

The IPO Process and its Impact on Underpricing: A Case Study of Motion Display Scandinavia AB*

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Abstract

This paper investigates the IPO process of the Swedish company Motion Display Scandinavia AB. It evaluates existing research on the IPO process and IPO performance, and views that research in light of the observed case. We observe that (i) the issuer does not evaluate IPO performance in absolute terms, (ii) the issuer distinguishes between direct and indirect IPO costs, (iii) the issuer has a willingness to reward IPO investors, and (iv) the issuer accepts that positive media attention comes on the premises of the media. These observations help explain why issuers don't mind leaving money on the table, partly because the issuer is not sufficiently concerned with underpricing (observation i and ii), and partly because the issuer sees underpricing as a deliberate measure to ensure a certain outcome (observation iii and iv). Furthermore, we observe that the issue price was set prior to the determination of lock-up restrictions. We discuss the potential effect this might have on IPO performance. On that basis, we elaborate on what we refer to as the "issue supply and demand aspect of fixed-price underpricing". We conclude that the absence of accurate information on lock-up restrictions at the time of the determination of the issue price leads to higher underpricing. To the best of our knowledge, this notion is new to research. Therefore, we suggest that it should be subject for further research.

Key words: IPO Process, Underpricing, Lock-up Agreements

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1 Introduction

1.1 Overview

An Initial Public Offering, or IPO, is the event when a privately owned firm for the first time offers its shares to the public by listing them on a stock exchange. The IPO event is of major importance to the firm, and the sum of IPOs that take place have a significant impact on the economy as a whole. In fact, researchers have expressed concern that the lack of a vibrant IPO market could limit Gross Domestic Product (GDP) and employment growth (Weild and Kim, 2009). Since IPOs receive much attention and are considered to be of high importance, both to individual firms and to the global economy, the IPO process and the IPO underpricing puzzle are of high relevance.

Regarding the underpricing puzzle, researchers agree on one matter; it is widely recognized that it has yet to be fully explained. More often than not, researches have attempted to explain the puzzle by conducting quantitative studies based on public information. However, all evidence to data suggests that quantitative methods based on public information fall short of fully explaining the underpricing puzzle.

In virtually all cases, the IPO process takes place behind closed doors. I.e., the process that results in the determination of the issue price, which directly affects the level of underpricing, takes place far from the public eye and researchers who work with public information. As the underpricing puzzle is an “insider” puzzle, we find it unreasonable to expect that it can be fully explained by “outsider” research. In this paper, we focus on the IPO process in order to better understand IPO performance from the “insider” rather than the “outsider” perspective.

1.2 Delimitations

This paper has academic delimitations with respect to the verification of our claims. Our observations are to a large extent based on informal meetings with key people involved in the IPO. Thus, verification may be difficult in retrospect. Furthermore, this paper also has a delimitation regarding its general application. We observe a single case that may, or may not, be generally applicable. There might also be a further delimitation concerning our observations because they are partly based on family connections.

1.3 Methodology and Access to Information

Our method will be that of a descriptive case study. We have followed the IPO process of Motion Display Scandinavia AB. We have had full access to the firm management and

the board. We have conducted interviews with the founder, the CEO and the senior advisor of the underwriter in charge of the IPO.¹ In addition to conducting interviews, we have spent time at Motion Display's offices, in order to make more objective observations than what is possible in interviews. The descriptive method in this paper starts with an evaluation of existing theories. It then gives an objective description of the appropriate case, prior to looking at existing theory in light of our case. Finally, we aim to connect the theories to our observations.

1.4 Outline

First, we describe existing theories on the IPO process, followed by a description of the IPO process of Motion Display. Then, we evaluate existing theories on IPO underpricing, before shortly outlining the observed IPO performance. In conclusion, we present support for certain theories on underpricing, and make suggestions for further research.

2 Theories on the IPO Process

The following is a step-by-step description of the IPO process as it is presented in theory. These are no formal "must-have" steps. However, the IPO process tends to follow a certain structure, which we have attempted to outline below. Having reviewed the steps that are presented in theory, we shortly discuss existing theories on IPO signalling. These are the suggested steps, which we will discuss:

1. Decision to go Public
 - Arguments Against Going Public
 - Timing of IPO
2. Choosing Underwriter
3. Choosing Market
4. Initial Information Gathering Phase
5. Marketing and Secondary Information Gathering Phase
6. Pricing and Share Allocation Phase
7. IPO Takes Place and the Role of the Formal Contract
 - After the IPO
 - Signalling

¹ Direct and indirect quotes from Stockholm Corporate Finance (underwriter) are based on this interview. They may be referred to as "representative of underwriter/Stockholm Corporate Finance" or "the underwriter". In all cases we, refer to the interview with the senior advisor in charge of the IPO.

2.1 Decision to go Public

The initiative to take a company public usually comes from its owners and/or the firm management. An important aspect of IPOs is the reasons to go public. In 2006, Brau and Fawcett published a paper based on a survey of 336 CFOs. They were asked to rank certain motivators behind their decision to go public (or not go public) on a five-point scale with anchors of 1 = not important to 5 = very important.² Regarding the motivation to go public, the study found that “to create public shares for use in future acquisitions”³ was the most important factor, rated at an average of 3.56/5.0. The other reasons are listed below in order of importance:

With a mean rank of ≥ 3 :

- To establish a market price/value for the firm
- To enhance the reputation of the company
- To minimize the cost of capital
- To broaden the base of ownership

With a mean rank (x) of $3 > x \geq 2.5$:

- To allow one or more principals to diversify personal holdings
- To attract analysts' attention
- To allow venture capitalists to cash out

With a mean rank (x) of $2.5 > x \geq 2$:

- The company has run out of private equity
- Debt is becoming too expensive. (Going public will give the firm bargaining power to renegotiate the lending terms with their bank).

Other empirical research shows that the likelihood of a firm conducting an IPO increases with its size and the industry's market-to-book ratio. Furthermore, companies appear to

² Firms were also categorized based on size (large/small with a threshold of 100 million USD in revenues), age (old/young with a threshold at a founding date of 1987), high-tech (yes/no), underwriter prestige (high/low with a threshold of 8.1 in Jay Ritter's underwriter database), venture capital (yes/no with a threshold of venture capitalist involvement), ownership decrease (large/small where large is an indication if insider's ownership percentage decrease by more than 23%). The respondents were also categorized according to their IPO status, three sub-groups were formed: 1. Firms that have successfully conducted an IPO; 2. Firms that have withdrawn from the IPO process; 3. Firms that according to certain size and age measurements are probable to have conducted an IPO but chosen remain public.

³ Implies the usage of “currency” in either acquiring other companies or in being acquired in a stock deal.

go public not to finance future investment and growth, but to rebalance their accounts after high investment and growth. IPOs are also followed by lower cost of credit and increased turnover in control, according to Pagano, Panetta and Zingales (1998).

In addition to this empirical evidence, four theoretical motivations to go public are dominant: (i) concerns regarding the cost of capital, (ii) the opportunity to cash out, (iii) IPO as a means to enable M&A activities and finally (iv) the usage of IPO as a strategic move.

The first is the motivation to go public due to concerns regarding the cost of capital. Modigliani and Miller (1963) and Scott (1976) found that firms with external equity seek to minimize their cost of capital as a result of liquidity associated with public shares and thereby maximize the value of the company. Based on asymmetric information and possible stock price misevaluation, Myers (1984) and Myers and Majluf (1984) further argue for the following pecking order of financing: internal equity, debt financing and then external equity.

Second, the opportunity to cash out is found to be an important motivation to go public. Zingales (1995) and Mello and Parsons (2000) argue that the insider's, often the management's, possibility to cash out is an important motivation. Ang and Brau (2003) support this with empirical evidence that insiders indeed sell shares in the IPO for personal gain. Additionally, IPOs give Venture Capitalists ("VCs") the opportunity to exit, providing an attractive harvest strategy, as argued by Black and Gilson (1998).

Third, researchers find that IPOs are important in order to enable M&A activities. IPOs may facilitate takeover activity; an IPO can serve as a first step towards having a company taken over at an attractive price, argues Zingales (1995). Reversely, Brau, Francis and Kohers (2003) found that IPOs might be important because they create public shares for a firm that may be used as "currency" in either acquiring other companies or in being acquired in a stock deal. As previously mentioned, this motivation is found to be the most important according to the CFOs surveyed by Brau and Fawcett (2006).

And fourth, Chemmanur and Fulghieri (1999) suggest that IPOs may serve as a strategic move, as they broaden the ownership base of the firms. Maksimovic and Pichler (2001) indicate that firms conduct IPOs to capture a first-mover advantage. They also suggest that an IPO can increase the publicity or reputation of the firm going public. Bradley, Jordan and Ritter (2003) found that analyst recommendations are often biased upward after an IPO. Thus, analyst coverage may motivate a firm to conduct an IPO.

2.1.1 Arguments Against Going Public

Brau and Fawcett (2006) performed the same survey but asked, “To what extent have the following influenced your decision not to conduct an IPO?” The most important issue was to maintain decision-making control in the firm (3.48/5.0). The second and third most important issues were to avoid ownership dilution and bad market/industry conditions, respectively. Although their mean values were above 3.0, less than 50% of the surveyed agreed with these issues as reasons not to go public. The scores are on an aggregate level relatively low, which indicates disagreement among the three respondent groups; (i) firms that have not tried an IPO, (ii) firms that have withdrawn from the IPO process and (iii) firms that have successfully gone public. Noteworthy is that CFOs from firms that have withdrawn from an IPO process, rate the importance of the market/industry’s conditions as more important than CFOs from firms that have performed an IPO.

