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Fall

New discoveries on the pricing of private companies in Sweden

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Abstract

There are several factors that influence the pricing of private companies differently in comparison to listed companies. The most prominent of these factors is the lack of liquidity. Owners of private company stock cannot easily sell the stock on a ready market, as is the case for publicly trade stock. Several studies have confirmed that private companies sell at a discount relative to listed companies, namely the Private Company Discount (PCD). There are indications of a widespread use of a PCD in Sweden in the pricing of private companies, yet, there has never been a study that confirms the existence of a PCD on the Swedish market. The scope of this study is set to create an index on behalf of Ernst & Young, comparing the pricing of private companies with listed companies. Such a comparison enables the measurement and analysis of a PCD on the Swedish market. The results from this study are remarkable. The average discrepancies in pricing between listed and private companies are too small to be statistically significant. Although there are possible distortions in the study, it seems that the PCD was, for the period 2005 – 2008 Q3, much lower on the Swedish market than what is the general perception and use of the PCD. Moreover, although the study cannot prove the existence of a PCD over the whole four-year period, it can be proved for certain periods, namely in economic booms. This means that the PCD varies over the economic cycle. These discoveries turn the use of a standardized PCD inadequate – we argue for the use of a price index for future reference when applying a PCD on a private company's value.

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1. Introduction

This chapter introduces the concept of the PCD, its background, and why it is an interesting subject to study. The problem discussion and the purpose define the goals and intentions of this study, whereby a disposition of the continuing pages is presented.

1.1 Background

There is an assumed discrepancy between the value and the price in transactions of private companies. In liquid stock exchanges, highly traded stocks are traded at their estimated value, but this might not be the case for private companies. It is argued that companies that are not sold in stock exchanges are priced lower than their exchange traded equivalents[1]. This difference in price is known as the Private Company Discount (PCD). John Koeplin, Atulya Sarin, and Alan Shapiro estimated a PCD of 20-30 % in their study on the Private Company Discount, when comparing evaluation multiples of private firms with listed firms.[2] Further, data published by the Mergerstat Review also provide evidence that private companies sell at a discount[3].

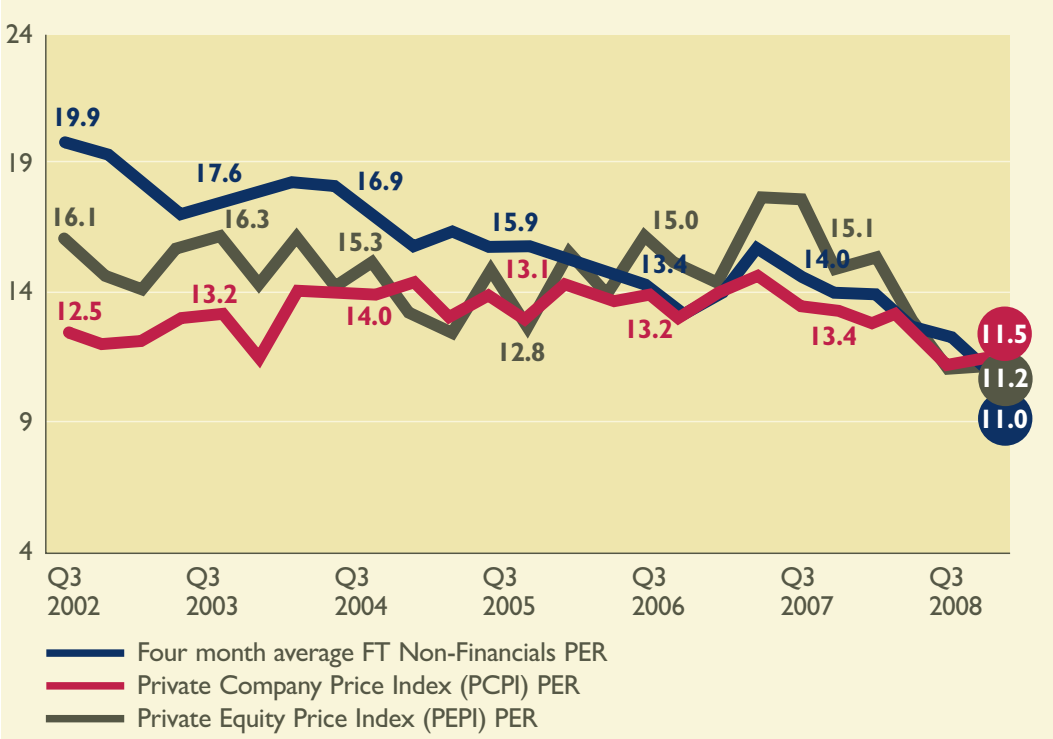
The PCD is a function of several factors that differ between private firms and publicly traded firms. The most prominent factor is the lack of liquidity in private company stock in comparison to publicly traded stock.[4] Owners of shares that are not traded on a stock exchange have more trouble selling their interests, as it is costly and time consuming to find a buyer and includes great uncertainty.[5] Empirical evidence, such as a study conducted by William Silber, have estimated and confirmed the existence of a discount for illiquidity[6].

In the United Kingdom, the accountancy firm BDO Stoy Hayward is tracking, per quarter, the average price-earnings multiples (P/E) of the London Stock Exchange (LSE) compared with the P/E multiples in private transactions. They

[1] *Koeplin, Sarin, Shapiro, 2000*
[2] *Ibid*
[3] *Pratt, Reilly, Schweihs*, 2000, p. 415
[4] *Koeplin, Sarin, Shapiro, 2000*
[5] *Pratt, Reilly, Schweihs*, 2000, p. 393
[6] *Silber, 1991*

also have an index following acquisitions made by Private Equity firms. This study, called the Private Company Price Index (PCPI)[7] shows that there exists a PCD on the UK market and that the pricing of firms changes over time, but it also shows that these changes differ in magnitude and pattern between exchange-traded firms and private firms.

The Private Company Price Index (PCPI)



The PCPI is a study, made by LBO Stoy Hayward, covering private transactions made in the United Kingdom. It displays the Price-Earnings (P/E) multiples, calculated as the equity value of the target divided by its historic after-tax profits. The index's transactions are focused on the mid-market size of £50-£250m. BDO excludes any deals that are statistically spurious from the sample or any high values that will affect the sample. They do not alter the listed index.[8]

Ernst & Young Transaction Advisory Services (E&Y) in Gothenburg recognizes the fact that there is a general PCD and that the relation in pricing of private and listed firms is changing over an economic cycle. They have in the last three years been taking steps in trying to establish an index measuring the price difference between private and listed firms on the Swedish market. However, it requires too much time to be carried out within their daily work. On the contrary, the task is quite suitable for a thesis. Strangely, nobody has ever before created a similar index in Sweden.

[7] *BDO Stoy Hayward*
[8] Shah, Navdeep

An index measuring the price difference between private and public companies on the Swedish market would be of great interest for Ernst & Young, as well as for other professionals, in their daily work when valuing private companies, as it can be used as a reference for applying an appropriate PCD.

1.2 Problem discussion

There has been numerous studies confirming and determining the PCD throughout the years. For example, the study conducted by Koeplin, Sarin and Shapiro clearly shows, just as the PCPI, that the valuation multiples for public companies are higher than those of private companies, and that private companies sell at a discount[9]. Several of the studies equal the PCD with a discount for illiquidity, while other studies also acknowledge other factors being important determinants. A study that equals the PCD with an illiquidity discount was conducted by William Silber, estimating a discount of 33.75 %[10]. Another one was conducted by John D Emory, estimating a discount for illiquidity of 44%[11].

A study conducted at the University of Toronto acknowledges not only illiquidity but also low earnings quality as a prominent factor influencing the PCD[12]. Earnings quality refers to the ability of a company's reported earnings to reflect its true earnings, and also its ability to predict future earnings[13]. There are also factors that have a diminishing effect on the PCD. One example is that larger blocks of shares tend to have a higher value due to ownership control, and therefore results in a lower discount[14]. Thus, it is not possible to measure pure illiquidity, but it is however possible to measure a PCD.

None of the earlier studies has remarked that the PCD is actually changing over an economic cycle, as is clearly seen in the PCPI. Only Damodaran mentions briefly that the illiquidity discount could change over time as investors' desire

[9] *Koeplin, Sarin, Shapiro, 2000*
[10] *Silber, 1991*
[11] *Emory, 1997*
[12] *De Franco, Gavious, Jin, Richardson, 2007*
[13] *Ibid*
[14] *Pratt, Reilly, Schweihs, 2000, p.418*

for liquidity changes over time[15]. However, the question is if there could not be more factors that influence changes in the PCD. Moreover, professionals that value companies seem to be using a static PCD rate, in size with those determined in American studies[16]. However, there has never been a test to measure the actual size of the PCD on the Swedish market. It is possible that it can differ considerably from studies made in other countries.

This study is intended to examine weather there exists a PCD on the Swedish market, measure its size, and to see how this discount changes over an economic cycle. The question that rises consequently is whether or not it is possible to determine the factors behind the changes. Given the initiation from E&Y, to create a private company price index for the Swedish market, this index will provide data for further analyses, namely:

- Is there a PCD on the Swedish market?
- Is the difference in pricing of private companies relative to listed companies static, or is it changing over an economic cycle?
- What factors determine the pricing of private companies, and how do they differ from the factors determining stock prices?

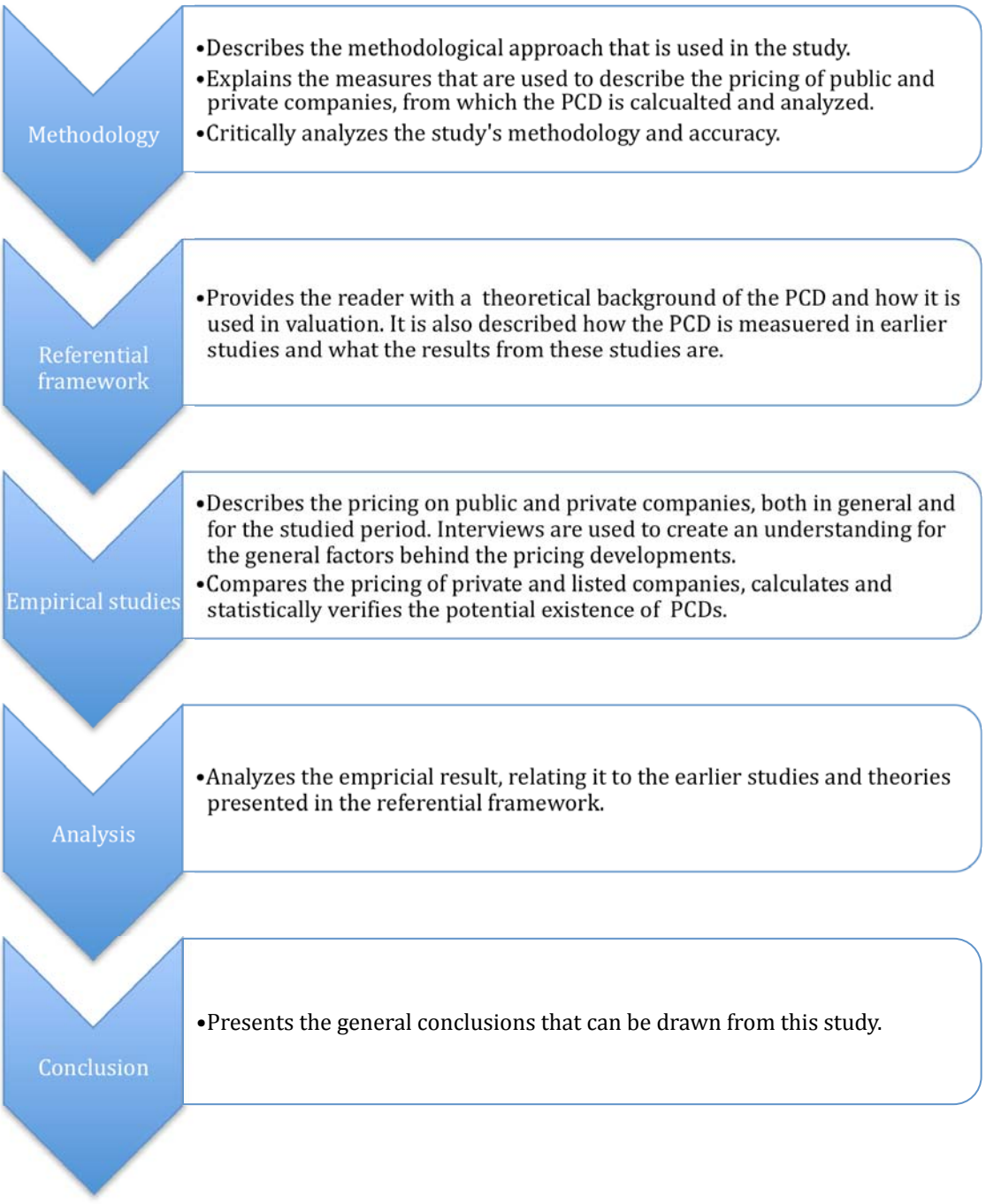
1.3 Purpose of the study

The purpose of this study is to describe and analyze the pricing of private firms on the Swedish market in relation to the pricing of publicly traded firms. A database is established on private transactions in Sweden, with the intention to use this database to create indexes on the prices of private firms in comparison with listed firms in Sweden. This will provide E&Y with a description and analysis of the pricing of private firms on the Swedish market, which will be useful for them in their work when valuing companies.

