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Performance of Value-Investing Strategies: Swedish Evidence, 2000-2010

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I. Introduction

Value investing is potentially a market anomaly not yet corrected for even though the concept of "buy low (, sell high)" arguably dates back far in the history of civilization, and in writing since at least the early 1800's (Popik, 2008). The value-investing philosophy and practical techniques can be of importance as exploitable long-term strategies in a variety of financial asset markets. Our main research question is:

Can so called "value" investing strategies outperform the market in terms of risk-adjusted returns in listed equities? If so, does the opposite of the value strategies, i.e. "glamour" strategies, underperform?

The objective of this study is to empirically evaluate how models of value-investing strategies have performed ex post in an updated and survivorship bias controlled Swedish sample setting and to compare and contrast our results to empirical findings and theories from existing economic literature. Our focus on the practitioner's perspective diverges from most previous academic literature. We evaluate risk and return performance non-parametrically for the selected strategies for the full sample and, to ensure robustness, for size and leverage sub-samples and in state-of-the-world sub-sample periods as well. We also formally test our risk-return findings against the Sharpe-Lintner-Black CAPM.

From our findings we report that taking a long position (buying) the value quintile (fifth) of our non-financial firm market sample yielded clear size- and leverage-robust ex post risk-return outperformance over the market and the glamour-quintile for the cash-flow oriented firm valuation ratios EBITDA/EV and FCFF/EV. In our risk-return assessment the value quintile of the equity valuation yield ratio E/P (reverse P/E) does not turn out robust while the well-documented equity valuation ratio B/M (reverse P/B) performance is downright poor on most aspects evaluated. Our results may indicate that cash-flow is a more robust indicator of firm value than accounting profits or book value of equity which both are arguably more exposed to distortions from accounting reform and accounting-related agency problems.

On the *causes* of our empirical value outperformance findings we find explanations from behavioral finance convincing. Among irrational investor behavior patterns, overreaction could intuitively explain value outperformance as investors tend to overshoot in pessimism more often in the lowest valued quantiles of the market, while overconfidence or overoptimism could explain why the highest valued segments of the market over time would tend to not be able to support subsequently even higher valuation levels. Practically, robust findings of a superior risk-reward for value-investing strategies over market benchmarks could imply that investors are still under-exploiting these behavioral characteristics.

In our concluding remarks we suggest that value-oriented single valuation ratio strategies and value-oriented strategies of higher complexity should not be dismissed as potential sources of return alpha going forward. Increased complexity in portfolio strategy simulations would be a natural extension of this study.

The remaining sections of the study are organized as follows; Section II starts with a brief and selective literature review on the value-investing concept and its relation to the Efficient Market Hypothesis (EMH). This study's formal research hypotheses are presented and the section ends with an empirical background summary and discussion. Section III covers the most central methodological aspects of this study; from how trading strategy simulations are performed, through risk-return performance evaluation and ending with econometric tests employed. Section IV describes our sample and presents and discusses the main results of our ex post risk-return performance evaluations and ex post econometric tests. Section V concludes and Section VI constitutes Sampling and Results Appendices.

II. Problem Discussion

One investment practitioner who arguably contributed significantly to the value investing philosophy in equities and other financial securities was Benjamin Graham (1894-1976). Graham co-authored "Security Analysis" (Graham & Dodd, 2009), with a first edition published in 1934 and later editions updated posthumously by other authors. In this book, and throughout his investment career, many value investment techniques recommended by Graham focused on screening for attractively priced stocks based on historical accounting ratios in relation to firms' fluctuating public market valuations. Such techniques are today associated with the practitioner field broadly defined as fundamental securities analysis.

Graham and Dodd argue that investments should have a "margin of safety" between the investor's perception of an investment's intrinsic value and the price that the investment sells for in the market, and that this margin implies risk reduction and distinguishes investing from speculation (Graham & Dodd, 2009, p. 498). In Graham's conceptual framework market prices are offered by the imaginative character "Mr. Market", who in a manic-depressive manner irrationally swings from over-optimism to over-pessimism on how the intrinsic value of a security is priced. Although vaguely defined, we believe that investment strategies based around this common sense philosophy could potentially pass the test of time rather well. Reasons for taking such a position are on one hand broad-based empirical support from previous data and, more importantly, behavioral finance-theory that attempt to link market irrationality to such empirical outcomes. Our proposition that value-investing systematically yields risk-return outperformance to a large extent violates the prevailing neo-classical market efficiency paradigm.

Practically our evaluation of value-investing will employ a widely employed academic framework[1] where:

- **"Value"** investing strategies are defined as **buying at low valuation ratio ratios**
- **"Glamour"**[2] investing strategies are defined as **when the investor buys at high valuation ratios**

2.1 Theoretical Background on Market Efficiency Benchmark

Most academics in financial economics would probably acknowledge that the empirical literature indicates that value investing strategies historically have generated absolute *return* outperformance, either relative to the market average and/or to glamour strategies. However, there is an explanatory split on the *causes* of such outperformance findings and on the *riskiness* associated with such strategies. On one side of the debate stand the Efficient Market Hypothesis (EMH) proponents, who try to explain value return outperformance by rationality, and on the other side we find behavioral finance-proponents, who to a varying extent try to reject the EMH based on investor irrationality.

A Brief Summary of the Efficient Market Hypothesis (EMH)

If the reader makes the strong assumption that pricing mechanisms of stock markets do reflect the financial economics concept of EMH then value-investing phenomena do constitute potential market efficiency anomalies. Fama's 1970 review is often attributed to have improved the organization of EMH and focuses on the mechanism of how, and to what extent, information is factored in to asset prices. Fama made two main propositions. First and most widely cited, Fama defined three levels of market efficiency:

1) **Weak market efficiency**

   Historical price information cannot be exploited to systematically make profits. Stock prices follow a random walk with a drift.

2) **Semi-strong market efficiency**

   All public information is instantly reflected in prices and cannot be exploited for profits.

3) **Strong market efficiency**

   All public and private information is instantly reflected in prices.

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[1] In Section 2.3 most of the important empirical studies on this topic follows this type of framework.

[2] Several authors in the literature instead of "glamour" use the term "growth". This terminology issue is of little importance but we employ "glamour" to emphasize that the opposite extreme valuation end of "value" does not necessarily relate to growth per se. "Value" stocks can be of high sales or profit growth just as "glamour" stocks can be of low sales or profit growth since the "value"/"glamour" terminology just focuses on valuation and nothing else. We thus avoid making a strong assumption about the linkage between expected growth and valuation ratio level.

If value-investing strategies based on fundamental analysis are profitable and exploitable that would clearly violate at least the semi-strong and strong forms of the EMH. There are as well empirical contributions that reject the weaker form's technical assumption of random walk stock prices, see for example Lo and MacKinlay (2001) and Lee et al (2010).

Fama's (1970) second proposition is the existence of a "joint hypothesis problem" in that information efficiency, in Fama's view, cannot be rejected without a simultaneous rejection of the asset price setting mechanism itself. This implies that in order to formally reject Fama's market efficiency one must do so in a test setting that at the same time rejects an equilibrium asset pricing model. This puts researchers in a practically problematic dilemma since Fama (1970) requires tests of EMH to be done with *ex ante* returns. The paradox is that when *ex ante* returns from the pricing model deviate from *ex post* returns it is not possible to fully distinguish whether the model is imperfect or if the EMH has been violated. Fama (1991, pp. 1575-1576) however argues that imprecision in inferences on market efficiency has not made EMH-tests less useful when it comes to *explaining* cross-sections and time series of securities returns.

What Constitutes an EMH-Anomaly?

Within the EMH-framework Schwert (2003, pp. 939-940) defines anomalies as "empirical results that seem to be inconsistent with maintained theories of asset-pricing behavior". In line with Fama's joint hypothesis problem, anomalies imply either information inefficiency and/or that the formal asset-pricing model cannot capture the risk-return relationship adequately. In line with Jensen (1978), Schwert also requires an anomaly to be of economic importance in terms of trading profitability. In his extensive review Schwert (2003) stresses how, following wide publication on them, many anomalies have seen their predictive power disappear or reverse as they have been arbitraged away over time. Schwert (2003, p. 939) takes an EMH-proponent stance in concluding that the collective academic evidence indicates the majority of anomalies might be "more apparent than real" and Roll (1994, pp. 71-73) questions the exploitability of even the strongest market efficiency anomalies. Fortunately, for the purpose of this study, Schwert's (2003, pp. 941-942) reasoning implies that finding evidence of existence of an already well-documented anomaly in independent samples, from an updated time frame and/or from other markets, would indicate that the anomaly still exists and may still be exploitable.

EMH as a Relative Efficiency Benchmark

The empirical focus of this paper aims at taking the perspective of the investment practitioner. What we do know practically is for there to exist systematically identifiable and exploitable patterns in valuation that persist over time the stronger forms of EMH have been violated. With support from Grossman and

Stiglitz (1980) we use EMH as a relative efficiency benchmark against which we test anomalies rather than as a description of realistic market pricing mechanisms. Grossman and Stiglitz (1980) criticized information market efficiency by presenting the logical paradox that if market prices already reflect all relevant information then no agent has incentive to acquire the costly private information needed to profitably trade in the market and then trading would break down. Grossman and Stiglitz support that security analysis can generate private information that potentially can be compensated in asset pricing.

2.2 Hypotheses

We propose that single valuation ratio value-investing strategies can produce ex post excess risk-adjusted portfolio returns in the Swedish public equity markets, employing publically available price and accounting data. Using the EMH as a benchmark the following two specific hypotheses will be addressed:

H1: "*Value" stock portfolio excess returns does <u>not positively deviate</u> from the market average; neither in absolute terms or when accounting for risk factors.*

H2: "*Value" stock portfolio excess return does <u>not positively deviate</u> from "glamour" stock portfolio performance; neither in absolute terms or when accounting for risk factors.*

The theoretical basis for H1 is that "value" stock portfolios should not be able to outperform adjusted for risk because such a strategy should generate lower-than-market risk at lower-than-market returns according to Modern Portfolio Theory (MPT). In the discussion of Section 2.3 most pro-EMH explanations focus on above-market risk factors inherent in value strategies. H2 is an extension of H1, where MPT predicts glamour stock portfolios to have above-market returns at above-market risk.

We expect rejection of H1 where value over market risk-return outperformance could support the existence of *overreaction* irrationality among investors. We also expect rejection of H2 where value over glamour risk-return outperformance could support the existence of overreaction, in the pricing of value stocks, as well as *over-confidence*/*over-optimism,* in the pricing of glamour stocks. In sub-sequent Section 2.3 these behavioral finance concepts are covered along with previous empirical findings. In order to *robustly* reject either hypothesis we require conclusive rejection over the full sample as well as in sub-samples. With our focus on the practitioner we will conservatively also require favorable or neutral performance relative to the market on remaining non-parametric performance measures, to be presented.

2.3 Empirical Background and Behavioral Finance Theory

B/M, E/P and/or CF/P Value Portfolios and Investor Irrationality

Among well-cited empirical works on the topic Lakonishok et al (1994) show that the risk-return of value stocks outperformed that of glamour stocks in the U.S. during 1968-1994. They do so independently for the price-to-book ("P/B"), price-to-earnings ("P/E") and price-to-cash flow ratios ("P/CF"). Subsequent to decile portfolio formation based on valuation ratio ranking, Lakonishok et al show how the value decile portfolios of P/B, P/E and P/CF distributions over a 5-year period deliver absolute return outperformance over the market and over the glamour decile portfolios. The two most extreme value P/B deciles outperformed the two most extreme glamour deciles in 73 % of the 1-year periods of the study, in 18 out of 20 3-year periods and in all 18 5-year periods. Concerning the EMH-proponent claim that value is riskier, Lakonishok et al formally show that even though value portfolios based on P/B and P/CF had marginally higher Sharpe-Lintner-Black CAPM regression betas than glamour portfolios for the full sample period, their betas were relatively higher in up-markets and relatively lower in down-markets. Lakonishok et al conclude that the ability for value strategies to outperform arise from their exploitation of the typical investor's mistakes, i.e. supporting investor irrationality.

DeBondt and Thaler (1987) as well confirm value return outperformance for the lowest quintile P/B portfolio. This paper also studied the returns prior to portfolio formation and found a clear price reversal effect; stocks of the value P/B quintile had lowest prior-to-formation 4-year returns and subsequently produced highest 4-year returns after portfolio formation. Mean-reversal findings of negatively serially correlated longer-term returns are also provided by Fama and French (1988) for U.S. industry and beta decile portfolios, and by Poterba and Summers (1988) for U.S. and international market indices.

Fama and French (2007) show how components of P/B valuation relate to value and glamour returns. The capital gains return outperformance of P/B value stocks comes mainly from their P/B ratios converging upwards while growth in book value of equity is insignificant to mildly negative. For glamour stocks it is the opposite story; a strong positive contribution from growth in book value of equity is counteracted by P/B converging downwards. P/B convergence is stronger for small capitalization stocks. Over the full 1926-2007 period the upward drift in P/B ratios only marginally affects the capital gains component of value and glamour portfolio returns. The value portfolio returns had a slightly higher dividend contribution than glamour in the latter 1964-2006 sub-sample period.

Another dimension of DeBondt and Thaler (1987), shows how earnings per share ("EPS") of the value quintile P/B stocks as well clearly mean-reverts around portfolio formation; with falling EPS in the 3-year period before ranking and rising EPS in the 4-year period after. Glamour stocks had sharply increasing EPS 3 years prior to ranking and one year after, then the EPS leveled off and reversed a little in year four.

DeBondt and Thaler (1987) point towards investor *overreaction* as an explanation for their mean-reversion findings in value portfolios, in line with experimental psychologists Tversky and Kahneman's (1974) behavioral decision theory. This theory proposes that the human mind tends to make biased forecasts when faced with decisions under uncertainty. In a review of investor cognitive and emotional biases, Kahneman and Riepe (1988) argue how investors may become *overconfident*, *overoptimistic* and/or *overreact* when making investment decisions. Chopra et al (1992) offer empirical support for overreaction in equities, corrected for market risk in terms of beta and for firm size. The overreaction effect is found to be greater in small capitalization firms. We acknowledge that although return underperformance in previous periods is a *likely* pre-condition for stocks to end up in value quantiles, such overreaction is not a *necessary* pre-condition. Testing for past returns would limit our sample size by removing firms that were only temporarily listed entities but that none the less are of interest for the practitioner. Similar arguments can be made for the opposite direction positive "momentum" effect observed by Jegadeesh and Titman (1993, 2001) and Fama and French (1996), among others.

Fama and French (1992) had earlier found value deciles on book-to-market ("B/M") to outperform in a U.S. sample covering 1963-1990, with robustness over firm size sub-samples. On the size effect proposed by Banz (1981), it is well documented that smaller capitalization stock returns over time outperform larger capitalization stocks; see e.g. Keim (1983). However, EMH-proponents such as Malkiel (2003, p. 10) point towards the risk of survivorship bias being higher in historical data for small capitalization firms.

In their much cited 1993 paper giving rise to the Fama-French Three Factor model, Fama and French (1993) try to explain why high B/M and low market capitalization stocks generated return outperformance in the U.S. during 1963-1991. They basically argue that return outperformance generated by the "HML" (high minus low B/M) and "SMB" (small minus large market capitalization) factors reflect heightened risks not captured in CAPM betas. Under the assumption of investor rationality they argue that B/M value strategy outperformance represented by HML implicitly gives exposure to some unspecific risk-factor.

In an international sample Fama and French (1998) found value outperformance and glamour underperformance for B/M, earnings-to-price ("E/P") and cash-flow-to-price ("CF/P") in 12 out of 13 markets studied, during a 1975-1995 sample period. However, they again insist on that there are inherent risks captured in the HML factor. Also arguing in favor of the EMH, Malkiel (2003, pp. 12-13) suggests that Fama and French's (1993) findings are period-specific. Malkiel presents evidence from Lipper

Analytic Services and Bogle Research Institute indicating that mutual funds based on P/B "value" did not consistently outperform "growth" funds in absolute returns for the 1937 to June 2002 period. However, Malkiel does not present how the fund sample was collected, how the P/B portfolio strategy was defined and whether strategies were consistently executed over time.

Loughran (1997) found that the B/M value anomaly was rejected for large capitalization firms in the U.S. during the 1963-1995 period. Fama and French (2006) view this observation as sample specific and show how B/M value findings are supported for 1926-1963 in the U.S. and in a 1975-2004 international sample, controlled for firm size. For both small and large capitalization stocks the E/P value anomaly is supported for the whole 1926-2004 period for U.S. and internationally for the 1975-2004 sub-sample period.

Survivorship Bias

After criticism of early-year survivorship bias, limited historical accounting data coverage and risk of "data snooping"[3] arising from the use of Standard & Poor's COMPUSTAT data in a majority of previous U.S. studies, Davis (1994) used survivorship bias free data from Moody's Industrial Manuals as an alternative source sample for the July 1940 to June 1963 period. Davis' study supports the value portfolio outperformance found in later period COMPUSTAT-based papers, for B/M, CF/P and E/P. Also controlling for survivorship bias, Fluck et al (1997) confirmed that low P/B and low P/E ratios produced exploitable outperformance for a 1979-1995 sample of large cap stocks, robust to transactions costs.

Cash-flows versus Accounting Accruals

Accounting earnings have one cash-flow and one accruals component. Bernstein (1993, p. 461) argue that because of accounting accruals are to some degree subjective, cash-flows from operations ("CFO") is a less distorted performance measure than reported net income. High earnings in relation to low CFO can, according to Bernstein, be indicative of suspect accruals criteria being employed by the firm.

