turn reflects positively on the relationship of the company with its investors, creditors, and customers (Yosha, 1995; Subrahmanyam and Titman, 1999). However, this is not a free lunch as the firm has to disclose sensitive information that is valuable to its competitors. This is particularly more relevant to



industries that are undergoing rapid technological changes or facing intense competition (Spiegel and Tookes, 2008). Therefore, the decision to go public may also depend on the characteristics of the company and its competitive position in the market.

The listing and the corporate governance requirements by the market may also obstruct the company from going public. To be traded in the stock market, the company should meet minimum criteria that relates to the size of its assets, net assets, profitability and the float. The listing requirements are usually restrictive and companies may not be able to meet and go public.<sup>18</sup>

Once listed, poor performance may violate listing requirements and the company may be forced to delist. This is accompanied with value destruction and disruption of firm productive activity (Harris et al., 2008). The forced delisting is also regarded as a sanction for managers for their weak performance and their failure to meet the market requirements (Djama et al. 2015).

Based on the above short discussion, we put a third hypothesis that reads as:

***H3:** CEOs who perceive that the information disclosure and that the listing requirements are excessive and costly are less likely to take their companies public by enlisting in the stock market.*

#### **4.4. Ownership and control**

An obvious cost of going public is the loss of owners' control over the firm (Roell, 1996). Ownership in public firms is less concentrated and the owners are more dispersed. Moreover, the managers of public companies usually own relatively less compared to their counterparts in private firms. Hence, their interests are less aligned with shareholders' and they are more likely to deviate from the value maximization principles to achieve personal and own career objectives (Jensen and Meckling, 1976).

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<sup>18</sup> Takahashi and Yamada (2015) inferred from a large sample of public and private firms in Japan over 30-year period and find that relaxed listing requirements encourages growing firms to go public.

Similarly, when the company goes public by floating a large proportion of its shares, the managers become exposed to the risk of falling victims to potential unfriendly takeover offences by other investors (Zingales, 1995).

In family businesses, control provides non-pecuniary private benefits for the owner-manager family (Zingales, 1995; Bebchuk, 1999; and Burkart et al. 2003). For instance, there are owners who are pleased when the new generation succeeds to take control and runs business, which normally bears the family name. Moreover, controlling families may have reputational benefits related to their business. For these advantages, managers and/or owners may refrain from offering shares to other parties who may eventually become part owners of the firm. In order to preserve these benefits management may prefer to keep the company private.

As a consequence of the previous discussion, we build the fourth and the final hypothesis by stating that:

**H4:** *CEOs who perceive that they may lose their ownership, control rights, and their companies will be potential targets for hostile takeovers are less likely to go public by enlisting their shares in the stock market.*

## **5. Research Methodology**

### **5.1. Sample Survey and Questionnaire**

The data for the study contains the responses of a sample of CFOs (their deputies) of large and medium companies operating in Abu Dhabi to a survey questionnaire. In setting up the questions we build up on the earlier works of Acquaah (2015) but we modified it to suit our purpose and to adapt to the local environment. The questionnaire consists of two groups of questions. The first group is dedicated to the collection of companies' characteristics and other demographic information. The second group contains 40 questions that are designed to assess the relative importance of the factors in influencing the managerial attitudes towards listing.

To validate the items measuring the different constructs, the questionnaire is sent out to be reviewed by three finance academics and five executives that are working in the domestic finance

industry. Their comments and suggestions to improve the survey are then incorporated and used to develop the final version of the questionnaire. In the questionnaire we use 5 points to measure the intensity of the responses of the CEO to the importance of a particular factor. The ordinal scale ranges from strongly disagree (1) to strongly agree (5). There is an option to choose “Don’t know”, if the respondent is not sure about the answer.

In the study we aim to compare the decisions of listed companies with unlisted firms that are eligible to list but choose to remain private. Therefore, our sample of companies is selected such that their size meets the minimum required for listing by the ADX which is AED 20 million.<sup>19</sup> The sample of companies contains large and medium-sized private and public companies. The population frame of companies operating in the Emirates of Abu Dhabi is identified by using the database of Abu Dhabi Online Commercial Directory (ADOCD).<sup>20</sup> From the total dataset we include all the 471 non-financial companies that meet the size criteria.<sup>21</sup>

The CEOs (or deputies) names and the company addresses are then taken from either the ADOCD or from the companies’ web sites. They are subsequently visited by the one of the authors or the research assistants.<sup>22</sup> The main purpose of the visit is to give them the questionnaire and to agree with them on a date to collect their complete responses.<sup>23</sup> In meeting with the CEOs, we ensure the confidentiality of the given information and we clarify that we report only non-revealing averages. We also promise to provide a summary of our findings upon request. The hope is to improve the response rate and to encourage the CEOs to provide reliable and accurate information. The data and responses are collected during the period from August to December 2016.

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<sup>19</sup> The Emirati Dirham (AED) is the currency of the United Arab Emirates and it has a fixed exchange rate against the dollar: 1\$ = 3.6725 AED.

<sup>20</sup> The Abu Dhabi Online Commercial Directory web is <http://www.abudhabichamber.ae/English/Pages/Default.aspx>.

<sup>21</sup> The factors that influence the decision to list in financial firms are different. These firms are different in their operations, regulations and ownership structure and hence, they are excluded from the sample. See Rosen et al. (2005) for more details on the appropriateness of removing banks and insurance companies from the sample.

<sup>22</sup> We employed twelve research assistants to distribute and collect the responses of the CEOs.

<sup>23</sup> Note that the sample companies are located in two cities: Abu Dhabi and Al Ain.

Following multiple visits to companies we managed to collect 152 responses, but 7 of them are omitted from analysis due to missing data. This has left us with a total of 145 useful questionnaires that are ready for analysis out of the 471 non-financial firms in the sample with an overall response rate of around 30.1%.<sup>24</sup> Our response rate is comparable to the response rate of 33% achieved by Steffen and Zanini, (2012) and it is below the response rate of 55% that is got by Acquaah (2015). However, we are superior when compared with most of similar studies.<sup>25</sup> The short questionnaire which requires only 10-20 minutes to complete and our perseverance in visiting the company multiple of times has contributed to the rate we achieve in this study.

Table 2 provides a general description of the demographics of the sample. As can be seen in the table the vast majority of the companies (71.7%) in the sample are private and only one third (28.3%) of the sample companies are listed in the ADX. Within the private company group, around two third of companies (64%, 44.8% of total) are not willing to list and only one third is (36%, 26.2% of all) are willing to go public over the next 3 years.