In addition, the purpose is to use the indexes to confirm if a PCD exists on the Swedish market, if it changes over an economic cycle, and thereafter identify the key factors behind these changes.

[15] *Damodaran, 2006, p. 523*
[16] *Carlström, Malin*

1.4 Disposition



2. Methodology

This chapter describes the process of how the methodological approach is chosen and how the study is conducted. Finally, the accuracy and credibility of the study is discussed.

2.1 Methodological approach

There are two types of methodological approaches to choose from when conducting a study: a quantitative approach and a qualitative approach. A quantitative study involves numerical information and is characterized by its objective portrayal and its ability to present standardized and reliable information[17]. A qualitative study is characterized by its ability to cover all contents in a study, and to create understanding and in depth description[18]. However, there is a risk of the information being more subjective and less reliable in a qualitative study[19].

The scope of this study is set to analyze the pricing of private companies in relation to publicly traded companies on the Swedish market. In order to obtain an accurate and generalized result on which one can draw statistically reliable conclusions, a quantitative approach is needed. The analysis therefore takes place through the creation of an index based on numerical information. However, the third questioned mentioned above in the problem discussion cannot be answered with only quantitative data as a base. The factors that determine the pricing of private companies and how they differ from the factors that determine stock prices cannot be identified purely by looking at the index. Therefore, in order to obtain a deeper understanding and presenting a more detailed description of the pricing situation, qualitative information is also gathered. With this as a base, a more in-depth analysis of the indexes is made, which enables the possibility to draw conclusions. Interviews are carried out with professionals within three different fields, providing expert knowledge on valuation and pricing. Professionals on the stock market provide information on factors that influence the pricing on the stock market. Professionals within Private Equity

[17] *Holme, Solvang, 1997, p.13*
[18] *Ibid*
[19] *Wallén, 2003, p. 73*

firms and professionals within private companies in a consolidation mode provide information on factors that influence the pricing of private companies.

The indexes include transactions where the target company is Swedish, and stretches from 2005 Q1 to 2008 Q3. The geographical limit and time period is set for practical reasons.

The chosen mode of procedure can be outlined in four steps:

1. The creation of a database, containing valuation multiples on private transactions of Swedish companies 2005 – 2008 Q3. The database is based on extractions from the Mergermarket database, provided by E&Y, and is complimented by data from the target and acquiring companies' financial statements.
2. The creation of a number of indexes where the average P/E, enterprise value-to-EBIT (EV/EBIT) and enterprise value-to-EBITDA (EV/EBITDA) multiples on private transactions are compared to the same average multiples of the stocks on the Swedish stock exchange OMX. From these indexes, it is possible to determine if a PCD is present on the Swedish market and also track changes in the PCD over an economic cycle.
3. The identification of the factors behind changes in the PCD takes place through the analysis of interviews with different players on the Swedish capital markets. Interviews are done with professionals within three different fields: financial analysts specialized on the stock exchange, analysts from Private Equity firms, and investment managers from companies that have had a strong consolidating mode throughout the period. By analyzing the interviewees' views on the key drivers of changes in valuation and pricing of firms in their respective fields during the period, it should be possible to distinguish drivers that differ between private and exchange-traded firms, that is, factors that drive changes in the PCD.

4. The result is analyzed and also compared to earlier studies and the referential framework, presented later in this study.

2.2 Valuation multiples

In order to ascertain a more reliable result and to draw more accurate conclusions from the quantitative data, the study is set to include three multiples when comparing private and listed companies. These multiples are the P/E, EV/EBIT, and EV/EBITDA multiples.

The P/E multiple is a very commonly used equity multiple. It is used to relate the market value of equity to net income.[20] The multiple looks at the value of the stocks of a company in relation to the income that the company is actually earning.[21] The multiple can be calculated in different ways. It can be calculated on actual earnings or estimated future earnings, so there is need for high caution for not to mix these different approaches. What differ between them are the earnings that are used. The future P/E ratio is computed using the estimated earnings for the coming twelve months.[22] This is the ratio most commonly used when measuring pricing on the stock market.[23] In this study, historical earnings will be used for both private and listed companies, that is, last reported earnings prior to the transaction. A main reason for this is that historic earnings do not include assessments of the future and it is basically the only possible way to conduct a study like this, given the information that is available.

EV/EBIT and EV/EBITDA are multiples used to value companies and its operating assets.[24] EBIT, earnings before interest and tax, is a measure of earnings generated from operating assets before interest and taxes are deducted. EBITDA is defined as earnings before interest, tax, depreciation and amortization and is a measure of the generated earnings prior to taxes and reinvestment needs.[25] As EBITDA does not deduct amortization and depreciation expenses, it estimates the cash a firm has earned from its operating assets.[26] Also these multiples are calculated using historical earnings when creating the indexes.

[20] *Damodaran, 2006, p. 259*
[21] *Ross, Westerfield, Jordan, Roberts, 2007, p. 71*
[22] *Damodaran, 2006, p. 259*
[23] *Berk, Demarzo, 2007, p. 30*
[24] *Damodaran, 2006, p. 259*
[25] *Damodaran, 2006, p. 299*
[26] *Berk, Demarzo, 2007, p.30*

It is argued that the EV/EBIT and EV/EBITDA multiples in comparison to the P/E multiple provide superior evaluation measures as they are capital structure neutral.[27] Hence, they are less affected by financial leverage decisions. Two companies might have different P/E multiples, even though they have equal profit streams, due to differences in their capital structures.[28] Also, the risk for a skewed result should be smaller when using especially EBITDA, than when using the P/E multiple, as there tend to be a lower number of firms that have negative EBITDA than negative net income.[29]

2.3 Gathering of data

2.3.1 Quantitative data

The indexes are based entirely on quantitative primary data. They are created in a manner to allow for the highest comparability, that is, comparability can sometimes go before accuracy.

The listed index is defined as the combined Large, Mid, and Small Cap at the Stockholm Stock Exchange, and contains the stocks listed in these indexes in November 2008, for simplicity reasons. The valuation multiples are calculated quarterly. The P/E multiple for each quarter is defined as each stock's total market value divided by its last annually reported after-tax income. The EV/EBIT and EV/EBITDA multiples are defined as each stock's total market value, plus the last annually reported net debt, divided by its last annually reported EBIT and EBITDA respectively. The information is obtained from Thomson Datastream.

The private index relies on data taken from the database Mergermarket, provided by E&Y. Mergermarket lists reported private transactions and displays the enterprise value of the target in some of the deals. The index is completed to some extent with the equity value in transactions, obtained from the acquirer's subsequent annual report. To obtain the equity value from the enterprise value, quoted in Mergermarket, or the enterprise value from the equity value, the target's last annually reported net debt prior to the transaction is subtracted or

[27] *Berk, Demarzo, 2007, p.263*
[28] *Koeplin, Sarin, Shapiro, 2000*
[29] *Damodaran, 2006, p. 302*

added. The valuation multiples are calculated on the target's last annually reported earnings prior to the transaction. The targets' and acquirers' financial reports are obtained through the Affärsdata database.

The sample is adjusted to only include private-to-private transactions. Public-to-private transactions will thereby be excluded, since they represent a special situation where it is virtually impossible to buy a listed company at a discount, for logical reasons. The sample is also discharged from transactions where the targets are banks, since their EBIT and EBITDA differ considerably from the majority of the companies involved.

2.3.2 Qualitative data

The information obtained through interviews enables making thorough analyses and drawing conclusions of the result presented by the indexes. The information aims at answering especially the third question presented in the problem discussion. Interviews are held with seven people in total that represent and can provide expert knowledge on valuation and pricing in three fields. Three of these people are experts on the stock market; Peter Malmqvist, Stock market analyst, Martin Guri, Senior Analyst Equity Strategist at Nordea Bank AB, and Joakim Skoglund, Equity Strategist at Nordea Bank AB. Two of the people are professionals within Private Equity firms; Malin Carlström, Associate at Verdane Capital Advisor, and Fredrik Näslund, Director at Nordic Capital. And two are professionals within companies in consolidation mode; Johan Hansen, CEO at Ittur AB, and Anders Mörck, CFO at LaTour AB. The interviews are conducted through personal meetings (with one exception, where the interview was held over the phone).

Prior to the interviews, the questions being posed are e-mailed to the interviewees, in order for them to be prepared and give a thorough response. The interview questions can be found in the exhibit. The questions are chosen in order to obtain information on what factors determine the price development within each field. That is, pricing on the stock market and pricing of private companies. The interviewees were also questioned on their views on what

constitutes the difference in pricing and its factors between private and listed companies.

2.4 Critical assessment

The population of the data is rather small. The number of transactions per quarter stretches from around 40 to 90, and there is a limited amount on the number of these transactions' earnings multiples that can be attained. The authors' objective is to complete the database with information from financial reports on at least thirty transactions per period, in order to give a fair estimate to the underlying population and to be able to draw statistically significant conclusions.

The time span investigated in this study (2005-2998Q3) is a relatively short period. In order to draw more reliable and generalized conclusions on the pricing of private companies in relation to listed companies, it is necessary to create an index covering a longer time horizon.

The P/E multiple is questionable as being the best comparison between firm values. Studies have been made where different ratios such as EV/EBITDA and EV/Sales yields high differences in the estimation of the PCD[30]. There is thus no certainty that the P/E multiple is the best measure to use when comparing firms. However, in this study it will be used due to two reasons: the availability, and the fact that it is the only comparable measure for the value of equity. The study is set to also include the EV/EBIT and EV/EBITDA multiples, in order to attain a more accurate and reliable result. It is argued that the EV/EBIT and EV/EBITDA multiples provide superior evaluation measures in comparison to the P/E multiple, for reasons discussed earlier in this chapter.

This is an uncharted territory, as there has been no earlier attempt to construct an index measuring the PCD in transactions covering Swedish companies. Also, there is no earlier study made to find the factors behind changes in the PCD. Consequently, there is great uncertainty and complexity to be recognized when drawing conclusions.

[30] *Koeplin, Sarin, Shapiro, 2000*

The gathering of data is a big and time consuming task and pose a risk to the quality of the study, as the study is to be conducted during a limited time span. One must not forget that E&Y has earlier considered completing this index.

The information attained through interviews holds a risk of being somewhat subjective and unreliable, as interviews are only conducted with seven people in total. In order to attain a more reliable result from the qualitative data, one would need to conduct more interviews.

There are many factors affecting the comparability between private and exchange-traded firms. For instance, they do not have the same demands when publishing financial statements. The availability and quality of financial information on private companies are more limited. It is important to recognize the fact that differences in valuation could occur because of the application of different accounting frameworks between listed and private companies. As a consequence, one must interpret the data with a critical and analytical mindset.

3. Referential framework

This chapter gives an explanation of the PCD, the illiquidity discount, investor's different approaches in dealing with illiquidity and a presentation of earlier studies that provide evidence for the existence of a PCD.

Private and public companies differ in a range of value factors, such as risk, growth rate, capital structure, the size and timing of cash flows, and liquidity. Thus, a discount is applied to account for these differences when valuing a private company, the private company discount (PCD).[31]

The most prominent factor influencing the PCD is the lack of liquidity of stocks in private companies compared to stocks in listed companies. Illiquidity refers to the time required to sell an asset, and the relative ease at which it can be sold without a significant loss in value.[32] As stock in a public company can easily be sold on a ready market, stocks in a private company cannot. There is no existing market place that brings buyers and sellers together.[33] Thus, it is more difficult to find potential buyers who are willing to pay the true value of the equity shares.[34] Assets that are rarely traded and for which there is a need to locate buyers and negotiate the deal, are normally characterized by a large bid-ask spread. That is, the difference between the bid and the ask price. The existence of buying and selling interest is normally indicated by the number of current transactions taking place and the size of the bid-ask spread.[35]As it is, in general, a hard and time consuming task to sell a private company in relation to a listed company they are normally considered as being more illiquid. It is widely known that investors are willing to pay more for liquid assets than for illiquid assets, which explains the discount for illiquidity when valuing a private company.[36]

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[31] *Koeplin, Sarin & Sharpiro, 2000*
[32] *Pratt, Reilly, Schweihs, 2000, p. 393*
[33] *Koeplin, Sarin & Sharpiro, 2000Ibis*
[34] *Pratt, Reilly, Schweihs, 2000, p. 393*
[35] Ibid
[36] *Damodaran, 2006, p. 539*

It is stated that costs resulting from lower earnings quality in private firms is another factor influencing the PCD. The earnings quality is defined as the ability of a company's reported earnings to reflect its true earnings, and also its ability to predict future earnings.[37] The evaluation of earnings is often problematic, as companies can calculate earnings figures, such as operating incomes, net income, and revenues in different ways. There is a possibility of not only mistakes being made but also a possibility of intentional earnings manipulation, when firms choose and implement accounting measures. Along with the existence of a lower earnings quality, a situation of asymmetric information follows, as management of a company with lower earnings quality obtains more information about the actual earnings than the potential buyers. Consequently, the buyer should require a discount. . Thus, the income statement alone shouldn't be used when predicting a company's future earnings. Instead, it is important to evaluate the quality of the reported financial earnings separately.[38]

However, when acquiring a company, most investors conduct a due diligence in order to evaluate the company in detail. This process is today commonly used in Sweden, especially for larger companies, but also for smaller ones. It is used for the acquisition of both private and public companies. Investors then obtain a thorough knowledge about the company and its earnings quality. [39] This in turn makes the theory of lower earnings quality being an important factor influencing the PCD irrelevant. Thus, the lack of liquidity remains the most prominent factor influencing the PCD[40].