Sloan (1996) observed how practitioner fundamental security analysis literature often focuses on adjusting firms' reported earnings with the intent of arriving at more reliable future earnings measure estimates[4]. Sloan empirically finds the accruals component of net earnings to be associated with less persistent future net earnings than the cash-flow component. Relevant to our study, Sloan finds the future stock returns related to the highest decile cash-flow proportion of earnings to significantly outperform returns of highest

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[3] Repeatedly using the same data to study a phenomenon as was used to originally discover/document it.

[4] For examples of adjustment techniques see Graham and Dodd (2009, pp. 394-534).

decile accruals proportion (lowest cash-flow proportion) stocks. Sloan concludes that investors seem "fixated" on reported net earnings, and do not correctly price in the higher quality cash-flow component. Bartov and Kim (2004) follows up by explicitly showing how portfolios based on a joint classification on high B/M (value) and a low earnings proportion of accruals (high cash-flow proportion) outperformed a simple B/M value strategy by a wide margin in returns, and at an indicated risk level that was marginally lower. The combined B/M glamour plus high accruals strategy significantly underperforms. We find the cash-flow versus reported earnings dimension of Sloan (1996) and Bartov and Kim (2004) interesting to cover in our empirical evaluations. We see an additional point in that the cash-flow measures will be less affected by the ever-changing accounting practices that could bias accruals over longer period samples.

On the Assumption That Value Portfolio Strategies Have Higher Risk

Fama and French (1992) find that B/M is the strongest explanatory variable for returns but consider the value anomaly of the lowest B/M deciles to potentially be a product of improper risk measurement. Fama and French's reasoning resembles Chan and Chen's (1991) argument that small market capitalization in a world of efficient markets should be associated with a distress risk factor. Chan and Lakonishok (2004) however show how conventional financial risk measures such as betas and return volatility were not heightened for value composite ratio portfolios and Lakonishok et al (1994) had previously found the same evidence for B/M and CF/P value quantile portfolios.

In addition and relevant to the downside-avoiding value investor seeking Graham's "margin of safety", both Lakonishok et al (1994) and Chan and Lakonishok (2004) reject claims that value portfolios' riskiness increases during realization of undesirable states. Chan and Lakonishok do so for the general stock market where the 25 worst and remaining negative market return months yield outperformance of value over glamour composite portfolios, i.e. adverse state performance was superior for value.

Griffin and Lemmon (2002) evaluate the link between Ohlson's (1980) firm bankruptcy likelihood metric "O-score" and value versus glamour B/M portfolios. Griffin and Lemmon's findings contradict Fama and French's (1993) distress risk proposal on the HML-factor; the outperformance of value stocks over glamour stocks is larger for the highest distress quintile sub-sample than for the lowest distress quintile. While high distress value firms show weakness in fundamentals the returns of highest distress value firms only marginally outperformed lowest distress value firms, i.e. the value strategy returns do not seem to stem from observable distress risk. The returns of the highest distress glamour portfolios are significantly worse than for the lowest distress glamour or highest distress value portfolios. They obtain similar findings for Altman's (1968) distress metric "Z-score". In line with Lakonishok et al (1994) and Chan and

Lakonishok (2004) the authors confirm robustness of value outperformance by adjusting for firm size and for adverse market periods, based on stock market returns and/or real GNP-growth.

Griffin and Lemmon see a possibility that high B/M firms systematically get mispriced. Piotroski (2000) provides evidence in support of that ex post outperformance of B/M value portfolios over glamour portfolios can be improved in terms of both return and risk by discriminating between fundamentally weak and strong firms. He does so using a composite firm fundamentals signal, incorporating firm leverage but also profitability and operating efficiency. Based on the above contributions on distressed and/or fundamentally weak firms we will empirically evaluate leverage effects on value strategy performance.

III. Data and Methodology

3.1 Data

Concerning data, we employ Thomson-Reuters DataStream Advance version 4.0 to extract Thomson-Reuters DataStream and Thomson-Reuters Worldscope data, from here on commonly denoted "TR". Worldscope includes coverage of inactive firms, which is needed to handle survivorship bias.

We extract our sample in Swedish krona ("SEK"), the local currency of Sweden. We evaluate a full sample period covering 30 June, 2000, to 30 June, 2011. We base our choice of a recent but limited coverage period to correspond to both acceptable data availability and data quality in TR for the Swedish data sets on key variables but also on that the period is not covered in the majority of existing empirical research. In our data-collection procedures, summarized below, we found data-availability, coverage and quality to be poor for the pre-year-2000 period, especially for smaller firms and firms categorized as inactive as of the end of the sample period. Our choice of a limited sample period lowers the scale and statistical power of the study but reduces potential bias issues to enter our analysis from the data. Our more recent coverage period and focus on Sweden also has the benefit of avoiding the discussed issue that earlier studies on the U.S. market are criticized for evaluating value anomalies in the same setting in which these were originally observed. Updated evidence serves as an evaluation of whether value anomalies have survived the potential arbitrage that could have followed extensive publication on them.

For our Swedish sample we employ the following three TR constituent lists, by TR mnemonic; "WSCOPESD", "DEADSD" and "FSWD". These Swedish lists encompass firms traded on the exchanges/trading venues *Nasdaq-OMX Stockholm* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. WSCOPESD is a list of publically traded Swedish firms with an "ACTIVE" trading status. DEADSD is TR's "dead list" for Sweden, consisting of dropped firm listings which will assist in minimizing survivorship bias. FSWD is a research list for Swedish firms used by Schmidt et al (2011) which increases our coverage. If not controlling survivorship bias generated ex post results would be less realistic accounts of how investors would have fared based on the distributions actually facing them at the time. Schmidt et al (2011) emphasize the importance of including all stocks in TR's constituent lists and to not filter out lacking some specified period of historical data as a listed entity or lacking status an active exchange listing as of the end of the sample period.

3.2 Variables Employed and Data Inspection

We manually inspect and clean the dataset before running any tests. The process is described in full in Appendix 1., including Appendix Table 1.1. The variables and procedures we employ to a large extent follows the recommendations of Ince and Porter (2006), a technical paper describing how to improve the accuracy and realism of TR constituent list datasets. To sum up those procedures we consider most central to our results we for each portfolio formation year remove inactive firms, non-traded firms and non-Swedish firms. Then in line with Fama and French (1992, p. 429) we try to completely remove all firms belonging to Financials, motivated by the sector's deviating accounting conventions and economics, which our simulation designs are not well-suited for. In short, Financials tend to have extreme accounting leverage but due to the nature of their business models this leverage does not function similar to that of non-financial firms. For firms with multiple share classes we aggregate the total number of shares before we calculate the total market capitalization of common equity. For each yearly simulation we have set a 10 million USD lower limit market capitalization which sample firms much pass; an attempt to limit the sample to "investable" firms based on market capitalization. This limit makes simulations more realistic and decrease exposure to data issues which are more prevalent among the smallest capitalization firms.

We employ corporate actions adjusted consolidated number of shares ("NOSHC"), number of shares per listed share class ("NOSH"), share prices ("P"), dividends ("DIV") and redemption rights ("REDM").

3.3 Valuation Ratios Evaluated

We set up models of four value strategies well-grounded in practical investment strategies used by value investors. Given the large set data set needed for coverage the strategies chosen are simplistic by nature, to limit errors and subjective bias in sampling and in simulating trades. The study organizes the simulated strategies into two main accounting valuation ratio categories of value-investing reviewed by Tweedy, Browne Company (2009).

The ratios to be simulated are as follows, starting with shorthand notation:

1) **High Book Value of Equity in Relation to Market Value of Equity**

B/M	Book Value of Equity-to-Market Capitalization of Equity

2) **High Yield in Relation to Market Value of Equity/Firm**

E/P	Earnings per Share-to-Share Price
EBITDA/EV	EBITDA-to-Enterprise Value[5]
FCFF/EV	Free Cash-Flow-to-Enterprise Value

B/M from the first category and E/P from the second category represent commonly employed[6] *equity* valuation multiples while the second category's EBITDA/EV and FCFF/EV, are *firm* valuation multiples. In Appendix Table 1.2. are an additional set of data variables used to compute the valuation ratios described and for use in subsequent risk-return evaluation. Also in Appendix 1 we practically define and calculate each valuation ratio. We can briefly summarize the valuation ratio calculations as follows:

$$\frac{\boldsymbol{B}}{\boldsymbol{M}} = \frac{yearend\ book\ value\ of\ common\ equity\ per\ share\ (BVPS)}{end-of-June\ market\ closing\ stock\ price} * \Delta NOSHC$$

$$\frac{\boldsymbol{E}}{\boldsymbol{P}} = \frac{yearend\ earnings\ per\ share\ (EPS)}{end-of-June\ market\ closing\ stock\ price} * \Delta NOSHC$$

$$\frac{\boldsymbol{EBITDA}}{\boldsymbol{EV}} = \frac{yearend\ Earnings\ Before\ Taxes, Interest, Depreciation\ and\ Amortization}{end-of-June\ market\ capitalization\ of\ common\ equity + yearend\ Net\ Debt}$$

$$\frac{\boldsymbol{FCFF}}{\boldsymbol{EV}} = \frac{yearend\ Free\ Cash-Flow\ to\ Firm}{end-of-June\ market\ capitalization\ of\ common\ equity + yearend\ Net\ Debt}$$

Where $\Delta NOSHC = Number\ of\ shares\ adjustment\ = [NOSHC_{year-end}/NOSHC_{end-of-June}]$, an adjustment factor that comes with the implicit assumption that an update to the number of shares becomes public information immediately.

B/M and E/P have a problematic aspect compared to EBITDA/EV and FCFF/EV in that both ratios' numerators in general are more exposed to accounting decision effects than EBITDA or FCFF. For example, BVPS can have low comparability over firms due to accounting issues in areas such as corporate

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[5] There is a working paper by Gray & Vogel (2011) indicating that a value strategy based on the EBITDA/EV ratio yields larger absolute return outperformance over the market average at smaller maximum drawdowns than price-to-earnings, FCFF/EV and book-to-market do. The study uses a U.S. sample covering years 1971-2010.

[6] For information on how multiples are used in relative valuation of firm equity/firm value and how multiples relate to firm fundamentals and common Discounted Cash-Flow valuation techniques see for example Damodaran (2002).

share holdings, intangible asset accounting and choice of depreciation scheme for tangible assets while EPS can be affected by a variety of accrual accounting effects, some generated at the discretion of management and others mandated by regulation. Accounting policy choices may be driven by tax considerations but aggressive manipulation of accounting might also aid management and/or controlling shareholders in misinforming and/or even defrauding external investors. The continuous reformation of accounting regimes, such as the mandatory switch to the international framework IFRS in the middle of the sample period, could cause inconsistencies over time. In summary accounting factors could support more robust performance in portfolio simulations for EBITDA/EV and/or FCFF/EV.

Furthermore, we will present sub-sample outcomes based on control variables. Similar to Fama and French (1992, 1993) we see firm size as one of the most relevant control variable candidates, and here we employ the end-of-June value of our already calculated market capitalization of common equity. In line with Chan and Chen (1991) and Fama and French (1992) we also employ leverage variables, to try to capture return differences due to financial risk. As a *market* leverage proxy candidate, from now on referred to as MV LEV, we extract total book value of assets[7] and divide this with our market capitalization of common equity. As a leverage candidate from an *accounting* perspective we extract a book value of total assets over book value of common equity-ratio and will refer to this as BV LEV.

3.4 Strategy Simulation Execution

We calculate the four valuation ratios using the most recent full fiscal year (corresponding to a 12 month period) backward looking accounting data available at the end of the preceding calendar year, on the last trading day of December, together with the end-of-June market capitalization of equity. We then at the end-of-June of each year rank all firms on the four valuation ratios and rebalance some q-quantile equally-weighted strategy portfolios based on these rankings. The sub-sample simulations have the same structure but start with an additional equal-weighted portfolio formation step on the sub-sample control variable.

With the majority of all listed firms having a fiscal reporting year corresponding to the calendar year, our choice of end-of-June as rebalancing date ensures recently updated full fiscal year accounting numbers that realistically will be available to the investment community for a majority of firms. Earlier rebalancing points in the calendar year would expose us to risk of a larger proportion of firms having outdated

[7] In TR DataStream 4.0 defined by TR as the "sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets".

reported numbers. Fama and French (1992) as well use end-of-June which also decreases any systematic end-of-year winner-loser momentum effects that may bias evaluation of value strategies.

Given the intention to evaluate practically applicable strategies our simulated trades will first and foremost involve long-only positions in extreme-end quantile portfolios, comparing value and glamour versus the market benchmark and each other, including a formal test of H1. A simple long value-short glamour market-neutral position in two or more quantile portfolios will be evaluated as a formal test of H2.

Total Return Measurement and Proxies for Market Portfolio and Risk-Free Rate

Concerning ex-post total returns, we do not use TR's total return indices (TR mnemonic "RI"). Ince and Porter (2006, s. 473) report that TR's RI are problematic in several data aspects. First of all, TR before decimalization round off prices to the nearest penny which leads to unacceptable return differences in RI for low-priced stocks[8]. A second problem is how RI itself is discretely reported to the nearest tenth; so when the level is very low RI does not reflect the price changes of the stock. Instead of discarding data we construct our own monthly total return index using three components of TR data; the already discussed P, adjusted dividend rate ("DIV") and, for a small number of firms, redemption rights ("REDM")[9].

Following TR DataStream methodology (Thomson-Reuters, 2008, p. 26) we calculate our individual securities' monthly gross total return index, RI_{mo}, and monthly gross total returns, $\boldsymbol{r_{mo}}$, for the month starting at time $t-1$ and ending at t as;

$$RI_{mo} = RI_t = RI_{t-1} * \frac{(P_t + DIV_t + REDM_t)}{P_{t-1}}$$

$$r_{mo} = r_t = RI_t - 1$$

Where $P_t = \, adjusted\ price\ at\ period\ ending\ date\ t$

$P_{t-1} = adjusted\ price\ at\ period\ starting\ date\ t-1$

$DIV_t = adjusted\ dividend\ payments\ during\ period\ t-1\ to\ t$

$REDM_t = adjusted\ redemption\ rights\ during\ the\ period\ t-1\ to\ t$

8 Ince and Porter (2006) do actually use the RI total return indices but do so recommending limiting the sample to shares priced above some cutoff of 1.00, 0.25 or 0.10 U.S. dollars.

9 For a few firms redemption rights are registered as independent price series on the adjusted price variable, P. We manually separate these series out and treat them as cash dividends, considering only the first monthly account.

Only in a few instances we incorporate separate adjusted price data for redemption rights, $REDM_t$. For most firms TR adjusts for redemption rights ($REDM_t$) directly in the price data.

Our market benchmark proxy, the *MSCI Sweden Gross Total Return Index* ("*MSCI Sweden*"), is selected on basis of widespread use among practitioners and researchers, its methodology and its breadth of coverage. This market index is value-weighted, free-float adjusted and includes gross dividends that are reinvested continuously. Its components are drawn from *Nasdaq-OMX Stockholm* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formely *SBI*) and *Aktietorget*, matching our sample universe (MSCI, 2012). From TR we extract *MSCI Sweden* in local currency (SEK), denoted RI_MSCI_{mo} and calculated by Thomson-Reuters using the same methodology as we use for individual securities with RI_{mo} above. We calculate its monthly returns as $r\_MSCI_{mo} = RI\_MSCI_{mo} - 1$. One should note that *MSCI Sweden* does not fully reflect our sample, due to MSCI index calculation procedures, with a major difference being the continuous reinvestment of gross dividends, and as well as our sampling procedures, including the removal of financial sector firms and 10 million USD market capitalization lower limit.

We employ the yield of 3-month Swedish Treasury Bills ("Statsskuldväxel" in Swedish) as risk-free rate of return proxy, rf_{mo}. From valuation ratio or market benchmark portfolio returns we obtain monthly *excess* gross total returns, ER_{mo}, by subtracting rf_{mo} from the total return indices; RI_{mo} or RI_MSCI_{mo}. We compound monthly total returns of the individual stocks, market benchmark and risk-free asset to cumulative one year buy-and-hold (BAH) returns, from July through June, and to 10-year cumulative full sample period and 5-year cumulative second half sample period BAH-returns.

3.5 Non-Parametric Portfolio Risk-Return Performance Evaluation

We evaluate the out-of-sample risk-return performance of the q-quantile valuation ratio portfolios against each other and against the market return benchmark. The appropriate number of quantiles for each evaluation is limited by sample size and the use of sub-sample criteria. For long-value, long-glamour and long-value-short-glamour strategy portfolios we will in addition report monthly cumulative gross total returns and maximum peak to trough drawdowns. To control for valuation disparities associated with the bust of the IT-bubble in the first half of the sample (July 2000 to June 2005) and/or the Great Recession in the latter half (July 2006 to June 2010) we also report statistics for the latter half of the sample. For the full sample period we also report standard deviations, Sharpe ratios and Sortino ratios of *excess* monthly returns. In line with Lakonishok et al (1994) and Chan and Lakonishok (2004) we also employ state-of-the world sub-samples based on market returns to evaluate robustness over adverse market outcome periods[10].

3.6 Portfolio Econometric Testing

Before the main time series hypothesis tests on the strategy *portfolio* risk-returns we employ Fama and MacBeth's (1973) multi-factor model on the full sample cross-section of *individual firm* returns, in line with Fama and French (1992) and Lakonishok et al (1994). This model indicates how well control variable and the valuation ratio candidates can *explain* individual stock returns and how the ratios are inter-linked.