2.1.2 Timing of IPO

All evidence to data show that IPOs come in waves, for example according to Ibbotson and Jaffe (1975) and Ritter (1980). This indicates the importance of IPO timing.

There is much academic support that managers take advantage of bull markets and attempt to capture attractive stock prices. Empirical measures of bull markets include current overall market conditions (Lucas and McDonald, 1990), current industry conditions (Pagano, Panetta and Zingales, 1998), predicted overall market conditions (Lucas and McDonald, 1990), predicted industry conditions (Lowry, 2003) and recent historical market conditions (Ritter and Welch, 2002). Using long run returns, Ritter (1991) and Loughran and Ritter (1995) posit that firms time IPOs to take advantage of favourable windows that allow them to get the most attractive offering prices.

Timing is driven by the attractiveness of the IPO market. Recent first-day stock performance of firms going public leads other firms to decide to go public, according to Lowry and Schwert (2002). Moreover, firms prefer to go public when other good firms are currently issuing, argues Choe, Masulis and Nanda (1993). This implies that IPO cycles are driven by momentum.

Firms go public when they reach a certain point in the business growth cycle and need external equity capital to continue to grow, as argued by Choe, Masulis and Nanda (1993) and Lowry (2003). Chemmanur, He and Nandy (2010) conducted a large sample study on the likeliness of a firm to go public. The most significant finding was that it is highly dependant on the private firm’s product market characteristics such as market

share, competition, capital intensity and cash flow riskiness. Firms with low information asymmetry and with projects that are easier to evaluate for outsiders also increases the likeliness of an IPO. Firms are also more likely to go public at the peak of their productivity cycle and when their sales, capital expenditures and other performance variables show an upward trending pattern the years before and after the IPO.

The CFOs surveyed by Brau and Fawcett believe that overall stock market conditions were identified as the single most important determinant of timing (4.21/5). Two other factors were also perceived as strongly influencing the timing of an IPO: industry conditions (3.86/5) and the need for capital to support growth (3.82/5). Other good firms currently going public and first-day stock performance of recent IPOs were viewed as relatively unimportant. This contrasts the research by Choe, Masulis and Nanda (1993). The data suggests that CFOs do pursue windows of opportunity but do so in terms of overall stock market and industry conditions and not by the IPO market. Thus, Brau and Fawcett also imply that IPO cycles are driven by momentum.

Smaller firms are particularly dependent on IPOs to obtain capital to fund continued growth. Smaller firms also rely more heavily on other good firms going public as an indicator of good timing, perhaps in an effort to increase their own reputation by being grouped with good firms. The inclusion of VCs in the IPO process raises managerial awareness of each timing factor. If the ownership is mainly looking for immediate proceeds from the IPO, the management is less concerned with market timing.

2.2 Choosing Underwriter

One of the early activities of the IPO process is the choice of underwriter. Brau and Fawcett (2006) used the same survey on CFO sentiment regarding underwriters that Krigman, Shaw and Womack (1999) used in their research aimed at pre-bull markets (1993-1995), and applied it to a post-bull market (2000-2002). CFOs tend to be consistent in their opinions regardless of market conditions, find Brau and Fawcett. Most so in ranking the three most important qualities of prospective underwriters, which are stated in order of importance: (i) Underwriter's overall reputation and status, (ii) quality and (iii) reputation of the research department/analyst and underwriter's industry expertise and connections.

Other criteria used in the surveys were ranked differently, possibly due to the important time aspect. However, the following three criteria were among the six most important attributes in both surveys:

- Institutional investor client base of the underwriter
- Market making, trading desk, and liquidity provision services
- Pricing and valuation promises

Other noteworthy criteria were fee structure, retail client base and non-equity related services (e.g., advice on M&A deals, debt, etc.).

2.3 Choosing Market

Typically, an early consideration in the IPO process is making sure that the firm fulfils all requirements of regulatory bodies and the stock exchange on which it intends to list its shares. There are at least two trends that increasingly affect the companies' choice of market, both of which are stated by Jenkinson and Ljungqvist (2000).

The first trend is the decreasing extent to which the choice of market is constrained by national boundaries. The decreasing relevance of national borders also affects the governance and ownership of the exchanges themselves, which tend to demutualize and become companies in their own right. As a result, markets are no longer defined by their nationality, but rather by their rules, regulations and liquidity.

The second trend is the emergence of new markets targeting smaller, growth-firms. This tendency is particularly pronounced in Europe. On these new markets, the requirements to enter are obviously lower than on traditional exchanges with larger, more mature firms. However, they tend to have stricter rules regarding information disclosure and transparency.

2.4 Initial Information Gathering Phase

Once the underwriter and the market have been chosen, the next phase of the IPO process is initiated. In this phase, the underwriter and the firm work closely together to perform a due diligence and gather the information required by the appropriate regulatory bodies and the chosen market. Arguably the most important decision prior to the IPO is the offer price. During the initial information gathering stage, the lead underwriter usually forms an initial view on the likely market value of the company. The timing of finding the likely market value may fall before or after the contract with the underwriter has been signed. Often, the issue price indication is included in the pitches held by prospective underwriters in order to receive the job. In those cases, the process of finding the likely value falls prior to the signing of the contract. A large variety of methods can be used when deciding the company value. The most common valuation methods are: peer group multiples valuation (using P/E-ratio etc.), the dividend discount

model, the free cash flow discount model, and the economic value added method and comparing with precedent transactions (Roosenboom, 2007). More often than not, a combination of these methods is used. The firm and its underwriter can even mould its IPO price to target a specific investor group. A lower offering price tends to attract retail investors and a higher, thus more prestigious valuation has the same effect on institutional investors, found Fernando, Krishnamurthly and Spindt (1999).

The result of the initial information gathering process is usually the publication of a so-called initial prospectus (may also be referred to as red herring, preliminary prospectus or pathfinder prospectus). The first “best guess” by the underwriters regarding the issue price, expressed as an initial price range, is an important part of the prospectus. The purpose of the initial information gathering process, which results in a initial prospectus, is to have a basis for later discussions with potential and existing investors, a process during which the final price will be set. On the other hand, some techniques essentially fix the price before formally inviting investors during the latter marketing and pricing phase. In those cases it may not be necessary to produce an initial prospectus and a final prospectus, argue Jenkinson and Ljunqvist (2000). Furthermore, the appropriate regulatory bodies must usually approve the initial prospectus prior to its publication.

2.5 Marketing and Secondary Information Gathering Phase

The next phase of the IPO process is the marketing and pricing phase. More often than not, firms that are about to go public will conduct a so-called Road Show during this phase. A Road Show is a series of events, often in different cities (hence Road Show), where top executives meet with existing and potential investors. A popular belief is that the usual intention of a Road Show is to provide investors with additional information. It turns out, argue Jenkinson and Ljunqvist (2000), that Road Show presentations don’t tend to differ from or add new information to what has already been stated in the initial prospectus. In stead, they argue, the main purpose of the Road Show is for the investment bankers to gather information from investors, about their views of the company and its valuation. This is in turn helpful to determine the final price. As investors are aware of this, the investment bank is faced with the problem that investors may hold back information they think will contribute to raising the final price. In the case of a fixed price, the issue price has already been set at that point in time. Thus, the major purpose of the road show is to elicit bids from investors. In general, a fixed-price IPO tends to be shorter than a full book building or formal auction process.

2.6 Pricing and Share Allocation Phase

Prior to making a final decision regarding price and allocation, a process to determine the investors demand curve is initiated (unless it's a fixed price, in which case no interactive process with investors is required). The two most usual ways to determine the investor demand are the book building process and the formal auction process. To an increasing extent, the book building process is being used. Jenkinson and Ljungqvist (2000) outline the following three steps of the book building process.

In the first step, the investment bank decides which investors are to be invited to the book building process. Smaller retail investors are usually excluded from the process, and there is a bias towards appreciating the presence of foreign investors as they are considered to represent the opinion of foreign investors. This is important because the marketing of shares overseas is gradually becoming more common. An alternative way to execute the first step is to issue a portion of the shares as guarantees. There are several kinds of guarantees but they all serve to reduce the risk of failure for the issuer. The most common type is when a certain group of investors are offered a portion of the equity issuance at a discounted price against the guarantee that they will put up the capital regardless of how the rest of the book building process plays out.

The second step involves the actual book building, in which invited investors indicate their demand. This process typically lasts for 8-10 days. During this period investors make different kinds of bids, on which basis the investment bankers will create an investor demand curve. The bids may include, but are not limited to, the following:

- A strike bid involves a bid for a certain number of shares at any price within the price range.
- A limit bid involves a bid that specifically states a price-quantity combination at which the investor is willing to buy.
- A step bid is a series of limit bids, i.e. an investor's specific demand curve.

Investors are free to bid, revise or cancel their bids until the book closes. The bids do not legally bind investors at this point.

Finally, the third step involves the decision on the final price and the allocation of shares. As a result of the book building process, the investment bank running the book essentially has a prospective investor demand curve. Additionally, they hold information on when the respective bids were submitted and revised. Despite having a good idea of the demand for the shares on offer, the final price will not be determined by

mechanistic crossing of demand and supply. Relatively little is known about how investment banks use the information in the book to determine the final price, as they tend to keep their books firmly shut to outsiders (including academic researchers). The underwriter, together with the issuing company, maintain close to complete discretion over the issue price and the share allocation. Cornelli and Goldreich (2001) provide research indicating that investment banks frequently state that one important aim in pricing is to provide modest returns for the initial investors. However, the returns of the initial investors are on average far from modest, according to Jenkison and Ljunqvist (2000).