3.1 The illiquidity discount

Investors normally account for illiquidity when making an investment. However, dealing with illiquidity can be done in different ways; there are three main approaches to use, which all results in a lower price of the investment. In the first alternative, an illiquidity discount is applied on the value. In the second alternative, an illiquidity premium is added to the discount rate. In the third

[37] *De Franco, Gavious, Jin, Richardson, 2007*
[38] *De Franco, Gavious, Jin, Richardson, 2007*
[39] *Karlin, Ulveström, 2008*
[40] *Koeplin, Sarin & Sharpiro, 2000*

alternative, relative valuation is used.[41] Here follows an explanation of the different approaches and factors influencing the degree of illiquidity.

3.1.1 Illiquidity discount on value

When valuing a publicly traded company you look at the expected cashflows and then apply a discount rate reflective of the risk in these cashflows, without making the assumption that illiquidity is a factor needed to be taken into consideration. When valuing a private company it is common to apply an illiquidity discount to this value. It is however hard to estimate the size of the discount, as the values of private companies cannot be observed, only the prices at which they are bought and sold. The discount for illiquidity is reflected in the difference between the price and the value of a company. We will look at four approaches commonly used when applying an illiquidity discount on value.[42]

A fixed discount

A common approach when valuing a private company is to use a fixed discount rate, for example 30%, for all firms, or to use a range, for example 15-35%, in which the discount will fall. The investor then decides what discount to use within this range.[43]

A firm-specific discount

With private companies, it is widely argued that the illiquidity discount varies across both firms and buyers, as the discount is a function of several factors that differs between the firms.[44] An important factor is the number of potential buyers and also the ease at which the asset can be sold.[45] This makes the practice of applying a fixed discount erroneous.[46]

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[41] *Damodaran, 2006, ps. 521*
[42] *Damodaran, 2006, ps. 521*
[43] *Damodaran, 2006, s.522*
[44] *Damodaran, 2006, s.522*
[45] *Pratt, Reilly, Schweihs, 2000, p. 417*
[46] *Damodaran, 2006, s.522*

Determinants

There are numerous factors influencing the degree of illiquidity of a company.[47] These need to be considered when determining the discount on value of a company. We will now take a closer look at some of these factors.

Liquidity of assets: A firm with more liquid assets will have a lower discount as the assets can easily be sold without a significant loss in value. Thus, a firm with less liquid assets, such as factories and more task specific and specialized assets will have a higher discount due to a lack of potential buyers.[48]

Financial health and cash flows of the firm: A firm in good financial health, with strong earnings and positive cash flows, should have a lower discount applied to it as it can be sold more easily than a firm in a lower state of financial health.[49]

Likelihood of going public in the future: The degree of probability of the firm going public in the future affects the discount negatively; the greater the probability that a company will go public, the smaller the discount. However, this is a hard prospect to make as information about an upcoming public offering is never certain.[50]

Size of the firm: The size of the firm has an impact on the discount; the smaller the firm, the larger the discount. That is when looking at the discount as a percentage of the firm value.[51] Furthermore, empirical studies argue that larger companies in general are less risky than smaller ones, which supports the idea of the size effect.[52]

Size of interest: It is argued that larger blocks of shares have higher discounts as a result of fewer potential buyers, and also due to the fact that they may be harder to finance than do smaller blocks of shares.[53] Nevertheless, it is also argued that it is more attractive to invest in a private business when the size of the interest acquired is large as the degree of ownership control increases whit size. Still, it is

[47] *Pratt, Reilly, Schweihs, 2000, p. 417*
[48] *Damodaran, 2006, p.523*
[49] *Ibid*
[50] *Pratt, Reilly, Schweihs, 2000, p. 418*
[51] *Damodaran, 2006, p.523*
[52] *Pratt, Reilly, Schweihs, 2000, p.416*
[53] *Pratt, Reilly, Schweihs, 2000, p.418*

important that the acquired size of interest is sufficient in order to gain a controlling stake. That is, a stake of 51 % in a company should be more valuable than a 49 % stake in that same company, and should therefore also be more liquid.[54] Thus, larger blocks have a higher value attached to them due to ownership control, which thereby results in a lower discount.[55]

Different buyers require different degrees of liquidity. Also, the demand for liquidity changes over time. Therefore, the illiquidity discount will be higher when the demand for liquidity is high and lower when the demand for liquidity is low. Consequently, the illiquidity discount can change over time.[56]

Synthetic bid-ask spread

The bid-ask spread is one factor influencing transaction costs. It is defined as the difference between what the buyer will pay and the seller will receive for a specific asset at a certain point in time. It should cover the dealers costs associated with the transaction, such as costs of holding inventory, cost of processing orders, and the cost of trading with investors that obtain a higher degree of information.[57]

Publicly traded stocks are not entirely liquid. In fact, liquidity varies greatly between them. In general, the largest companies' stock are most traded on. Hence, larger companies are more liquid than smaller companies. The bid-ask spread is considered to be a measure of illiquidity for publicly traded stocks. One can compute the size of the bid-ask spread in relation to the market price of the stock, and thereby see the cost of illiquidity per unit. Stock that are very liquid have a lower bid-ask spread as a percent of the stock price. In order to relate this to a private company, the bid-ask spread could be considered as being very high as the stocks of private company do not trade. A synthetic bid-ask spread can be created to estimate the illiquidity discount of a private company. This is done by

[54] *Damodaran, 2006, p.523*
[55] *Pratt, Reilly, Schweihs, 2000, p.418*
[56] *Ibid*
[57] *Damodaran, 2006, p.526*

relating the bid-ask spread of a public stock to measurable variables of a private company.[58]

Option based illiquidity discount

Another alternative when valuing illiquidity is to use an option pricing model. Illiquidity is then compared with a put option where the investor is constrained from trading the asset during a specific period. However, there are several problems associated with this approach. The assumptions for a put option are not the same as for an illiquid asset, as a private company is not constrained from trading. Thus, illiquidity cannot be fairly compared to a put option.[59]

3.1.2 Illiquidity premium on discount rate

Instead of putting an illiquidity discount on value, one can adjust the discount rate used in DCF valuation for illiquidity. By doing this, a lower value is obtained when using the same cash flows. This can be done in several ways.[60] The different approaches are similar to the ones mentioned above when determining an illiquidity discount on value.

Constant illiquidity premium

One can add a constant illiquidity premium to the discount. That is, the same discount premium is added to all private companies. [61]

Firm-specific premium

Instead of applying a constant premium, one can apply a firm-specific premium, which varies between companies. Thereby, the liquidity and specific features of the assets being valued are taken into consideration. Measures, such as liquidity betas, are required in order to carry out this method. Liquidity betas are used as a measure of the company's exposure to illiquidity risk. This is though a difficult approach to carry out for private companies. [62]

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[58] *Damodaran, 2006, p.526*
[59] *Damodaran, 2006, p.527*
[60] *Damodaran, 2006, p.529*
[61] *Damodaran, 2006, ps.530*
[62] *Ibid*

Specific characteristics of assets

Besides the two approaches already mentioned, one can also identify specific characteristics of traded assets and relate the illiquidity premium to these. By doing so, firms that are in poor financial health will have a higher liquidity premium than financially healthy firms.[63]

3.1.3 Relative valuation

Besides the two methods already mentioned, there is a third alternative in dealing with illiquidity. Relative valuation is a common approach when valuing a business[64]. In relative valuation the company is compared to the transaction price of similar companies with similar liquidity.[65] The companies used as comparisons need to have similarities in their fundamental characteristics (such as growth, risk and cashflows) as the company being valued.[66]

However, it is hard to use this method when it comes to private businesses due to several reasons. One problem is that the number of private businesses that can be used for comparison is limited. Transactions of private companies occur less frequently, and information about the transactions is not always made publicly available.[67] There are also many differences in accounting standards and practices, as the requirements are lower for private firms than for public firms. The quality of financial accounting and other information may therefore be lower, as the reliability and quantity of financial data is different from publicly traded firms.[68]

Hence, it is hard to find information about private companies and the value that has been assigned to them. An option is to look at how publicly traded firms are valued and use them as comparables. The approach is then to apply an illiquidity discount on the valuation ratios of a comparable publicly traded firm, and then use them when valuing private firms.[69] Revenue or earnings multiples from the

[63] Ibid
[64] *Koeplin, Sarin & Sharpiro, 2000*
[65] *Ibid*
[66] *Damodaran, 2006, p.532*
[67] *Damodaran, 2006, p.534*
[68] *Pratt, Reilly, Schweihs, 2000, p.416*
[69] *Koeplin, Sarin, Shapiro, 2000*

listed firm are adjusted for illiquidity and then used when valuing the private company.[70]

One example of relative valuation is the study conducted by John Koeplin, Atulya Sarin and Alan Shapiro [71]. They matched 84 pairs of private and public acquisitions in the U.S during the period 1984 to 1998, and 108 foreign transactions for the same period. They looked at the earnings, sales, and book value multiples for all the companies and compared them. Their findings clearly showed that the valuation ratios for public companies are higher than those of private companies, and that private companies sell at a discount. They estimated a discount of 20-30% for domestic firms when looking at EV/EBIT and EV/EBITDA multiples, and a discount of 40-50 % for the same multiples when looking at foreign firms. The average discount when looking at the book value multiple (EV/Book value) was somewhat lower. However, when looking at the sales multiple (EV/sales), the discount was nonexistent. It is though stated that the result from the EV/Sales multiple is not statistically significant, contrary to the results when using the other multiples[72]

When conducting the study, Koeplin, Sarin and Shapiro tried to attain a sample as highly controlled as possible. Yet, one problem which needs to be taken into consideration when interpreting the results in this study is that the private company sample consists of smaller companies with different growth rates than the publicly traded companies they were paired and matched with.[73] Thus, it is likely that these differences have an impact on the discount.

3.2 Earlier studies

The evidence of an illiquidity discount and estimates of private company discounts are mainly based on two types of empirical studies. One being studies on restricted stock and the other being studies on Pre-IPO discount.

[70] *Damodaran, 2006, p.534*
[71] *Koeplin, Sarin, Shapiro, 2000*
[72] *Koeplin, Sarin, Shapiro, 2000*
[73] *Ibid*

3.2.1 Studies on Restricted Stock and Private Placements

One way to estimate the illiquidity discount is to look at restricted stocks issued by publicly traded companies. A restricted stock is a share issued by public companies to investors through private placements. Restricted stocks are considered as being identical to publicly traded stock, except for the fact that they are restricted from being resold in the open market for a certain time period.[74] In general, restricted shares are issued at a much lower price than publicly traded stock, which reflects their lack of liquidity. By comparing the price at which a restricted stock is issued with the publicly traded stock price, one can estimate a discount for illiquidity.[75]

There are several studies made on the discount for private placement. One of the most famous studies was conducted by William Silber. He examined issues of restricted stock made during the period 1981-1988. He found that the average discount for restricted stocks was 33.75%, when compared to the publicly traded stocks within the same companies. He also drew the conclusion that the discount was smaller for larger firms and more profitable firms, and larger for smaller firms and less profitable firms. He also found that the discount was larger for bigger blocks of shares.[76]

Another study analyzing issues of restricted stock is called "Analysis of Private Sales of Unregistered Common Stock". It was conducted by the valuation firm Management Planning Inc. They compared the share price in private placements of restricted stocks with the share price of the same company's freely traded stocks. The study showed that the share price of the private placements was priced lower than the freely traded stocks. The study also clearly showed that smaller companies had larger discounts and therefore argues for the size effect.[77]

Even though studies on restricted stocks are regarded as evidence for the existence of a discount for illiquidity, they have been criticized for various reasons. The private placement discount is not only a function of illiquidity but is also associated with other factors. The discount may partly be compensation to

[74] *Damodaran, 2006, p.516*
[75] *Koeplin, Sarin, Shapiro, 2000*
[76] *Silber, 1991*
[77] *Pratt, Reilly, Schweihs, 2000, p.401*

the investor for providing other services to the firm.[78] Also, the samples on which the studies are conducted are suffering from large standard errors. The samples are relatively small and they are also spread over long time horizons. Furthermore, the samples can be considered as being unrepresentative, as the companies that issue restricted stock in general are smaller, riskier and less healthy compared to the average firm.[79] These factors need to be taken into consideration as it may lead to a distorted result. Thus, one might need to look at other types of studies in order to attain a more reliable measure of the illiquidity discount.