Connecting to our discussion on EMH we formally test the strategy portfolio's total excess returns on the market total excess returns in the Sharpe-Lintner-Black Capital Asset Pricing Model (CAPM), a clean standard testing specification incorporating mean-variance optimization in an equilibrium pricing model. H1 and H2 are evaluated by long-value and long-value-short-glamour strategy portfolios, respectively.

Unlike Fama and French (1992) we will not use historical betas in our study, for two main reasons. First and foremost, obtaining statistically robust historical beta estimates, whether static or dynamic, require a long pre-portfolio formation estimation period; thus excluding many potentially interesting firms that were only briefly publically traded. We argue that requiring longer-term historical beta estimates comes with a risk of a systematically biased sample and potentially misleading results. Second, historical beta estimates are subject to arbitrary estimation choices. Fama and French's (1992, p. 445) multi-factor regressions found no economic relevance for historical betas once controlling for firm size.

From the discussion up to this point it should also be evident that using the full Fama-French Three Factor model (Fama & French, 1993) as our main asset pricing test framework is counter-intuitive since its HML-factor is one of the most interesting explanatory variables in our study (in B/M). By logic, if the suggested hypothetical distress factor associated with value portfolios of above average returns does not yield systematically higher risk measures for such portfolios then why should practicing investors care about it? If we find that value portfolios consequently imply higher risk-adjusted returns that would not weaken our skepticism to this distress argument.

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[10] See also e.g. La Porta (1996, pp. 1737-1739).

IV. Empirical Results

4.1 Sample Statistics, Individual Stocks, Full Sample

Our full 10 year Swedish sample covers non-Financial firms only (see Section 3.2) and starts at 3,576 firm years for which there is an active trading price on the yearly end-of-June portfolio formation day. Our requirement for an end-of-June minimum market capitalization of at least 10 million USD results in that we drop 980 firm years. Then our requirement of accounting data availability for at least one of the four valuation ratio results in an additional drop of 143 firm years. The maximum number of observations for the full 10-year Swedish sample is then 2,453 firm years.

Appendix Table 2.1., of Appendix 2, summarizes the cross-sectional return distributions for the individual stocks in our full Swedish sample. The annual cross-sectional return distributions are far from normal, with a cross-sectional mean firm year BAH gross total return of +6.8 % while the median is +0.1 %. Comparing the end month (June) number of firm observations with the starting month's (July) indicates that the proportion of firms that quit trading during the year is around 5 percent, on average. Concerning our choice of simulating non-reinvesting buy-and-hold (BAH) strategies the reader can from Appendix Table 2.1. observe that sample firms that drop out in a given year constitute a marginal issue at most.

Appendix Table 2.2. shows the Swedish full sample distributions for the portfolio formation valuation ratios and the candidates for sub-sample control variables. Concerning leverage ratios, being a function of market stock prices the *market value* asset leverage (MV LEV) fluctuates in a positively market-correlated manner, falling with broad market advances and rising during bear markets, while *book value* asset leverage (BV LEV) stays rather constant over time. Moving over to our four valuation ratios we for B/M note that the median firm trades at a lower premium to book value of equity than the mean firm; indicating that glamour B/M firms can reach rather extreme premiums. Summarizing the three yield type ratios, E/P, EBITDA/EV and FCFF/EV we note that the median E/P and EBITDA/EV yields are quite stable at around +2 % to +3 % for most years in the sample while the median FCFF/EV yield is close to zero for all years. On all three ratios the distributions appear skewed towards negative yields.

Appendix Table 2.3. and associated Appendix 2 text covers the individual firms' yearly average pairwise sample correlations between annual buy-and-hold returns, valuation ratios and sub-sample variables.

Fama-MacBeth Explanatory Regression for Individual Firm Returns

Our final examination of the individual firm sample data is an explanatory multi-factor regression with the individual firm year returns as dependent variable. The model is explained in Appendix 2 with output summarized in Appendix Table 2.4. The methodology primarily follows Lakonishok et al (1994), but also Fama and French (1992) who both obtain their model from Fama and MacBeth (1973). In line with Lakonishok et al (1994) we employ annual BAH-returns instead of monthly and also avoid Fama and French's use of historical beta estimates. As discussed before, there are problems associated with historical beta estimates and our area of interest is evaluating strategies, not pricing model tests.

To sum up findings of the model in the Appendix Table 2.4. we find firm size to be negative with weak significance in a stand-alone regression, supporting the expected size effect. Size does however turn out insignificant for all combined regressions except for its combinations with earnings yield (E/P) together either of the two firm valuation ratios, EBITDA/EV or FCFF/EV, where it is significantly negative. This result makes us curious whether E/P, EBITDA/EV and FCFF/EV strategies differ in size-robustness. Concerning leverage variables we note that on a stand-alone basis ln[MV LEV] has a highly significant positive coefficient while ln[BV LEV] turns out insignificant. We run both two leverage ratios combined with ln[SIZE] and ln[MV LEV] is still found significantly positive while ln[BV LEV] and ln[SIZE] are insignificant. We drop book value leverage (see Appendix 2 for more discussion) and will exclusively employ market leverage (MV LEV) as our leverage control variable. For B/M neither positive values nor our negative value dummy can significantly explain the yearly average returns. E/P, EBITDA/EV and FCFF/EV all receive expected coefficient signs; positive for increasing positive yield values and negative for the negative yield dummy variables. The mean annual R^2 of these multi-factor models indicate that the average extent to which return variability of annual cross-sections of *individual* securities can be explained by these models ranges from non-existent to poor over the full 10-year sample period.

Speculatively, a potential cause to weakened explanatory power of both B/M and ln[BV LEV] over returns in our 2000 to 2010 sample period compared to pre-year 2000 findings might be reformation of balance sheet accounting standards has led to increased proportion of intangible assets in balance sheets[11].

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[11] In some cases, such as firms where the room for management to make discrete IFRS goodwill accounting choices has increased in more recent years, this may have decreased the reliability of book value of equity as an indicator of shareholder value. It should intuitively be much more difficult (even for the ideal experienced appraiser free of conflicts of interests) to objectively produce continuous unbiased estimates of the expected future value of a firm's goodwill, a unique intangible asset entirely made up by an accounting-concept, than estimating the value of somewhat liquid and/or standardized tangible or financial assets.

4.2 Valuation Portfolio Risk-Return Performance Evaluation

This section constitutes the main results of the study and the evaluation of Hypotheses H1 and H2. Compared to the weak explanatory findings on *individual* firm returns we do expect our shift to the securities *portfolio* perspective for the rest of the analysis to vastly improve the ability to make inferences on the link between the valuation ratios and ex post returns.

4.2.1 Part 1: Full Sample Valuation Ratio Quintile Portfolios

Below, in Table 4.2.1., we present equally-weighted valuation ratio decile portfolio distributions over the ratios themselves and over size and leverage control variables. Visual inspection of the full sample means and medians of all valuation ratios indicates a right-skewed distribution for B/M in its decile portfolios and left-skewed distributions for E/P, EBITDA/EV and FCFF/EV in theirs. B/M seems to increase exponentially towards the value while the three yield ratios (E/P, EBITDA/EV and FCFF) are almost flat in the middle deciles with clear deviation in the most extreme glamour and value end deciles. Furthermore, as we go from the glamour to value B/M portfolio deciles median SIZE is decreasing while median MV LEV is increasing. The most extreme value decile and the most extreme glamour decile have lower than average firm size for all yield ratios (E/P, EBITDA/EV and FCFF/EV); reflecting that the most extreme valuations occur in small capitalization stocks, for which information asymmetries can be assumed to be higher than in closely scrutinized large capitalization firms. Market leverage is heightened in both extreme ends of the E/P deciles distribution but not for EBITDA/EV or FCFF/EV.

We then move on to a set of preliminary risk-return CAPM evaluation of glamour to value decile portfolio distributions for each valuation ratio. Breusch-Pagan tests for heteroskedasticity in the monthly return CAPM OLS regression residuals indicate non-constant variance for the absolute majority of the deciles of the four ratios at 1 % or 5 % significance. We thus run OLS regressions with White's heteroskedasticity-corrected standard errors[12]. Summarizing Table 4.2.2., one should first notice that our sample methodology and components deviate from the *MSCI Sweden* index so the within-panel and between-panel variation is our main interest. We read each panel from leftmost glamour to rightmost value deciles.

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[12] Since now dealing with time series we also ran Box-Ljung Q-test autocorrelation and partial autocorrelation tests on the regression residuals. We found no indication any valuation ratio had systematically autocorrelated residuals.

Table 4.2.1.
Valuation Ratio Decile Portfolio Characteristics

Table shows distributions of the valuation ratios B/M, E/P, EBITDA/EV and FCFF/EV. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. The Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.

Variables: $SIZE$ = end-of-June market capitalization of common equity in SEK million. $MV\ LEV$ = market leverage = $\frac{year-end\ book\ value\ of\ assets}{end-of-June\ market\ capitalization\ of\ common\ equity}$. B/M = Book-to-Market = $\frac{year-end\ book\ value\ of\ common\ equity/share}{end-of-June\ market\ share\ price}$. E/P = Earnings-to-Price = $\frac{year-end\ Earnings\ Per\ Share\ (EPS)}{end-of-June\ market\ share\ price}$. $EBITDA/EV$ = EBITDA-to-Enterprise-Value = $\frac{year-end\ Earnings\ Before\ Interest, Taxes, Depreciation\ and\ Amortization}{end-of-June\ Enterprise\ Value\ (EV)}$. $FCFF/EV$ = Free-Cash-Flow-to-Enterprise-Value = $\frac{year-end\ Free\ Cash-Flow\ to\ Firm}{end-of-June\ Enterprise\ Value\ (EV)}$.

Statistics: $RANK$ = Observation quantile ranking on sorting variable. $Mean$ = sample mean. $Median$ = sample median. # = mean average number of yearly firm observations. $EW\ Panel$ represents the full sample for each Panel.

Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Variable	Statistic	Panel A: Decile Portfolios on B/M Rank										
		Glamour									**Value**	***EW Panel***
B/M	$RANK$	1	2	3	4	5	6	7	8	9	10	
	$Mean$	-0.06	0.11	0.18	0.25	0.32	0.41	0.52	0.67	0.90	3.01	0.63
	$Median$	0.04	0.10	0.17	0.24	0.30	0.38	0.49	0.63	0.87	1.59	0.35
$SIZE$	$Mean$	29989	21634	20608	22703	19448	16202	8989	12995	6705	3020	16266
	$Median$	1799	1257	946	1097	854	947	671	604	582	426	811
$MV\ LEV$	$Mean$	0.81	0.73	0.61	0.68	1.02	1.15	1.44	1.73	2.97	4.71	1.58
	$Median$	0.23	0.24	0.30	0.39	0.57	0.65	0.98	1.21	1.51	1.42	0.60
	#	24	24	24	24	24	24	24	24	24	24	240
Variable	**Statistic**	**Panel B: Decile Portfolios on E/P Rank**										
		Glamour									***Value***	***EW Panel***
E/P	$RANK$	1	2	3	4	5	6	7	8	9	10	
	$Mean$	-1.11	-0.13	-0.04	0.00	0.03	0.04	0.06	0.07	0.10	0.33	-0.07
	$Median$	-0.43	-0.11	-0.03	0.01	0.02	0.04	0.05	0.07	0.08	0.17	0.03
$SIZE$	$Mean$	1225	1839	5423	21375	28241	18603	45790	14868	17904	5738	16095
	$Median$	250	357	654	1409	1586	1639	1138	921	834	572	803
$MV\ LEV$	$Mean$	1.89	1.68	1.23	1.89	0.90	1.00	1.44	1.60	1.97	2.07	1.57
	$Median$	0.70	0.37	0.27	0.40	0.45	0.56	0.66	0.79	0.88	1.20	0.60
	#	25	24	24	24	24	24	24	24	24	24	243
Variable	**Statistic**	**Panel C: Decile Portfolios on EBITDA/EV Rank**										
		Glamour									***Value***	***EW Panel***
EBITDA $/EV$	$RANK$	1	2	3	4	5	6	7	8	9	10	
	$Mean$	-1.09	-0.03	-0.00	0.01	0.02	0.03	0.06	0.10	0.15	0.64	-0.01
	$Median$	-0.19	-0.02	0.00	0.01	0.02	0.03	0.06	0.09	0.15	0.30	0.02
$SIZE$	$Mean$	372	2471	33341	28505	21356	30185	20189	16177	6017	3683	16259
	$Median$	205	496	3188	1712	1544	1263	938	829	820	419	805
$MV\ LEV$	$Mean$	1.01	0.78	1.31	2.94	1.54	2.18	1.20	1.09	1.45	2.27	1.58
	$Median$	0.54	0.22	0.24	0.67	0.65	0.67	0.59	0.60	0.80	1.36	0.60
	#	24	24	24	24	24	24	24	24	24	23	240
Variable	**Statistic**	**Panel D: Decile Portfolios on FCFF/EV Rank**										
		Glamour									***Value***	***EW Panel***
$FCFF$ $/EV$	$RANK$	1	2	3	4	5	6	7	8	9	10	
	$Mean$	-0.83	-0.08	-0.03	-0.01	-0.01	0.01	0.02	0.03	0.07	0.38	-0.05
	$Median$	-0.23	-0.07	-0.03	-0.01	-0.01	0.01	0.02	0.03	0.06	0.17	0.00
$SIZE$	$Mean$	811	2292	5211	9559	28411	29929	27539	24600	23496	7953	15982
	$Median$	228	415	675	1197	3007	1600	1412	1491	881	372	797
$MV\ LEV$	$Mean$	1.65	1.50	1.85	1.32	1.84	1.83	1.46	1.25	0.97	1.96	1.56
	$Median$	0.82	0.49	0.43	0.46	0.39	0.59	0.63	0.51	0.54	0.29	0.60
	#	25	24	25	24	25	25	25	24	25	24	245

Table 4.2.2.
Full Sample Valuation Ratio Decile Portfolios: Excess Returns and CAPM Return Regressions

Table presents time series monthly risk-return statistics and CAPM tests for decile portfolios formed on the ranking of individual firms on four valuation ratios. Portfolios are rebalanced annually at the end of June. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD. We study four valuation ratios, each represented by Panel A to D:

A) B/M = Book-to-Market = $\frac{year-end\ book\ value\ of\ common\ equity}{end-of-June\ market\ price\ of\ share}$. B) E/P = Earnings-to-Price = $\frac{year-end\ Earnings\ Per\ Share\ (EPS)}{end-of-June\ market\ price\ of\ share}$. C) $EBITDA/EV$ = EBITDA-to-Enterprise-Value = $\frac{year-end\ Earnings\ Before\ Interest, Taxes, Depreciation\ and\ Amortization}{end-of-June\ Enterprise\ Value\ (EV)}$. D) $FCFF/EV$ = Free-Cash-Flow-to-Enterprise-Value $\frac{year-end\ Free\ Cash-Flow\ to\ Firm}{end-of-June\ Enterprise\ Value\ (EV)}$.

The first row section of table summarizes mean excess monthly returns, $\boldsymbol{ER_{mo}}$, and their standard deviations, $\boldsymbol{\sigma[ER_{mo}]}$, for portfolios formed by book-to-market decile rank, $\boldsymbol{B/M\ Rank}$, and for our market return benchmark, $\boldsymbol{MSCI\ Sweden}$. We define monthly excess returns as $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, respectively. We calculate monthly Sharpe Ratios as $\boldsymbol{Sharpe = \frac{ER_{mo}}{\sigma[ER_{mo}]}}$. In the second row section we present the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from estimation of the following Sharpe-Lintner-Black Capital Asset Pricing Model (CAPM) relationship: $\boldsymbol{ER_{mo} = \alpha_{\_mo\_MSCI} + \beta_{\_mo\_MSCI} * ER_{MSCI_{mo}} + \varepsilon_{mo}}$ where $\boldsymbol{\varepsilon_{mo}}$ denotes an iid OLS residual. We obtain our CAPM estimates by running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the excess return of the market benchmark, using White's heteroskedasticity-corrected standard errors. The respective coefficient t-statistics evaluates the null hypotheses $\alpha_{\_mo\_MSCI} = 0$ and $\beta_{\_mo\_MSCI} = 1$. ***, **, *, denote significance at the 1 %, 5 % and 10 % levels, respectively. In addition we present the R^2 of the CAPM regressions. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted and free-float adjusted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill. All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Panel A: Decile Portfolios on B/M Rank

Variable	Period	***Glamour*** 1	2	3	4	5	B/M RANK 6	7	8	9	***Value*** 10	MSCI Sweden
ER_{mo}	Jul 2000-Jun 2010	-0.004	-0.001	-0.004	0.003	0.006	0.005	0.006	0.006	0.006	0.010	-0.004
$\sigma[ER_{mo}]$		0.087	0.081	0.083	0.075	0.081	0.069	0.065	0.072	0.072	0.101	0.087
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	-0.004	-0.001	-0.004	0.002	0.006	0.004	0.006	0.006	0.005	0.009	
$t - stat$		-0.81	-0.30	-0.84	0.53	1.04	1.05	1.85*	1.48	1.28	1.34	
$\beta_{\_mo\_MSCI}$		0.901	0.880	0.869	0.819	0.762	0.723	0.755	0.802	0.774	0.886	
$t - stat$		-1.31	-1.31	-1.68*	-2.80***	-3.04***	-3.98***	-4.90***	-2.93***	-2.79***	-1.01	
R^2		0.561	0.616	0.578	0.624	0.464	0.582	0.714	0.647	0.604	0.407	