Once the final price and allocation has been decided, the investors who participated in the book building process will confirm their bids (until this point in time, they are typically not legally bound by their bids). The final prospectus will be printed, and shares usually start trading within a short period of time.

An alternative to the intermediary book building process is the formal auction. The main difference is the potential of a formal auction to be entirely disintermediary. I.e., while investment bankers (in consultation with their client) are free to set whatever price they prefer after a book building process, the formal auction has the potential of not directly including the investment bank in the pricing process (if *ex ante* rules that determine the price are set prior to the auction). As the formal auction form is becoming less popular, the importance of research explaining formal auctions is also declining.

2.7 IPO Takes Place and the Role of the Formal Contract

The formal contract between the issuer and underwriter should specify the banks' obligations regarding origination and advisory, underwriting and distribution services, as well as the compensation terms. I.e., the contract between the issuer and its underwriter states which one of two roles (which we are about to explain) the underwriter will play as soon as the company's shares go public. There are no limitations to what may or may not be included into the contract. Thus, in theory, there is an infinite number of potential contracts.

In reality, two types of contracts are dominant: firm-commitment contract and best effort contract. In the case of a firm-commitment contract, the investment bank takes personal inventory of all the shares in an attempt to resell them to the market. For a best-effort arrangement however, the underwriter instead has the sole role of a broker without taking shares into own possession. Draho (2004) suggests that the optimal contract should be one that simultaneously maximizes the expected IPO proceeds, while

minimizing the risk. Needless to say, implementing a contract that ensures this is generally speaking impossible.

According to Brau and Fawcett's survey, CFOs rank an underwriter's willingness to take on a firm-commitment as opposed to a best-efforts arrangement as the most important of all IPO process issues (3.93/5.0). The reason is that issuers want to use the firm-commitment contract as a means of signalling (which we will come back to shortly). Other factors concerning the contract include the lockup period of key shareholders, green shoe/over-allotment options, window dressing the prospectus and unit offering.

Regarding the suspicion that the type of contract may have an effect on mispricing, Li and Masulis (2004) found that the initial returns declined as the underwriter's ownership increased, thereby aligning their interests.

2.7.1 After the IPO

Sometimes, the investment bank offers additional after-IPO services. A typical after-IPO service is a stabilization service, the purpose of which is to stabilize the price on the after-market. Essentially, the investment bank stands prepared to buy shares in the case of excess supply, and to sell shares in the case of excess demand. Often, this support is linked with the granting of green shoe/over-allotment options to the investment bank. The over-allotment options pretty much serve to fulfil the formerly stated purpose of the after-IPO service. Another post-IPO service is continued analyst coverage, the point of which is to ensure a good flow of information on the firm, which in turn should stimulate the stock's liquidity. In addition to the two former post-IPO services, the investment bank and issuers relationship may continue as the firm may need help to raise capital in the future. Needless to say, this is entirely dependent on a successful relationship.

2.7.2 Signalling

Due to asymmetric information between IPO insiders and potential investors, signalling theory continues to be an important component of IPO research. Signalling is an activity that reduces this information asymmetry and can play a vital role in getting a higher valued IPO. Brau and Fawcett (2006) also surveyed the same 336 CFOs regarding the most significant signals. The following is a list of signals, with anchors 1 = bad signals to 5 = good signals. The stated number is the average CFO answer:

Signal	Mean
Having strong historical earnings	4.51
Using a top investment banker	4.21
Insiders commit to a long lockup	3.99
Using a big-four accounting firm	3.91
A large first-day stock price jump	3.77
Having venture capital (VC) backing	3.24
Selling a large portion of the firm in the IPO	2.55
Issuing units	2.44
Selling insider shares in the IPO	1.90

Teoh, Welch and Wong (1998) suggest that strong historical earnings are a certification of good future performance. Carter and Manaster (1990) found that the underwriter's reputation is closely linked to the perception of the IPO's riskiness. Reputable investment banks signal that there is less risk involved in the issue, which in turn reduces the investor's incentives to conduct proper information acquisition. In addition to this, IPOs with a more informed investor base require higher returns. Since a high underwriter reputation is associated with less informed investors this leads to lower returns from the issue. Carter, Dark and Singh (1998) claim that underperformance over a three-year period is lower when the IPO was handled by a prestigious underwriter. The IPO underpricing is also less severe when conducted by a reputable investment bank. Titman and Trueman (1986) add that an entrepreneur with more favourable information about his firm is more likely to choose prestigious underwriters and auditors when conducting their IPO. Megginson and Weiss (1991) show that having venture capitalists involved in the issuing firm indicates quality and reduces the costs of going public and maximizes the gains to the offering firm. This is especially so when the venture capitalist holds its position post-IPO. Brau, Lambson and McQueen (2005) challenge the assumption that lockups are nothing but a solution to a moral hazard problem and claim that it serves as an important indicator of firm quality. The strongest negative signal is on the same topic and has to do with the selling of insider shares. Leland and Pyle (1977) point out the severity in selling a large portion of the firm's equity during the IPO as it enlarges the information asymmetry and causes distrust towards the management's agenda.

3 Motion Display Scandinavia AB

3.1 Background

Motion Display Scandinavia AB (“Motion Display” or “MD”) is a Swedish company founded in 2005. Through its founder and other key people, the firm holds more than 20 years of experience from retail and in-store marketing. Motion Display designs, produces and distributes electronic point-of-purchase displays with the purpose of in-store advertisement. For examples of MD’s advertising displays, please visit their home page.⁴

The advertising displays are referred to as EDPs, or “Electronic Paper Displays”. As the name implies, they are based on MIT spin-off E-ink Corporation’s⁵ electronic ink technology. Motion Display holds the global exclusive right to apply E-ink technology for in-store marketing displays. E-ink is also the sole supplier of EPD to other sectors such as E-book readers where its main customer is Amazon (Kindle). Motion Display’s products draw attention to selected items on the shelf-space by blinking different promotional messages. In doing so they yield an increase in sales, mostly for generic products. The E-ink displays are thin, energy efficient and can be modified to fit customer needs.

The retail industry is becoming increasingly focused on in-store marketing due to the fact that 70% of all customer-purchasing decisions are taken whilst inside the store. The Swedish annual budget for retail marketing is 70 BnSEK and is growing by 20% annually, according to the firm.

Motion Display’s market position is somewhat unique considering it holds the exclusive right to use E-ink technology in production of EPDs for retail applications. Currently, E-ink Corporation thrives on its tablet department. Their strategy for expanding into the retail industry is to develop cost-efficient and high qualitative EPDs. Thus, the exclusive contract with Motion Display.

According to Motion Display, 85 MSEK have been invested in research and development of hardware and software technology, as well as in the establishment of a low-cost production facility in China. As of February 2014, approximately 200 marketing campaigns using EPDs have been completed. The sales of the EPDs used in these campaigns have generated an accumulated turnover of 50 MSEK for Motion Display. Today’s target customer groups are mainly retail chains such as ICA⁶, due to their need

⁴ www.motiondisplay.com

⁵ www.eink.com

⁶ www.ica.se

to boost sales of high margin products. Motion Display also supplies large retail suppliers such as Unilever and Coca-Cola with EPDs. Independent studies have been conducted on the effect of Motion Display's products. The results show that by using the blinking displays, sales can grow by several hundred per cents and the ROI is in the same range. Accordingly, the interest from the retail industry is immense.

3.2 Brief Financial Statistics and Ownership Structure

MSEK	2009	2010	2011	2012	2013
Revenues	2.6	11.3	13.5	8	6.7
Gross margin	-4%	15%	28%	33%	44%
Net profit	-10	-8.9	-17.1	-14.3	-12.6

Ownership structure as of March 5th, 2014	# of shares	% of ownership
Erik Danielsson (with company)	2,367,200	32%
Rickard Danielsson	896,540	12%
Anders Lundmark	610,240	8%
Fredrik Danielsson (with company)	475,380	6%
Others (approximately 70)	3,090,120	42%
Total	7,439,480	100%

**The number of shares has been adjusted to the 20:1 split, which was not registered as of March 5th.*

3.3 Management⁷

- **Anna Engholm** is Motion Display's CEO.
- **Ola Ödmark** is Motion Display's CTO.

3.4 Board of Directors

- **Erik Danielsson** is the founder and chairman of Motion Display. He has served as CEO of Pharmacia AB in the period 1984-1990. Erik has also founded several well-known companies including Scandinavian Bioga⁸ (leading biogas technology provider), Pricer AB (world leaders in electronic shelf labels), UltraSonus AB⁹ (ultrasonic treatment of fluids in industrial processes) and Trippus AB¹⁰ (software for the meeting industry). In this paper, Erik will be referred to as "the founder".

⁷ For more information about the management, please see <http://www.motiondisplay.com/about/#2>.

⁸ www.scandinavianbiogas.se

⁹ No web site available

¹⁰ www.trippus.com

- **Mikael Smedeby** is Managing Partner of the law firm Lindahl¹¹. Mikael does not hold any shares in Motion Display at the time of the IPO.
- **Anders Lundmark** has been on the Board of Motion Display since October 2012. Anders holds 610 240 shares in Motion Display (roughly 8%) as of March 5th.

4 Case Study: IPO process of Motion Display

During the spring of 2014, we closely followed to the IPO process of Motion Display. This is an outline of our observations. This section also includes discussions regarding what we have observed.