3.2.2 Studies on Pre-IPO Discount

Another type of study measuring the discount for illiquidity is studies made on pre-IPO Discount. The measure of the illiquidity discount is then derived by comparing prices at which stocks were initially offered to the public, that is, comparing the offering price at an initial public offering (IPO) with the transaction price including the same shares prior to the IPO. The difference can be regarded as a discount for illiquidity.[80]

Eight studies were conducted by John D Emory, ASA of Robert W. Baird & Company, during the period 1982 to 1997. Based on his studies he found an average discount of 44%. He compared the IPO price with the prices of traded stocks five months prior to the IPO.[81]

Another study was conducted by the Willamette Association, covering the years 1975 to 1995. They analyzed transactions three years prior to the IPO. The P/E multiple for each private transaction was compared with the public offering P/E multiple. They adjusted the multiples for differences in the industry average P/E multiple between the time of the private transaction and the time of the public offering.[82] The average discount varied between the periods. But the average discounts for the different periods ranged from 32 % to 75 %. [83]

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[78] *Koeplin, Sarin, Shapiro, 2000*
[79] *Damodaran, 2006, p. 517*
[80] *Koeplin, Sarin, Shapiro, 2000*
[81] *Emory, 1997*
[82] *Pratt, Reilly, Schweihs, 2000,p.408*
[83] *Williamette Management Associates*

There are several problems related to the studies of pre-IPO discounts. Many of the transactions are not at arm's length. That is, the parties involved in the transaction are not independent and may have shared interests[84]. The most important problem is that there is a selection bias in the samples used for the studies. Since the studies exclude companies that fail to go public, only "successful" companies are included which then could understate the size of the illiquidity discount. This is because the less successful companies could be expected to have a lower degree of liquidity and therefore attain a higher discount. Also, management compensation may be embedded into the lower price in private transactions, and many of the transactions are options issued to management, instead of shares being traded for cash.[85]

The large discounts in both studies and the wide range of discounts in the Willamette study indicate that there are several factors influencing the pre-IPO discount, and not only illiquidity. However the studies covered hundreds of transactions over more than 20 years, and the difference between prices in private transactions and public transactions varied under different market conditions during these years. After eliminating outliers the discount ranged from 40 % to 63%. This strongly supports the existence of a discount for illiquidity.[86]

3.3 Differences in Price/Earnings Multiples

It is argued that price/earnings multiple for acquisitions of private companies in comparison to the same multiple for acquisitions of public companies, is in general much lower. Data on average price/earnings multiples for acquisitions of private and public companies, published by Mergerstat Reviews every year, strengthens this assumption. The private company multiple is almost every year inferior to the public company multiple in this study.[87] There are also other studies showing the same result. One being the study conducted by Koeplin, Sairn and Shapiro[88], presented earlier in this chapter, where they paired and

[84] *Investor Glossary*
[85] *Koeplin, Sarin, Shapiro, 2000*
[86] *Pratt, Reilly, Schweihs, 2000, p.411*
[87] *Pratt, Reilly, Schweihs, 2000, p.415*
[88] *Koeplin, Sarin & Sharpiro, 2000*

matched private companies with publicly traded companies and compared their P/E ratio. Their findings supports that private companies in general acquire a lower P/E ratio. Another report arguing for the same cause is the index published by BDO Stoy Hayward presented in the introduction to this thesis[89]. The index is based on P/E multiples of private and publicly traded companies and clearly shows that the P/E ratios of private firms in general are lower than the P/E ratios of publicly traded firms.

The difference between the P/E ratios is influenced by several factors.[91] Here follows an explanation of the most prominent ones.

3.4.1 Exposure to the market

Information, financial and non-financial, on all publicly traded companies is easily available. We are exposed to such information in hundreds of newspapers and sites everyday. Publicly traded companies are required to make detailed financial information official due to various laws and regulations. Also, these companies are under close observation. Therefore, detailed financial information is easily available when an investor wants to acquire a publicly traded business.[92]

On the other hand, for private companies the situation is much different. There is no reliable listing of private companies, and there are no requirements of releasing detailed financial information. Hence, potential investors are not exposed to necessary information. Due to this situation, it is often the private business seller and not the potential buyer that initiates the sale of the company. This in turn, has a tendency to lower the price on the deal.[93]

3.4.2 Financial accounting and Information

The requirements for accounting and other important information are much stricter for publicly traded companies than for private ones. Thus, there is a difference in the reliability and amount of financial information between private and public companies. It is argued that this difference has an impact on the

[89] *BDO Stoy Hayward*
[91] *Pratt, Reilly, Schweihs, 2000, p.415*
[92] *Ibid*
[93] *Ibid*

average price/earnings paid for in acquisitions of public companies in relation to private companies.[94]

3.4.3 The Size Effect

Larger companies are, as stated earlier in this study, in general less risky than smaller ones. Consequently, they should attain a lower present value discount rate and a higher price. Since private companies in comparison to publicly traded ones in general are smaller, they are assigned a subordinate price.[95]

Öhrlings PricewaterhouseCoopers conduct a study on risk premiums on the Swedish stock market every year since 1997.[96] The study clearly shows that small companies attain a higher average risk premium than do larger companies. For example, the study conducted for the year 2008 states that the average additional risk premium for small companies (companies with a market value of 100 MSEK) was 3,9%, in comparison to the average additional risk premium for larger companies (companies with a market values of 5000 MSEK) of only 0,6 %.[97] Thus, this provides strong evidence for the size effect.

The factors mentioned are contributing to the difference in the multiples. There is however a lack of research available on this subject[98]. It is therefore hard to draw general conclusions as there are many factors that have an influential effect on the difference between the ratios. Either way, the studies clearly shows that private companies in general trade at lower price/earning multiples than do publicly traded firms, and thus argues for the existence of a private Company Discount.

[94] *Pratt, Reilly, Schweihs, 2000, p.416*
[95] *Ibid*
[96] *Öhrlings PricewaterhouseCoopers, 2008*
[97] *Ibid*
[98] *Pratt, Reilly, Schweihs, 2000, p.416*

4. Empirical studies

This chapter is divided into three sections. First, pricing on the stock market in general and the pricing on the stock market 2005-2008 Q3 is described through interviews with professional analysts and by looking at performance and valuation multiples. Second, pricing of private companies is described through interviews with professionals from private equity and investment companies, and by looking the valuation multiples used in the study. The chapter ends with a comparison between pricing on the stock market and on private transactions, resulting in the calculations of a PCD for the Swedish market.

4.1 Pricing on the stock market

In this section, the qualitative information is taken from three interviews, held with Martin Guri, strategic advisor for institutional investors at Nordea Markets, Joakim Skoglund, strategic advisor for private investors at Nordea Markets, and Peter Malmqvist, stock market analyst and economic journalist. The statistical information is taken from the Thomson Datastream.

4.1.1 Driving factors of pricing at the stock market

According to Martin Guri, Strategic Advisor at Nordea Markets, there are three general drivers of the pricing at the stock market. These are:

1. Expected future earnings, and whether or not the investor expects the companies to exceed their expected earnings. When investors believe that earnings will increase, the stock price of those companies increase.

2. Appetite for risk among investors. Depending on the economy, investors choose different securities such as government bonds, domestic stock, foreign stock, currencies, raw material, high yield bonds etc. During an economic upswing, investors turn to riskier securities, such as equity.

3. Liquidity in the economy. High liquidity triggers risky investments. The liquidity is explained as the availability of money, which is primarily determined by the interest rates.

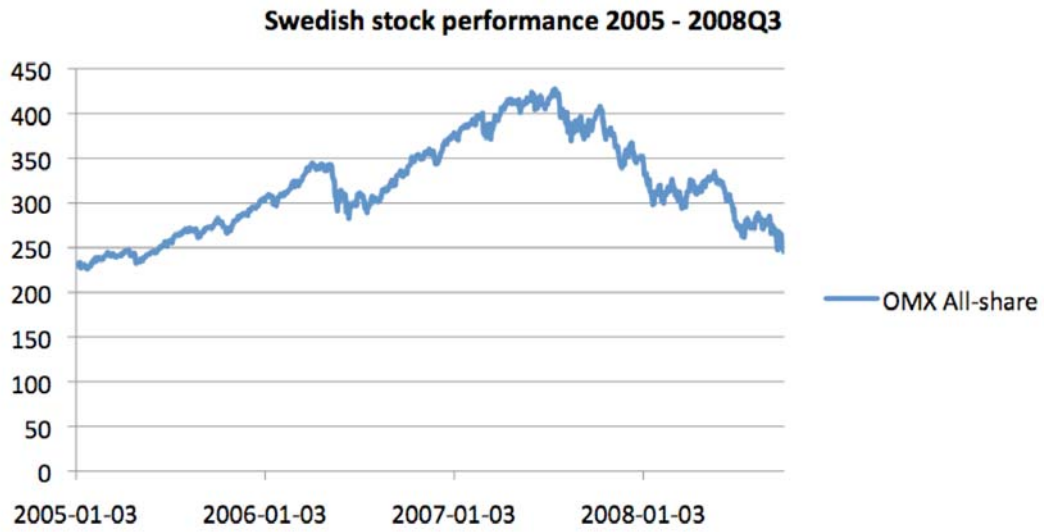
Peter Malmqvist, stock market analyst and economic journalist, points out the general economic outlook as the most important factor for growth at the stock market. For separate companies, it is the expected earnings 12-24 months forward that affects their prices the most. He says that the last 18 months proves this reasoning, as future earnings are expected to be significantly lower. However, during a continuous increase in stock prices, it is the companies' actual earnings that are the major determinants for their stock performance over time.

The investors' leverage, that is whether or not the investors purchase stock using debt, does not affect the market value on the stock market. However, the companies' market values on the stock market are highly affected by their leverage, according to Mr. Malmqvist and Joakim Skoglund, Strategic Advisor at Nordea Markets. They explain that leverage higher than around 2 times EBITDA is considered to be risky by the equity holders, who in turn increase their required rate of return, which lowers the stock prices.

Mr. Guri points out that there is no statistically significant historic correlation between the interest rate and the performance of the stock market. What has historically driven the stock market is a blend of several different factors for each period. Mr. Guri stresses that one cannot be too quick to draw conclusion on future stock market performance by looking at the past.

4.1.2 Pricing on the Swedish stock market 2005 – 2008 Q3

The graph below shows the pricing on the Swedish stock market during the period for this study.



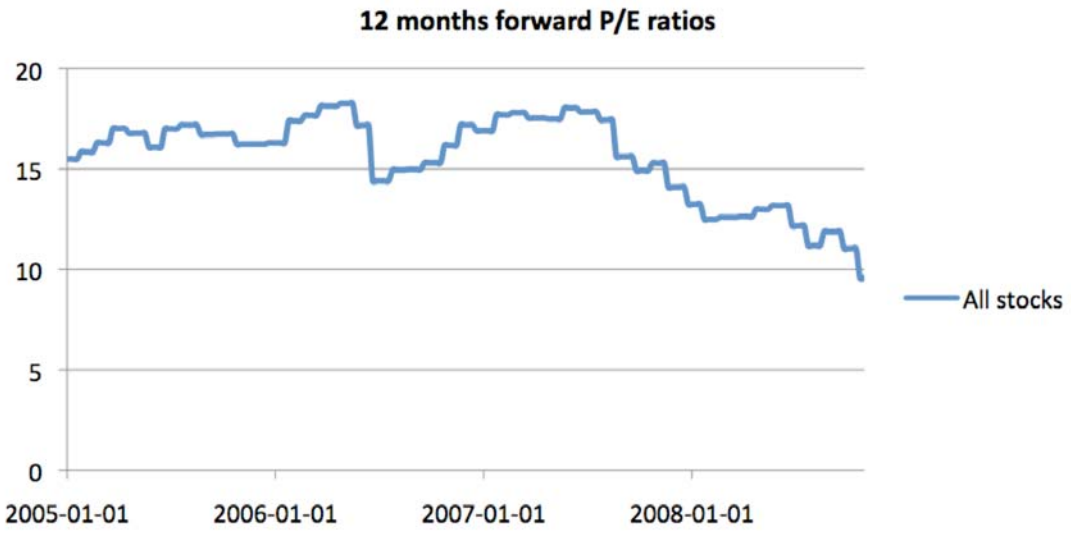
The OMX All-share index, containing all shares listed in Sweden, as it is normally quoted. Thomson Datastream.

The Swedish stock market experienced a continuous price increase from 2005 to mid 2007, except for a small decline in May 2006. According to Mr. Guri, this short decline was the result from an increase in interest rates and a general fear for inflation. Shortly after, the market continued its growth until the mid 2007, when the credit crunch commenced. According to both Mr. Malmqvist and Mr. Guri, this steady increase on the stock market was highly driven by a growth in expected earnings among the listed companies. Mr. Malmqvist says that the return on equity (capital gain and dividends) tripled from 2003. He also believes that corporate raiders such as Christer Gardell helped push the development upward, encouraging more private investors to engage in the stock market. In addition, during 2005 and 2006, Sweden experienced a "super-boom", according to Mr. Malmqvist, characterized by low inflation and record low interest rates.