Panel B: Decile Portfolios on E/P Rank

Variable	Period	***Glamour*** 1	2	3	4	5	E/P RANK 6	7	8	9	***Value*** 10	MSCI Sweden
ER_{mo}	Jul 2000-Jun 2010	0.003	-0.001	-0.006	-0.003	0.003	0.004	0.003	0.009	0.011	0.010	-0.004
$\sigma[ER_{mo}]$		0.120	0.105	0.102	0.082	0.065	0.067	0.061	0.056	0.057	0.075	0.087
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	0.002	-0.002	-0.007	-0.004	0.003	0.004	0.002	0.009	0.010	0.009	
$t - stat$		0.28	-0.27	-1.03	-0.82	0.93	1.21	0.89	2.94***	3.07***	1.82*	
$\beta_{\_mo\_MSCI}$		1.076	1.029	0.981	0.912	0.760	0.792	0.672	0.627	0.601	0.670	
$t - stat$		0.47	0.27	-0.17	-1.44	-4.26***	-4.76***	-5.12***	-6.03***	-6.59***	-3.88***	
R^2		0.423	0.501	0.488	0.654	0.708	0.728	0.645	0.646	0.590	0.422	

Panel C: Decile Portfolios on EBITDA/EV Rank

Variable	Period	***Glamour*** 1	2	3	4	5	$EBITDA/EV$ RANK 6	7	8	9	***Value*** 10	MSCI Sweden
ER_{mo}	Jul 2000-Jun 2010	-0.004	-0.006	-0.004	0.004	0.011	0.006	0.004	0.003	0.006	0.009	-0.004
$\sigma[ER_{mo}]$		0.118	0.117	0.087	0.070	0.084	0.075	0.061	0.061	0.055	0.060	0.087
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	-0.005	-0.006	-0.004	0.004	0.010	0.005	0.004	0.002	0.005	0.009	
$t - stat$		-0.65	-78	-0.78	1.01	1.96*	1.38	1.04	0.87	1.65	2.76***	
$\beta_{\_mo\_MSCI}$		1.106	1.030	0.89	0.803	0.838	0.841	0.654	0.677	0.577	0.672	
$t - stat$		0.69	0.26	-1.18	-3.14***	-1.99**	-1.66*	-6.82***	-6.02***	-7.36***	-6.37***	
R^2		0.462	0.405	0.556	0.695	0.518	0.657	0.612	0.642	0.569	0.648	

Panel D: Decile Portfolios on FCFF/EV Rank

Variable	Period	***Glamour*** 1	2	3	4	5	$FCFF/EV$ RANK 6	7	8	9	***Value*** 10	MSCI Sweden
ER_{mo}	Jul 2000-Jun 2010	0.000	0.000	0.007	0.001	-0.003	0.002	0.006	0.004	0.006	0.010	-0.004
$\sigma[ER_{mo}]$		0.105	0.084	0.095	0.087	0.083	0.072	0.065	0.061	0.057	0.059	0.087
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	-0.001	-0.001	0.007	0.000	-0.004	0.001	0.005	0.003	0.006	0.010	
$t - stat$		-0.11	-0.18	1.06	0.00	-0.82	0.40	1.61	1.13	1.82*	2.69***	
$\beta_{\_mo\_MSCI}$		1.050	0.843	0.883	0.853	0.933	0.830	0.737	0.719	0.632	0.617	
$t - stat$		0..38	-2.25**	-1.20	-2.01**	-0.99	-2.80***	-5.06***	-7.78***	-7.21***	-7.59***	
R^2		0.528	0.534	0.454	0.500	0.659	0.693	0.675	0.737	0.637	0.574	

Starting with the first set of rows in Panel A of Table 4.2.2. ER_{mo} is negative for glamor B/M deciles and then increasing up until the middle B/M deciles. $\sigma[ER_{mo}]$ is falling in B/M. In the second set of rows our monthly CAPM-regressions indicate increasing but statistically insignificant alphas in B/M while the betas have no clear distribution in B/M. Interestingly, all beta estimates come in below unity (1.000), with strong significance at the 1 % level for deciles 4 to 9; a finding which could be partly related to *MSCI Sweden* being a poor choice of market proxy for our sample but could also indicate that B/M deciles have less return variation than an unsorted market average. Concerning R^2 we notice how around ½ to ¾ of the variation in B/M portfolio returns can be explained by the variation of the *MSCI Sweden* benchmark.

In the first row section of Panel B of Table 4.2.2. we see that ER_{mo} is generally increasing in E/P while $\sigma[ER_{mo}]$ is generally falling. The leftmost extreme glamour decile breaks the expected pattern with a weakly positive ER_{mo} while its excess return volatility is the highest. The CAPM regressions yield generally increasing alphas, with positive coefficients of strong significance for deciles 8 and 9 and of weak significance for decile 10. Unlike for B/M, betas are clearly decreasing in E/P and deciles 4-9 come in strongly significant. R^2 values are similar to B/M.

In Panels C and D both EBITDA/EV and FCFF/EV have clearly decreasing $\sigma[ER_{mo}]$ as we go from glamour to value. In line with value outperformance ER_{mo} is highest in the value deciles but the middle deciles have return variation that would violate a linearly increasing risk-return. Whether this middle decile ER_{mo} variation is due to our small sample size or due to some systematic factor we hope to answer with our quintile strategy portfolio Tables 4.2.3. to 4.2.6., following in this section, and with our control variable sub-samples of sub-sequent sections. The CAPM R^2 are in line with Panels A and B.

We then directly evaluate the risk-return performance of value and glamour strategy portfolios based on the two leftmost (glamour) and the two rightmost (value) valuation ratio deciles (i.e. quintile portfolios), starting with B/M in Table 4.2.3. below. From the first two row sections of Table 4.2.3. we observe that the cumulative annual total return (CAR) from being long value and glamour B/M portfolios was +8.8 % versus -3.9 % for the full July 2000 to June 2010 period, while a market-neutral long-value-short-glamour B/M strategy yields +11.2 %. This can be compared to a close to zero CAR from the *MSCI Sweden* market proxy and +2.7 % from a risk-free rate investment. The maximum peak-to-trough drawdown when compounding over the whole sample period was -66.7 % for long-value, in line with the market average at -67.4 % but better than long-glamour's -80.0 %. The market-neutral strategy had a considerably smaller maximum drawdown of -38.4 %.

The below findings for B/M are not robust over the latter half of the sample, July 2005 to June 2010, as the long-glamour portfolio a CAR of +8.9 % outperforms the market benchmark by a small margin while the long-value produces only +0.6 % and market-neutral long-value-short-glamour comes in a CAR of -7.6 %, suffering from shorting glamour. The latter half period drawdowns are also reversed; long-value now retraces deeper than long-glamour, which comes in close to the market on maximum drawdown. The market-neutral strategy also shows least maximum retracement for the second half period of the sample.

Table 4.2.3.
Risk-Return of B/M Value and Glamour Portfolio Strategies, Full Sample

Table summarizes the risk-return performance of book value of common equity-to-market value of capitalization (B/M) strategies. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.

Strategy portfolios are rebalanced annually at the end of June each year. The three strategies evaluated are 1) Long Glamour, buying B/M-deciles 1+2 with the highest premiums (lowest discounts), 2) Long Value buying B/M-deciles 9+10 with the lowest premiums (highest discounts) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the two Value B/M-deciles (9+10) and an off-setting short-selling position is initiated in the Glamour B/M-deciles (1+2).

The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma}[\boldsymbol{ER_{mo}}]$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$), 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$), 53 positive but next to 12 best ($\boldsymbol{r_{mo\_P53}}$) and 12 best ($\boldsymbol{r_{mo\_B12}}$) monthly returns.

Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$, $\boldsymbol{r_{mo_{N43}}}$, $\boldsymbol{r_{mo_{P53}}}$and $\boldsymbol{r_{mo_{B12}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively.

$\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted and free-float adjusted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.

All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

		$B/M\ Strategy$								
Variable	**Period**	*Long Glamour* (deciles 1+2)	*Long Value* (deciles 9+10)			*Long Value* (deciles 9+10) *Short Glamour* (deciles 1+2)			$MSCI\ Sweden$	rf
CAR	Jul 2000-Jun 2010	-0.039	0.088			0.112			0.003	0.027
CR_maxDD		-0.800	-0.667			-0.384			-0.674	0.000
CAR	Jul 2005-Jun 2010	0.089	0.006			-0.076			0.071	0.022
CR_maxDD		-0.540	-0.667			-0.384			-0.523	0.000
				H1 Tests			*H2 Tests*			
				H_0	*t-statistic*		H_0	*t-statistic*		
ER_{mo}	Jul 2000-Jun 2010	-0.002	0.008	$\leq ER_{MSCI_{mo}}$	1.47*	0.008	≤ 0	1.63*	-0.004	
$\sigma[ER_{mo}]$		0.081	0.080			0.053			0.087	
$Sharpe$		-0.03	0.10			0.15			-0.04	
$Sortino$		-0.01	0.05			0.11			0.00	
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	-0.003	0.007	= 0	1.53	0.008	= 0	1.63		
$\beta_{\_mo\_MSCI}$		0.890	0.830	= 1	-2.08**	-0.055	= 1	-12.98***		
R^2		0.639	0.563			0.499				
r_{mo_W12}	Jul 2000-Jun 2010	-0.122	-0.010	$= r_{mo\_MSCI}$	2.12*	0.022	= 0	0.80	-0.141	0.003
r_{mo_N43}		-0.035	-0.022	$= r_{mo\_MSCI}$	1.09	0.013	= 0	1.19	-0.030	0.002
r_{mo_P53}		0.032	0.034	$= r_{mo\_MSCI}$	0.10	0.002	= 0	0.08	0.034	0.002
r_{mo_B12}		0.106	0.130	$= r_{mo\_MSCI}$	0.10	0.024	= 0	1.39	0.127	0.002

The Sharpe ratios indicate risk-adjusted excess return outperformance for long-value over long-glamour and the market, mainly due to higher ER_{mo}while $\sigma[ER_{mo}]$ is similar for all three portfolios. And the Sharpe ratio of the market-neutral long-value-short-glamour strategy comes in above long-value, with similar ER_{mo} produced at almost half $\sigma[ER_{mo}]$. One-sided t-tests of the portfolio ER_{mo} against *MSCI Sweden* reject both H1 and H2 for B/M portfolios. $ER_{MSCI_{mo}}$, shows positive and weakly significant return outperformance of +0.8 % over the market for both long-value and market-neutral strategies. In terms of *downside* excess return volatility, the Sortino ratio as well comes in most favorable for the market-neutral strategy while the long-value clearly outperforms the market.

Our formal test for H1 and H2 is performed employing the estimates from CAPM regressions following the same methodology as those presented earlier in this section. For B/M portfolios the signs and magnitude of long-value and market-neutral CAPM alphas are in line with rejection of H1 and H2, but come in statistically insignificant. The beta is significantly below unity for the long-value portfolio, rejecting H1, but below unity for long-glamour as well. The market-neutral portfolio beta is weakly negative (and strongly significant); reflecting some potential portfolio diversification benefits. The R^2 of the CAPM regressions, explaining how much of the return variability of each strategy that was captured by the return variability of *MSCI Sweden*, comes in somewhat higher for the glamour portfolio compared to the value portfolio (R^2 of 63.9 % versus 56.3 %). Surprisingly, the market-neutral B/M strategy's return variability is as well captured to a large extent by the model (R^2 of 49.9 %).

State-of-world analysis based on monthly *MSCI Sweden* returns indicate long-value and market-neutral strategy market outperformance in the negative monthly states, based on sign and coefficient. Statistically we only find weak significance for long-value H1 rejection in the 12 worst *MSCI Sweden* months and long-value somewhat unexpectedly outperforms the market and long-glamour in the positive states.

We then move on to strategy portfolio tests of E/P, shown in Table 4.2.4. below. The most interesting full period CAR-findings are that long-value now clearly outperforms the market-neutral strategy which outperforms the market. Long-glamour again returned a negative CAR. Unlike for B/M, the latter half sub-sample period CAR of long-value and market-neutral E/P strategies both outperform the market and long-glamour, which returns a negative CAR in line with its full period CAR. Concerning drawdowns only long-value retraces less than the market in the full sample period while the market-neutral strategy has less than a third of the market average drawdown in the second half period of the sample when long-value has marginally worse. Unlike for B/M, the long-glamour strategy consistently generates the largest maximum drawdown in both full sample and second half sample period. Concerning risk-adjusted full period excess returns long-value comes in as relative winner on Sharpe and Sortino ratios but the market-neutral strategy is clearly superior to the market and long-glamour. Both higher excess returns and lower volatility create long-value and market-neutral portfolio outperformance. Statistically the positive ER_{mo} of long-value can significantly reject H1 while the market-neutral ER_{mo} cannot significantly reject H2.

Table 4.2.4.
Risk-Return of E/P Value and Glamour Portfolio Strategies

Table summarizes the risk-return performance of net earnings-to-market capitalization of common equity yield (E/P) strategies. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.

Strategy portfolios are rebalanced annually at the end of June each year. The three strategies evaluated are 1) Long Glamour, buying B/M-deciles 1+2 with the highest yields, 2) Long Value buying B/M-deciles 9+10 with the lowest yields and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the two Value B/M-deciles (9+10) and an off-setting short-selling position is initiated in the Glamour B/M-deciles (1+2).

The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of these cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the R^2 of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$), 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$), 53 positive but next to 12 best ($\boldsymbol{r_{mo\_P53}}$) and 12 best ($\boldsymbol{r_{mo\_B12}}$) monthly returns.

Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$, $\boldsymbol{r_{mo_{N43}}}$, $\boldsymbol{r_{mo_{P53}}}$ and $\boldsymbol{r_{mo_{B12}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively.

$\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted and free-float adjusted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.

All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

		E/P Strategy								
Variable	**Period**	***Long Glamour*** (deciles 1+2)	***Long Value*** (deciles 9+10)			***Long Value*** (deciles 9+10) ***Short Glamour*** (deciles 1+2)			***MSCI Sweden***	$\boldsymbol{rf}$
$\boldsymbol{CAR}$	Jul 2000-Jun 2010	-0.028	0.136			0.079			0.003	0.027
$\boldsymbol{CR\_maxDD}$		-0.806	-0.586			-0.695			-0.674	0.000
$\boldsymbol{CAR}$	Jul 2005-Jun 2010	-0.024	0.098			0.105			0.071	0.022
$\boldsymbol{CR\_maxDD}$		-0.672	-0.586			-0.159			-0.523	0.000
				H1 Tests			***H2 Tests***			
				$\boldsymbol{H_0}$	***t-statistic***		$\boldsymbol{H_0}$	***t-statistic***		
$\boldsymbol{ER_{mo}}$	Jul 2000-Jun 2010	0.001	0.010	$\leq \boldsymbol{ER_{MSCI_{mo}}}$	2.22**	0.007	≤ 0	1.04	-0.004	
$\sigma[\boldsymbol{ER_{mo}}]$		0.107	0.061			0.074			0.087	
$\boldsymbol{Sharpe}$		0.01	0.17			0.10			-0.04	
$\boldsymbol{Sortino}$		0.00	0.09			0.04			0.00	
$\boldsymbol{\alpha_{\_mo\_MSCI}}$	Jul 2000-Jun 2010	0.000	0.010	= 0	2.72***	0.007	= 0	1.18		
$\boldsymbol{\beta_{\_mo\_MSCI}}$		1.052	0.636	= 1	-5.83***	-0.412	= 1	-10.90***		
$\boldsymbol{R^2}$		0.504	0.577			0.161				
$\boldsymbol{r_{mo\_W12}}$	Jul 2000-Jun 2010	-0.139	-0.076	= $\boldsymbol{r_{mo\_MSCI}}$	4.33***	0.063	= 0	2.37**	-0.141	0.003
$\boldsymbol{r_{mo\_N43}}$		-0.039	-0.010	= $\boldsymbol{r_{mo\_MSCI}}$	3.13***	0.029	= 0	3.26***	-0.030	0.002
$\boldsymbol{r_{mo\_P53}}$		0.037	0.031	= $\boldsymbol{r_{mo\_MSCI}}$	-0.56	-0.005	= 0	-0.89	0.034	0.002
$\boldsymbol{r_{mo\_B12}}$		0.148	0.010	= $\boldsymbol{r_{mo\_MSCI}}$	-1.34	-0.048	= 0	-1.41	0.127	0.002

The CAPM regressions produce strongly significant alphas and betas for long-value E/P, resulting in a more pronounced rejection of H1 than for long-value B/M. The market-neutral strategy's beta at -0.412 is strongly significant, rejecting H2, but the monthly excess return alpha of +0.7 % over *MSCI Sweden* turns out insignificant. Like for B/M we expect control variable sub-sample analysis to improve the statistical power of our CAPM tests, given our small sample size. The R^2 of the CAPM regressions have the reverse relative magnitude compared to the B/M value case, with E/P value return variability being captured to a larger extent than E/P glamour (R^2 of 57.7 % versus 50.4 %). Unlike the B/M case, the market-neutral E/P strategy return variability does not capture that of *MSCI Sweden* to a large degree (R^2 of 16.1 %).

Finally, the signs and magnitude of long-glamour, long-value and market-neutral E/P strategies perform roughly in line with expectation in our state-of-the-world analysis. Statistically we have significant or strongly significant market outperformance for long-value and market-neutral strategies in the 12 worst and in the remaining negative *MSCI* Sweden return months; indicating these strategies clearly outperform when the market portfolio returns retrace.