On March 10th 2014, Euroclear Sweden AB¹² approved the request of Motion Display to offer the company's shares at Aktietorget, i.e., taking the company public. Motion Display will issue 1.6 million shares at a price of 13.0 SEK amounting to 20.8 MSEK. The external equity will finance the development of an internal sales organization and help to accelerated the expansion.

4.1 Motivation to Go Public

In 2009, four years after Motion Display ("the company" or "the firm") was founded, the number of shareholders increased steadily. In the period that followed, a discussion concerning the investors' exit opportunities was initiated. Three alternative ways to reward the investors were discussed: (i) reward investors by paying dividends, (ii) attempt to be acquired, and (iii) take the company public.

At the time, Motion Display was in need of making reinvestments to expand the business, and not in a position to pay dividends. Therefore, that alternative proved to be unviable. As Motion Display is a high-growth potential technology company, it seemed possible to find an acquirer. The alternative to go public also made sense. Having established that there were to viable options, the shareholders were split between the alternative to attempt to be acquired and the alternative to go public.

The alternative to be acquired was neither supported by the founder nor the CEO of Motion Display. They suggested that the firm should go public. In addition to providing an exit opportunity for investors, their arguments for going public were (i) the need of accessible capital and (ii) the positive marketing effects of getting IPO attention.

¹¹ www.lindahl.se

¹² <http://www.riksbank.se/en/Financial-stability/Financial-infrastructure/Systems-in-the-Swedish-infrastructure/Euroclear-Sweden/>

Regarding the need of capital, the IPO would raise capital instantly. The founder also argued that the possibility of raising capital for the company in the future would be better if it were a public firm.

As the company has yet to truly penetrate its market, creating awareness was also of high priority. The management expected the IPO “buzz” to attract more customers (especially ICA customers in Sweden, due to divisionalized management). Therefore, the marketing effects of going public were an argument for the IPO.

The shareholders opposing the IPO argued that the firm wasn’t sufficiently mature. Having discussed the pros and cons of the alternatives, consensus was reached quickly, and the decision to go public was made.

4.2 Timing of IPO

Regarding the timing of the IPO, the management mostly considered three factors: (i) the degree to which the firm was sufficiently mature to go public, (ii) the firm’s capital needs, and (iii) the overall market conditions.

The founder and the management were confident that the firm was significantly mature to go public: Existing customers were overly satisfied with the product, the production facilities had a scalable production, and the margins were developing positively. The most significant determinant of the IPO timing was the need of new capital. As the firm is about to expand their business, they need external capital to finance the development of an internal sales organization and to help accelerate the expansion. Furthermore, the founder correctly argued that IPOs tend to come in cycles. The overall market conditions can be a reason not to go public. This may be so even in cases where every other object of analysis speaks in favour of an IPO. The founder concluded that this year is expected to be a good IPO year.

Having decided to go public, the capacity of the underwriter and the stock exchange also largely affect the timing of the IPO. The underwriter played an important role concerning the strategic timing of the IPO, by strongly recommending that the IPO should take place prior to May. This was due to the vast number of public offerings that were scheduled for that time period. As the firm approached the underwriter in December 2013, and an IPO process normally takes six to eight months¹³, there was a time constraint. Despite this, the IPO date was initially set to April 7th, making it the fastest IPO process the underwriter’s project leader had ever experienced. The underwriter argued that timing the IPO date to April would help to take advantage of the

¹³ According to the underwriter

current waves of similar market activities as, “the hot financial spring would have gained momentum by then, but investors would still be hungry enough for new investment opportunities as opposed to this summer when investors might be more cautious due to potential losses from May.”

4.3 Choosing Underwriter

It turns out that the process of choosing underwriter was unacademic in this case. Sometimes, firms have several underwriters to manage their IPO. Motion Display found this to be superfluous given the size of their business. Thus, they ruled out that option early in the process. The initial selection of prospective underwriters was based on recommendations from the founder’s personal and professional network. The motivation for this approach is the importance put on the actual people who will run the IPO, rather than what firm they work for. “The worst people in the best firm is not what we’re after,” the founder argued. Thus, personal relations were of high importance in the choice of underwriter. On this basis, four prospective underwriters were considered: Avanza¹⁴, Remium Nordic¹⁵, Falk and Nerpin¹⁶ and Stockholm Corporate Finance¹⁷ (“SCF”).

Prior to further negotiations, the four underwriters conducted a basic due diligence and an indicative valuation of the company. The due diligences were not disclosed to the company. The price indications looked as follows.

Prospective underwriter	Price indication (pre-money)
Avanza	70-80 MSEK
Remium Nordic	130 MSEK
Falk and Nerpin	130 MSEK
Stockholm Corporate Finance	90-130 MSEK

Having visited all prospective underwriters, Avanza was removed from the list due to its low valuation. This was partly expected as “Avanza has a reputation for valuing IPOs very conservatively. We decided that Avanza’s valuation in the range 70-80 MSEK was too low,” the founder said.

¹⁴ www.avanza.se/foretag/corp/start.html

¹⁵ www.introduce.se/corporate-finance/

¹⁶ Mr. Falk and Mr. Nerpin are two Stockholm-based gentlemen who occasionally advise firms on IPOs. I.e., Falk and Nerpin is no firm in the sense the other underwriters are. No web site is available.

¹⁷ For more information on Stockholm Corporate Finance, please see www.stockholmcorp.se.

Falk and Nerpin showed great interest in the deal, but did not have the capacity within the appropriate time frame: They were unable to offer their services prior to 2015. Thus, they were crossed off the list.

Regarding the two finalists, the decision boiled down to the availability of the firms and their suggested issue price (which we will come back to under the section, “Issuers Reasoning on IPO Valuation”). Remium Nordic and Stockholm Corporate Finance showed an equal interest in the deal. However, SCF had fewer deals signed to the appropriate period. Moreover, the Motion Display IPO was comparably larger for SCF than for Remium Nordic. Thus, the founder and management were afraid that they would be deprioritised if they chose Remium Nordic. “We wanted to make sure that we were a big fish in the underwriter’s water,” the founder said.

Further arguments for SCF were (i) their experience, (ii) the quantity of large family investors, which was considered an appropriate investor base for this deal, and (iii) a better fee structure including a break-up fee of 200,000 SEK, which was 500,000 SEK below that of Remium Nordic. As a result, the decision was made to sign on with SCF as underwriter.

On the basis of Brau and Fawcett’s survey from 2006, we asked the founder to rank the following considerations regarding the choice of underwriter. In the following, “founder” indicates the founder’s answers, and “mean” indicates the survey average.

Importance regarding choice of underwriter	Founder	Mean
Underwriter’s overall reputation and status	4	4.39
Quality and reputation of the research department/analyst	1	4.25
Underwriter’s industry expertise and connections	1	4.24
Market making, trading desk, and liquidity provision services	1	3.50
Institutional investor client base of the underwriter	4	3.50
Pricing and valuation promises	4	3.24
Fee structure	4	2.75
Retail client base of the underwriter	4	2.67
Underwriter non-equity related services	1	2.54

In the observed case, the research department, industry expertise and other services played a small role regarding choice of underwriter with respect to the survey average.

The client base, valuation and fee structure, on the other hand, played a comparably important role.

4.3.1 Stockholm Corporate Finance's Evaluation of Motion Display Deal

Before SCF pitched in their services to Motion Display, they conducted a light due diligence. The main purpose was to establish if Motion Display was suitable to go public. SCF visited one of Motion Display's customers in central Stockholm to more closely examine the product. They found that it seemed promising. Furthermore, they looked closely at the people involved in MD. Its founder has worked as a CEO for a listed company before, and also founded and gone public with a company similar to Motion Display: Pricer AB. Its other board members also had a respectable background, SCF concluded. This served as a further indication that the firm was ready to go public, according to the underwriter. Naturally, all publicly available reports were studied by SCF, and they concluded that MD was suitable to go public.

4.3.2 Issuers Reasoning on IPO Valuation

Regarding the choice of underwriter, the suggested valuation constrained the prospective underwriters in both directions. On the one hand, Avanza was crossed off the list as a result of their low valuation. On the other hand, the founder argued; "we thought that Remium Nordic's indicative valuation was too high." This was seen an argument against that underwriter. This observation is inconsistent with the view that IPOs mostly serve to raise capital. However, it is consistent with Loughran and Ritter (2004), who argue that in later periods there has been less focus on maximizing the IPO proceeds.

The founder told us; "journalists tend to be unable to distinguish between the quality of a publicly traded stock and the underlying company". Therefore, he said, "a first-day positive return would result in positive media cover as the market price of the firm has increased." Prospective IPO underpricing was expected to result in positive media coverage, thereby creating an incentive for underpricing. Having said that, the founder was aware that the firm would give up an unnecessarily high share of equity for the same amount of cash, in the case of underpricing.

In further discussions on the important of the first-day performance, the rewarding of early investors was regarded as important. "We want to make sure that our early investors have a good experience," the founder argued. Thereby, the company identified yet another incentive to underprice the IPO.

4.3.3 Underwriters Valuation Process

In their initial pricing process, the underwriter combined (i) a simple discounted cash flow model (DCF model), (ii) an analysis of recent rights issues, as well as (iii) an evaluation of R&D investments that had been made throughout the years. Rather than incorporating these aspects into a single model, the underwriter evaluated the results separately.

The DCF was based on projections provided by Motion Display. Prior to applying those projections in the valuation method, they were “tuned down”. The underwriter did not specifically comment on how this was done. When considering the DCF, we noticed that the calculated net present value of that analysis should exceed 97.6 MSEK significantly, depending on the risk assumptions. The representative for SCF confirmed that, “the DCF serves to get a feeling of Motion Display’s risk and expectations for the future rather than finding a particular discounted value.”