The stock market boom ended in mid 2007 due to the credit crunch, caused by a bubble in the American mortgage market, according to Mr. Malmqvist. The American construction industry came to an abrupt halt in January 2006. At that point, it had grown continuously for 16 consecutive years. Shortly after, housing

prices began to fall in the United States, but it was not until mid 2007, 18 months later, that the financial system's problems began. The Swedish stock market peaked in June 2007, but it was not until the bankruptcy of Bear Stearns in October 2008, that the financial crisis seriously affected Swedish markets.

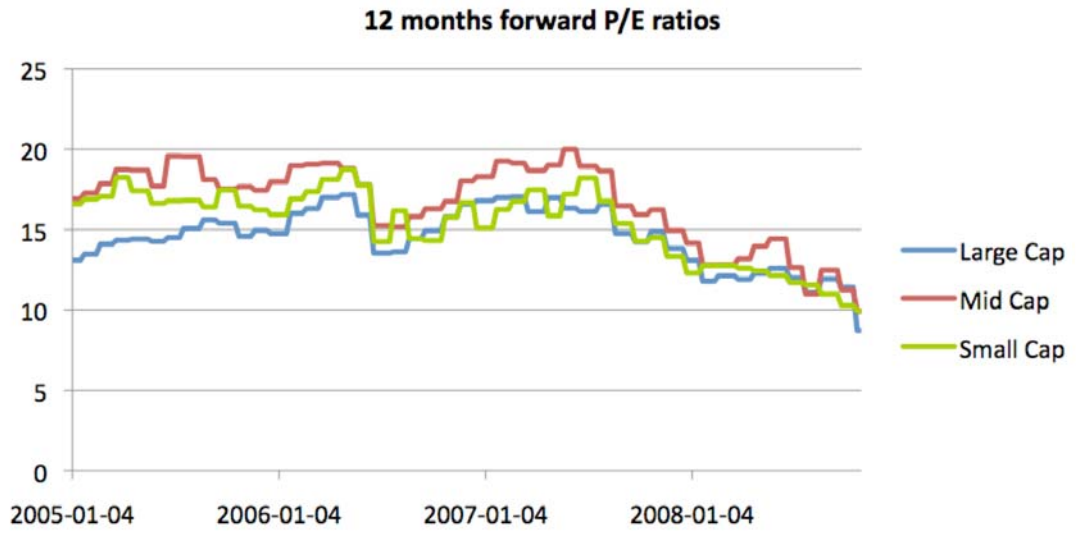
According to Mr. Malmqvist, the 12 months forward P/E multiples were much lower during this period compared to earlier economic upswings. In March 2000, at the peak of the IT bubble, the average 12 months forward P/E multiple on the Stockholm Stock Exchange was 35, compared to 16 at the peak in mid 2007. In the summer of 1998, the stock market peaked at an average 12 months forward P/E multiple of 25, which then dropped to 14. Thus, the low in 1998 was just slightly below the peak in 2007, which is quite noteworthy. Mr. Malmqvist explains the reason behind this to be the result of extremely high real returns on the stock market during 2005 to 2007. Investors, however, kept a conservative approach and did not expect the companies to keep this high level of earnings in a longer perspective. That is why the multiples were lower during this peak than in earlier ones.



The average of the 12 months forward P/E multiples for the combined Large, Mid, and Small Cap indexes. The index is discharged from negative values and values above 100. Thomson Datastream.

The graph above displays the 12 months forward P/E multiples for 2005 - 2008 Q3. They have been fairly stable during the period, reflecting continuously improved earnings in proportion to the increase in stock prices until 2007, when expected earnings began to reduce. The graph below shows the 12 months

forward P/E multiples for companies of different sizes. Mr. Malmqvist says that smaller listed companies normally have an illiquidity discount of 10-20% by looking at the 12 months forward P/E multiple. However, during 2005 and 2006, there was a boom among the smaller listed companies.

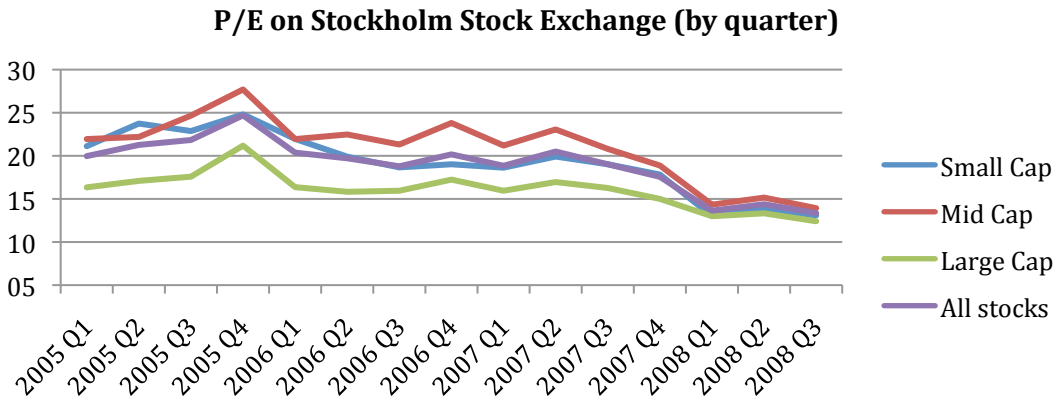


The average of the 12 months forward P/E multiples for the Large, Mid, and Small Cap indexes. The Large Cap index contains companies valued above EUR 1 billion, whereas the Mid Cap contains companies valued between EUR 150 million and EUR 1 billion and the Small Cap index contains companies valued below EUR 150 million. The indexes are discharged from negative values and values above 100. Thomson Datastream.

All three of the interviewees consider that the Swedish stock market is currently undervalued. Mr. Malmqvist goes further and says that the prices on the stock market reflect a fear for recession that is immense. He believes that in six months from now, will we see that this fear is exaggerated. Mr. Skoglund and Mr. Guri are slightly more moderate; Mr. Guri says that whether or not the stock market is undervalued depends on which period it is compared to.

4.1.3 Price ratios based on historical earnings measures 2005-2008 Q3

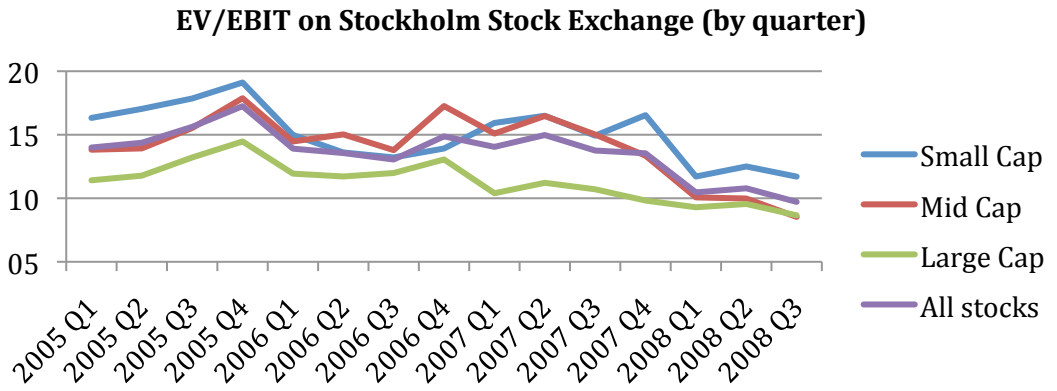
The following graphs displays valuation multiples based on historical earnings, that is, the market value of each company is divided by its last reported earnings, EBIT, and EBITDA.



The average of the historic P/E multiples for the listed companies in Sweden. The indexes are discharged from negative values and values above 100. Thomson Datastream.

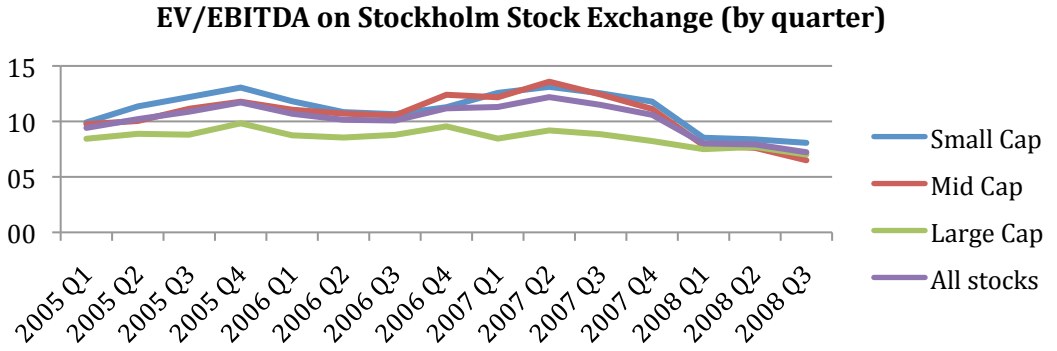
The graph above displays the P/E multiples on a quarterly basis. The drop in multiples for all three indexes in the first quarter of 2006 and the first quarter of 2007 reflects the increase in earnings. This effect is very large in 2006.

Compared to the 12 months forward P/E multiples, the P/E multiples based on historical earnings are significantly higher, reflecting an expected growth in earnings. The Large Cap index however, is close to the 12 months forward P/E multiples, indicating that the larger companies on the stock market are expected to have small growth in earnings, whereas the Mid Cap and Small Cap indexes indicate higher expected earnings growth. It is notable that the Mid Cap sized companies are expected to have larger growth than the Small Cap companies according to the graphs. However, this can be the result of the size effect, that is higher required return for smaller companies, or the effect of accounting measures, such as referral of taxes, as this relationship is twisted in the subsequent graphs that measure EV/EBIT and EV/EBITDA.



The average of the historic EV/EBIT multiples for the listed companies in Sweden. The indexes are discharged from negative values and values above 75. Thomson Datastream.

The graphs of EV/EBIT and EV/EBITDA differ remarkably in volatility. The EV/EBITDA curves are relatively smooth over time, whereas the EV/EBIT curves are very volatile.



The average of the historic EV/EBITDA multiples for the listed companies in Sweden. The indexes are discharged from negative values and values above 50. Thomson Datastream.

The graph above displays the EV/EBITDA multiples for listed companies. It is clear that the market expects the economic downturn to affect the expected earnings more for the Small Cap and Mid Cap than for Large Cap, for which is somewhat stable.

4.2 Pricing on private transactions

The qualitative information in this section is taken from interviews with experienced professionals from the private sector. Two interviews are conducted with professionals within Private Equity; Fredrik Näslund, Director at Nordic Capital, and Malin Carlström, Associate at Verdane Capital. Two interviews are held with professionals from investment companies; Johan

Hansen, C.E.O at Ittur, and Anders Mörck, C.F.O at Latour. In addition, there are a few comments by the interviewees from the previous section. The statistical information is taken from Mergermarket and from the financial statements of the companies involved in the transactions.

4.2.1 Driving factors of pricing of private companies

As regards to the pricing of private companies, the estimated value of the target is rarely the price being paid by the acquirer. Two of the interviewees work in the Private Equity industry, where the business idea is to buy cheap and sell expensive. This is also true for the investment companies, although they are sometimes willing to pay more for synergies. According to Jonas Hansen, C.E.O at Ittur, they stand out among other investment companies, as around 80% of their targets are malfunctioning companies. This means that they often buy companies for a very low price. It is also common to use earnouts in certain transactions, that is, to pay an additional sum contingent on that the target meets specific performance-related goals within a certain period following the transaction, according to Malin Carlström, associate at Verdane Capital. This is a way for the acquirer to ensure himself that the management has not exaggerated expected earnings.

All interviewees primarily use discounted cash flow models when valuing their companies. Verdane Capital has a fixed required rate of return at 30% on their equity, while it is somewhat more flexible with the other companies. The interviewees' companies also frequently use relative valuation, that is, to use multiples to compare with other companies. The multiples they compare with can be from recent private transactions, but are often taken from the stock market. The multiples used are mostly EV/EBITDA, where EBITDA is 12 months forward. None of the interviewees look particularly closely at the P/E multiple.

Only one of the companies among the interviews, Verdane Capital, uses a standardized PCD of 30%, discounted from the value of equity. Fredrik Näslund, director at Nordic Capital, says that Nordic Capital are required to use a 25% PCD in accordance with the European Venture Capital Association, but it is merely an accounting measure and does not influence their deals. Mr. Hansen

says that Ittur normally apply a minimum PCD of 20%, although it is currently at a minimum of 20-30%. It has thus gone up in the economic downturn. For Latour, the pricing is more a question of negotiation, according to Anders Mörck, C.F.O. at Latour, although he believes that they buy targets for an average PCD of 30% to the targets estimated value. Latour's goal is to buy as cheap as possible, and they have sometimes bought companies for a quarter of their estimated value. However, they are also prepared to pay a price that represents a small or no PCD at all, if they have a strong need for the target in their portfolio.

Mr. Malmqvist argues that the illiquidity discount sometimes can be offset by a controlling premium, when buying 100% of a company's stock. If however one buys a minority interest in a family-owned company, a strong illiquidity discount would be required. Hence, the PCD varies significantly depending on the transaction.