Then, in Tables 4.2.5. and Table 4.2.6. below we present analysis of our two firm valuation ratios, EBITDA/EV and FCFF/EV. Table 4.2.5. below like for B/M shows the highest full period EBITDA/EV CAR for the market-neutral strategy, closely followed by long-value. The biggest CAR contrast with B/M and E/P is that the long-glamour underperformance multiplies in magnitude for the period. The drawdowns are similar to those of E/P strategies; long-glamour is consistently worst, now by even greater margins, long-value is the full period winner while the market-neutral strategy in the second half of the sample retraces by less than a third of the drawdowns of long-value or the market. For the latter half sample period CAR's are very similar to those of E/P strategies; with a slightly negative long-glamour CAR and large positive CAR for long-value and market-neutral strategies.

The risk-adjusted excess returns are outperforming the market and the long-glamour strategy by similar margin for long-value and market-neutral EBITDA/EV strategies, in terms of Sharpe and Sortino ratios. The ER_{mo} reject H1 with significance for long-value and reject H2 with weak significance for the market-neutral strategy. The CAPM regressions yield positive alphas for both long-value and market-neutral strategies. The relatively larger alpha of +1.1 % per month for the market-neutral strategy is insignificant while the smaller alpha of +0.7 % per month is significant for long-value, supporting formal rejection of H1 but not H2. The betas are very similar to those of E/P strategies and with reject H1 and H2. The R^2 of all three EBITDA/EV strategies are similar to those of the E/P strategies.

The state-of-the world analysis more clearly support rejection of H1 and H2 than for B/M and E/P; the signs and magnitudes of long-glamour, long-value and market-neutral strategies follow a pattern of market outperformance of value in bad times and underperformance in good times. Statistically, both long-value and market-neutral strategies significantly outperform during negative states, as was the case for E/P.

Table 4.2.5.
Risk-Return of EBITDA/EV Value and Glamour Portfolio Strategies

Table summarizes the risk-return performance of EBITDA-to-enterprise value yield (EBITDA/EV) strategies. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.

Strategy portfolios are rebalanced annually at the end of June each year. The three strategies evaluated are 1) Long Glamour, buying B/M-deciles 1+2 with the highest yields, 2) Long Value buying B/M-deciles 9+10 with the lowest yields and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the two Value B/M-deciles (9+10) and an off-setting short-selling position is initiated in the Glamour B/M-deciles (1+2).

The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of these cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the R^2 of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$), 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$), 53 positive but next to 12 best ($\boldsymbol{r_{mo\_P53}}$) and 12 best ($\boldsymbol{r_{mo\_B12}}$) monthly returns.

Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$, $\boldsymbol{r_{mo_{N43}}}$, $\boldsymbol{r_{mo_{P53}}}$and $\boldsymbol{r_{mo_{B12}}}$. The null hypotheses and corresponding t-statistics are reported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively.

$\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted and free-float adjusted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.

All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Variable	Period	*Long __Glamour__* (deciles 1+2)	*Long __Value__* (deciles 9+10)	H1 Tests H_0	H1 Tests t-statistic	*Long __Value__* (deciles 9+10) *Short __Glamour__* (deciles 1+2)	H2 Tests H_0	H2 Tests t-statistic	$\boldsymbol{MSCI\ Sweden}$	$\boldsymbol{rf}$
		EBITDA/EV Strategy								
$\boldsymbol{CAR}$	Jul 2000-Jun 2010	-0.101	0.105			0.120			0.003	-0.101
$\boldsymbol{CR\_maxDD}$		-0.876	-0.544			-0.665			-0.674	-0.876
$\boldsymbol{CAR}$	Jul 2005-Jun 2010	-0.033	0.091			0.096			0.071	-0.033
$\boldsymbol{CR\_maxDD}$		-0.708	-0.544			-0.145			-0.523	-0.708
$\boldsymbol{ER_{mo}}$	Jul 2000-Jun 2010	-0.005	0.008	$\leq \boldsymbol{ER_{MSCI_{mo}}}$	1.79**	0.011	≤ 0	1.47*	-0.004	
$\sigma[\boldsymbol{ER_{mo}}]$		0.112	0.056			0.078			0.087	
$\boldsymbol{Sharpe}$		-0.05	0.14			0.13			-0.04	
$\boldsymbol{Sortino}$		-0.02	0.07			0.06			0.00	
$\boldsymbol{\alpha_{\_mo\_MSCI}}$	Jul 2000-Jun 2010	-0.006	0.007	= 0	2.38**	0.011	= 0	1.65		
$\boldsymbol{\beta_{\_mo\_MSCI}}$		1.068	0.624	= 1	-7.51***	-0.438	= 1	-11.03***		
R^2		0.480	0.649			0.164				
$\boldsymbol{r_{mo\_W12}}$	Jul 2000-Jun 2010	-0.145	-0.077	= $\boldsymbol{r_{mo\_MSCI}}$	5.67***	0.068	= 0	2.69**	-0.141	0.003
$\boldsymbol{r_{mo\_N43}}$		-0.047	-0.012	= $\boldsymbol{r_{mo\_MSCI}}$	3.14***	0.035	= 0	3.85***	-0.030	0.002
$\boldsymbol{r_{mo\_P53}}$		0.031	0.031	= $\boldsymbol{r_{mo\_MSCI}}$	-0.70	-0.001	= 0	-0.30	0.034	0.002
$\boldsymbol{r_{mo\_B12}}$		0.147	0.085	= $\boldsymbol{r_{mo\_MSCI}}$	-4.06***	-0.061	= 0	-1.59	0.127	0.002

Summarizing the strategy portfolio results for FCFF/EV, shown in 4.2.6. further below, we find results quite similar to those of EBTIDA/EV. One main difference is that the market and long-value underperformance of the long-glamour FCFF/EV strategy is not as wide in CAR, weakening the market-neutral strategy CAR. The maximum drawdowns are now clearly most favorable for the market-neutral strategy in both in the full sample period and second half period.

Table 4.2.6.
Risk-Return of FCFF/EV Value and Glamour Portfolio Strategies

Table summarizes the risk-return performance of Free Cash-Flow-to-Firm-over-enterprise value yield (FCFF/EV) strategies. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.

Strategy portfolios are rebalanced annually at the end of June each year. The three strategies evaluated are 1) Long Glamour, buying B/M-deciles 1+2 with the highest yields, 2) Long Value buying B/M-deciles 9+10 with the lowest yields and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the two Value B/M-deciles (9+10) and an off-setting short-selling position is initiated in the Glamour B/M-deciles (1+2).

The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading returns, $\boldsymbol{CR}$, and the maximum peak-to-trough drawdown of these cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the R^2 of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$), 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$), 53 positive but next to 12 best ($\boldsymbol{r_{mo\_P53}}$) and 12 best ($\boldsymbol{r_{mo\_B12}}$) monthly returns.

Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$, $\boldsymbol{r_{mo_{N43}}}$, $\boldsymbol{r_{mo_{P53}}}$and $\boldsymbol{r_{mo_{B12}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ***, **, *, denote significance at the 1 %, 5 % and 10 % levels, respectively.

$\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted and free-float adjusted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.

All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

		FCFF/EV Strategy								
Variable	**Period**	***Long Glamour*** (deciles 1+2)	***Long Value*** (deciles 9+10)			***Long Value*** (deciles 9+10) ***Short Glamour*** (deciles 1+2)			***MSCI Sweden***	***rf***
$\boldsymbol{CAR}$	Jul 2000-Jun 2010	-0.024	0.110			0.085			0.003	0.027
$\boldsymbol{CR\_maxDD}$		-0.692	-0.524			-0.393			-0.674	0.000
$\boldsymbol{CAR}$	Jul 2005-Jun 2010	0.007	0.081			0.054			0.071	0.022
$\boldsymbol{CR\_maxDD}$		-0.668	-0.524			-0.201			-0.523	0.000
				H1 Tests			***H2 Tests***			
				$\boldsymbol{H_0}$	***t-statistic***		$\boldsymbol{H_0}$	***t-statistic***		
$\boldsymbol{ER_{mo}}$	Jul 2000-Jun 2010	0.000	0.008	$\leq \boldsymbol{ER_{MSCI_{mo}}}$	1.89*	0.006	≤ 0	1.24	-0.004	
$\sigma[\boldsymbol{ER_{mo}}]$		0.091	0.056			0.053			0.087	
$\boldsymbol{Sharpe}$		0.00	0.14			0.11			-0.04	
$\boldsymbol{Sortino}$		0.00	0.07			0.05			0.00	
$\boldsymbol{\alpha_{\_mo\_MSCI}}$	Jul 2000-Jun 2010	-0.001	0.008	= 0	2.52**	0.006	= 0	1.42		
$\boldsymbol{\beta_{\_mo\_MSCI}}$		0.946	0.625	= 1	-8.08***	-0.316	= 1	-15.36***		
$\boldsymbol{R^2}$		0.567	0.652			0.185				
$\boldsymbol{r_{mo\_W12}}$	Jul 2000-Jun 2010	-0.124	-0.082	$= \boldsymbol{r_{mo\_MSCI}}$	4.88***	0.041	= 0	2.47**	-0.141	0.003
$\boldsymbol{r_{mo\_N43}}$		-0.036	-0.011	$= \boldsymbol{r_{mo\_MSCI}}$	3.42***	0.025	= 0	3.96***	-0.030	0.002
$\boldsymbol{r_{mo\_P53}}$		0.031	0.031	$= \boldsymbol{r_{mo\_MSCI}}$	-0.67	-0.001	= 0	-0.43	0.034	0.002
$\boldsymbol{r_{mo\_B12}}$		0.133	0.088	$= \boldsymbol{r_{mo\_MSCI}}$	-3.48***	-0.045	= 0	-1.75	0.127	0.002

Continuing down Table 4.2.6. the relatively narrower return spread between value and glamour is also reflected in monthly risk-adjusted excess returns. With similar to market ER_{mo}volatility and ER_{mo} downside volatility but relatively higher monthly ER_{mo} the long-value results in higher risk-return market outperformance (in terms of Sharpe and Sortino ratios) than for the market-neutral strategy, which does outperform the market by a clear but smaller margin. CAPM betas for long-value and market-neutral strategies have similar signs and magnitude as for EBITDA/EV and are strongly significant. But the positive CAPM alpha is of the same magnitude and significance for the long-value FCFF/EV strategy, supporting H1 rejection, while the market-neutral strategy receives a positive alpha of only around half the magnitude (+0.6 % per month) compared to market-neutral EBITDA/EV (+1.1 % per month) and cannot statistically reject H2. R^2 of the FCFF/EV strategies are similar to those of E/P and EBITDA/EV.

The *MSCI Sweden* return state analysis comes out very similar for FCFF/EV long-value and market-neutral strategies compared to the corresponding EBITDA/EV strategies. Both strategies have strong significance for bad state outperformance supporting rejection of H1 and H2.

Full Sample Results Summary and Comparison to Previous Studies

Our full-sample results indicate that our three yield-type ratios E/P, EBITDA/EV and FCFF/EV all provide robust and, in general, significant support for rejecting H1 and H2. Monthly CAPM alphas of the market-neutral strategy for E/P, EBITDA/EV and FCFF/EV come in as insignificant, with signs and magnitude otherwise supporting H2 rejection, likely due to our small sample size lowering testing power.

Concerning previous studies, Lakonishok et al (1994, pp. 1548-1549) observed sizeable positive differences when simply subtracting the glamour quintile 1-year absolute total returns from those of the value quintile; this yearly average difference was largest for cash-flow-to-price (where they define cash-flow as earnings plus depreciation) at +7.9 %, then came B/M at +6.5 % and finally E/P at +5.4 %. We compound Fama and French's (1992, p. 442) monthly data for 1-year holding period portfolios to find that their corresponding value minus glamour quintile absolute return differences were +8.6 % for E/P and +4.9 % for B/M. Not being entirely comparable to any of the above articles methodology-wise, for the corresponding value minus glamour quintile yearly return difference calculation (which is not equivalent to our long-short strategy) our study registered +17.0 % for the mean of FCFF/EV and EBITDA/EV followed by +16.4 % for E/P while B/M had +12.7 %. With a broader definition of value and glamour as top 30 % and bottom 30 % of the market (top 3 and bottom 3 deciles) Fama and French (1998, p. 1980) offer estimates for yearly value minus glamour *excess* return difference for Sweden during the period 1975-1995 of +8.2 % for E/P, +8.0 % for B/M and +4.6 % for CF/P. Noting the major differences that Fama and French measure US dollar returns and employ U.S. T-bills as risk-free rate, we compound our corresponding ER_{mo} to generate yearly value minus glamour *quintile* excess return difference estimates of around +13.3 % as mean for FCFF/EV and EBITDA/EV, +12.7 % for B/M and +11.4 % for E/P.

Our full sample results do not warrant H1 or H2 rejection for B/M strategies. Although indicating full sample market and long-glamour return outperformance for long-value and long-value-short-glamour B/M strategies the evidence is not robust for the second half of the sample period or for state-of-the-world analysis and few results are statistically significant. For the full period it seems that the long-value B/M strategy, compared to the three yield-strategies, outperforms long-glamour and the market primarily due to higher returns rather than meaningfully lower risk. As indicated B/M is negatively correlated with size and positively correlated with leverage for individual stocks and for B/M decile portfolios (Appendix Tables 2.2. and 2.3.). Our regressions of individual stock returns returned negative (but insignificant) signs for size and positive (and significant) sign for market leverage when both control variable candidates were run together with B/M (Table 4.1.1.). At least in individual firm returns the higher explanatory strength of primarily firm market leverage appears to dominate the explanatory strength of B/M but also to significantly explain part of the positive return variation when regressed with E/P, EBITDA/EV or FCFF/EV. Given the explanatory power of firm size and firm market leverage described in background papers and indicated in our preliminary evaluation we do expect improved statistical power in strategy portfolio results when now moving on to analyzing control variable sub-samples.

4.2.2 Part 2: Market Capitalization Tertile-Valuation Ratio Quintile Portfolios

Following the same procedure as in Section 4.2.1 above we now add a prior portfolio formation step where we control our sample for firm market capitalization. We sort all firms into three separate sub-samples based on portfolio formation day market capitalization tertile and after that follow the same analysis steps as for the full sample above.

We inspect the size tertile sub-sample distributions for each valuation ratio and market leverage control variable, MV LEV, following the same procedure as for Table 4.2.1. of the preceding section. All ratios are observed to have more dispersed quintile distribution means and medians within the small size tertile compared to within medium and large size tertiles; valuations seem more extreme for small cap firms. For all valuation ratios the firm size variable itself does across all size tertiles decrease in the glamour and value quintile ends, with larger firm size in the middle valuation quintiles. MV LEV increases with B/M within all size tertiles but does not show any size-robust patterns for E/P, EBITDA/EV and FCFF/EV.

We repeat the valuation ratio quantile portfolio analysis of Table 4.2.2. of Section 4.2.1 above, only now we have added an initial firm size tertile ranking step. In order to stay within a compact Thesis format the results of the quantile analysis, in this and sub-sequent sub-sample sections, will be not included in thesis but only covered briefly in text, while the strategy portfolio results will be covered in full. For the size tertile-B/M quintile results we notice how after adjusting for size the intra-size tertile ER_{mo} and $\sigma[ER_{mo}]$ and the CAPM alphas and betas are inconclusive on superior risk-reward for increasing B/M, just as in the unadjusted full sample. For E/P we can across all size tertiles observe intra-size tertile support for a superior ER_{mo} and $\sigma[ER_{mo}]$ risk-reward for increasing E/P and CAPM regression alphas and betas are also clearly supportive of value outperformance. For EBITDA/EV the largest risk-adjusted return outperformance is generated in the value quintile, mainly due to a lowered $\sigma[ER_{mo}]$ as we go toward the value quintile. In absolute terms ER_{mo} unexpectedly peaks in the middle (3rd) quintile, for all size tertiles. The CAPM results point in a similar direction; betas clearly fall as we go towards value and although positive in the value quintile alpha's magnitude peaks in the middle quintile. FCFF/EV has more robust risk-return outperformance as we go towards the value quintile, compared to EBITDA/EV. The effect from having lower excess return volatility ($\sigma[ER_{mo}]$) clearly favors the risk-reward of the value quintile.

Table 4.2.7. below presents the full performance for our three size tertile-valuation ratio quintile strategies. The full period B/M results indicate that long-value and market-neutral long-value-short-glamour strategies have size-robust outperformance over the market in terms of CAR:s and maximum drawdowns. Unfortunately this result does not hold for the second half period sub-sample. We also notice unexpected asymmetry over firm sizes; in terms of portfolio CAR and maximum drawdown the largest size tertile of long-value records highest CAR and smallest maximum drawdown while the opposite is true for long-glamour; it has absolute return outperformance for the smallest size tertile. The relative levels and signs of ER_{mo} and $\sigma[ER_{mo}]$ and the relative ranking of Sharpe and Sortino ratios indicate market outperformance of long-value and market-neutral portfolios. There is not size-robustness however; the middle firm size tertile sub-sample produces insignificant return outperformance of limited magnitude which is not compensated by a considerably lower volatility. In the CAPM regressions only the large firm size tertile (3rd) produces significant positive alphas and significant below-unity betas for both long-value and market-neutral strategies. The betas for the market-neutral strategy are not far from zero for any size tertile and the R^2 are essentially zero (not the case for the full sample). In the state-of-the world analysis the medium (2nd) firm size tertile does not support H1 rejection for long-value or H2-rejection for market-neutral to the same extent as is shown for the small (1st) and large (3rd) size tertiles.

For E/P we can from Table 4.2.8. results below observe that market return outperformance of long-value is robust over size tertiles, driven by higher CAR while maximum drawdown is marginally to clearly lower than market. Firm size-robust long-value outperformance holds for the latter period sub-sample as well. Long-glamor generates above-market maximum drawdowns and consistently negative or near zero CAR:s.