The table also shows that most companies in the sample are mature. Around three quarters of the sample companies (75.2%) has been in operation for twenty years or more and only one quarter (24.8%) is young and established in the last ten years. The sample's greatest concentration is in the industry sector with 50.3% of the sampled companies, while the smallest presence of the sample lies in the health care sector with only 2.8% of the companies.

Almost half of the companies in the sample are very large (44.8%) with total assets of AED 501 million or more. The small firms (of total assets of AED 50 million or less) in the sample are not many and they constitute only 14.5% of the sample size. In terms of the number of employees most

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<sup>24</sup> According to Gorsuch (1983) and Kline (1979, p. 40), a sample of more than 100 yields good quality results. Hair et al. (2010) also suggest that for regression type analysis, the sample size should fall between five and ten times the number of independent variables. Given the number of variables in this study, which is eight (8), would suggest a sample size of 80. Furthermore, Sekaran, (2016) shows that a response rate of 30% is acceptable for surveys.

<sup>25</sup> For instance, it is 9% response rate out of the 392 CEOs in Graham and Harvey (2001), 5% out of the 313 CEOs in Brounen et al. (2004), 18.8% out of the 336 CEOs in Brau, et al. (2006a.b), and finally 4.3% out of the 78 CEOs in Bancel et al., (2007).

firms employ 10 employees or more. A round 36.6% of firms' employ even more than 500 employees. The percentage of firms in the sample employing less than ten is tiny and it stands at 6.9%.

The study collates data on product-related innovativeness of the firm by asking whether the firm has introduced a new or significantly improved products or services in its respective market. Nearly 45.5% of the companies in the sample appear to have introduced new products and technologies in their related markets (see Table 2).

Finally, we collect information about CEO's perception of the competitive environment of their companies. The CEOs are asked to indicate the extent to which their market is competitive. The majority of companies' CEO responds by saying that their firms are operating in a highly competitive market environment (85.5%). Only small number of companies in the sample is functioning in markets with little competition (2.1%).

**[INSERT TABLE 2 HERE]**

## ***5.2. Analytical framework***

The study begins by conducting an exploratory factor analysis (EFA) in order simplify the 40 latent variables that represents the CEOs' responses in the survey questionnaire. This is important as it allows us to summarize the CEOs' answers on listing into a small number of usable factors and it aggregates questions that have common response patterns. In other words, the EFA brings together the constructs to which CEOs respond in a similar way into a manageable smaller number of factors that can be subsequently analyzed. Therefore, the EFA reduces the number of regression coefficients by combining correlated constructs into the same factor. This is important as it also reduces multicollinearity in the subsequent analysis.

Following this pre-processing stage, we analyze and test the hypothesis regarding listing by using a logistic regression model (LRM). The limited dependent variable is the probability of a

company is listed and/or willing to list its shares in the stock market and the independent variables are the factors underlying the decision to go public. The limited dependent value is measured as a dummy, with value 1 if either the company is listed or willing to list in the next three years, and 0 if it is not willing to list at all. The LRM is estimated by maximum likelihood and its goodness to fit the data is assessed traditionally by the likelihood ratio, the Pseudo R2, and by the Wald statistics.

### 5.2.1 Independent variables

To choose the number of factors we use the eigenvalue criterion.<sup>26</sup> Factors with eigenvalues greater than 1.0 are retained and the initial factors are submitted to varimax rotation with Kaiser Normalization. Subsequently, factor with loadings  $\geq |0.5|$  are kept in the analysis (See Hair et al. 2010) while all other factors with lower values are excluded from further interpretation. The factors' reliability is tested against the benchmark of 0.5 of a Cronbach Alpha threshold and it is granted a value of 0.7 (Churchill Jr. 1979).<sup>27</sup> The Kaiser-Meyer-Olkin measure of sampling adequacy should be greater than 0.5 (Kaiser, 1974).

The eigenvalues and the components that are obtained in the initial extraction of the factor analysis are shown in Table 3. The analysis of the variance of the eigenvalues indicates that the four factors generate 79.8% of the total variance. The first factor has a large eigenvalue (7.612) and it accounts for approximately 33.79% of the variations in the responses to items. This is compared to only 20.23% attributed for the second factor; and to less than 15.63% and 10.13% that are due to the third and fourth factors respectively. Therefore, the factor analysis can be used to summarize the 40 items in the questionnaire into these four factors without much loss of information.

**[INSERT TABLE 3 HERE]**

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<sup>26</sup>The eigenvalue criterion is also known Kaiser-Guttman criterion (Kaiser, 1960)

<sup>27</sup> The exploratory factor analysis (EFA) is conducted using the IBM® SPSS Statistical software.

The principle component analysis and varimax procedure have identified four dimensions that are underpinned by the 20 items. The results of the analysis are shown in Table 4.<sup>28</sup> The four dimensions are the following: the knowledge about the benefits of going public, valuation and signaling, disclosure requirements and costs, and finally ownership and control. Thus, we excluded 21 items from the final factor analysis because they do not increase the explained percentage of variance and their factor loading is less than 0.5. The value of Kaiser-Meyer-Olkin measure of sampling adequacy is a round 0.890 which is greater than 0.5 and hence the sample of factors suffices to describe the decision to list. Moreover, the Bartlett's test of sphericity is highly significant<sup>29</sup> and therefore factor analysis is appropriate. The Cronbach's Alpha is 0.839 for factor 1, 0.833 for factor 2, 0.725 for factor 3 and 0.784 for factor 4, and this indicates reliability and internal consistency of the items that underlie the factors.<sup>30</sup> The four factors with their remaining constructs are shown in Table 4.

For further analyses, a composite measure of each factor is generated by taking the average of the scores of individual constructs. Thus, if 5 items are loaded on one particular factor, the factor is calculated by summing the scores of the 5 items and then dividing the sum by 5. In what follows of the subsection we detail the constructs composing the factors.

***Factor 1- Knowledge about the benefits of going public*** is underpinned by 6 items that reflects CEOs' recognition of the importance of the stock market in corporate growth and economic development. The items related to this factor are included in the following CEOs' responses: (1) a stock exchange can provide companies with choices in financing their business activities; (2) if more companies participate in the activities of a stock exchange, individuals will be motivated to increase their investments and savings; (3) a listing on a stock exchange will create public shares

<sup>28</sup> Items with loading < 0.5 are removed from the analysis as mentioned previously.

<sup>29</sup> The chi-squared test value is  $X^2=1726.545$  and the p-value is  $P<0.000$

<sup>30</sup> As this reliability is greater than the accepted threshold of 0.7, the four factors have adequate internal consistency (see Hair et al. 2010).