Regarding the analysis of recent rights issues, the underwriter correctly stated that since the company had been founded in 2005, it has raised a total of 77.9 MSEK at an average price of 14.32 SEK per share (corrected for the 20:1 split). The average price of 14.32 SEK served as a benchmark as to what previous investors had been willing to commit to. This information was a key aspect of the issue price determination.

The underwriter estimated the total R&D investments made by the firm at 80 MSEK. “When evaluating the investments it is important to try to understand if money has been “destroyed” by the firm. For example, we ask: has the company changed strategy, and thereby made invaluable investments? Or has the company rather made investments in the past that are consistent with today’s strategy? Looking at Motion Display, we found that the company has invested wisely. Thus, we believe that the value of the company should exceed the amount that it has invested,” the representative for SCF told us. This line of argument served as a basis for how much the company should be worth on a minimum basis. The additional value comes from expectations for the future.

Two contributing factors when estimating the firm’s chances of success were the people involved and the firm’s past growth. The underwriter acknowledged the competence and background of the founder, board members, accountants and legal advisors of the firm. “Considering the growth of the firm and the people that work with it, we believe that it should be worth at least what has been invested in it,” the representative for SCF told us.

The former aspects of the valuation process were conducted prior to the decision that SCF was to become the underwriter. The formerly described valuation served as underlying material for the “pitch” that was held in order to receive the job (from the perspective of SCF). Once that decision had been made, the underwriter and issuers quickly came to an agreement regarding the issue price; it was to be set at 13 SEK per share. That decision was made on February 26th, 2014. “We concluded that the share should be attractive at 13 SEK, and Erik agreed with this,” the representative from SFC told us. The founder confirms that the issue price was quickly agreed upon. Furthermore he adds that, “the issue price was decided at an early stage in the IPO process.” In summary, we notice that the issue price was decided soon after the underwriter had been chosen. Thus, we observe that the underlying pricing process for the final issue price mostly took place prior to deciding which underwriter was to be chosen. This was possible due to the early decision that a fixed-price would be appropriate for this IPO. Motion Display and SCF agreed that it would be easier to succeed with a fixed price as it simplifies the decision-making process for investors. They believe that this method is more common for small firm IPOs such as themselves.

From a theoretical point of view, the pricing process may seem comparably simple and unscientific. When asked to elaborate on that statement, the SCF representative responded as follows: “At that time, several potential corporate advisors were making their case to Motion Display. Thus, we were unable to spend much time on the pre-contract due diligence and valuation of the company. We simply wouldn’t have time to do so, as we were working on existing projects. Once we would receive the contract, however, we would put effort into learning more about the firm.”

In summary, we have observed an interesting deviation regarding the timing of the pricing process relative to how it is described in theory: the timing of the pricing process is significantly skewed backward in the observed case. In this case, the practicality of the matter is that the price was decided upon shortly after the deal with Stockholm Corporate Finance was signed. Thus, the pricing process and modelling that was used as a basis to decide the issue price took place before the deal was signed. Considering the natural limitation to work on uncertain deals, the pricing process in this case turned out to be relatively simple and unscientific. Furthermore, please note that the decision regarding lock-up contracts was not made until March 7th, i.e., after the issue price had already been set. We will elaborate on this later in the paper.

4.4 Choosing Market

For Motion Display, the decision regarding the appropriate market choice always stood between First North¹⁸ and Aktietorget¹⁹, two Swedish Multilateral Trading Facilities (MTFs). Nasdaq OMX Stockholm²⁰ was out of the question due to its listing requirements; it requires companies to follow IFRS regulations, show its financial history and have certain board structure requirements as well as corporate governance codes. It is also subject to heavy scrutiny from financial analysts and institutional investors. Thus, Nasdaq OMX Stockholm was not considered an option. First North and Aktietorget don't require these standards. That made them natural choices for Motion Display.

On a more subjective level, the company considered these MTFs to be more attractive markets since they tend to be the growing ground for companies still in their expectation phase. Both markets hold plenty of companies that still haven't turned profitable, but have strong growth potential. The MTFs are also known for having a highly engaged retail investor base, which allows for higher trading frequency despite low turnover in SEK volume, something the company strives to obtain. Motion Display's hope is that a broad ownership base of retail investors will increase its brand and product recognition, and consequently lead to an increase in sales.

As soon as Stockholm Corporate Finance was hired as underwriter, they steered the company towards Aktietorget due to several factors. Mainly it was a question of direct costs. First North requires a certified advisor, which would cost roughly 180,000 SEK annually. On top of that, First North charges higher overall fees. Moreover, SCF believed that Aktietorget is under less screening from the financial sector. This was considered beneficial for Motion Display as they want to keep a low profile initially in terms of analyst coverage. The firm sought high product attention, yet low stock performance attention. As Aktietorget and First North share a mutual trading platform, there aren't any barriers for brokers to conduct trades on either exchange. In that sense, Aktietorget and First North target the same brokers.

Motion Display elaborated further on the benefits of listing at Aktietorget. They argue that the simplicity of their product is something that will go well with the retail investors that trade on Aktietorget, as they can easily relate to the product. They will enjoy encountering the products at their local retailers and word-of-mouth will play a key role in the equity marketing, the company argued. Aktietorget also hosts several

¹⁸ www.nasdaqomxnordic.com/about_us/firstnorth

¹⁹ www.aktietorget.se

²⁰ www.nasdaqomxnordic.com

gatherings for retail investors every year, which the company believes to be an important platform for marketing their stock in the future. For these reasons, the MTF Aktietorget was chosen as the appropriate market place.

4.5 Initial Information Gathering Phase

The first drafts for the initial prospectus were written a month prior to the subscription period. The process was a collaboration between Motion Display's CEO, who provided the company details, and representatives from SCF. Many versions of the prospectus were written before they arrived at the final. However, all versions were based on a fixed price issuance for 20.8 million SEK at a pre-IPO valuation of 97.6 MSEK, translating into an issue price at 13 SEK per share. As the valuation took place at an early stage in the IPO process, it has already been discussed in previous sections of the paper. Thus, we will not discuss it in this or future sections, but state that this is a deviation from the previously suggested theoretical IPO process.

The first step of the equity offering was to approach investors who specialize in obtaining a guaranteed portion of the issued shares at a certain discount. SCF was not fully content with the decision to approach guarantees. They argued that the issued shares would have enough interest on their own. However, they complied with MD's wish and engaged a specific group of investors within their network that specializes in these types of deals. Three meetings were set up with four to five investors present at each. The outcome of the meetings was a final share allocation of 10.4 million SEK at a discount of 8% (50% of issued shares). The demand exceeded the supply, which resulted in not every investor receiving the requested amount of shares. Motion Display carefully considered the trade-off between ownership dilution and insuring the success of the IPO before they decided to accept the investors' offers. Their final argument was that raising half of the required capital before the subscription would increase interest during the road show and official subscription period. This would in turn give the company leverage when approaching the investors in the subscription period. Furthermore, they found the stress relief factor of having their IPO "insured" to be worth the additional cost of diluting their shares. Some of the investors that came in during this initial phase were international, which was believed to increase the attractiveness of the IPO in general. The following is the list of guarantees:

Name	Guarantee (SEK)	Share of new stocks
SSE Capital	3,250,000	16%
Svea Lands SA	1,500,000	7%
Ulti AB	1,001,000	5%
Erik Danielsson	650,000	3%
Martin Sjöberg	650,000	3%
Hemo Spray & Pump	528,000	3%
Håkan Holmberg	520,000	3%
Rune Löderup	520,000	3%
Elander Invest AB	500,500	2%
Termidor AB	500,500	2%
Creocacus AB	260,000	1%
Falvir International Ltd	260,000	1%
Irgens Bergh	260,000	1%
Total	10,400,000	50%

On March 7th, it was decided that 90% of the ownership of key shareholders²¹ was to be subject to a 365-day lock-up agreement, starting from the first day of trading. Anders Lundmark would normally have been considered a key shareholder, seeing as he is a board member. With the approval of Aktietorget, Lundmark's shares were not restricted by any lock-up agreements on Mr. Lundmark's request. The lock-up restriction for the guarantees was set at 10 weeks. The investors that guaranteed the first half of the issued shares were given the option to buy an additional round of shares to the maximum amount of 8 million SEK from Erik and Rickard Danielsson at the offering price. The expiration date for these options was initially set to the IPO date. The reason for having such an extensive lock-up period was to signal to investors that the founder and key people within the organization strongly believe in the company and aren't looking to make a quick exit. Please note that the issue price was set prior to the decision regarding lock-up period for guarantees and key shareholders. In other words, we observe that the pricing process that led to the issue price may not have included an accurate consideration of the lock-up restrictions.

²¹ Erik Danielsson (Founder and Chairman) 26%, Rickard Danielsson (Former CEO) 10%, and Anna Engholm (CEO) 1%.

4.6 Marketing Phase and Subscription Period

Motion Display went on a road show, with the purpose of marketing the IPO. The CEO and the founder and chairman represented Motion Display at events in Stockholm, Malmö and Gothenburg. They notified their professional and private contacts regarding the IPO. The marketing activities of SCF included sending a teaser and the application form²² to their investment network of 4,000 people. The same goes for AktieTorget, which has an investor base of 8,000 people. In addition, SCF would target 40,000 potential investors through an independent connection.

4.6.1 *Postponed IPO Date*

Motion Display's initial IPO date was set for April 7th, 2014. On March 27th, the company made public that the subscription period was to be extended until April 4th, leading to a postponed first trading date set for April 22nd.