Table 4.2.7.
Risk-Return of B/M Portfolio Strategy by Market Canalization Sub-Sample

Table summarizes the risk-return performance of book value of common equity-to-market value of capitalization (B/M) strategies in size tertile sub-samples. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms of a market capitalization equivalent to less than 10 million USD. Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market capitalization of common equity. Then three strategies evaluated are 1) Long Glamour, buying B/M-quintile 1 with the highest premium (lowest discount), 2) Long Value buying B/M-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value B/M-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first and second row sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$) and 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$) monthly returns.
Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, $\boldsymbol{r_{mo_{W12}}}$ and $\boldsymbol{r_{mo_{N43}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.
All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

			B/M Strategy								
Variable	**Period**	$\boldsymbol{Size}$ $\boldsymbol{Tertile}$	***Long <u>Glamour</u>*** (quintile 1)	***Long <u>Value</u>*** (quintile 5)			***Long <u>Value</u>*** (quintile 5) ***Short <u>Glamour</u>*** (quintile 1)			$\boldsymbol{MSCI}$ $\boldsymbol{Sweden}$	$\boldsymbol{rf}$
$\boldsymbol{CAR}$	Jul 2000-	1	-0.015	0.114			0.099			0.003	0.027
$\boldsymbol{CR\_maxDD}$	Jun 2010		-0.766	-0.673			-0.592			-0.674	0.000
$\boldsymbol{CAR}$	Jul 2000-	2	-0.040	0.028			0.032			0.003	0.027
$\boldsymbol{CR\_maxDD}$	Jun 2010		-0.813	-0.688			-0.576			-0.674	0.000
$\boldsymbol{CAR}$	Jul 2000-	3	-0.074	0.169			0.219			0.003	0.027
$\boldsymbol{CR\_maxDD}$	Jun 2010		-0.826	-0.540			-0.207			-0.674	0.000
$\boldsymbol{CAR}$	Jul 2005-	1	0.134	-0.013			-0.145			0.071	0.022
$\boldsymbol{CR\_maxDD}$	Jun 2010		-0.491	-0.590			-0.592			-0.523	0.000
$\boldsymbol{CAR}$	Jul 2005-	2	0.033	-0.049			-0.091			0.071	0.022
$\boldsymbol{CR\_maxDD}$	Jun 2010		-0.624	-0.549			-0.505			-0.523	0.000
$\boldsymbol{CAR}$	Jul 2005-	3	0.033	0.189			0.152			0.071	0.022
$\boldsymbol{CR\_maxDD}$	Jun 2010		-0.613	-0.540			-0.165			-0.523	0.000
					H1 Tests			*H2 Tests*			
					$\boldsymbol{H_0}$	*t-statistic*		$\boldsymbol{H_0}$	*t-statistic*		
$\boldsymbol{ER_{mo}}$	Jul 2000-	1	0.000	0.011	$\leq ER_{MSCI_{mo}}$	1.37*	0.009	≤ 0	1.13	-0.004	
$\boldsymbol{\sigma[ER_{mo}]}$	Jun 2010		0.087	0.104			0.087			0.087	
$\boldsymbol{Sharpe}$			0.00	0.11			0.10			-0.04	
$\boldsymbol{Sortino}$			0.00	0.07			0.07			0.00	
$\boldsymbol{ER_{mo}}$	Jul 2000-	2	-0.001	0.003	$\leq ER_{MSCI_{mo}}$	0.50	0.002	≤ 0	0.39	-0.004	
$\boldsymbol{\sigma[ER_{mo}]}$	Jun 2010		0.093	0.077			0.060			0.087	
$\boldsymbol{Sharpe}$			-0.02	0.04			0.04			-0.04	
$\boldsymbol{Sortino}$			-0.01	0.02			0.02			0.00	
$\boldsymbol{ER_{mo}}$	Jul 2000-	3	-0.005	0.014	$\leq ER_{MSCI_{mo}}$	2.36***	0.017	≤ 0	2.43***	-0.004	
$\boldsymbol{\sigma[ER_{mo}]}$	Jun 2010		0.082	0.086			0.076			0.087	
$\boldsymbol{Sharpe}$			-0.06	0.16			0.22			-0.04	
$\boldsymbol{Sortino}$			-0.02	0.10			0.19			0.00	
$\boldsymbol{\alpha_{\_mo\_MSCI}}$	Jul 2000-	1	-0.000	0.011	= 0	1.40	0.009	= 0	1.12		
$\boldsymbol{\beta_{\_mo\_MSCI}}$	Jun 2010		0.804	0.831	= 1	-1.30	0.032	= 1	-8.28***		
$\boldsymbol{R^2}$			0.443	0.331			0.001				
$\boldsymbol{\alpha_{\_mo\_MSCI}}$	Jul 2000-	2	-0.002	0.003	= 0	0.54	0.002	= 0	0.40		
$\boldsymbol{\beta_{\_mo\_MSCI}}$	Jun 2010		0.905	0.805	= 1	-2.20**	-0.095	= 1	-11.21***		
$\boldsymbol{R^2}$			0.493	0.570			0.013				
$\boldsymbol{\alpha_{\_mo\_MSCI}}$	Jul 2000-	3	-0.006	0.014	= 0	2.42**	0.017	= 0	2.42**		
$\boldsymbol{\beta_{\_mo\_MSCI}}$	Jun 2010		0.897	0.825	= 1	-2.03**	-0.066	= 1	-10.20***		
$\boldsymbol{R^2}$			0.621	0.487			0.004				
$\boldsymbol{r_{mo\_W12}}$	Jul 2000-	1	-0.124	-0.086	$= r_{mo\_MSCI}$	2.79**	0.038	= 0	1.61	-0.137	0.003
$\boldsymbol{r_{mo\_N43}}$	Jun 2010		-0.026	-0.028	$= r_{mo\_MSCI}$	0.17	-0.002	= 0	-0.48	-0.030	0.002
$\boldsymbol{r_{mo\_W12}}$	Jul 2000-	2	-0.134	-0.103	$= r_{mo\_MSCI}$	1.58	0.030	= 0	0.96	-0.137	0.003
$\boldsymbol{r_{mo\_N43}}$	Jun 2010		-0.033	-0.024	$= r_{mo\_MSCI}$	0.80	0.010	= 0	0.75	-0.030	0.002
$\boldsymbol{r_{mo\_W12}}$	Jul 2000-	3	-0.130	-0.093	$= \boldsymbol{r_{mo\_MSCI}}$	3.00**	0.037	= 0	1.18	-0.137	0.003
$\boldsymbol{r_{mo\_N43}}$	Jun 2010		-0.040	-0.015	$= \boldsymbol{r_{mo\_MSCI}}$	2.20**	0.025	= 0	2.03**	-0.030	0.002

In excess returns and excess return volatility E/P long-value outperforms the market and long-glamour by a clear margin robust for all firm size tertiles. On the basis of absolute excess return statistical significance warrants rejection of H1 for all firm sizes (10 % level significance for the smallest size tertile) while H2 can be rejected at weak (10 % level) significance only for the medium and largest size tertiles. The CAPM results support size-robust rejection of H1 on basis of sign and magnitude of alphas (and significance for medium and largest size tertiles) and significant below-unity betas. CAPM cannot reject H2 robustly for all size tertiles. The smallest size tertile long-glamour portfolio generates an unexpected marginally positive alpha, resulting in a similar marginally positive market-neutral strategy alpha for this tertile. Although of larger magnitude than significant long-value alphas, remaining market-neutral alphas are insignificant, likely due to a lack of statistical power. Supporting H2 rejection, the beta estimates of the market-neutral strategy are negative by an economically meaningful extent for all size tertiles.

In the state-of-the-world analysis both long-value and market-neutral strategies generate statistically significant size-robust market return outperformance in the worst 12 *MSCI Sweden* return months in sample. Signs and magnitude support size-robust return outperformance in the remaining negative *MSCI Sweden* months as well for both long-value and market-neutral. This warrants rejection of H1 and H2 on adverse state outperformance. In addition the long-value strategy comes in not far behind the market for all size tertiles in the 12 best and remaining positive *MSCI Sweden* months.

The EBITDA/EV portfolios of Table 4.2.9. further below indicate above-market CAR for long-value and market-neutral strategies and negative below-market CAR for long-glamour, for all size tertiles and for the latter half sub-sample period. For the full sample period the maximum drawdowns of long-value are consistently less than the market's while the drawdowns of long-glamour are consistently above market. Robust across all size tertiles the excess monthly returns are favorable for long-value and market-neutral compared to the market and long-glamour, as indicated by Sharpe and Sortino ratios. The outperformance of long-value and market-neutral is most pronounced in the smallest size tertile. Excess return volatility is below-market for long-value, around market for market-neutral and above-market for long-glamour.

Our CAPM-evaluation supports H1 and H2 rejection in terms of sign and magnitude of alpha coefficients and beta-coefficients of economically meaningful magnitude. However, alphas generated by the portfolio return series mostly turn out statistically insignificant, possibly related to the discussed lack of statistical power due to our limited sample. The non-parametric state-of-the-world analysis shows a clear state-dependence for EBITDA/EV strategies. Long-value and market-neutral strategies produce return outperformance of similar magnitude as E/P during worst and remaining negative *MSCI Sweden* months.

Table 4.2.8.
Risk-Return of E/P Portfolio Strategy by Market Canalization Sub-Sample

Table summarizes the risk-return performance of net earnings-to-market capitalization of common equity yield (E/P) strategies in size tertile sub-samples. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.
Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market capitalization of common equity. Then three strategies evaluated are 1) Long Glamour, buying E/P-quintile 1 with the highest premium (lowest discount), 2) Long Value buying E/P-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value E/P-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$) and 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$) monthly returns.
Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$ and $\boldsymbol{r_{mo_{N43}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$. All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

			E/P Strategy								
Variable	**Period**	***Size Tertile***	*Long Glamour* (quintile 1)	*Long Value* (quintile 5)			*Long Value (quintile 5)* ***Short Glamour*** (quintile 1)			***MSCI Sweden***	***rf***
CAR CR_maxDD	Jul 2000-Jun 2010	1	0.009 -0.750	0.132 -0.658			-0.002 -0.837			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2000-Jun 2010	2	-0.086 -0.829	0.125 -0.579			0.125 -0.632			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2000-Jun 2010	3	-0.098 -0.900	0.155 -0.579			0.132 -0.623			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	1	-0.053 -0.678	0.057 -0.658			0.089 -0.219			0.071 -0.523	0.022 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	2	-0.100 -0.725	0.087 -0.579			0.177 -0.246			0.071 -0.523	0.022 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	3	-0.011 -0.700	0.147 -0.579			0.073 -0.559			0.071 -0.523	0.022 0.000
					H1 Tests			***H2 Tests***			
					H_0	*t-statistic*		H_0	*t-statistic*		
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	1	0.005 0.122 0.04 0.02	0.012 0.092 0.13 0.08	$\leq ER_{MSCI_{mo}}$	1.50*	0.004 0.109 0.04 0.02	≤ 0	0.43	-0.004 0.087 -0.04 0.00	
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	2	-0.004 0.108 -0.04 -0.02	0.010 0.062 0.15 0.07	$\leq ER_{MSCI_{mo}}$	1.81**	0.011 0.083 0.14 0.06	≤ 0	1.48*	-0.004 0.087 -0.04 0.00	
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	3	-0.004 0.123 -0.03 -0.01	0.012 0.064 0.18 0.09	$\leq ER_{MSCI_{mo}}$	2.90**	0.013 0.096 0.14 0.06	≤ 0	1.49*	-0.004 0.087 -0.04 0.00	
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	1	0.004 1.062 0.399	0.011 0.681 0.289	= 0 = 1	1.60 -2.86***	0.005 -0.376 0.063	= 0 = 1	0.47 -7.27***		
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	2	-0.005 1.019 0.463	0.009 0.594 0.478	= 0 = 1	2.22** -5.48***	0.011 -0.420 0.134	= 0 = 1	1.63 -10.5***		
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	3	-0.004 1.234 0.525	0.011 0.720 0.666	= 0 = 1	3.34*** -4.07***	0.013 -0.509 0.146	= 0 = 1	1.65 -13.4***		
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	1	-0.120 -0.039	-0.077 -0.016	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	3.51*** 1.58	0.043 0.023	= 0 = 0	1.82* 2.01*	-0.137 -0.030	0.003 0.002
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	2	-0.140 -0.040	-0.075 -0.006	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	3.87*** 3.26***	0.064 0.034	= 0 = 0	2.14* 3.48***	-0.137 -0.030	0.003 0.002
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	3	-0.174 -0.046	-0.082 -0.011	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	3.69*** 3.12***	0.092 0.035	= 0 = 0	3.78*** 2.47**	-0.137 -0.030	0.003 0.002

Table 4.2.9.
Risk-Return of EBITDA/EV Portfolio Strategy by Market Canalization Sub-Sample

Table summarizes the risk-return performance of EBITDA-to-enterprise value yield (EBITDA/EV) strategies. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.
Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market capitalization of common equity. Then three strategies evaluated are 1) Long Glamour, buying EBITDA/EV-quintile 1 with the highest premium (lowest discount), 2) Long Value buying EBITDA/EV-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value EBITDA/EV-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$) and 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$) monthly returns.
Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$ and $\boldsymbol{r_{mo_{N43}}}$.The null hypotheses and corresponding t-statistics are reported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.
All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Variable	Period	*Size Tertile*	*EBITDA/EV Strategy* Long Glamour (quintile 1)	Long Value (quintile 5)			Long Value (quintile 5) Short Glamour (quintile 1)			*MSCI Sweden*	rf
CAR CR_maxDD	Jul 2000-Jun 2010	1	-0.106 -0.847	0.136 -0.547			0.103 -0.760			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2000-Jun 2010	2	-0.145 -0.869	0.072 -0.572			0.136 -0.650			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2000-Jun 2010	3	-0.090 -0.864	0.070 -0.552			0.054 -0.562			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	1	-0.076 -0.687	0.084 -0.547			0.124 -0.192			0.071 -0.523	0.022 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	2	-0.134 -0.748	0.074 -0.572			0.207 -0.195			0.071 -0.523	0.022 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	3	-0.040 -0.700	0.075 -0.552			0.033 -0.494			0.071 -0.523	0.022 0.000
					H1 Tests H_0	*t-statistic*		*H2 Tests* H_0	*t-statistic*		
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	1	-0.004 0.126 -0.03 -0.02	0.010 0.057 0.18 0.09	$\leq ER_{MSCI_{mo}}$	2.11**	0.012 0.100 0.12 0.05	≤ 0	1.30*	-0.004 0.087 -0.04 0.00	
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	2	-0.009 0.112 -0.08 -0.04	0.005 0.063 0.09 0.04	$\leq ER_{MSCI_{mo}}$	1.02	0.007 0.086 0.08 0.06	≤ 0	1.57*	-0.004 0.087 -0.04 0.00	
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	3	-0.004 0.114 -0.03 -0.02	0.005 0.062 0.08 0.04	$\leq ER_{MSCI_{mo}}$	1.23	0.007 0.090 0.08 0.03	≤ 0	0.84	-0.004 0.087 -0.04 0.00	
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	1	-0.005 1.134 0.422	0.010 0.580 0.555	= 0 = 1	2.76*** -8.29***	0.012 -0.549 0.159	= 0 = 1	1.46 -8.96***		
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	2	-0.010 1.033 0.446	0.005 0.618 0.507	= 0 = 1	1.26 -4.92***	0.013 -0.410 0.120	= 0 = 1	1.70* -9.36***		
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	3	-0.005 1.087 0.477	0.005 0.713 0.682	= 0 = 1	1.48 -3.69***	0.007 -0.369 0.088	= 0 = 1	0.90 -9.91***		
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	1	-0.143 -0.051	-0.076 -0.007	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	5.44*** 3.92***	0.068 0.045	= 0 = 0	2.42** 3.91***	-0.137 -0.030	0.003 0.002
r_{mo_W12} r_{mo_N43}	Jul 2000Jun 2010	2	-0.141 -0.051	-0.081 -0.012	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	4.69*** 2.55**	0.060 0.039	= 0 = 0	1.98* 4.06***	-0.137 -0.030	0.003 0.002
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	3	-0.165 -0.045	-0.085 -0.020	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	3.77*** 2.00*	0.080 0.025	= 0 = 0	3.41*** 2.22**	-0.137 -0.030	0.003 0.002

Finally, we turn to study FCFF/EV in Table 4.2.10. below. FCFF/EV long-value strategy performs similar to EBITDA/EV on CAR and maximum drawdown; with size tertile-robust market outperformance for the full sample period. At the same time the long-glamour strategy's size tertile CAR:s are not as low as for EBITDA/EV and the maximum drawdowns are less deep. This results in that the market-neutral strategy yields lower CAR market outperformance, but at not as deep maximum drawdowns, over the full period. Compared to the EBITDA/EV-case above the long-glamour strategy does not continue to yield large negative CAR over all tertiles in the second half sub-sample period, contributing to that the market-neutral FCFF/EV-strategy underperforms in CAR. For all size tertiles both long-value and market-neutral strategies have lower excess return volatility ($\sigma[ER_{mo}]$) than the market. With ER_{mo} market outperformance being significant for the medium size tertile and weakly significant for the remaining two tertiles the long-value strategy can reject H1 in terms of absolute excess return outperformance robust over firm size. The market-neutral strategy receives ER_{mo} of signs and magnitude supporting H2-rejection but there is weak statistical significance for doing so in the medium size-tertile only.