(opportunities) for future mergers and acquisitions; (4) a listing on the stock exchange will allow companies' managers to be monitored by their owners/stockholders more efficiently; (5) a stock exchange can be a channel of capital inflow for domestic growth and development; and finally (6) listing on the ADX has a potential incremental impact on the company's growth and performance.

**Factor 2- Valuation and signaling** is constructed by 5 items that reflect the extent of the influence of listing on equity values. The items of this factor are included in the following responses: (1) the stock prices on the ADX accurately reflect the available information about the value and activities of companies; (2) the level of participation in the ADX by institutional investors is very low; (3) the stock prices of companies that are already listed in the ADX do not change very much; (4) the number of company shares that are bought and/or sold in the ADX is too small; and finally (5) The transparency rules in the ADX are very weak.

**Factor 3- Disclosure requirements and costs** has 6 items that focuses on disclosure standards, transparency, requirement and quality of financial reporting, and listing costs and administrative expenses in the ADX. The 6 items include the responses to the following points : (1) listing on the ADX involves a lot of accounting, legal and selling costs because of the extensive financial disclosure and independent audits of financial statements; (2) listing on the ADX requires the company to follow stringent legal rules regarding the reporting of business activities; failure to follow the rules could lead severe fines or delisting, (3) listing on the ADX exposes the company's business activities to its competitors because of the extensive disclosure requirements; (4) listing on the ADX exposes the company's business activities to its competitors because of the extensive disclosure requirements; (5) regulatory control and supervision that prevent the practices of withholding relevant information, misrepresenting information, forgery and fraud are weak in the ADX; and finally (6) listing costs and administrative expenses in the ADX are high.



**Factor 4: Ownership and control** is constructed by only 3 items that spot CEOs' fears of loss of ownership and control rights by going public. The items of this factor include the following the CEOs' responses to the following constructs: (1) listing on the ADX may threaten the control of the founders (big shareholders) in the management of the company; (2) Listing on the ADX will allow the company's managers to be controlled by their owners/stockholders; and (3) Listing on the ADX will make the company much more vulnerable to hostile takeovers.

[INSERT TABLE 4 HERE]

### 5.2.2 Control variables

The decision to go public can be related to other company related factors and thus these should be controlled for before any inference on listing is made. For instance, Brave et al. (2005) has found that younger companies' IPOs usually suffer from adverse selection problems and that this discourages them from going public.<sup>31</sup> Firms that are usually there for a long period of time have a relatively higher reputation and they suffer less from information asymmetry compared to younger companies (Diamond, 1989). Therefore, we hypothesize that the probability of going public is positively related to the age of the company.

Another factor that influences the decision to list is the size of the company. Several theories predict that larger firms are more likely to go public than smaller companies. Large firms are more transparent and they produce higher quality financial statements and hence they are less exposed to adverse selection and information asymmetry compared to small firms (Pettit and Singer, 1985; Chemmanur and Fulghier, 1995).

Moreover, the issuing costs incurred by large firms are less due to the big size of the issue and to economies of scale as most of issuing costs are fixed (Yosha, 1995; Pagano and Röell, 1998). The large size of the issue will trigger higher liquidity and higher trading volume in the company's stock

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<sup>31</sup> The implication of adverse selection is that the issue will be undervalued if it is offered to investors in the market.

and hence, the benefits of listing are greater for large companies compared to smaller firms (Pagano et al. 1998). Hence, we conjecture that the larger the firm, the more it is likely to list and we control for that.<sup>32</sup>

There is some theoretical literature on the relationship between the firm's product characteristics and its decision to list. For instance, Spiegel and Tookes (2007) predict that firms will privately finance innovative products that are great in generating revenues but will then go to the public markets to finance the remaining less innovative investments. Therefore, we expect that firms producing innovative products to be more likely to enlist their equities in the market.<sup>33</sup>

The literature on the influence of the market structure on the firm decision to list is considerable. Pagano et al. (1998) argue that the greater the firm's market share and the more it is operating in a less competitive environment the more likely the management is going to decide to list. However, they also argue that the high transparency of public companies reduces their competitive advantage and hence deters them from going public. Thus, we also expect firms with high market shares to be more willing to list and go public.

Hence, in light of the previous discussion we include four firm-specific control variables: the age of the firm, the size of the firm, its market shares and whether its products are innovative. The age is controlled for by using the log of the number of years since firm establishment. The company's size is controlled for by the log total assets and the log of the number of its employees. The paper uses a dummy variable that takes 1 if the company's product is innovative and 0 otherwise. Finally, the competitive environment is measured on a three-point scale taking (1) for "low competition", (2) for "moderate competition" and (3) for "high competition".

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<sup>32</sup> Supporting arguments are provided by Chemmanur and Fulghieri (1999) and Chemmanur et al. (2010) who find that large firm that have access to private financing and firms with high sales growth are more likely to list. They also find that capital intensive firms with riskier cash flows are more likely to go public.

<sup>33</sup> Note that public markets with diversified investors do finance innovative products with uncertain market acceptance and hence uncertain cash flows (Allen and Gale, 1999). This is supported empirically by the work of Acharya and Xu (2017).

Finally, we control for the industry in which the firm is operating by using a dummy variable that takes on values of 1 if the company is in the industry sector and 0 otherwise. In the following section we turn to discuss the empirical results.

## 6. Results and discussion

### 6.1. Univariate analysis

Table 6 presents the difference in means test results of the factors in the two groups: the first group contains companies that are listed or willing to list and the second group consists of companies that are not willing to list.<sup>34</sup> The table shows that the knowledge about the benefits of going public in the CEOs responses of listed companies is significantly larger than in the responses of the second group and this result supports H1. However, the finding is only significant at the 10% level. The result on the difference in the valuation and signaling factor is much stronger. The CEOs of listed companies think that the market is more accurate in valuing the company's equity compared to the second group. The means are 3.72 and 3.02 in the first and the second group respectively. The difference in means between the two groups shows larger magnitude and a much greater significance at the 0.1% level. Thus, we may conclude safely that the CEOs who perceive that the ADX is inefficient and illiquid and that their shares will be undervalued are more likely to stay private as expected by H2.