According to Ms. Carlström, the general factors that affect pricing of private companies, which are also the major factors determining the pricing development during 2005-2008 Q3, are:

1. The price expected by the seller, who in turn looks at multiples from past transaction and the stock market for reference.

2. Competition among buyers, and their availability to funds. Supply and demand is a strong factor.

3. Interest rates, which normally affects Private Equity buyers more who use financial leverage.

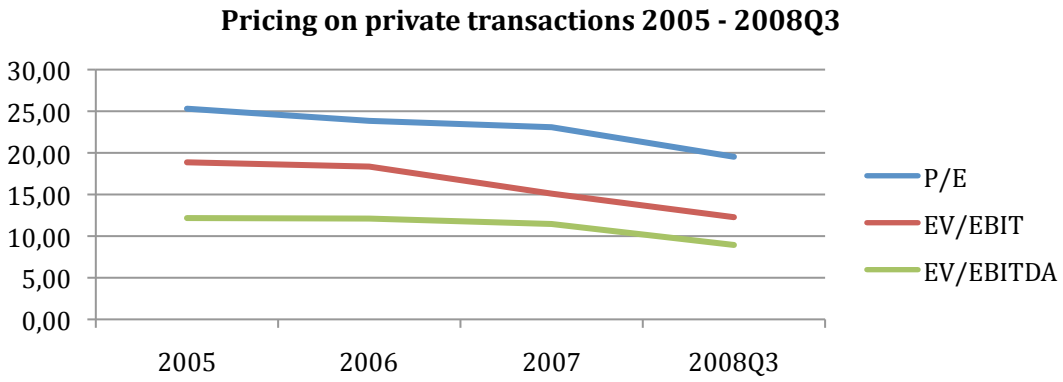
Mr. Näslund says that for Private Equity buyers, the availability of capital (from both funds and debt) is important for the pricing of private companies. During 2006 and the first half of 2007, there was an unprecedented boom within Private Equity, in terms of availability to both funds and debt. He continues however, saying that the pricing on the stock market is the major influence on the pricing of private companies. Even though low multiples on the stock market might not affect their targets' estimated values, they can still use the stock market's multiples for price negotiation. However, in an economic downturn, the

illiquidity discount for companies that are sensible to economic downturn, that is, much more risky during an economic slump, becomes so large that no seller is willing to sell. This phenomenon often leads to a sharp decline in transactions completed when the economy goes into a slump. Mr. Skoglund also comments on this matter, saying that the pricing of private companies follow the pricing on the stock market, but with a lag. When the pricing on the stock market declines, there are fewer completed transactions of private companies, since the sellers do not sell at the new price level. If however the decline on the stock market is enduring, the prices on private companies will eventually follow. The lag is also to some extent explained by the fact that transactions take up to half a year to complete. Mr. Mörck says that private companies are valued at the same economic outlooks that affect the stock market, but that the stock market is far quicker to reflect changes in the economic outlook. However, he considers the stock market to overreact in both directions, being too optimistic or too pessimistic.

All of the interviewees consider that the stock market is currently undervalued. Some of them use the currently low multiples at the stock market when they negotiate for the price of companies.

4.2.2 Price ratios based on historical earnings measures 2005-2008 Q3

The graph below displays valuation multiples based on historical earnings on private transactions for the period 2005-2008 Q3. The purchase price is taken from Mergermarket or from the acquirers' annual report the year following the transaction. The earnings measures are taken from the target's last financial report prior to the transaction. The transactions for which there are obtained valuation multiples are not sufficient in number to allow for more periods; the results are presented on a yearly basis to provide a fair estimate.



The average of the historic P/E, EV/EBIT, and EV/EBITDA multiples for the private transactions in this study. The indexes are discharged from negative values and values above 100, 75, and 50 respectively. Mergermarket and Affärsdata.

The graph shows that the pricing has been quite stable and similar to the listed indexes, with a slight reduction in price for 2008.

4.3 The private company discount

In this section, the valuation multiples for the listed and the private companies are compared in order to calculate a private company discount. The section begins with the establishing of two matching indexes, followed by comparisons, calculations, and t-tests for statistical significance.

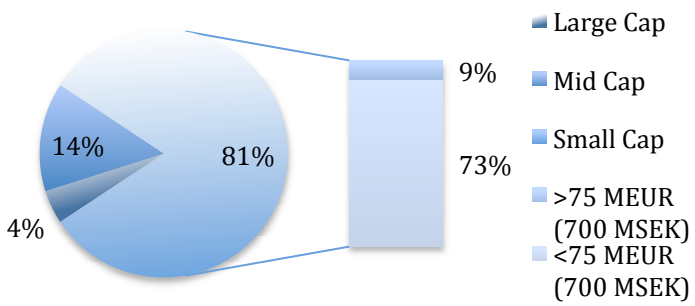
4.3.1 Establishing matching indexes

From looking at the valuation multiples on the Swedish stock market, one can see that there are clear differences in ratios depending on the size of the companies. For instance, the average EV/EBIT ratio for the Large Cap index during the period 2005-2008Q3 is 11,3 whereas it is 15,1 for the Small Cap index. Thus, it is crucial that the private and the listed indexes compared match in terms of the size of the companies concerned.

The table and the graph below display the characteristics of the sample of private transactions. It is clear that the sample contains observations that differ largely in size, the smallest transaction being valued at SEK 230 thousand whereas the largest transactions is valued at roughly SEK 50 billion. The sample's arithmetic mean is SEK 1,8 billion and the standard deviation is almost SEK 9 billion. However, the sample's median is only at SEK 207 million. This means that the sample contains a large number of fairly small transactions, but the sample's mean is distorted by a few very large transactions. The pie chart

below adds to this picture. It shows that a vast majority, 73% of the transactions, is at a transaction price below EUR 75 million, which means that they are in the lower half of the Small Cap index.

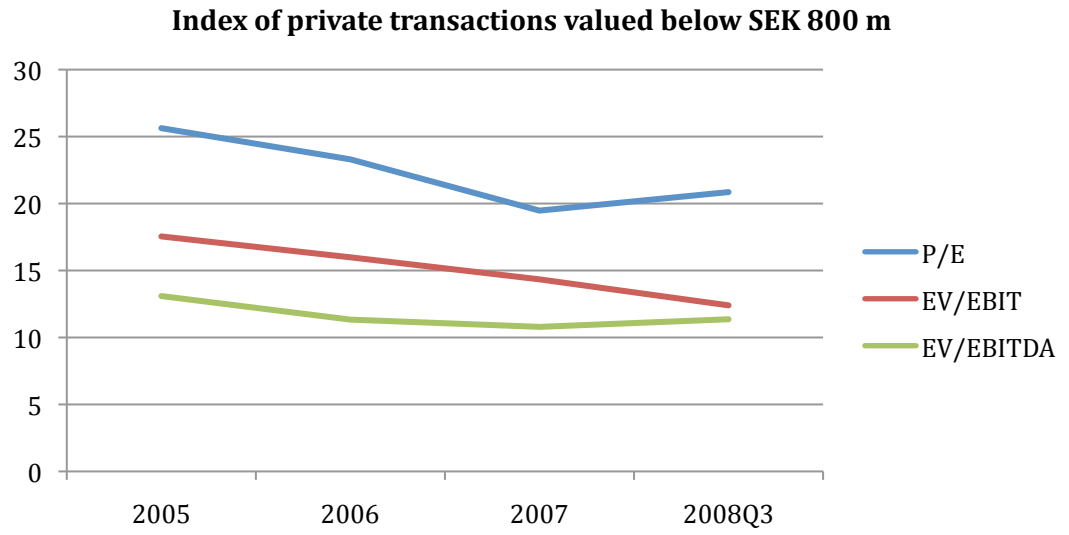
Sample characteristics	
Mean	1 838 MSEK
Median	207 MSEK
Stand. dev.	8 974 MSEK



The characteristics and distribution of the private index, in terms of size of the transactions.

To obtain a comparison that yields a true estimate, the private and listed indexes must be very well matched in terms of the size of the transactions involved. Unfortunately the number of transactions in the sample of the private transactions does not allow for a break up of the sample into several indexes. Therefore, transactions above the value of SEK 800 million are excluded, in both the private and the listed index. What is left is two matching indexes with companies whose sizes represent roughly the lower half of the Small Cap index.

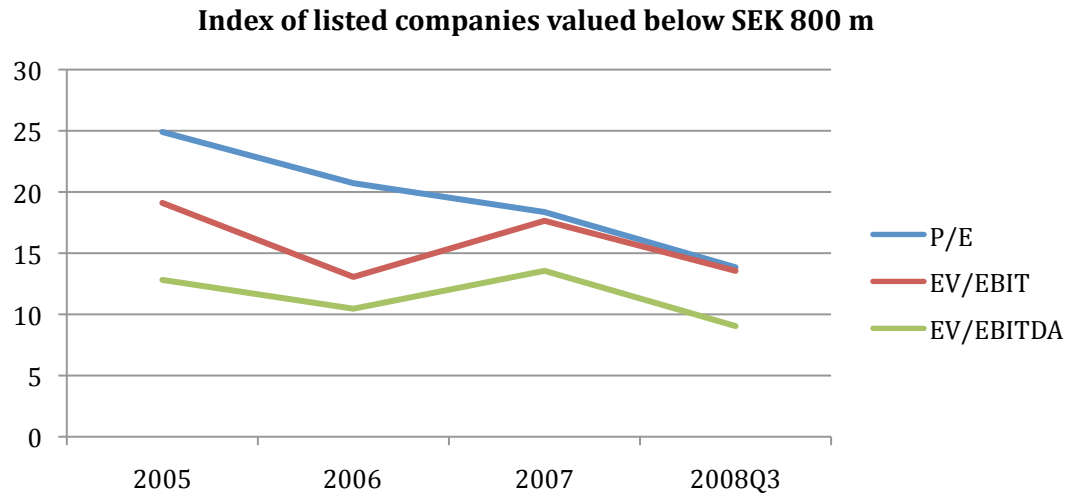
The private index that appears when stripped of all transactions at a price above SEK 800 million represents 78,5% of the original index. It consists of between 210 and 244 observations depending on the price-to-earnings measure, distributed over the four years. The observations are to some extent unevenly distributed as more transactions took place in 2006 and 2007 than in the other years. 2008 also suffers from the absence of the fourth quarter. However, all measures for all years have each above 30 observations, which is the minimum requirement for a sample to be normally distributed. It is thus fair to conclude that the index is representative for the population as a whole. The graph below displays the ratios of the index when stripped from the large transactions.



The average of the historic P/E, EV/EBIT, and EV/EBITDA multiples for the private transactions in this study, valued below SEK 800 m. The indexes are discharged from negative values and values above 100, 75, and 50 respectively. Mergermarket and Affärsdata.

The slight decrease in EV/EBIT and EV/EBITDA multiples over the period reflect a pricing that has grown slower than the growth in earnings over this period. A remarkable feature of the index is that in 55,3% of the transactions, the equity is valued at roughly 14% higher than the enterprise value, reflecting cash on the balance sheet.

The listed index, displayed below, is stripped of all companies that were valued above SEK 800 million in the third quarter of 2008. The index has an average of 47 companies (sample size) per year. However, each company is measured quarterly, which results in the index having an average of 189 observations per year.



The average of the historic P/E, EV/EBIT, and EV/EBITDA multiples for the listed companies, valued below SEK 800 m. The indexes are discharged from negative values and values above 100, 75, and 50 respectively. Thomson Datastream.

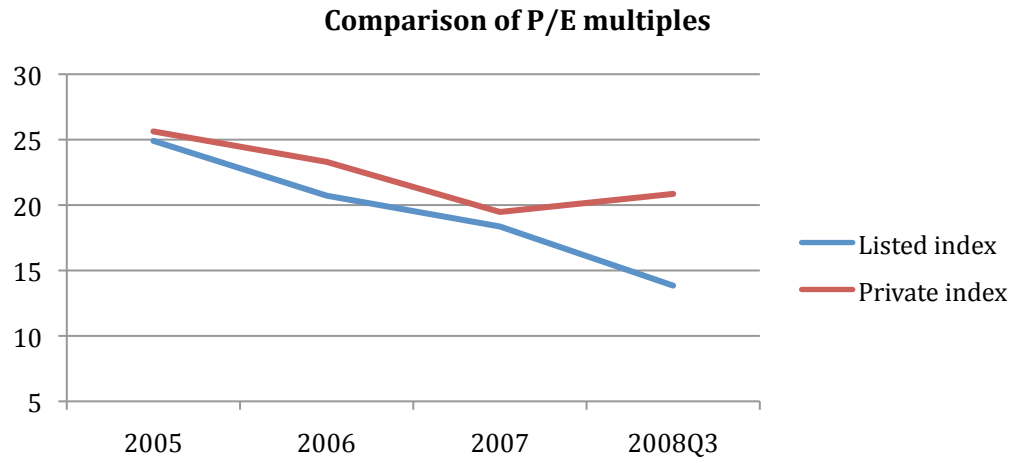
The strong volatility in the EV/EBIT and EV/EBITDA multiples is more the result of high volatility in earnings than price fluctuations. The average EBITDA for a Small Cap company was SEK 47 million in 2004, after which it rose sharply to SEK 58 million in 2005, which caused the dip in multiples for 2006. The following earnings were actually slightly smaller, at an average of SEK 55 million. However, in 2007, it rose again to SEK 67 million, which, together with the decline in stock prices, resulted in the significant drop for 2008.