The CAPM alphas again seem to robustly come in as meaningfully positive for long-value, across all size tertiles. The long-value beta estimates are similar to those of EBITDA/EV; significantly below unity while long-glamour beta estimates are at around unity at the same time. So we reject H1 robust for size. The market-neutral strategy's CAPM alphas have correct sign but are lower than for the long-value size tertiles and weakly significant only in the medium size tertile. Concerning the state-of-the-world analysis the outcome is again similar to EBITDA/EV; over all firm size tertiles there is clear long-value and market-neutral market outperformance in bad states and market underperformance in good states. The return outcomes from the long-glamour strategy are very close to the market outcome, over all states and for all size tertiles.

Table 4.2.10.
Risk-Return of FCFF/EV Portfolio Strategy by Market Canalization Sub-Sample

Table summarizes the risk-return performance of free cash-flow-to firm-over-enterprise value yield (FCFF/EV) strategies. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.
Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market capitalization of common equity. Then three strategies evaluated are 1) Long Glamour, buying FCFF/EV-quintile 1 with the highest premium (lowest discount), 2) Long Value buying FCFF/EV-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value FCFF/EV-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$) and 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$) monthly returns.
Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$ and $\boldsymbol{r_{mo_{N43}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the MSCI Sweden Gross Total Return index, our value-weighted market proxy.
All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0.

			FCFF/EV Strategy							*MSCI Sweden*	*rf*
Variable	**Period**	***Size Tertile***	***Long Glamour*** (quintile 1)	***Long Value*** (quintile 5)			***Long Value*** (quintile 5) ***Short Glamour*** (quintile 1)				
CAR	Jul 2000-Jun 2010	1	-0.017	0.094			0.022			0.003	0.027
CR_maxDD			-0.706	-0.562			-0.487			-0.674	0.000
CAR	Jul 2000-Jun 2010	2	-0.033	0.136			0.116			0.003	0.027
CR_maxDD			-0.707	-0.502			-0.259			-0.674	0.000
CAR	Jul 2000-Jun 2010	3	-0.005	0.085			0.032			0.003	0.027
CR_maxDD			-0.744	-0.485			-0.503			-0.674	0.000
CAR	Jul 2005-Jun 2010	1	0.035	0.079			0.009			0.071	0.022
CR_maxDD			-0.617	-0.562			-0.434			-0.523	0.000
CAR	Jul 2005-Jun 2010	2	-0.025	0.063			0.060			0.071	0.022
CR_maxDD			-0.692	-0.502			-0.218			-0.523	0.000
CAR	Jul 2005-Jun 2010	3	0.074	0.092			-0.003			0.071	0.022
CR_maxDD			-0.549	-0.485			-0.211			-0.523	0.000
					H1 Tests H_0	*t-statistic*		***H2 Tests*** H_0	*t-statistic*		
ER_{mo}	Jul 2000-Jun 2010	1	0.002	0.007	$\leq ER_{MSCI_{mo}}$	1.38*	0.003	≤ 0	0.47	-0.004	
$\sigma[ER_{mo}]$			0.107	0.066			0.081			0.087	
$Sharpe$			0.02	0.11			0.04			-0.04	
$Sortino$			0.01	0.05			0.02			0.00	
ER_{mo}	Jul 2000-Jun 2010	2	-0.001	0.010	$\leq ER_{MSCI_{mo}}$	2.24**	0.009	≤ 0	1.59*	-0.004	
$\sigma[ER_{mo}]$			0.095	0.065			0.061			0.087	
$Sharpe$			-0.01	0.16			0.15			-0.04	
$Sortino$			0.00	0.08			0.07			0.00	
ER_{mo}	Jul 2000-Jun 2010	3	0.001	0.006	$\leq ER_{MSCI_{mo}}$	1.35*	0.002	≤ 0	0.42	-0.004	
$\sigma[ER_{mo}]$			0.090	0.052			0.063			0.087	
$Sharpe$			0.01	0.11			0.04			-0.04	
$Sortino$			0.01	0.06			0.02			0.00	
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	1	0.001	0.007	= 0	1.62	0.004	= 0	0.52		
$\beta_{\_mo\_MSCI}$			0.999	0.641	= 1	-5.53***	-0.353	= 1	-9.61***		
R^2			0.456	0.489			0.100				
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	2	-0.001	0.010	= 0	2.59**	0.009	= 0	1.69*		
$\beta_{\_mo\_MSCI}$			0.927	0.679	= 1	-5.23***	-0.242	= 1	-13.06***		
R^2			0.499	0.577			0.083				
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	3	0.001	0.005	= 0	1.98**	0.003	= 0	0.52		
$\beta_{\_mo\_MSCI}$			0.997	0.588	= 1	-7.57***	-0.404	= 1	-17.31***		
R^2			0.646	0.663			0.216				
r_{mo_W12}	Jul 2000-Jun 2010	1	-0.126	-0.092	$= r_{mo\_MSCI}$	3.22***	0.034	= 0	1.44	-0.137	0.003
r_{mo_N43}			-0.037	-0.011	$= r_{mo\_MSCI}$	2.62**	0.027	= 0	3.27***	-0.030	0.002
r_{mo_W12}	Jul 2000-Jun 2010	2	-0.129	-0.078	$= r_{mo\_MSCI}$	4.11***	0.051	= 0	2.34**	-0.137	0.003
r_{mo_N43}			-0.029	-0.014	$= r_{mo\_MSCI}$	2.51**	0.015	= 0	1.79*	-0.030	0.002
r_{mo_W12}	Jul 2000-Jun 2010	3	-0.131	-0.070	$= r_{mo\_MSCI}$	6.07***	0.061	= 0	3.08**	-0.137	0.003
r_{mo_N43}			-0.031	-0.013	$= r_{mo\_MSCI}$	3.44***	0.018	= 0	2.07**	-0.030	0.002

4.2.3 Part 3: Market Leverage-Valuation Ratio Portfolios

We now turn to market leverage tertile-valuation ratio quintile portfolio analysis. Unlike for size tertiles, the leverage tertile sub-sample distributions do not show considerably increasing valuation ratio quintile mean and median dispersion as we go from the lowest to the highest leverage tertile. However, compared to the lowest and medium leverage tertiles the highest leverage tertiles have considerably lower valuations in the extreme value quintile while valuations in the extreme glamour quintile are not heightened.

In unpublished results, the MV LEV-variable itself does not seem to have systematic within-leverage tertile variation for any of the valuation ratios quintiles. The median firm size is falling with increasing B/M-valuation for all leverage tertiles. Similar to the full sample findings, median firm sizes for all three yield-oriented ratios (E/P, EBITDA/EV and FCFF/EV) are considerably smaller in the extreme glamour and extreme value deciles compared to the three middle deciles.

Furthermore, for unpublished full leverage tertile-valuation ratio quantile distributions we observe that neither intra-leverage tertile ER_{mo} and $\sigma[ER_{mo}]$ nor intra-leverage tertile CAPM alphas and betas could consistently indicate improved risk-reward as we go from the glamour to value on the B/M distribution. For E/P we find that after controlling for leverage the risk-reward in terms of superior ER_{mo} and $\sigma[ER_{mo}]$ is robustly increasing in E/P. CAPM betas clearly support that going from glamour to value E/P quintile lowers market risk exposure, robust over leverage tertiles. CAPM alphas are generally insignificant and have unexpected signs and relative magnitudes over the intra-leverage-tertile E/P distributions, indicating that risk-adjusted return E/P value outperformance might not be leverage-robust. For EBITDA/EV we observe that the combined ER_{mo} and $\sigma[ER_{mo}]$ risk-reward seems to provide leverage-robust support of superior performance as we go from glamour to value. This is especially clear in that excess return volatility ($\sigma[ER_{mo}]$) is lowered. CAPM betas support leverage-robust decreased market risk as we go from glamour to value EBITDA/EV quintiles, while signs and magnitude of alpha estimates only support increasing risk-adjusted return for the highest leverage tertile. FCFF/EV, like EBITDA/EV, shows improved risk-return in terms of ER_{mo} and $\sigma[ER_{mo}]$ as we go from glamour to value. This improvement is consistent primarily because the excess return volatility is lowered. CAPM alpha estimates are of sign and magnitude supporting risk-adjusted return outperformance increasing in FCFF/EV, with significance for the lowest leverage tertile. CAPM betas clearly support decreasing market risk in FCFF/EV for lowest and highest leverage tertiles, while the medium leverage tertile is insignificant.

We move on to an extended strategy portfolio analysis for each valuation ratio. In Appendix Table 3.1. we find that B/M long-value and market-neutral strategies to not have leverage tertile-robust full and second half sample period outperformance either, in terms of CAR and/or maximum drawdowns. Based on ER_{mo} and $\sigma[ER_{mo}]$ the long-value strategy generates leverage-robust risk-return market outperformance while the market-neutral strategy does not. The CAPM regressions cannot support leverage-robust rejection of either H1 or H2. Long-value generates positive but insignificant alphas and inconclusive betas. The state-of-the-world analysis for leverage tertiles is inconclusive on B/M.

Appendix Table 3.2. summarizes leverage tertile-E/P quintile strategies. There is robust CAR market outperformance for long-value over both the full sample period and latter 5-year period while maximum drawdowns are below market for the full period but above market for the latter 5-year period, which we view as a cause for not rejecting H1. The market-neutral strategy is not leverage-robust in terms of CAR or drawdowns. In monthly *excess* returns the picture is similar; long-value comes in with clear leverage-robust market outperformance in both absolute ER_{mo} and on risk-adjusted Sharpe and Sortino ratios while market-neutral generate lower but still positive ER_{mo}, not significant from zero, at higher volatility than long-value and the market. The CAPM regressions provide support for leverage-robust rejection of H1 on basis of positive weakly (10 % level) to strongly (1 % level) significant leverage-tertile alphas and below unity betas for long-value portfolios. The leverage-tertile CAPM findings for the market-neutral strategy are similar to those of the size-tertiles; the market-neutral strategy generates positive but insignificant alphas over all leverage-tertiles while negative and strongly significant betas support H2 rejection. Finally, the state-of-the-world analysis shows that both long-value and market-neutral strategies generate significant size-robust market return outperformance in the adverse *MSCI Sweden* states. This warrants rejection of H1 and H2 on adverse state outperformance, just as for size tertile-E/P quintiles.

Continuing with EBITDA/EV, in Appendix Table 3.3, we notice that the long-value and market-neutral strategies outperform the market and the long-glamour strategy for the full sample period in CAR, but for the latter half 5-year sub-sample period market outperformance is not completely robust over all leverage-tertiles (although not far from). Both long-value and market-neutral strategies consistently have less maximum drawdown than long-glamour but not compared to the market over the full sample period (here market-neutral strategy is not robust) or the second half 5-year period (where long-value is not robust). Moving on to excess returns; there is clearly leverage-robust absolute and risk-adjusted market outperformance from the long-value strategy and to a lesser extent from the market-neutral strategy. The CAPM-evaluation supports H1 and H2 rejection in terms of sign and magnitude of alphas and we have strongly significant beta-coefficients of economically meaningful magnitude. For EBITDA/EV long-value all leverage-tertile alphas are significant. In state-of-the-world analysis the long-value and market-neutral strategies produce return outperformance of similar magnitude as E/P during adverse *MSCI Sweden* states.

Finally, in Appendix Table 3.4. we focus on the main differences between EBITDA/EV and FCFF/EV in leverage tertile–quintile strategy portfolios. The long-value FCFF/EV strategy performs similar to EBITDA/EV on CAR and maximum drawdown; with leverage-robust market outperformance for the full sample period. The market-neutral strategy yields lower CAR market outperformance, but at not as deep maximum drawdowns, over the full period. For all leverage tertiles both long-value and market-neutral strategies have lower excess return volatility ($\sigma[ER_{mo}]$) than the market. With ER_{mo} market outperformance being significant for the medium size tertile and weakly significant for the remaining two tertiles the long-value strategy can reject H1 in terms of absolute excess return outperformance robust over firm size. The market-neutral strategy receives ER_{mo} signs in line with H2-rejection but there is weak statistical significance for doing so in the lowest leverage-tertile only. The positive CAPM alphas are significant and leverage-robust for long-value. Also the sign and magnitude of the CAPM alphas support outperformance of our market-neutral strategy. CAPM betas are strongly significant for both long-value and market-neutral portfolios. The FCFF/EV state-of-the-world returns are similar to EBITDA/EV; there is clear leverage-robust long-value and market-neutral market outperformance in bad states.

4.3 Limitations of Results

On the main limitations of our findings it should be emphasized that we do not formally model the transaction costs involved in executing our simulated value strategies. The inability of professionally managed active investment funds to outperform their passive benchmark indices is evidence supporting the toll generated by such frictions; see for example Malkiel (2005). However, the passive type of value investing modeled in this paper with infrequent rebalancing would not necessarily suffer very much from transaction costs. Neither would they, compared to a passive investment in the market portfolio, require any meaningful additional investment in private information that would need to be compensated, a pre-condition for exploitable anomalies if one follows Grossman and Stiglitz's (1980) economic reasoning. Ball (1978) also support that executing the accounting valuation ratio type of passive portfolio strategies simulated in this paper would neither be associated with significant transaction or informational costs[13]. Intuitively, the sheer magnitude of our return outperformance estimates together with the fact that we only turnover the strategy portfolios once yearly would not add a heavy burden on the long-value strategy from direct trading costs on investors with enough capital to diversify in line with the strategies. The trading costs in terms of spreads will tend to increase in less liquid small capitalization stocks.

[13] Although Ball (1978) reaches the conclusion that "value" outperformance is more likely to be observed due to short-comings of CAPM to model the market portfolio characteristics than to be due to market inefficiency.

For institutional fund managers there is also arguably an execution problem in that such managers often face asymmetric utility from deviating from their benchmark; short-term return underperformance will most likely result in reduced compensation and in higher risks of loss of employment for the manager than the potential benefits of continuing to pursue a strategy that ex ante could be longer-term outperforming. And in open-ended funds the capital outflows associated with short-term underperformance are most likely to deter their managers from executing the original strategies planned. We argue that such agency and institutional constraints on active fund managers would not apply to a large extent if executing passive extreme quantile value portfolio strategies in line with what we have simulated and what was shown in the presented empirical background. If strictly executed, we find it likely that value portfolio outperformance versus the market and versus glamour portfolios could stay rather intact.

For our long-short market-neutral strategy there are however additional problems and restrictions regarding execution and additional trading costs that are less stable and more difficult to forecast. Our simulations of this strategy could be considered to have the highest practical feasibility for the largest market capitalization tertile sub-sample and being unlikely to be executable at all in the smallest tertile market capitalization sub-sample. This is due to constraints on the possibility to take a short position in smaller capitalization firms' stock. For example if attempting to short-sell stocks the availability and costs associated with borrowing shares might be more restrictive, and so might margin conditions offered. If doing the short-selling through equity derivatives, larger capitalization shares will in general most likely have better availability of instruments, liquidity and pricing.

The performance record for the large and medium capitalization size sub-samples can be considered the most reliable and exploitable in our study due to greater practical possibility for execution but also due to our experience that data quality for small capitalization firms was less reliable when extracting the sample.

V. Conclusion

The empirical results from our simulations provide clear indications that the value-quintiles of cash-flow oriented EBITDA/EV and FCFF/EV valuation ratios outperform the market and the glamour-quintiles in ex post absolute and risk-adjusted returns; rejecting Hypothesis 1 (H1) with robustness for size and leverage. Equity valuation yield ratio E/P was not robust over leverage-sub samples while the performance of the well-documented equity valuation metric B/M is downright poor in most aspects evaluated. On Hypothesis 2 (H2) our results again allow for size- and leverage-robust rejection for EBITDA/EV and FCFF/EV but not for E/P or B/M; cash-flows seem also to better capture the value-glamour spread.

We support previous literature on that B/M and E/P quantile strategies suffer from that their accounting numerators, EPS and BVPS, are less robust indicators of intrinsic firm value than the cash-flow oriented metrics EBITDA and FCFF. In the words of Lakonishok et al (1994, p. 8): "…although the returns to the B/M strategy are impressive, B/M is not a 'clean' variable uniquely associated with economically interpretable characteristics of the firms." We also find it plausible that the continuously changing accounting and regulatory environment makes EPS and BVPS less consistent indicators of a firm's equity value over time and that the arbitrary nature of accrual accounting decisions make these accounting metrics generally less reliable. A speculative alternative (but not mutually exclusive) explanation could be that the net debt/net cash position in the enterprise value (EV)-based firm valuation ratios has some predictive power of return mean reversal. Lower net debt (higher net cash position) as proportion of total EV might ceteris paribus support some of the 1-year reversal pattern seen in EBITDA/EV and FCFF/EV value portfolios, which was robust both before and after adjusting for market-based leverage (in the form of book value of assets over market capitalization of common equity).

In overall our results makes us conclude that potential explanations on the *causes* of value market anomalies that are based on irrationality seem to have some merit. Intuitively, systematic and persistent irrational human behavior would be a plausible explanation for the success of practical investment concepts based on buying hypothetically undervalued assets in expectation that the market has temporary overreacted and subsequently will be reversing its mistake. Among irrational investor behavior patterns, overreaction intuitively could explain value outperformance as investors tend to overshoot in pessimism more often in the lowest valued quantiles of the market while overconfidence or overoptimism would explain why the highest valued segments of the market over time tend to be unable to support even loftier future valuation levels. Practically, robust findings of superior risk-reward for value-investing strategies over the market could imply that investors are still under-exploiting such behavioral characteristics.