Table 6 also shows that listed companies do not agree as much as unlisted that the information disclosure and listing requirements in ADX are excessive and costly. The mean in the two groups is 3.26 and 3.68 in listed and unlisted groups respectively. The difference in means is significant at 5% level and therefore the initial testing is also supporting the third hypothesis H3. Similarly, the descriptive evidence also supports the fourth hypotheses H4 as listed companies give lower score on

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<sup>34</sup> Table 5 is provided to show the distributional properties of the variables. It contains the mean, the standard deviation, the minimum and the maximum of both the factors and the control variables that are used in the multivariate analysis.

the loss of ownership and control factor. The mean achieved by the listed group is 3.35 while the mean recorded for the second group is 3.81. The test  $p$  value shows that the difference is statistically significant at the 5% level.

Moreover, Table 6 shows that the difference between the means of the two groups is significant in every control variable we included in the analysis. As can be seen in the table the listed group of companies is significantly older, larger and operates in a less competitive environment than the unlisted matched group. The table also shows that companies that belong to an industry are more likely to list than non-industry companies. The two groups have not shown any difference in the innovativeness of their products and the null hypothesis that listed companies are equally innovative as unlisted firms is not rejected at the conventional significance levels.

**[INSERT TABLE 5 HERE]**  
**[INSERT TABLE 6 HERE]**

Table 7 presents the Pearson correlation matrix of the variables that are used in the analysis. The correlations support to the evidence suggested in the previous descriptive statistics. The dummy variable that represents the likelihood of going public is significantly correlated with all of the factors. As expected it is positively correlated with the knowledge about the benefits of going public (0.244). Moreover, it is negatively correlated with biased valuation and signaling (-0.289). It is also negatively correlated with the disclosure requirements and the cost argument (-0.418). Finally, it is negatively correlated with the ownership and control conjecture (-0.568).

The same applies to the correlation with most of the control variables. The association with age, sector, and size are all statistically significant at the 5% level. Note also that most correlations among the factors are reasonably low and hence multicollinearity is unlikely to influence our regression

estimates.<sup>35</sup> Next, we turn to the multivariate analysis to check whether these univariate correlations continue to hold.

[INSERT TABLE 7 HERE]

## 6.2. *Multivariate analysis*

As mentioned previously, we use a multivariate logistic regression to measure the influence of the factors on the likelihood of the decision to list.<sup>36</sup> The limited dependent variable is the dummy that takes 1 for all companies that are either listed or willing to list and 0 otherwise. The parameters of the model are estimated by bootstrapping the data set which allows measurement without making any distributional assumption. It also increases the power of the tests as it makes it possible to avoid issues of overfitting especially when the ratio of the number of observations to the number of parameters is relatively small.<sup>37</sup>

Table 8 reports the estimation results. In column 2 we report the expected influence of the factors given theory. Column 3 reports the estimates when the control variables are excluded from the model (model 1). In column 4 we re-estimate the model with all control variables (model 2). Finally, in column 5 we re-estimate with the number of employees as a size proxy (model 3).

As can be seen in all of the three models in the columns, there is positive and significant impact of the knowledge about the benefits of going public factor on the managers' probability of taking their companies to public trading. This empirical finding supports Hypothesis 1, which states that top managers and/ or owner who recognize the benefits of going public and how the stock market works will be more likely to enlist their companies on the stock market.<sup>38</sup>

The three regressions in the columns also show that there is a negative and significant relationship between the valuation and signaling factor and the chance of the going public decision

<sup>35</sup> As expected the correlation between the two proxies of firm size is high around 0.77. Hence, we choose only one of them to include in the same regression model.

<sup>36</sup> We estimated the multivariate logistic regression using Stata 15 Statistical software.

<sup>37</sup> Estimates are generated using 1000 replications.

<sup>38</sup> This result conforms well to the findings of Marchisio and Ravasi (2001), Brau, et al. (2006a, b) and Acquah (2015).

which supports Hypothesis 2. The CEOs who perceive that ADX is inefficient, illiquid and undervalue shares are less likely to take their companies public. This result is inconsistent with Acquah (2015), who finds that market efficiency has no effect on the choice to list Ghanaian firms. However, it is highly consistent with the argument that companies listed in a small segregated and illiquid equity market tend to be undervalued therefore companies prefer to stay private under these circumstances.

Like most emerging markets and other equity markets in the MENA region, the ADX market suffers from low levels of trading volume, infrequent and irregular trading, lack of transparent information and most importantly lack of liquidity. The inefficient execution, clearing, settlement and confirmation of trades contribute to the already poor liquidity of the market with serious consequences on its efficiency. These market characteristics have been documented by several empirical studies such as Bley (2011), Jamaani and Roca (2015), Charfeddine and Ben Khediri (2016) among many others.

The columns in the table shows that unlike the influence of the previous two factors which is significant, the impact of the disclosure requirements and the costs factor on the corporate decision is negligible and can be ignored. Specifically, the disclosure requirements and costs factor has a negative but insignificant impact on the probability to list. This suggests that companies think that disclosure requirements, costs of listing such as accounting, underwriting, legal fees, and costs of meeting the regulations of listing are not burdensome as suggested by the literature including the findings of Acquah (2015) on Ghanaian firms.

**[INSERT TABLE 8 HERE]**

The relationship between ownership and control and the probability of going public is negative and significant in all models. The managers/owners of businesses are reluctant to list in order not to share parts of their business with outsiders and they fear the loss of ownership and control rights.

This is not surprising as the corporate sector in Abu Dhabi is either state owned or dominated by influential families with economic and political reputation.<sup>39</sup> The result here is in line with the findings obtained by Pagano et al. (1998), Brau, et al. (2006a,b) and Acquaah (2015). It also conforms to the theoretical arguments that are highlighted by Zingales (1995), Bebchuk (1999) and Burkart et al. (2003) who show that control provides a non-pecuniary private benefits for the owner-manager in family businesses.<sup>40</sup>

Regarding the influence of other control variables, we find significant and positive relationship between the age of the firm and their decision to list on a stock exchange. Firm age is an indicator of good reputation, which reduces information asymmetry and helps the firm to get access to equity capital funds.<sup>41</sup> Similarly, we find a positive and significant association between firm size (using either proxy) and the probability of going public. Larger firms do not suffer from information asymmetry, they are less exposed to adverse selections bias, they incur less administration cost, and they enjoy more liquidity for their listed shares. Therefore, they are more likely to reap the benefits of going public and hence they tend to enlist in the stock market.

The influence of competition on the corporate decision to list is negative and significant suggesting that firms operating in more competitive industries are less likely to enlist. The result is consistent with Pagano et al. (1998) who argue that the higher the transparency of public companies the less is their competitive advantage and that this deters them from going public.

Finally, we do not find any significant effect of either the product-related innovativeness or the firm sector on the probability of listing. These two firm specific characteristics do not appear to have a predictive power over the decision of the managers/owner to take their firms public.