Press release of March 27th: "Motion Display Scandinavia AB has learned that private investors, due to technicalities in the setup of the new share issue, have not been able to use their investment savings accounts (ISK), or use the investment deduction (Investeraravdrag), when subscribing for the shares. The Board has therefore decided to extend the subscription period through Friday, April 4th 2014. New first trading day is scheduled for April 22nd. (...)"

On April 15th, a press release stated that "the listing on AktieTorget has been fully subscribed" and that the first day of trading was rescheduled for May 5th, i.e. almost two additional weeks. The second postponing of the issue date was due to lagged effects of the first postponed issue date. "We wanted to be absolutely certain that there was enough time to resolve the issues that led to the first postponing of the issue date. In essence we needed to make sure that every new shareholder indeed had received their new shares," the founder said.

4.7 IPO Takes Place and the Role of the Formal Contract

As our focus is on the IPO process rather than the event itself, we will not go into detail on the mechanisms on the IPO day. The formal contract between Motion Display and SCF was a fixed-price best effort contract. As formerly stated, this implies that the underwriter merely works as a broker in the sense that they don't hold any shares but rather market them to their contacts. The post-IPO price development is covered later in the paper.

²² "Anmälningssedel"

5 Theories on IPO Underpricing

In this chapter, we have reviewed existing theories on IPO underpricing, and re-categorized these theories into five subgroups: (i) asymmetric information, (ii) compensation to early investors (iii) deliberate measure to ensure certain outcome, (iv) agency conflicts, and (v) issuers don't mind leaving money on the table. The purpose of this approach is to better be able to view existing theory in light of what we have learnt from our observations.

5.1 Asymmetric Information

Baron and Holmstrom (1980) and Baron (1982) argue that underwriters exploit superior market knowledge to underprice issues, minimize marketing effort, and ingratiate themselves with buy-side clients.

Rock (1986), proposes a winner's curse model based on information asymmetry. Rock assumes that investors are informationally heterogeneous, i.e., some investors (better-informed) know more than others (ordinary investors) about the quality of IPO firms. Hence, better-informed investors only bid on the attractive IPO offerings and leave the overpriced IPOs to ordinary investors. Therefore, to entice the continued participation of ordinary investors, IPO firms use IPO underpricing to compensate for losses by ordinary investors due to the winner's curse.

An and Chan (2008), offer an alternative approach that provides support to the former evidence. They find that firms with credit ratings one year prior to the IPO face on average 17% less underpricing than firms without credit ratings. The credit ratings themselves, however, have no significant impact on the level of underpricing. An and Chan imply that the existence of credit ratings reduced asymmetric information in the IPO market, which in turn reduced underpricing.

Lam and Yap (1998), provide evidence that the first-day price behaviour of the Singaporean-tendered IPOs is consistent with the information asymmetry explanation.

Beatty and Ritter (1986) argue that investor uncertainty about the IPO firm biases offering prices lower than the unknown future market price. One could argue that the investor uncertainty is based on information asymmetry, in which case this paper does offer evidence to the asymmetry explanation.

Benveniste and Spindt (1989), Benveniste and Wilhelm (1990) and Spatt and Srivastava (1991) argue that underpricing rewards sophisticated investors for divulging

accurate valuation information during the book-building process. This is another line of argument supporting the information asymmetry argument.

Schrand and Verrecchia (2005) found evidence supporting that greater disclosure frequency in the pre-IPO period is associated with lower underpricing. However, the paper found the opposite evidence regarding the disclosure frequency of Internet companies. This offers mixed support to the information asymmetry explanation of underpricing.

In summary, many researchers have indicated their support to the information asymmetry argument. In fact, the information asymmetry argument stands out as one of the most documented suggested answers to the underpricing puzzle.

5.2 Compensation to Early Investors

Ellul and Pagano (2006) argue that in addition to expecting compensation for the firm's fundamental risk and adverse selection costs, they expect additional compensation for providing liquidity. Benveniste and Spindt (1989) found an association between underpricing and price adjustments during the pre-IPO period. Their explanation is that underpricing compensates informed investors for providing truthful information about firm prospects through their pre-IPO demand orders. IPO underpricing depends on riskiness of the issue, argues Ritter (1984). Riskier IPOs will be more underpriced than less risky ones. This prediction is based on the assumption that underpricing occurs as an equilibrium condition to induce investors to participate in the IPO market. This may indicate that underpricing is a result of compensation to early investors for taking on risk. Further evidence that risk is a driver of underpricing is provided by Rock (1986).

5.3 Underpricing as a Deliberate Measure to Ensure Certain Outcome

Welch (1992) models the idea that underpricing can cause a domino or cascade effect among investors that raises demand for the issue. Habib and Ljungqvist (2001) argue that underpricing allows for cost savings in other areas of marketing the issue. Demers and Lewellen (2003) assert that underpricing brings attention to the stock on the opening day. Boehmer and Fishe (2001) demonstrate that underpricing increases the after-issue trading volume of the stock. Booth and Chua (1996) propose that underpricing helps ensure a wide base of owners to increase the liquidity of the newly publicly listed firm. Brennan and Franks (1997) agree that underpricing allows for a wide base of owners but argue that the motivation is to entrench management. Stoughton and Zechner (1998) argue that underpricing allows for the creation of block holders that can increase

monitoring. Maynard (2002) and Griffith (2003) suggest that underpricing permits spinning – the enriching of executives or their favoured clients. Aggarwal (2003), Fische (2002) and Krigman, Shaw and Womack (1999) argue that underpricing allows for the practice of flipping by favoured investors. Ljungqvist and Wilhelm (2003) assert that underpricing enriches friends and family through directed share programs. Tinic (1988), Hughes and Thakor (1992) and Drake and Vetsuypens (1993) suggest that underpricing may serve as a protection against possible future litigation from investors. Aggarwal, Krigman and Womack (2002) have developed a more aggressive theory suggesting that the management deliberately underprices the IPO in order to create an information momentum that will drive up prices to abnormal levels at the time when the lock-up period ends. Thus, enabling holders of shares with lock-up periods to sell at a higher price than if the underpricing would not have taken place.

In summary, the former evidence indicates that the underpricing may be viewed as a deliberate measure to achieve a certain outcome. We will come back to this under the section “findings”. We will argue that our observations provide support to the notion that underpricing may be viewed as a deliberate measure to ensure a certain outcome.

5.4 Agency Conflict Explanations

Schenone (2004) documents that IPO firms with a pre-IPO banking relation with a prospective underwriter have 17% less IPO underpricing on average. It would make sense that an established banker relationship would help align the issuers and underwriter’s interests. Therefore this evidence goes hand in hand with the suggestion by Ritter and Welch (2002) and Loughran and Ritter (2002) that underpricing depends to a large extent on conflicts of interests between underwriters and issuers. Furthermore, Pulliam and Smith (2000, 2001) suggest that the arguably over-powered underwriters may deliberately leave more money on the table than necessary, in order to enrich their buy-side clients in exchange for other goods or services unrelated to the IPO.

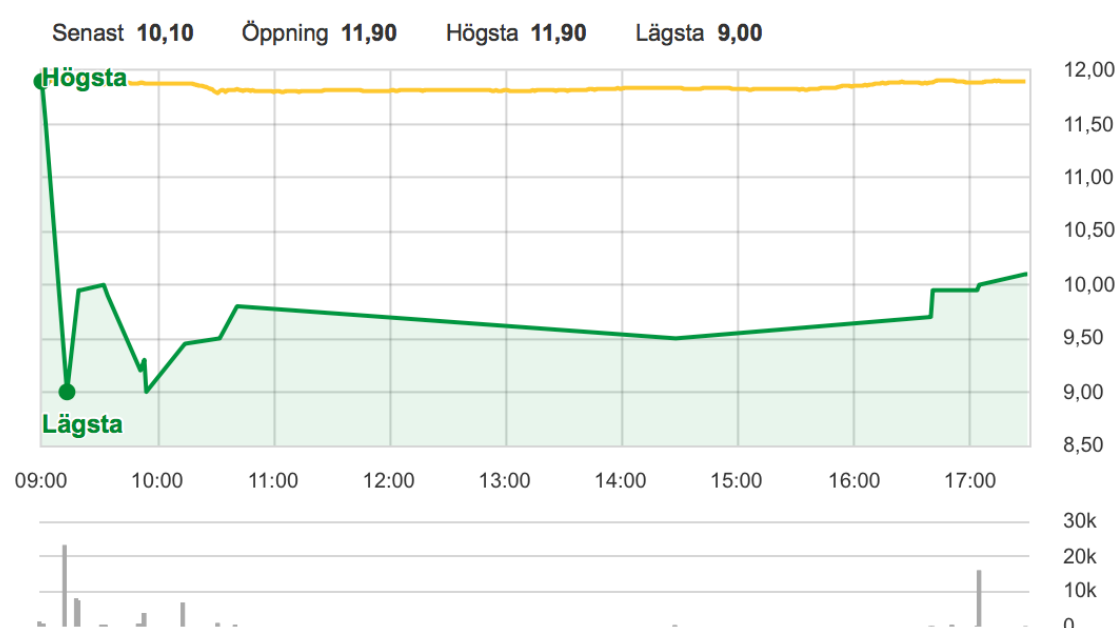
5.5 Issuers Don’t Mind Leaving Money on the Table

Loughran and Ritter (2002) connect mental accounting to the phenomenon that issuers do not get upset when leaving money on the table in IPOs. They advance a behaviour theory that suggests issuers are pleasantly surprised with the amount they can raise in the IPO (i.e., their new-found personal wealth). Thus, according to theories on mental accounting, the issuer does not correctly evaluate the indirect cost of underpricing. Under prospect theory, they are not significantly concerned with underpricing and

therefore it exists. This goes hand in hand with empirical evidence: in the average IPO, \$ 9.1 million is left on the table. This represent roughly twice the amount paid to investment bankers in fees, i.e. a large indirect cost of going public. Thus, issuers should from a rational point of view be concerned with the indirect cost of underpricing. Ljungqvist and Wilhelm (2003) provide an alternative explanation to this phenomenon; it could be explained by reduced CEO ownership, fewer IPOs containing secondary shares, increased ownership fragmentation and an increased frequency and size of “friend an family” share allocations. These changes made issuing firm decision-makers less motivated to bargain for a higher offer price.