Even though the listed index is stripped from all companies valued above 800 million, its companies are still significantly larger than those in the private index. The following table displays the differences. It appears that the average company in the listed index is roughly twice as big as the average company in the private index. As a result, there is a size effect to be considered when drawing conclusions from the following comparisons.

Private index characteristics		Listed index characteristics	
Mean	208 630	Mean	502 468
Median	146 359	Median	440 440
Standard deviation	179 826	Standard deviation	350 810

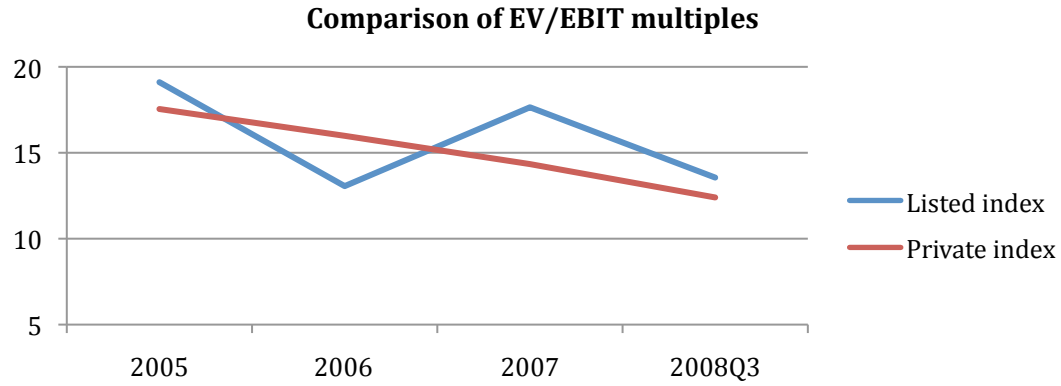
Characteristics of the matched indexes. Thomson Datastream, Mergermarket, and Affärsdata.

4.3.2 Comparisons of price-to-earnings measures



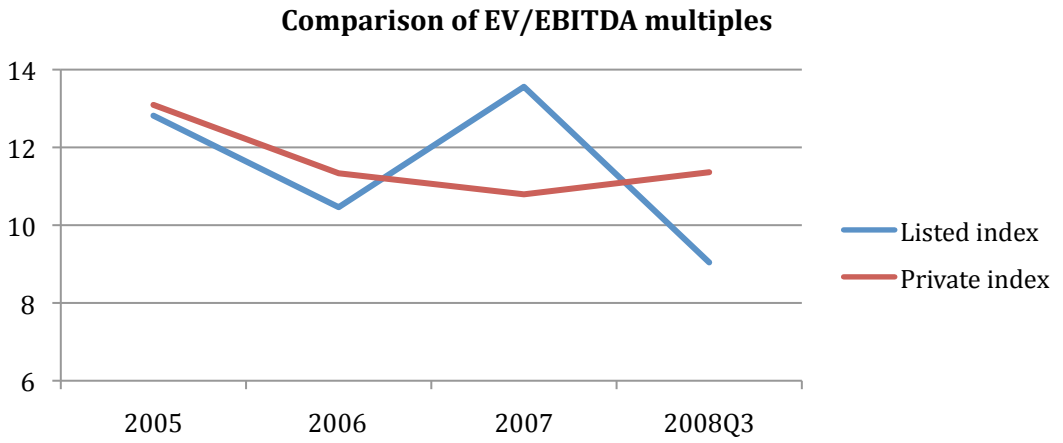
A comparison of the historic P/E multiples for the listed companies and the private transactions in this study, valued below SEK 800 m. The indexes are discharged from negative values and values above 100.

The above graph displays the P/E multiples for the two indexes during the period 2005 – 2008 Q3. There is a visible lag in pricing of private companies in 2008, as explained earlier by Mr. Skoglund, or it could be the effect of lower earnings in 2007.



A comparison of the historic EV/EBIT multiples for the listed companies and the private transactions in this study, valued below SEK 800 m. The indexes are discharged from negative values and values above 75.

The comparison of EV/EBIT multiples shows a very stable decline in prices for private companies, while the listed index is very volatile. So is also the comparison of EV/EBITDA multiples, as shown below.



A comparison of the historic EV/EBITDA multiples for the listed companies and the private transactions in this study, valued below SEK 800 m. The indexes are discharged from negative values and values above 50.

Similarly to the P/E multiple, the lag in pricing is shown in the graph above. This could reflect that few sellers sell to the new price level, or simply because earnings were slightly lower for 2007.

4.3.3 Calculating private company discounts

The table below lists in detail the arithmetic means of the valuation multiples obtained from the study. The average mean is not calculated as an average of the four years' means, but as the mean of all observations. In this way, it is not distorted by the fact that each year has different numbers of observations.

Comparisons of ratios between private and listed companies						
		2005	**2006**	**2007**	**2008 Q3**	**Average**
P/E	Listed	24.91	20.72	18.36	13.84	19.43
	Private	25.63	23.30	19.47	20.85	21.90
EV/EBIT	Listed	19.11	13.06	17.64	13.56	15.94
	Private	17.55	15.99	14.34	12.40	15.13
EV/EBITDA	Listed	12.82	10.46	13.56	9.04	11.63
	Private	13.09	11.33	10.78	11.36	11.22

The average valuation multiples for the listed companies and the private transactions, valued below SEK 800 m.

The table below yields price discrepancies that are displayed in percentage form in the table below. Discounts for private companies are negative figures, and premiums are positive.

Discrepancies in prices between private and listed companies					
	2005	**2006**	**2007**	**2008 Q3**	**Average**
P/E	+2.9%	+12.5%	6.1%	50.6%	+12.7%
EV/EBIT	-8.2%	+22.4%	-18.7%	-8.5%	-5.2%
EV/EBITDA	-2.2%	+8.3%	-20.4%	25.7%	-3.5%

The discrepancies in pricing measured as a percentage, private-to-listed.

Surprisingly, there is a continuous private company premium when comparing P/E multiples over the four-year period. The EV/EBIT and EV/EBITDA show a private company discount as an average over the whole period, although it is marginal.

4.3.4 Testing for statistical significance

It is crucial for a study like this to be tested for statistical significance. A t-test is the most appropriate test for testing the difference between the means of two samples for which the populations' means and variances are unknown. An independent t-test for two samples with unequal sample sizes and unequal variances, which is the case for this study, is as follows.

$$t = \frac{\overline{X}_1 - \overline{X}_2}{s_{\overline{X}_1 - \overline{X}_2}}$$

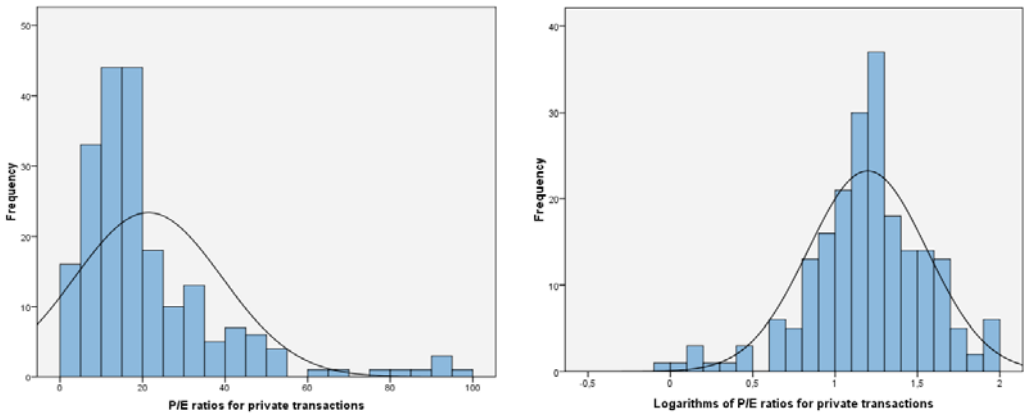
where

$$s_{\overline{X}_1 - \overline{X}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

and the degrees of freedom are determined as follows.

$$D.F. = \frac{\left(s_1^2/n_1 + s_2^2/n_2\right)^2}{\left(s_1^2/n_1\right)^2/(n_1 - 1) + \left(s_2^2/n_2\right)^2/(n_2 - 1)}$$

A t-test requires that the samples be normally distributed, which is not the case for this study. However, although the observations are not normally distributed, their logarithms are. Thus, the t-test is conducted on the logarithms of the observations. The distribution for the P/E ratios from private transactions and the normal distribution for the corresponding logarithms are displayed below.



The difference in distribution between the P/E multiples for private transactions (left) compared to their logarithms (right).

The table below shows the result from the t-test. The discrepancies in prices between the private and the listed indexes are tested for statistical significance for each individual year, and also over the four-year period as a whole.

Statistical significance with a 95% confidence interval						
		2005	**2006**	**2007**	**2008 Q3**	**Total period**
P/E	Difference	Premium +2,9%	Discount +12,5%	Premium +6,1%	Premium +50,16	Premium +12,7%
	Stat. significant	NO	NO	NO	YES	YES
EV/EBIT	Difference	Discount -8,2%	Premium +22,4%	Discount -18,7%	Discount -8,5%	Discount -5,2%
	Stat. significant	NO	YES	YES	NO	NO
EV/EBITDA	Difference	Discount +2,2%	Discount +8,3%	Discount -20,4%	Premium 25,7%	Discount -3,5%
	Stat. significant	NO	NO	NO	NO	NO

The result from the test of significance, YES means that the discrepancy is statistically significant at a 95% confidence interval.

As displayed in the table above, there are only a few times where the discount (or premium) is statistically significant. The large discount and the large premium for the EV/EBITDA multiple in 2007 and 2008 are surprisingly not statistically significant, which is explained by the EBITDA curve's volatility increasing its standard error.

5. Analysis and discussion

This chapter discusses the result from the study and relates it to theory and earlier studies as well as the problem discussion from the introduction chapter.

5.1 Does it exist a private company discount on the Swedish market?

Our study cannot prove the existence of a statistically significant PCD on the Swedish market for the period 2005 – 2008 Q3 as a whole. On the contrary, our study shows that during this period, there was in fact a private company *premium* when looking at the average P/E multiples over the whole period. A PCD can be statistically verified for an individual period when looking at the EV/EBIT multiple, but it cannot be considered a general fact. Our expected outcome for this study was to find a significant average PCD on the Swedish market over the period 2005 – 2008 Q3, which we did not. However, the result of the study seems to be logical when analyzing its circumstances. In fact, we can provide three major reasons that give a rationale for the result of our study.

First, from earlier studies, we have learned that good financial health and cash flows of a firm reduces its PCD. As a fact, Sweden experienced a ”super boom”, as Mr. Malmqvist called it, during the major period of our study. This had positive effects on companies’ health and earnings, for both listed and private companies. As a result, a large part of the private companies in our study had considerable amounts of cash on their balance sheets prior to the transactions. As mentioned earlier, in 55% of the transactions, the value of equity was higher than the enterprise value. This means that on top of the value of the business, measured as discounted future cash flows, there was a net cash & cash equivalence of an average of 14% of the enterprise value, an amount that is unlikely to be matched on the stock market, where companies are considered to destroy shareholders’ value when holding large amounts of cash. This means that the acquirer, in 55% of the transactions, must have had added an average of 14% to the multiple before even considering a PCD. Moreover, there are potential factors that could have a diminishing effect on the PCD, such as the control premium, as mentioned in the theory. These are effects we cannot measure in this study, but it is important that we recognize the potential existence of such effects during this

period. As the desire for liquidity can change, one could argue that the desire for control can change from period to period. It is possible that the control premium was unusually large during this period, or that other unidentified premiums affected the PCD.

Second, as described in the referential framework, an important factor when determining a PCD for a specific firm is the number of potential buyers. This is also commented on by Ms. Carlström, who says that supply and demand strongly influence the pricing of private companies. Considering the economic environment in Sweden during the first 2.5 years in our study, this effect was strong. The "super boom" previously mentioned did not just increase the cash for potential targets, but also for acquirers. Moreover, during this period, we experienced an unprecedented boom within Private Equity, who had easy access to funds. On top of this, there were record low interest rates, that is, cheap access to capital for both industrial and financial investors. Accordingly, the effect of supply and demand must be considered to be very strong during the period for our study. In fact, one could argue that the seller of a private company faced an unusually liquid market for private companies during this period. As described in theory, illiquidity refers to the time required to sell an asset, and the ease at which it can be sold without a significant loss in value. This indicates that there was a lower degree of illiquidity during this period. On top of this, theory argues that investors are in general willing to pay more for liquid assets than illiquid assets, which would result in a lower bid-ask spread, if companies were considered more liquid during this period. Hence, the discount for illiquidity, and accordingly the PCD, was supposedly smaller during this period.