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<sup>39</sup> In Emirate of Abu Dhabi most of large corporations that are not listed are owned by Abu Dhabi Investment Authority which is a public entity.

<sup>40</sup> The owner-manager gains pleasure when the new generation takes control and runs the business He gains also reputational benefits related to the business in both the economic and political arenas.

<sup>41</sup> This is consistent with Boehmer and Ljungqvist (2004), Brau, et al. (2006a, b), and Acquaah (2015).

The overall results we obtain in all specifications are the same. However, adding the control variables enhance the fit of the models with increases in the value of Log likelihood, the Cox & Snell  $R^2$  and the Nagelkerke  $R^2$ . The first model which uses the factors only has Nagelkerke  $R^2$  of 35.5% which increases to 54.0% and to 49.4% when control variables are added in the second and the third models respectively.<sup>42</sup> The HL statistics which is the Hosmer-Lemeshow test of misspecification is statistically insignificant for all models and hence we may conclude that all the logistic models are adequately specified. The HL statistics shows that the in sample predictions is most accurate when Model 2 is used to forecast the probability of listing in the ADX.<sup>43</sup>

Table 9 shows the classification accuracy of the firms in the sample that is generated by each of the three models. We compare the firms' actual listing status with the probability of being listed that is fitted by the three specifications. The cut-off probability that is used to classify firms into a particular group is 0.50. In particular, a firm is classified into a listed group if the model's generated probability is greater than 0.5 and to a non-listed group if it is less than 0.5. As can be seen in the table, the models are doing very well and they are able to predict around 73.8%, 84.1% and 80.2% of the in-sample companies' listing status in the three models respectively.

Therefore, we may conclude by saying that all models appear to be useful for predicting the probability of going public and that the predictions of model 2 are the most accurate. Compared to model one, model two is 14.5% more accurate in predicting the listing outcome and 7.8% more accurate in forecasting decisions of firms to stay or to go private. Similar pattern is observed with model three.

**[INSERT TABLE 9 HERE]**

### **6.3. Additional tests**

<sup>42</sup>As a rule of thumb, if Nagelkerke  $R^2$  is higher than 0.2 then the fit of the model is acceptable. If it is larger than 0.4 then it is good. Finally, if it is greater than 0.5 then the fit is very good (see for example Erichson et al. 2006).

<sup>43</sup> Note that in sample predictions are more accurate when the  $\chi^2$  statistics of the HL test is small or the  $p$ -value is high. For instance, given our sample, the  $p$  value is less than 5% when the  $\chi^2$  statistics is less than 15 and hence, the model is adequate at conventional levels when the test statistics is less than 15.



The regression used for inference from imposes a logistic regression model between the probability to list and other control variables. This is restrictive as other models may be more suitable given the data set. These models may also produce different results. To see whether our findings stand under another data generating process, we estimate an artificial neural network model (ANN hereinafter) and use it to predict the probability of listing in the ADX.<sup>44</sup> The ANN model is a non-parametric artificial intelligence model that requires no prior assumptions regarding the structure of the relationship or the distribution of the underlying data and in that sense it is more flexible (Salchenberger et al. 1992; Wu et al. 2006). These models allow the data to identify an appropriate function between the factors and the probability to list (Goss and Ramchandani, 1995). In this paper, we use a multilayer perceptron (MLP) as our optimization algorithm which is subsequently used to classify the firms in the sample.<sup>45</sup>

The classification results of the firms according to the model are presented in Table 10. As can be seen in the table, the model obtains similar classification accuracy to the logistic regression model. The three sets of independent variables accurately classify about 72.1%, 86.9%, and 82.5% of the firms respectively. Thus, we conclude that both models are equal in predicting the decision of going public in the ADX.

Figure 1 plots the receiver operating characteristics curve (ROC) that is based on the neural network. These curves may be used to evaluate the predictive accuracy of using the three sets of variables to predict the decision to go public. The highest value of the area is under the curve of model 2 which indicates one more time that model 2 is superior to other models in predicting the listing decision of firms in Abu Dhabi.<sup>46</sup>

**[INSERT TABLE 10 HERE]**  
**[INSERT FIGURE 1 HERE]**

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<sup>44</sup> Note that neural networks have become widely used in the bankruptcy prediction literature.

<sup>45</sup> The multi-layer perceptron (MLP) neural network model is conducted using the IBM® SPSS Statistical software.

<sup>46</sup> The area under the ROC is a measure of the predictive accuracy of the model, with a value of 1 representing a perfect classification model.

In order to get better insights into the importance of each variable in predicting the probability of going public, we perform sensitivity analysis using model 2 which is the best model in our set. Table 11 and Figure 2 display the importance and normalized importance of each variable. The table shows that the firm specific characteristics, such as age, size and its competitive environment are most important in influencing the probability of listing in Abu Dubai. Furthermore, lack of knowledge about the benefits of listing, inefficiently and illiquidity of the ADX and fears to lose ownership and control of the firm are also important factors that may deter managers/owners from taking their company public.

Finally, we find that disclosure requirements, direct costs of listing, the industry in which the firm is operating and the product-related innovation to all have a minor role and a weak influence on the corporate decision of going public. These findings are broadly consistent with the previous results obtained from the logistic regression models. However, neural networks provide further evidence on the relative importance of the factors that influence firms to enlist in the Abu Dhabi stock exchange.

**[INSERT TABLE 11 HERE]**  
**[INSERT FIGURE 2 HERE]**

## **7. Conclusion**

This study represents a first attempt to identify the reasons behind corporate decisions to list or not to list in the ADX. This is important as many companies in Abu Dhabi have decided to stay private and hence it is crucial to understand the reasons that underline their decisions. In this paper we address the factors that motivate/discourage companies to list their stocks in the ADX. To get to the answer we survey a sample of 145 CEOs of public and private large and medium-sized companies operating in Abu Dhabi.

The findings of our research show that managers refrain from listing in the ADX as they fear to lose ownership and control rights. Moreover, the inefficiency and the poor liquidity of the ADX are

playing an important role in discouraging managers from going public. Managers think that the ADX tends to undervalue equities. The other factors are considered to be important but to a lower extent. For instance, the lack of knowledge about the benefits of going public discourages firms from going public.

In addition, we find that firm specific variables are relatively important in shaping the corporate decision to list. Larger and older firms are more likely to enlist compared to smaller and younger firms. Moreover, firms that are operating in competitive industry fear to disclose information and therefore they are less likely to go public.