6 Case Study: IPO Performance of Motion Display

On May 5th, Motion Display’s was taken public. The stock now trades under the ticker “MODI” on the MTF AktieTorget. The share experienced an immediate price-drop, with a first-of-the-day order at 11.90 SEK. This turned out to be the highest priced transaction of the day. The share closed at 10.10 SEK, which represents a price drop of 22.3% with respect to the issue prise of 13 SEK. That implies that the IPO was overpriced by 22.3% on the first day of trading. The following graph shows the price development and trading volume for day one. The yellow line represents the OMX Stockholm 30 index. The green line represents Motion Display.



The founder had the following comment on the first trading day: “As expected, the first day trading volume was low. This is usually the case on AktieTorget. Early investors²³ who were given the opportunity to lower their average acquisition cost prior to the IPO²⁴ were able to sell shares with profit at prices below the issue price. Thus, they dominated the trading that took place on day one.”

This paper is based on a descriptive case study. It focuses on the process rather than the outcome. Therefore, we will not further comment on the IPO performance.

7 Findings

First, we aim to explain why issuers don’t mind leaving money on the table. Our discussion is connected to the degree to which underpricing is deliberate. We suggest that underpricing may be a deliberate measure to ensure a certain outcome. Having reviewed existing theories on underpricing, we argue that many existing papers support the notion that underpricing can indeed be deliberate. This, in turn, helps explain why issuers don’t mind leaving money on the table.

Second, we observe that in fixed-price IPOs, the issue price can in some cases be set prior to the determination of lock-up restrictions. On this basis, we elaborate on the effect, which the absence of lock-up information at the time of the issue price decision might have on underpricing. We develop what we refer to as the “issue supply and demand aspect of fixed-price underpricing”. We conclude that this line of argument requires further research.

7.1 Why Issuers Don’t Mind Leaving Money on the Table

We observe that (i) the issuer does not evaluate IPO performance in absolute terms, (ii) the issuer distinguishes between direct and indirect IPO costs, (iii) the issuer has a willingness to reward IPO investors, and (iv) the issuer accepts that positive media attention comes on the premises of the media. These observations help explain why issuers don’t mind leaving money on the table.

First of all, we observe that the issuer does not evaluate IPO performance in absolute terms. If successful, the IPO will raise 20.4 MSEK regardless of the issue price.²⁵ Hence, the external capital raised is neither affected by the issue price nor by the

²³ Referring to shareholders who had bought shares at a comparably high price many years ago.

²⁴ This was possible through a pre-IPO emission at 7.50 per share, available to certain shareholders only.

²⁵ Motion Display deliberately raises this amount, and not more, due to a regulatory limit of € 2.5 million.

post-IPO market price.²⁶ The only effect of the IPO performance is the degree to which pre-IPO owners “water out” their holdings. We observe that the “watering out” of shares is not measured in absolute, monetary terms. As a result, the issuer is not concerned with leaving money on the table. This is consistent with Loughran and Ritter (2002), who connect mental accounting to the existence of underpricing.

Our second observation is that the issuer distinguishes between direct and indirect IPO costs. On the one hand, the cost for corporate advisory (direct cost) is taken into account when choosing underwriter: The comparably small break-up fee of Stockholm Corporate Finance was a winning argument for that prospective underwriter. On the other hand, the differences in indicative issue prices (indirect cost) were not perceived as a cost. In fact, one underwriter who suggested a high issue price was deprioritised for exactly that reason. Negative cash flows are viewed as direct costs, and thus measured in absolute terms. The indirect cost of underpricing is not necessarily seen as a cost. Therefore, it is not measured in absolute terms. As a result, one unit of direct cost is perceived as less negative than one unit of an indirect cost. This may help explain why the issuer does not mind leaving money on the table. This is consistent with the theory of mental accounting, developed by Thaler (1999).

Third, we observe a desire to reward IPO investors. This observation is made on both firm level and underwriter level. “It is important that the new shareholder gets a positive experience of investing in Motion Display,” the founder stated. Furthermore, the SCF representative said, “if we can take the company public now, it will not matter all too much whether we dilute existing owners with 10, 15 or 20%. The most important thing is that Motion Display gets happy, new owners” Clearly, rewarding IPO investors is important. This creates an incentive to underprice the IPO.

Fourth, we observe that the issuer accepts that positive media coverage comes on the premises of the media. “More often than not,” the founder told us, “the media is unable to distinguish between a good firm and a good stock.” Should the IPO be overpriced, it would be seen as something negative, due to the first day decline in the share price. For the firm, however, overpricing would imply cheap capital. “The media is generally not willing to enlighten that aspect of IPO underpricing,” the founder said. As a result, underpricing the IPO would imply positive media coverage. This again created an incentive to underprice the issue. We argue that this is consistent with Brau and Fawcett (2006), who find that “a large first day stock price jump” is considered as a positive signal

²⁶ Please note that this only goes for fixed-price IPOs with a fixed amount of issued shares, as is the case on Motion Display.

(3.77/5), according to a survey of 336 CFOs.

Observation one through four support that issuers don't mind leaving money on the table. Observation three and four also suggest that underpricing may be deliberate. On that basis, we argue that underpricing can be a deliberate measure to ensure a certain outcome. We will now further elaborate on this.

The notion that an IPO serves to raise new capital is a widely recognized incentive to go public. However, we observe that the incentives to go public include, yet go beyond, the need for new capital. In accordance, the discussion on the appropriate issue price goes beyond simply attempting to maximize the IPO proceeds. This is consistent with Loughran and Ritter (2004), who argue that in later periods there has been less focus on maximizing the IPO proceeds.

We have examined existing theory on IPO underpricing. We conclude that many existing papers support our suggestion that underpricing might be a deliberate measure to ensure a certain outcome. We will shortly describe the existing theory that offers support to our suggestion.

Welch (1992) models the idea that underpricing can cause a domino or cascade effect among investors that, in turn, raises demand for the issue. Habib and Ljungqvist (2001) argue that underpricing allows for cost savings other areas of marketing the issue. Demers and Lewellen (2003) assert that underpricing brings attention to the stock on the opening day. Boehmer and Fishe (2001) demonstrate that underpricing increases the after-issue trading volume of the stock. Booth and Chua (1996) propose that underpricing helps ensure a wide base of owners to increase the liquidity of the newly publicly listed firm. Brennan and Franks (1997) agree that underpricing allows for a wide base of owners, but argue that the motivation is to entrench management. Stoughton and Zechner (1998) argue that underpricing allows for the creation of a block holder that can increase monitoring. Maynard (2002) and Griffith (2003) suggest that underpricing permits spinning – the enriching of executives or their favoured clients. This argument also implies that underpricing is a measure for the investment bank to ensure a certain outcome. Aggarwal (2003), Fishe (2002) and Krigman (1999) argue that underpricing allows for the practice of flipping by favoured investors. Flipping is the practice of holding, and then dumping, shares within a short time frame. Ljungqvist and Wilhelm (2003) assert that underpricing enriches friends and family through directed share programs. Tinic (1988), Hughes and Thakor (1992) and Drake and Vetsuypens (1993) suggest that underpricing may serve as a protection against possible future litigation from

investors. Aggarwal, Krigman and Womack (2002) have developed a more aggressive theory suggesting that management deliberately underprice the IPO in order to create an information momentum that will drive up prices to abnormal levels at the time when the lock-up period ends. Thereby, enabling holders of shares with lock-up periods to sell at a higher price than if the underpricing would not have taken place.

We argue that the papers mentioned offer support to our suggestion that underpricing might be viewed as a deliberate measure to ensure a certain outcome. Please note that we clearly distinguish between (i) underpricing as something that is necessary to ensure that the IPO takes place (Ellul and Pagano, 2003; Benveniste and Spindt, 1989; Ritter, 1984; Rock, 1986), and (ii) underpricing as something that in itself serves to ensure a certain outcome.

In summary, we find that the issuer does not mind leaving money on the table. This is supported by all of our four observations (see 7.1, first paragraph). Furthermore, we argue that two of our observations (desire to reward IPO investors and secure positive media coverage) indicate that underpricing might be deliberate, and that it serves to ensure a certain outcome. For this argument, we find support in existing research.

7.2 Issue Supply and Demand Aspect of Fixed-Price Underpricing

Motion Display issued 1.6 million shares at 13 SEK per share in its IPO. The issue price was effectively agreed upon on February 26th. The decision concerning lock-up restrictions for key shareholders was made on March 7th. After discussions with AktieTorget, it was decided that 90% of the holdings of key shareholders were to be subject to a full-year lock-up agreement. (Except Mr. Anders Lundmark's²⁷ holdings, which were excluded from all lock-up contracts upon his request). In other words, the underwriter can not have included the correct lock-up agreements in the pricing process, as they had yet to be decided at the time.