Third, as both mentioned in theory and by Mr. Malmqvist, publicly traded stocks are not entirely liquid. Mr. Malmqvist says that smaller listed stocks have an illiquidity discount of 10-20%. Although there was a somewhat exception to this general rule during 2005 and 2006, this must be taken into consideration when interpreting the result of our study. On a general basis, the smaller the listed company is, the smaller is its liquidity, as mentioned in theory. Considering the fact that this study compares the private index to the lower half of the Small Cap index, there is possibly an illiquidity discount already included in the multiples

for the listed index. In addition, the companies in the listed index are in average twice the size of the private companies. From the relationship between size and valuation multiples observed in our study, it is probable that the listed companies would have had slightly higher multiples, were they the same size as the private companies.

A fourth factor that we value as of slightly less magnitude is the target's possibility of going public in the future, which reduces the PCD according to theory. It is fair to say that this possibility existed during the upswing on the stock market from 2005 to mid 2007.

Considering the above-mentioned circumstances for this study, its result is not as peculiar as it first may seem, and this is for two general reasons: First, there are circumstances that indicate that pricing on private companies was unusually high during the studied period, namely the economic boom and its effect on both targets' and acquirer's financial health. Second, the size effect in terms of both higher pricing based on historical multiples for small stocks and liquidity discount on small listed firms has most likely had an impact on the study, skewing the result. Consequently, we do not consider the premium indicated by the P/E multiples as a fact. Instead, we believe that the discounts indicated by the small discrepancies in pricing for the total period when comparing the EV/EBIT and EV/EBTIDA multiples should have been higher had we not the size effects in the study. On top of this, the study ascertains a discount for the EV/EBIT multiple in 2007, which we consider to be accurate. Consequently, the study indicates the existence of a PCD in general, and proves it for a single period. However, it is clear that, for the studied period, the PCD on the Swedish market is considerably lower than what is the general result in earlier foreign studies.

5.1.1 Comparisons to earlier studies

Similarly to our study, earlier studies yield different results when using different measures. Koeplin et al. found an average discount of 20-30% when looking at the EV/EBIT and EV/EBITDA. However, they too obtained significantly different results when using different value measures. This raises the question on which is

the best measure to value companies, based on the information that is obtainable. It is our view that, out of the three different value multiples used in our study, the EV/EBITDA multiple is the best estimate for measuring and comparing value between firms, as it represents the company's fundamental ability to generate cash flows, is relatively free from accounting measures, and is not affected by capital structure. The EV/EBIT multiple is also relatively trustworthy, although it suffers from exposure to changes in accounting measures and large occasional write-downs. As regards to the P/E multiple, our study shows clearly its deceitfulness. The relation between the listed and the private index is twisted for the P/E multiples, compared to the EV/EBIT and EV/EBITDA multiples, that is, the P/E multiple shows a premium when the other indicate a discount. Given the earlier mentioned net cash in 55% of the private companies, their higher P/E multiples are obviously not the effect of high interest expenses. Instead, it must be due to accounting effects. This accounting effect is two-headed. First, private and listed companies are subject to different accounting standards, as mentioned in theory. Second, we argue that listed companies are under more pressure from share- and stakeholders to report higher earnings in comparison to private companies. This could lead to a difference in the use of tax referral over an economic cycle between public and private companies.

Something that needs to be kept in mind when comparing this study to earlier studies is that the time period covered in this study is much shorter than the time period covered in earlier studies. For example, the study conducted by Koeplin et al. covered the time span 1984-1998, the study conducted by William Silber covered the time span 1981-1988, the Willamette association study covered the years 1975-1995, and the PCPI index starts from 2002 and stretches until present time. Thus, there could be several underlying conditions that differ between our study and earlier studies, concerning both the stock market and the private market. These conditions could be required returns, market premiums, valuation techniques, liquidity on the stock market, tax policies, and more. In fact, the Willamette study, which measured the pre-IPO discounts, supports this reasoning, as that study estimated an average discount that varied significantly,

namely between 32% and 75%, from period to period. It could also be argued that communication technologies, such as the Internet, have helped the market for private companies to become increasingly liquid over time.

As regards to the PCPI, our study shows significantly higher multiples for both private and listed companies. This could be due to size effects, as their index is aimed at the mid-size market, or it could be the effect of different sorting and adjustments of the sample. As described in the introduction chapter, they analyze each multiple more closely and exclude all multiples that would distort the sample. However, although the PCPI does not show the same multiples as our study, it is a clear similarity in the pattern of the indexes for the last four years. The P/E multiple for private transactions is stable and is slightly increasing during 2008, while the listed index is in a steep downturn. This is true for both the PCPI and our study. However, the most important observation is that the PCPI shows that the difference in pricing between private and listed companies narrowed since 2002, and that there was a small discrepancy in pricing for the period 2005 – 2008 Q3. This, together with the result of our study, provides strong indications of a smaller or nonexistent PCD over the period covered in this study.

5.2 Is the PCD static or changing over an economic cycle?

Our study strengthens our reasoning from the introduction chapter concerning a non-static private company discount. It shows that the pricing of private companies relative to listed companies can change considerably from period to period. Moreover, our study shows that occasional circumstances, such as the effect of supply and demand, also can have a strong influence on the PCD. However, the major reason for the change in the PCD over an economic cycle is that the stock market is much more volatile than the private market. Moreover, the stock market overreacts, in both directions, as said by Mr. Mörck. During the studied period, the pricing on private companies is relatively stable. This is also visible for a longer period when looking at the P/E multiples in the PCPI, where the pricing on private transactions lies around a multiple of 13, whereas the listed index goes from a multiple of 22 in 2001 to around 12 in early 2008.

The market for private companies follows the stock market to a certain extent, but with a considerable lag, since the stock market is much more liquid than the private market. This lag is larger in an economic downturn, as explained by Mr. Skoglund and shown in both our study and the PCPI, when owners of potential targets try to keep the pricing at its current level. The implication of this reasoning is that, in an economic downturn, the buyers must apply a lower PCD since the sellers lag in accepting the new price levels, and because the pricing of private companies is not as volatile as the stock market. The result of this reasoning is that the PCD becomes larger in an economic boom and smaller or maybe nonexistent in an economic slump. It is therefore not appropriate to apply a standardized average discount in any period if one is to pay a fair market price.

If we draw the conclusion that it is the volatility in pricing on the stock market that is the main reason to the changes in the PCD over an economic cycle, it is important to include in this reasoning the fact that the pricing on the stock market, in terms of the average 12 months forward P/E multiples, were considerably lower during this period, compared to in earlier economic peaks, as explained by Mr. Malmqvist. This could mean that the volatility in terms of historic P/E multiples were also significantly lower during the period covered in this study. If this is the case, this implies that the result from our study is, in fact, most attributable to an unusually low volatility on the stock market, in terms of historic P/E multiples.

5.2.1 Interpretation of earlier studies

The fact the PCD changes over time should be kept in mind when interpreting the earlier studies made on the PCD. In fact, we reason that some of the earlier studies are biased towards market upswings and do not provide a true estimate for the average PCD, that is, their stated PCDs are too high.

Several estimates of the PCD come from studies made on pre-IPO discounts, such as the Willamette study. However, IPOs are normally only carried out in times of economic upswing. Thus, the studies on pre-IPO discounts obtain heavily biased PCDs, that is, it does not measure the PCD over the whole economic cycle.

The studies made on valuation multiples, such as the Koeplin et al. study, are also biased toward an economic upswing, in the sense that fewer transactions take place in an economic downturn. If one is to obtain an average discount over an economic cycle, taking the average of all measured transaction will result in a skewed result if one does not take into account that the numbers of transaction made in booms and slumps respectively can differ considerably.

Although we criticize earlier studies to be biased, we reason that the use of an average PCD is limited, that is, it is only useful as evidence for the existence of a PCD. This is because, when in a pricing situation, one is either in a boom or a slump, which means that the PCD is seldom at its average.

5.3 Factors that affect the PCD

According to the interviewees, the pricing on the stock market and the pricing of private companies are affected by the same factors, namely the economic outlook, the target's performance, and the liquidity in each market.

The valuation and pricing of private company follows macro trends to the same extent as listed companies do. It is however the difference in liquidity between the two markets that is the underlying reason to a changing PCD, making the stock market more volatile. The stock market is highly liquid and adapts instantly to macroeconomic changes. The private market however, is much slower in adapting the pricing to new price levels, especially in an economic downturn, as seen in both our study and the PCPI. Nevertheless, there are indications of that the stock market was much less volatile, in terms of P/E multiples, during the period in our study. However, this could be an occasional phenomenon, and it is not possible to predict future volatility in terms of valuation multiples, and thus the future size of the PCD.

The stock market is of great importance to the pricing of private companies, as it offers an alternative investment or divestiture. In an economic prosperity, the seller can issue an IPO instead of selling the company to a private investor, if he believes that he will earn more in doing so. On the other hand, during a recession characterized by an undervalued stock market, the acquirer can find a company

for a better price at the stock market. As a conclusion, the stock market can be used for negotiation by both parties.

The performance of the private targets proved in our study to contain an additional feature: not only meaning that the target performs good financially, but also that it can hold a considerable amount of cash or have low level of or no debt (which also would make it a suitable target for a leveraged transaction).

The liquidity in the private market, measured as the number of potential buyers, proved to be an important factor for the studied period. However, it does not mean that the next economic boom will be accompanied by the same high number of potential buyers of private targets. One can also reason that the PCD varies because the stock market varies in liquidity over a business cycle, as explained by Mr. Guri. Although the private market also varies in liquidity, it could be that the stock market is more sensitive to those changes.

6. Conclusion

Our study indicates a small average PCD when comparing the EV/EBIT and EV/EBITDA multiples over the whole period, although the discount is not statistically significant. However, we believe that we would have obtained a statistically significant PCD over the whole period for these multiples had we not the size effect, skewing the result in our study. Nevertheless, our study strongly indicates that the PCD on the Swedish market were not as big during this period as earlier studies made in other countries suggest. Comparing it to the similar results in the PCPI leads us to the conclusion that the PCD on the Swedish market during the period for this study was small or sometimes nonexistent. It is our belief that this was the result of occasional circumstances, such as an unusually liquid market for private companies and an unusually low volatility, in terms of valuation multiples, on the stock market.

Although we cannot prove the existence of a PCD over a longer period, our study proves the existence of a PCD for certain points in time, notably in economic upswings. Our study shows that the PCD is actually changing considerably over an economic cycle, which we believe should have an impact on the use of the PCD when valuing private companies. We argue that one cannot apply an average standardized discount at any point in the economic cycle. The PCD changes over the economic cycle, and is thus seldom at its average level. It is of course up to the individual acquirer to decide how much he values liquidity, but if one is to pay a fair market price or compete with other acquirers, one must replace the standardized PCD with one that is more adapted to the transaction's surroundings and the firm-specific factors that influence the company's degree of liquidity, as they are explained in theory.

This study and the PCPI are the only available studies on the PCD conducted in present time. Together, they provide strong indications of that the existence of a large PCD for the last four years in Sweden was, in fact, a myth. This means that earlier studies on the PCD should now be of less relevance when pricing private companies. Instead, it is our viewpoint that the estimation of a PCD is most easily

and most accurately obtained from an index, such as the PCPI and the one in this study, which reflects both up-to-date pricing and market conditions.

7. Suggestions for further studies

This study could not prove a PCD over a four-year period in Sweden. It would therefore be very interest to look at these multiples over a longer period of time, for instance, tracking it backwards to the last economic downturn in 2001. It would be interesting to see if the curves would be similar to the PCPI, that is, that the PCD was larger in 2002.

According to theory, companies' assets can differ in liquidity. It would therefore be interesting to map the pricing of private and listed companies in different industries in Sweden, in order to find out if there are significant differences in the PCD between them.

There seem to be no right answer in how to correctly measure the PCD. There are several more or less advanced methods. However, it is the authors' opinion that a relative valuation is the best. The question is on which earning measures it should be based. One idea is to base the multiples on the average trend in earnings, EBIT, and EBITDA over a five-year period when calculating the multiples.

It would be very interesting to do a similar study as Koeplin et al., where they paired and compared private transactions with their listed counterparts, based on fundamental similarities such as industry, cash flows, financial structure, size etc. A result from similar Swedish study would be very interesting, since the studies would be highly comparable. This would bring light to whether or not the Swedish PCD is of the same size as in other countries.

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Exhibit - Interview guide

Listed companies

What are the main factors that drive general price changes on the stock exchange?

Which factors drove the change in pricing on the Swedish stock exchange for the period 2005 – 2008 Q3?

What do you believe are the main factors behind changes in value of listed companies in relation to private companies?

Do you believe that the current pricing on the stock market reflects the companies' fundamentals?

Private companies

What valuation method do you use when pricing your targets?

In what extent do you compare with listed companies? How does this work in the current market situation? Do you believe that the current pricing on the stock market reflects the companies' fundamentals?

How do you deal with the illiquidity discount for non-listed companies when pricing your targets?

What are the main factors that drive general changes in pricing of your targets?

What factors drove the changes in pricing of your targets during the period 2005 – 2008 Q3?

How do you adjust your valuation method when in a bidding situation? Do you enhance your future projections or do you lower your required return?

What do you believe are the major factors behind the change in pricing of private companies in comparison to listed companies?