There are several policy implications for the government to draw from these results. First, in order to encourage listings, the Abu Dhabi Securities and Commodities Authority should allow companies to issue unequal voting rights shares<sup>47</sup> and that permits owners and managers to retain control. Second, the Abu Dhabi Securities and Commodities Authority should provide an extensive education programs to managers and/or owners on the benefits and advantages of listing in the ADX. This is expected to have an impact on the number of companies going public. This can be carried out by launching a website that provides education and support services and that improves managers' and/or owners' knowledge about the benefits of stock markets.

Third, the Abu Dhabi Centre of Corporate Governance should introduce a series of initiatives that aim at improving corporate governance; strengthen information dissemination, and transparency of listed companies. The aim is to reduce information asymmetry and to provide investors with confidence to make informed decisions, thus enhancing market efficiency and liquidity.

The authority may also enhance liquidity by appointing market makers. Market makers can play several important roles in the stock market. They increase information flow, maintain price continuity, ensure an orderly market, thereby enhancing market liquidity and efficiency. It may also

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<sup>47</sup> Shares such dual-class of shares, priority shares, voting right ceilings shares, non-voting shares, or depository certificates are all examples of unequal voting rights shares.

allow short selling in order to improve market efficiency. Implementation of short-selling can contribute to market liquidity, efficiency and support the price discovery process.<sup>48</sup>

Introducing electronic trading platforms speeds up execution and reduces trading costs. It also encourages investors to trade more frequently and it improves trading volumes and liquidity.

In a later stage and once the market gains acceptance, efficiency, and liquidity; the Abu Dhabi Securities and Commodities Authority may allow for derivatives trading. This will enhance the attractiveness of the market for existing investors and may potentially attract new entrants. The derivative instruments create opportunities for investors to hedge risk and help in price discovery and hence it may promote market trading and efficiency.

The credibility of these results is only conditional on the sample, and on the quality of information provided by top managers/owners of the firms. To enhance the robustness of our findings and analysis, future research should therefore be repeated using the same survey in the next 2-5 years.

Finally, it would have been very useful to know the likelihood with which the non-listed group of companies are going to list in the next five years. This can be obtained easily by asking the CEO's directly in the questionnaire about their plans to list in the coming years. The information could have been important as it would have enabled us to separate the non-listed firms' sample into two sub-samples: firms planning to list in five years and firms that are not planning to list. The difference in the responses of both sub samples could have been tested statistically to obtain the managerial factors that are most decisive in the consideration of the going public decision. Alternatively, we could have asked the managers directly to tick the most important factor that they consider when they decide to go public.<sup>49</sup> We leave this for future research.

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<sup>48</sup> Note that this is not crucial as managers think that shares are undervalued. Short selling may eliminate market inefficiency by correcting the price of overvalued shares.

<sup>49</sup> This point never crossed our minds and it has been brought to our attention thankfully by one of the referees.

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**Table 1: Macroeconomic and ADX characteristics in the year 2016**

***Stock markets indicators***

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Number of listed companies	68
Market capitalization (US\$ bn)	120.487
Market cap./GDP (%)	46.34

Trading Volume(US\$ bn)	0.676
Turnover ratio	0.56
P/E ratio	10.78

**Macroeconomic indicators**

GDP (US\$ bn)	261.0
GDP per capita at current prices (US\$ thousand)	76.185
Oil and gas revenue/GDP (%)	50.9
Gross fixed capital formation (US\$ bn)	48.223

Sources: Data were obtained from multiple sources including the Arab Monetary Fund, Statistics Centre - Abu Dhabi.

**Table 2: Sample description**

		Frequency (N)	Percentage (%)	
Group (Status)	Listed on the ADX	41	28.3	
	Willing to list on the ADX over the next 3 years	38	26.2	
	Not willing to list on ADX	66	45.5	
Age	1 to less than 10 years	36	24.8	
	10 to less than 15 years	30	20.7	
	15 to less than 20 years	23	15.9	
	>20 years	56	38.6	
Main activity (Sector)	Industry	73	50.3	
	Utilities	27	18.6	
	Wholesale	4	2.8	
	Real state	20	13.8	
	Oil & Gas	6	4.1	
	Health Care	4	2.8	
	Technology	11	7.6	
Size	<i>Total asset</i>	≤ AED 50 m	21	14.5
		AED 51 m – AED 100 m	22	15.2
		AED 101 m- AED200 m	23	15.9
		AED 201m- AED500 m	14	9.7
		>AED 501 m	65	44.8
	<i>Number of employees</i>	1-10 employees	10	6.9
		11-99 employees	37	25.5
		100-250 employees	31	21.4
		251-500 employees	14	9.7
		> 500 employees	53	36.6
	Product-related innovativeness	Yes	66	45.5
No		79	54.5	
Competitive environment	Highly competitive	124	85.5	
	Moderate competitive	18	12.4	
	Low competitive	3	2.1	

**Table 3: Eigenvalues and variance explained**

Component	Total	Initial Eigenvalues	
		% of Variance	Cumulative %

1	7.612	33.786	33.786
2	3.273	20.227	54.013
3	1.803	15.633	69.646
4	1.342	10.131	79.777

**Table 4: The factor loading results of the items of independent variables**

<i>Factor/items</i>	<i>Factor loading</i>
<b>Factor 1: Knowledge about the benefits of going public (KBGP) - (<math>\alpha = 0.839</math>)</b>	
A stock exchange can provide companies with choices in financing their business activities.	0.775
If more companies participate in the activities of a stock exchange, individuals will be motivated to increase their investments and savings.	0.699
A listing on a stock exchange will create public shares (opportunities) for future mergers and acquisitions.	0.695
A listing on the stock exchange will allow companies' managers to be monitored by their owners/stockholders more efficiently	0.516
A stock exchange can be a channel of capital inflow for domestic growth and development.	0.515
Listing on the ADX has a potential incremental impact on the company's growth and performance.	0.596
<b>Factor 2: Valuation and signaling (VS)- (<math>\alpha = 0.833</math>)</b>	
The stock prices on the ADX do not accurately reflect the available information about the value and activities of companies	0.737
The level of participation in the ADX by institutional investors is very low.	0.696
The stock prices of companies that are already listed on the ADX do not change very much.	0.713
The number of company shares that are bought and/or sold in the ADX is too small.	0.737
The transparency rules in the ADX are very weak.	0.587
<b>Factor 3: Disclosure requirements and costs (DRC)- (<math>\alpha=0.725</math>)</b>	
Listing on the ADX involves a lot of accounting, legal and selling costs because of the extensive financial disclosure and independent audits of financial statements.	0.765
Listing on the ADX requires the company to follow stringent legal rules regarding the reporting of business activities; failure to follow the rules could lead to severe fines or delisting.	0.605
Listing on the ADX exposes the company's business activities to its competitors because of the extensive disclosure requirements.	0.784
Listing on the ADX exposes the company's business activities to its competitors because of the extensive disclosure requirements.	0.696
Regulatory control and supervision that prevent the practices of withholding relevant information, misrepresenting information, forgery and fraud are weak in the ADX.	0.735
Listing costs and administrative expenses in the ADX are high.	0.639
<b>Factor 4: Ownership and control (OC) - (<math>\alpha = 0.784</math>)</b>	
Listing on the ADX may threaten the control of the founders (big shareholders) in the management of the company.	0.775
Listing on the ADX will allow the company's managers to be controlled by their owners/stockholders.	0.622
Listing on the ADX will make the company much more vulnerable to hostile takeovers.	0.600
<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</b>	0.890
<b>Bartlett's Test of Sphericity (Approx. Chi-Square)</b>	1726.545***
<b>(P-value)</b>	(0.000)