On the basis of this observation, we will now elaborate on what we refer to as the “issue supply and demand aspect of IPO underpricing”.²⁸ As the level of lock-up restrictions directly affects the level of share supply on the first day of trading, the level of lock-up restrictions should also have a direct impact on the market price. This is in accordance with the widely recognized theory of supply- and demand effects on market prices (Denham-Steuart, 1767; Smith, 1776; Ricardo, 1817). The level of lock-up

²⁷ Anders Lundmark is a board member. Thus, it would be normal to include his holdings.

²⁸ Please note that the following suggestions are based on observation of a fixed-price IPO. Thus, our suggestions mostly go for fixed-priced IPOs.

restrictions will in turn affect the level of underpricing, given that the issue price remains unchanged.²⁹

We derive the same chain of action through a similar line of argument. As the level of lock-up restrictions should affect the first-day trading volume, the level of lock-up restrictions should also have an impact on the post-IPO market price. Thus, underpricing should be affected. Again, we assume that the issue price remains unchanged. The effects on underpricing by share supply and trading volume are closely linked. The essence of our notion is that the level of lock-up restrictions will have an impact on underpricing, one way or the other, under the assumption that the issue price remains unchanged.

The lack of certain lock-up considerations in the pricing process should lead to an over- or underestimation of the issue price, depending on whether the underwriter over- or underestimated the degree of lock-up restrictions. In the absence of information regarding lock-up restrictions at the time of the determination of the issue price, underpricing will increase given that underwriters make too low assumptions regarding the final level of lock-up restrictions and vice versa. This line of argument requires an elaboration on whether underwriters under- or overestimate lock-up restrictions in the absence of such information at the time of the issue price decision.

So, do underwriters under- or overestimate the lock-up agreements? We argue that it becomes conceptually more difficult to price an asset with decreasing supply. I.e., it is more difficult to price an asset with $< 100\%$ supply rather than full supply. As financial modelling, as any modelling, is about simplifying the world, we expect that underwriters assume (consciously or subconsciously) low lock-up restrictions in the absence of accurate information.

We have established that absent lock-up information at the time of the issue pricing will affect underpricing. Until this point, we have argued that the chain of action is dependent on an assumption regarding the underwriters estimated lock-up level. Some may argue that underwriters are capable of making conscious or subconscious assumptions based on unwritten industry standards in the absence of accurate information. In our analysis we will now assume that the underwriter is on average capable of guessing the correct lock-up level. We will now show that our chain of action holds even under that assumption.

²⁹ By "issue price remains unchanged" we mean that the issue price is not changed or updated when lock-up restrictions are finally decided.

Although the underwriter may be able to guess correctly on average, the presence of an additional assumption, rather than certain information, will lead to higher risk. The issue price should, in turn, be set to a lower level due to the added risk. A lower issue price will, all else equal, lead to higher underpricing. In other words, our suggested chain of action holds even under the assumption that the underwriters guess correctly on average. This notion is consistent with Ritter (1984), who suggests that IPOs with a higher risk should be more underpriced.

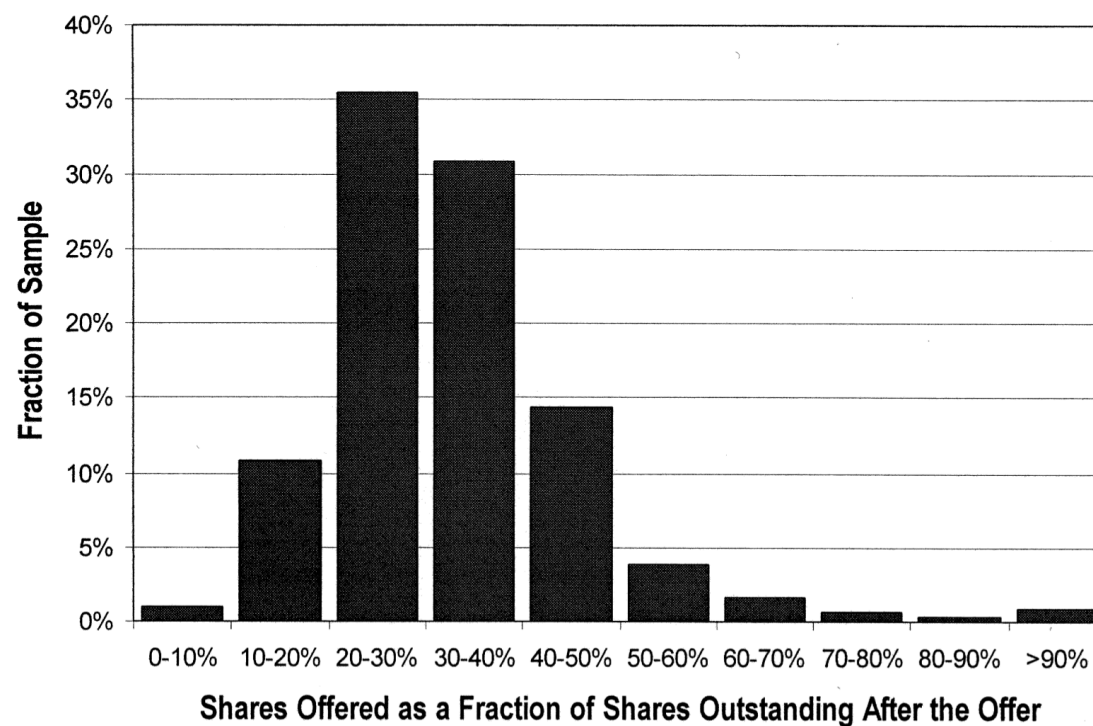
Having established that our proposed chain of action holds, we will attempt to indicate the magnitude of this effect. To illustrate the magnitude of variation in lock-up restrictions, and thus what we suggest is the magnitude of our notion, we will shortly describe the lock-up agreements of Motion Display. Then we will set the observed lock-up restrictions in relation to “normal levels”.

The shares that were subjects of lock-up restrictions turned out to represent 46.3% of the company on the first day of trading. 9.7% were subject to a 10-week lock-up agreement, and 36.6% were subject to a full-year lock-up agreement.

Name	# shares	% of post-IPO total # shares	Lock-up restrictions		
			10w	1y	Total
Erik Danielsson	2,367,200	29%		25.9%	25.9%
Rickard Danielsson	896,540	11%		9.8%	9.8%
Anna Engholm	89,400	1%		1.0%	1.0%
Anders Lundmark	610,240	7%			
Others	3,476,100	42%			
Total (pre money)	7,439,480	90%			
Guarantees	800,000	10%	9.7%		9.7%
Non-guarantees	800,000	10%			
Shares issued (IPO)	1,600,000	19%			
Total (post money)	8,239,480	100%	9.7%	36.6%	46.3%

To set the observed lock-up contracts in relation to “normal” lock-up levels, we have considered a study by Field and Hanka (2001) that covers a sample of 1,948 US IPOs in the time period 1988-1997. Unfortunately, no comparable study is available for the

Swedish IPO market. In Field and Hanka's sample, the average lock-up period is 187 days and covers an average of 63% of the company. The spread of shares offered as a fraction of shares outstanding after the IPO in Field and Hanka's survey is illustrated below.



The sample of Field and Hanka shows that there are large deviations in lock-up restrictions. Roughly 65 % of the sampled IPOs have lock-up restrictions covering the range 60-80%. As previously stated the sample average is 63%. We assume Field and Hanka's sample is representable for the Swedish IPO market. Hence, the lock-up agreements of Motion Display cover 26.4 percentage points less of total ownership than the average. The deviation of 26.4 percentage points between Motion Display and the sample mean of Field and Hanka is considerably large. This should illustrate the magnitude of variation in lock-up contracts, and thus the possibly large effect of our suggested chain of action.

In summary, we find that the level of lock-up restrictions directly affects the level of underpricing, given that the issue price remains unchanged. This notion holds even if underwriters guess correctly on average. To the best of our knowledge, this notion is new to research. Most likely so because the normal case is that the lock-up restrictions are, indeed, decided upon prior to determining the issue price. If the observed scenario is rare, this paper does not add significant value to neither academics nor practitioners. However, if the scenario is common, we argue that further research should be done.

8 Conclusion

We support the notion that issuers don't mind leaving money on the table. We observe that (i) the issuer does not evaluate IPO performance in absolute terms, (ii) the issuer distinguishes between direct and indirect IPO costs, (iii) the issuer has a willingness to reward IPO investors, and (iv) the issuer accepts that positive media attention comes on the premises of the media. These observations help explain why issuers don't mind leaving money on the table, partly because the issuer is not sufficiently concerned with underpricing (observation i and ii), and partly because the issuer sees underpricing as a deliberate measure to ensure a certain outcome (observation iii and iv).

Furthermore, we observe that in our case the issue price was determined prior to deciding the degree of lock-up restrictions on key shareholders. We conclude that the absence of accurate information on lock-up restrictions at the time of the determination of the issue price, should lead to higher underpricing given that the issue price remains unchanged. This notion holds when we assume that underwriters, on average, correctly guess the lock-up levels. We refer to this notion as the "issue supply and demand aspect of fixed-price underpricing", and argue that further research is required.

9 Suggestions for Further Research

We suggest that further research is done regarding the suggested "issue supply and demand aspect of underpricing". We argue that researchers first should look into whether the observed scenario is common or not. Furthermore, we suggest that researchers should evaluate the differences in underpricing between high- and low level lock-up restrictions. If successful, this might provide a basis for the incorporation of lock-up considerations in issue pricing models. In summary, we ask researchers to raise the question: "Are issue supply considerations a missing aspect of issue price determination?" Our paper suggests that they might be.

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