Note: Extraction Method: Principal Component Analysis. Only factor loading  $\geq 0.5$  are shown. *P*-values for testing the null Bartlett's Test of Sphericity is reported between parentheses. Two-tailed test of significance: \*\*\* $P \leq 0.001$ .

**Table 5: Descriptive statistics of independent variables**

	Mean	Std. Deviation	Minimum	Maximum
Factor 1: Knowledge about the benefits of going public	3.908	0.534	1.250	4.916
Factor 2: Valuation and signaling	3.263	0.697	1.285	4.714
Factor 3: Disclosure requirements and costs	3.677	0.423	2.666	4.666
Factor 4: Ownership and control	3.712	0.565	2.285	4.857
Age	1.179	0.230	0.698	1.518
Sector	0.641	0.908	0	1
Asset	2.317	0.690	1.301	5.001
Employee	2.282	0.650	1.398	4.301
Competitive environment	2.834	0.425	1	3
Product-related innovativeness	0.806	0.396	0	1
Total number of companies	145			

Note: This table presents descriptive statistics for all sample companies. Age is the natural logarithm of time in years since incorporation. Sector takes the value 1 if a company belongs to the industrial sector and 0 otherwise. Asset is the natural logarithm of company's total asset. Employee is the natural logarithm of the company's number of employees. Competition is 1 if a company is operating in low competitive environment, 2 if in moderate competitive environment, and 3 if in highly competitive environment. Product-related innovativeness is 1 if the company produces innovative products and 0 otherwise. Knowledge about the benefits of going public, valuation and signaling, disclosure requirements and costs ownership and control are the potential factors derived from the factor analysis and measured using a 5-point Likert type scale that ranges from 1-5.

**Table 6: Independent variables test of the two groups using bootstrap T-test for equality of means**

Variable	Mean (listed)	Mean (Non-listed)	T-value	P-value
Factor 1: Knowledge about the benefits of going public	3.79	3.44	1.489*	(0.076)
Factor 2: Valuation and signaling	3.02	3.72	-3.526***	(0.001)
Factor 3: Disclosure requirements and costs	3.26	3.68	-2.091**	(0.043)
Factor 3: Ownership and control	3.35	3.81	-1.826**	(0.046)
Age	1.83	1.09	3.693***	(0.000)
Sector	0.78	0.43	1.951**	(0.048)
Asset	3.52	1.99	7.531***	(0.000)
Employee	3.48	1.97	5.945***	(0.000)
Competitive environment	2.82	2.86	-1.508*	(0.061)
Product-related innovativeness	0.78	0.86	1.214	(0.227)
Total number of companies	79	66		

Note: This table presents univariate tests on differences between listed and non-listed companies. Independent variables are as defined earlier. Bootstrap results are based on 1000 bootstrap samples. P-values for testing the null hypothesis that the difference between the two groups equals to zero are reported between parentheses. Two-tailed test of significance:

\*\*\*  $P \leq 0.001$

\*\*  $P \leq 0.05$

\*  $P \leq 0.1$

Table 7: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	
1 Company Status	1.00											
2 Factor 1: Knowledge about the benefits of going public	0.244** (0.060)	1.00										
3 Factor 2: Valuation and signaling	-0.289** (0.000)	-0.243** (0.010)	1.00									
4 Factor 3: Disclosure requirements and costs	-0.418** (0.025)	0.220** (0.000)	0.066 (0.430)	1.00								
5 Factor 4: Ownership and control	-0.568*** (0.004)	0.319*** (0.000)	0.227*** (0.006)	0.444*** (0.000)	1.00							
6 Age	0.572*** (0.001)	-0.057 (0.493)	0.265*** (0.001)	0.149** (0.074)	-0.018 (0.832)	1.00						
7 Sector	0.167** (0.045)	-0.096 (0.252)	0.044 (0.597)	-0.046 (0.384)	-0.066 (0.428)	0.197** (0.018)	1.00					
8 Asset	0.613*** (0.000)	-0.204** (0.014)	0.352*** (0.000)	0.003 (0.973)	-0.105 (0.210)	0.453*** (0.000)	0.257*** (0.002)	1.00				
9 Employee	0.657*** (0.000)	-0.244*** (0.003)	0.438*** (0.000)	-0.048 (0.568)	-0.215*** (0.009)	0.493*** (0.000)	0.211** (0.011)	0.774*** (0.000)	1.00			
10 Competitive environment	-0.031 (0.714)	0.068 (0.416)	-0.123 (0.140)	0.085 (0.311)	-0.047 (0.576)	-0.037 (0.655)	0.084 (0.317)	0.001 (0.993)	-0.001 (0.994)	1.00		
11 Product-related innovativeness	-0.085 (0.308)	0.064 (0.446)	-0.160* (0.055)	0.063 (0.448)	0.051 (0.539)	-0.057 (0.492)	-0.067 (0.421)	-0.093 (0.268)	-0.126 (0.131)	0.180** (0.030)	1.00	

Notes: Variables are as defined earlier.  $P$  values in parenthesis. Two-tailed test of significance.

\*\*\*  $P \leq 0.001$

\*\*  $P \leq 0.05$

\*  $P \leq 0.1$

**Table 8: Estimated logistic regression model (N=145)**

Variable	Exp. sign	Model 1	Model 2	Model 3
Constant		-3.145*	- 4.070**	-6.165**
		(0.083)	(0.016)	(0.025)
Factor 1: Knowledge about the benefits of going public	+	0.980**	1.548***	1.094**
		(0.040)	(0.003)	(0.028)
Factor 2: Valuation and signaling	-	-0.989**	- 0.822**	-0.772**
		(0.012)	(0.024)	(0.028)
Factor 3: Disclosure requirements and costs	-	- 0.204	- 0.296	-0.257
		(0.549)	(0.445)	(0.442)
Factor 4: Ownership and control	-	-0.725**	-0.832**	-0.755**
		(0.027)	(0.025)	(0.025)
Age	+		0.780**	0.872**
			(0.031)	(0.035)
Sector	?		0.125	0.131
			(0.787)	(0.635)
Asset	+		2.574***	
			(0.000)	
Employee	+			1.480***
				(0.001)
Competition	-		-0.429**	-0.329**
			(0.037)	(0.050)
Product-related innovativeness	-		-0.205	-0.185
			(0.711)	(0.719)
Log likelihood		174.959	135.777	150.271
Hosmer and Lemeshow $\chi^2$		12.602	3.008	6.189
		(0.126)	(0.934)	(0.626)
Cox & Snell $R^2$		0.214	0.424	0.383
Nagelkerke $R^2$		0.355	0.540	0.494

Notes: This table presents the results of logistic regressions on a binary variable that equals to one if the company is listed in the stock market and 0 otherwise. The logistic regressions are estimated using 'bootstrapping' approach based on 1000 replications. The odds ratios are calculated by taking the exponent of the coefficients. Variables are as defined earlier.  $P$ -value in parenthesis. Two-tailed test of significance:

\*\*\*  $P \leq 0.001$

\*\*  $P \leq 0.05$

\*  $P \leq 0.1$



**Table 9: Logistic regression classification accuracy.**

Class. observed	Model 1			Model 2			Model 3		
	Class. predicted			Class. predicted			Class. predicted		
	listed	Non-listed	Correct (%)	listed	Non-listed	Correct (%)	listed	Non-listed	Correct (%)
listed (1)	33	22	60.0	41	14	74.5	36	19	65.5
Non-listed (0)	16	74	82.2	9	81	90.0	14	76	84.4
Total class. (%)			73.8			84.1			80.2

Note: The cut value is 0.5.

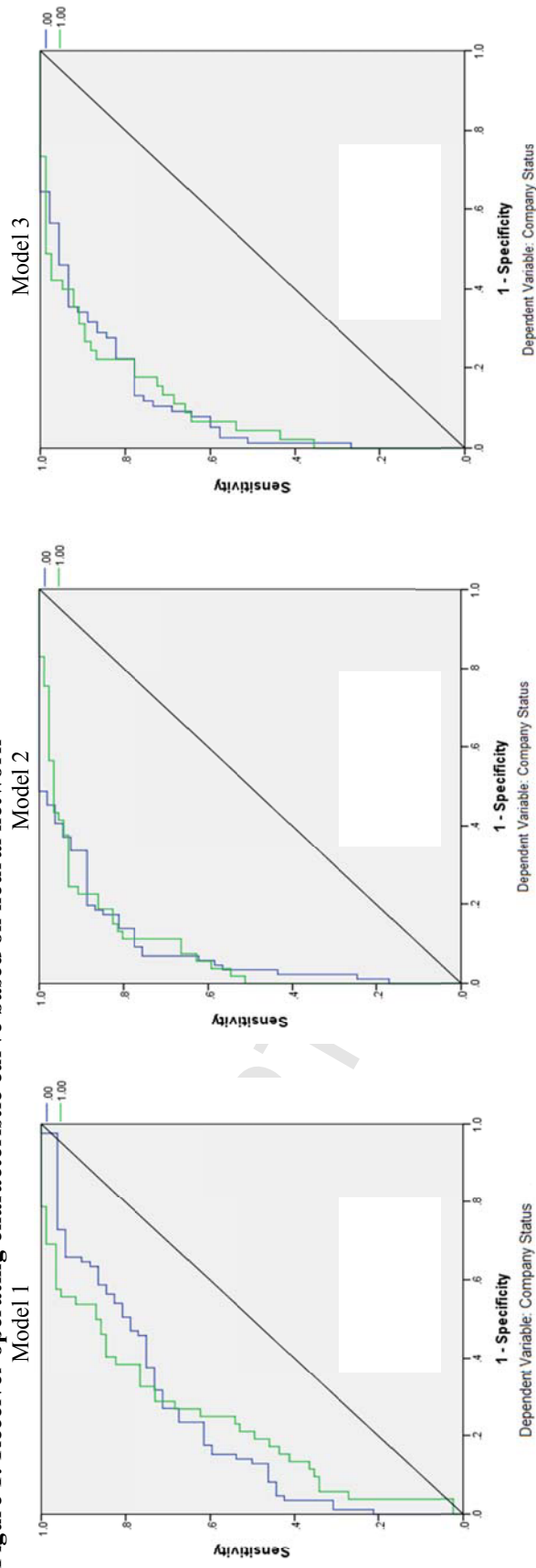
**Table 10: Neural network classification accuracy.**

Class. observed	Model 1			Model 2			Model 3		
	Class. predicted			Class. predicted			Class. predicted		
	listed	Non-listed	Correct (%)	listed	Non-listed	Correct (%)	listed	Non-listed	Correct (%)
listed (1)	18	23	43.9	30	9	76.9	24	14	63.2
Non-listed (0)	6	57	90.5	4	56	93.3	3	56	94.9
Total class. (%)			72.1			86.9			82.5

**Table 11: Independent variable importance analysis based on neural network.**

	Importance	Normalized Importance	Rank
Factor 4: Ownership and control	0.121	69.3%	5
Factor 2: Valuation and signaling	0.140	79.7%	3
Competition	0.121	69.0%	6
Factor 1: Knowledge about the benefits of going public	0.139	79.5%	4
Age	0.175	100.0%	1
Factor 3: Disclosure requirements and costs	0.077	44.0%	7
Asset	0.165	94.4%	2
Sector	0.044	25.1%	9
Product-related innovativeness	0.017	9.7%	8

**Figure 1: Receiver operating characteristic curve based on neural network**



Note: The closer the ROC curve is to the upper left corner, the higher is the overall predictive accuracy of the model. If the area under the ROC curve is equal to 1, then the model is able to perfectly discriminate between the binary outcomes and we have a perfect classification. If a classifier cannot discriminate between two groups, then the area under the ROC curve is equal to 0.5. In our analysis the area under the ROC curve is 0.661, 0.912, and 0.894 for models 1, 2, and 3 respectively.

**Figure 2: Independent variable importance analysis based on neural network.**