The strategies simulated in this thesis are by their nature crude simplifications of the investment style of real value-investors, the simulations cannot capture all the important case-by-case assumptions and adjustments made in fundamental securities analysis. Taking this into account and the fact that this study does not explicitly test ex post returns of real-life value-investors, our empirical findings still clearly indicate that investors in general will have a greater chance of long-term risk-return outperformance by overweighing their portfolios towards the market's value quintile on firm valuation ratios EBITDA/EV or FCFF/EV while possibly underweighting the glamour. As a suggestion for further research closer to fundamental analysis one could expand the simulation framework to incorporate composite valuation ratio rankings and/or fundamental indicators of bankruptcy risk, liquidity risk and/or operating performance.

VI. Appendices

Appendix 1: Sampling and Calculation Procedures

Appendix Table 1.1.
Sample Selection Variables and Methodology

The table headers represent the following: (1) "Variable" represents our notation for the variable. (2) "TR mnemonic" represents Thomson-Reuters (TR) mnemonic for each variable. (3) "Description" briefly summarizes the characteristics of the variable. (4) "Use" briefly describes how we employ the variable

Source of all data is Thomson-Reuters DataStream Advance version 4.0

(1) Variable	**(2) TR mnemonic**	**(3) Description**	**(4) Use**
TR mnemonic	MNEM	A unique identification code assigned by TR.	To assign each time-series to a unique firm/security.
Firm name	NAME	Name of the security or firm.	To assign each time-series to a unique firm/security.
Type of security	TYPE	Type of instrument.	To exclude non-common equity instruments.
Security price currency	PCUR	Currency of price series	To remove foreign stock exchange quotations.
Date inactive	W07012 /W07015	Date security turned inactive	To keep track when a security stopped trading actively.
P (adjusted security price)	P	Closing price adjusted for any sub-sequent capital actions	Calculation of market capitalization of common equity. Calculation of return metrics. Calculation of per-share based valuation ratios.
Nation code	WC06027	Usually corresponds to country of domicile.	Removal of non-domestic firms.
GICS	WC06010	GICS, General Industry Classification Standard	Removal of Financial industry firms.
Level 6 industry sub-sector	INDM /INDG	DataStream's level 6 industry classification on a sub-sector level	Removal of Financial industry firms.
Business description	WC06091 /WC06092	Description of firm operations	Removal of Financial industry firms. Firm industry reclassification.
NOSHC (consolidated number of shares)	NOSHC	Adjusted consolidated total number of shares in issue for a firm. Updated on new issues etc.	Calculation of market capitalization of common equity when consolidated firm level data is available.
NOSH (number of shares)	NOSH	Adjusted total number of shares in issue for a security. Updated on new share issues etc.	Calculation of market capitalization of common equity for a specific security. Controlling firm level consolidated total number of shares (NOSHC).

Employing variables from Appendix Table 1.1. above and manual checks we perform the following manipulation procedures to clean and filter the sample:

1) Removal of Duplicate Observations

We remove all overlapping accounts of the same entity based on MNEM and NAME.

2) Removal of Non-Common Equity Securities

In the TR country constituent lists we remove all securities whose TYPE is not equivalent to common equity, "EQ". We also manually remove share subscription units indicated by NAME phrase "unit" and convertible equity indicated by NAME phrase "kv" for the Swedish sample.

3) Removal of Non-Default Exchange Price Data

We remove observations whose ISO standard codes, EXMNEM, did not match "OME", default price data source for Sweden. We remove observations where PCUR, is not "SK", Swedish kronor (SEK).

4) Removal of Firms Listed as Inactive Before Start of Sample Period

We remove firms where the securities have been listed as inactive (W07012, W07015) prior to 2000-06-31; the first portfolio formation date. We as well check each firm against availability of monthly adjusted price, P, time series data availability from 2000-06-31, and onwards and remove observations missing price. In addition we remove firms that were non-trading in 2000-06-31, in Reuters indicated by the price observations staying constant throughout the whole remaining time series.

5) Removal of Inactive, Non-Trading and Non-Listed Firms

We remove observations where the nation code is not "572" for Sweden, but we do make few exceptions for foreign corporate structures or main listings (United States 6 instances, United Kingdom 4 instances, Canada 3 instances, Finland 3 instances, Luxembourg 3 instances, Switzerland 3 instances Bermuda 2 instances, Norway 2 instances, Denmark 1 instance and Russia 1 instance). We remove a number of firms listed as "Unquoted" equities on INDG, including fully privately held or state-owned firms.

6) Removal of Financials

Due to the financial, banking and insurance sectors' deviating economics and accounting conventions we remove all financials from our sample, following among others Fama and French (1992). To sort out Financials we first employ DataStream's level 6 sub-sector general industry classification codes, excluding "04 Banks/Savings & Loan", "05 Insurance" and "06 Other Financial". We continue by employing DataStream's level 6 industry classification on a sub-sector level, INDM (or INDG). We remove all level 6 sub-sectors corresponding to the ICB level 2 sector Financials. We manually screen NAME, short and long firm descriptions and remove additional firms we consider clearly belonging to Financials.

7) Industry Reclassification

In 11 instances we find firms we consider to be potentially misclassified on INDG and INDM and we instead reclassify them based on short and/or long firm descriptions.

8) Aggregation of Multiple Share Classes

For each yearly portfolio formation day, the last trading day of June, we need the aggregate number of shares. From the start of the sample, 2000-06-30, we employ NOSHC when provided and when NOSHC does not match NOSH for a multiple class company (indicated by NAME and/or WC11501). When NOSHC is not provided we for each year employ NOSH and manually aggregate the share classes for stocks with multiple classes. When data does not exist for non-traded share class of a multiple share class firm we manually look up the number of shares from the firm's financial reports; accessed through the firm web pages and/or through the Swedish Tax Agency (2012), Amadeus (Bureau van Dijk, 2012) and/or Retriever Business (2012) databases. When NOSHC matches NOSH we do the same manual report check-up and aggregation of NOSH. When NOSHC matched NOSH TR data errors were found to be more prevalent among small capitalization firms, firms not listed on main stock exchange (e.g. non-*Stockholmsbörsen*/non-*Nasdaq OMX Stockholm*) and for inactive ("DEAD") firm listings.

9) Removal of Non-Dominant Share Classes (When Multiple Traded Share Classes)

We for each year exclude from our sample the share class that represents the lowest proportion of the total amount of shares from our sample in firms with multiple traded share classes outstanding (indicated by NAME and/or WC11501). All valuation ratios are then calculated based on the remaining share class and each firm occurs only once per simulation period.

10) Calculation of Consolidated Market Capitalization

We will for the rest of this paper calculate market capitalization of common equity as consolidated market capitalization by aggregating the full number of shares from common share classes (Step 8 above) and multiplying these with the adjusted price, P, of the main share class.

11) Sample Minimum Market Capitalization Limit

We for each year limit the sample to "investable" companies based on market capitalization on portfolio selection day. We restrict our sample to firms that have a minimum common equity market capitalization corresponding to at least 10 million USD. This limitation makes the simulations more realistic and decrease exposure to information quality issues such as missing data coverage and data errors; errors which are more prevalent among firms with the lowest market capitalization.

12) Missing Reverse Share Split Adjustment

We screen our market capitalization metric for semiannual changes in excess of +300% and -67%. For such observations we manually inspect both NOSH/NOSHC and P data. If a major share count change is registered in one single month without a large change in P we manually consult the firm's financial reports. In 72 instances we find and adjust for one or two reverse splits deemed not accounted for.

13) Incorrect Price Observations Adjustment

If a major total return change[14] of +100 % or more or -50% or less is registered in one single month without a major share count change we manually check P and DIV series. In 9 instances the P data is considered unadjusted or erroneous, taking into account the number of shares information and firm report information available in Swedish Tax Agency (2012) and we change the price data source from TR to SIX-Telekurs. In addition we manually change the DIV series for 2 firms based on firm reports.

In the valuation ratio and return metric calculations described in Sections 3.3 and Section 3.4, respectively, we employ the following TR variables of Appendix Table 1.2.:

Appendix Table 1.2.
Valuation Ratio and Risk-Return Evaluation: Variables

(1) "Variable" represents our notation for the variable, (2) "TR mnemonic" represents Thomson-Reuters mnemonic for each variable, (3) "Frequency" represents the data frequency employed for each variable, (4) "Description" briefly summarizes the characteristics of the variable and (5) "Use" briefly describes how we employ the variable

Source of all data is Thomson-Reuters DataStream Advance version 4.0

(1) Variable	(2) TR mnemonic	(3) Frequency	(4) Description	(5) Use
DIV (adjusted dividend rate)	DDE	Monthly	Adjusted dividend rate, based on ex dividend date.	Calculation of total return metrics.
BVPS (book value per share)	WC05476	Yearly	Book value of common equity per shares outstanding (BVPS)	Calculation of the B/M ratio.
EPS (adjusted earnings per share)	WC05201	Yearly	Net earnings per share (EPS)	Calculation of the E/P ratio.
ND (net debt)	WC18199	Yearly	Total debt minus cash and short-term investments.	Calculation of enterprise value (EV) and the EBITDA/EV and FCFF/EV ratios
PREF (Preferred stock)	WC03451	Yearly	Preference stock which do not participate with common shares in profits of firm.	Calculation of enterprise value (EV) and the EBITDA/EV and FCFF/EV ratios
MINORITY (minority interest)	WC03426	Yearly	Proportion of net worth of a subsidiary no owned by controlling company.	Calculation of enterprise value (EV) and the EBITDA/EV and FCFF/EV ratios
EBITDA	WC18198	Yearly	Earnings before Interest, Taxes, Depreciation and Amortization.	Calculation of the EBITDA/EV ratio.
FFO	DWFC	Yearly	Funds From Operations.	Calculation of the FCFF/EV ratio.
FCAPEX (fixed CAPEX)	WC04601	Yearly	Fixed asset capital expenditures	Calculation of the FCFF/EV ratio.

Before performing valuation ratio calculations we update two key end-of-year variables that are extracted in *per share* amounts. While we on portfolio formation day in end-of-June will extract all other annual accounting information based on year-end values we do assume that the investors can receive up-to-date

[14] The total return computation employed is presented in Section 3.4.

information about changes in adjusted number of common shares outstanding for firms. Thus we multiply common equity per share ("BVPS") and net earnings per share ("EPS") by a factor $\Delta NOSHC = [NOSHC_{year-end}/NOSHC_{end-of-June}]$ where $NOSHC$ represents adjusted number of shares outstanding.

We calculate B/M by dividing the company's last full fiscal year 12 month BVPS with the portfolio formation day adjusted price, P, and multiplying with the number of shares adjustment factor $\Delta NOSH$. The numerator BVPS is based on combined multiple share classes, adjusted for capital actions, and includes preference stock when these participate in the firm's profits.

E/P is calculated by dividing EPS by the adjusted price, P, and multiplying by $\Delta NOSHC$. Based on the TR data the EPS is based on the last full fiscal year 12-month net profit/loss, adjusted for capital actions and including preferred shares in the share base only when these participate in the profits of the company. TR's EPS is based on the combined fully diluted year-end outstanding number of shares and when several classes of common shares exist EPS reflects the main share class. For Sweden the TR EPS is generally reported before special adjustments/extraordinary items but after minority interest and preferred dividends (except when preferred shares are included in share base). For Sweden the TR EPS is also before allocations to untaxed reserves and after an assumed tax rate corresponding to the Swedish corporate tax rate in the cases the actual tax for earnings per share is not reported by the company.

We then move from equity valuation to firm valuation ratios, using enterprise value ("EV") in the denominator instead of market value of common equity. We calculate EV by adding the latest known full year net debt ("ND"), preferred stock capitalization ("PREF") and minority interest ("MINORITY") to the market capitalization of common equity on portfolio formation date. PREF are preferred stocks that do not participate with common shares in the profits of the company, stated at latest book value, and MINORITY is the portion of net worth of subsidiaries that is not owned by the controlling consolidated company. As described in Section 3.1. we calculate the consolidated market capitalization on portfolio formation day by multiplying $NOSHC$ with the portfolio formation day main share class adjusted price, P.

With EBITDA/EV the TR data for EBITDA represents earnings before interest expenses, interest income, income taxes, depreciation and amortization. And for FCFF/EV the free cash-flow to firm, FCFF, is calculated by us as year-end net cash-flow from operating activities ("DWFC") minus fixed asset capital expenditures ("FCAPEX"). For EBITDA/EV and FCFF/EV we generate negative yields when EV is positive and EBITDA or FCFF is negative, but also when a firm is trading at negative EV (occurs when firm net cash position exceeds the market capitalization of equity) but the EBITDA or FCFF is negative.

The rare instances when EBITDA or FCFF is positive and the firm's shares are offered at negative EV generate positive EBITDA/EV or FCFF/EV, respectively.

Appendix 2: Individual Firm Sample Statistics

Appendix Table 2.1.
Cross-Sectional Monthly Returns and Annual BAH-Returns for Individual Stocks

In this table we present the monthly and year-by-year and distributions for the buy-and-hold-returns (BAH-returns) for the full Swedish sample, covering the 10-year period from end-of-June 2000 to end-of-June 2010.

Year-by-year in end-of-June the sample's firm constituents are filtered out based on primarily the following criteria: 1) An end-of-June active trading price is available, 2) an end-of-June 10 USD million minimum equity common market capitalization is met, 3) firms classified as belonging to the *Financials* ICB level 2 sector are removed and 4) all yearly accounting data needed to calculate at least one of the four valuation ratios considered in this study (B/M, E/P, EBITDA/EV and/or FCFF/EV) were available as of each preceding year end (i.e. end-of-December annual accounting data was available on each end-of-June portfolio formation date).

The variables described are: r_mo = monthly total gross buy-and-hold (BAH) return, not reinvesting dividends nor reinvesting when stocks quit trading. r_yr = end-of-June to end-of-June 1-year total gross buy-and-hold (BAH) return, not reinvesting dividends nor reinvesting sale/liquidation proceeds received when stocks quit trading.

The statistics we present are as follows: $Mean$ = period mean. $Median$ = period median. Min = period minimum. Max = period maximum. σ = standard deviation. # = number of observations for variable in period.

All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

		Period											
Variable	**Statistic**	**Month**	**Year 2000 /2001**	**2001 /2002**	**2002 /2003**	**2003 /2004**	**2004 /2005**	**2005 /2006**	**2006 /2007**	**2007 /2008**	**2008 /2009**	**2009 /2010**	**Full Sample**
	$Mean$	July	0.008	-0.073	-0.078	0.066	-0.041	0.039	-0.021	-0.029	-0.009	0.028	-0.011
	#		229	207	195	190	221	232	273	317	316	273	2453
	$Mean$	Aug.	0.060	-0.087	-0.062	0.074	-0.024	0.041	0.034	-0.050	0.006	0.058	0.005
	#		229	207	195	190	221	231	270	316	315	271	2445
	$Mean$	Sept.	-0.034	-0.144	-0.184	0.022	0.060	0.065	0.045	0.000	-0.140	0.058	-0.023
	#		228	203	193	189	220	231	268	316	314	271	2433
	$Mean$	Oct.	-0.084	0.087	0.162	0.078	-0.003	-0.030	-0.001	-0.018	-0.188	0.012	-0.010
	#		227	199	193	189	220	231	267	315	310	271	2422
	$Mean$	Nov.	-0.071	0.176	0.150	0.051	0.074	0.049	0.016	-0.093	-0.064	0.010	0.018
	#		225	197	193	188	219	231	263	315	308	270	2409
	$Mean$	Dec.	-0.050	0.008	-0.111	0.022	0.032	0.082	0.085	-0.042	-0.069	0.014	-0.004
	#		224	195	193	188	218	231	263	314	306	270	2402
r_mo	$Mean$	Jan.	0.133	-0.014	-0.030	0.124	0.029	0.029	0.044	-0.057	0.121	0.068	0.044
	#		222	195	193	188	219	229	260	313	305	270	2394
	$Mean$	Feb.	-0.118	-0.004	-0.029	0.027	0.062	0.038	-0.028	0.047	-0.007	-0.014	-0.002
	#		221	194	193	187	219	227	259	310	303	270	2383
	$Mean$	March	-0.082	0.041	-0.046	-0.029	0.036	0.062	0.053	-0.021	0.037	0.085	0.016
	#		220	191	193	186	218	227	258	308	301	270	2372
	$Mean$	April	0.049	-0.070	0.094	0.006	-0.029	0.014	0.040	0.013	0.230	0.003	0.041
	#		218	190	193	186	217	227	258	307	300	269	2365
	$Mean$	May	0.037	-0.041	0.060	-0.036	0.032	-0.088	0.005	0.019	0.103	-0.078	0.004
	#		217	190	191	184	216	227	256	305	299	269	2354
	$Mean$	June	-0.109	-0.088	0.075	0.013	0.050	-0.011	-0.026	-0.121	-0.027	-0.032	-0.032
	#		217	189	187	184	215	225	255	303	298	269	2342
	$Mean$		-0.200	-0.155	-0.158	0.524	0.284	0.461	0.267	-0.310	-0.204	0.351	0.068
	$Median$		-0.145	-0.151	-0.155	0.401	0.204	0.362	0.175	-0.348	-0.234	0.278	0.001
	Min		-0.984	-0.954	-0.930	-0.700	-0.860	-0.465	-0.742	-0.910	-0.928	-0.788	-0.984
r_yr	Max		2.615	0.983	1.908	2.829	3.991	4.849	3.433	0.614	2.418	4.346	4.849
	σ		0.638	0.377	0.280	0.536	0.632	0.529	0.578	0.372	0.410	0.511	0.578
	#		229	207	195	190	221	232	273	317	316	273	2453

Appendix Table 2.2. (Text)
Cross-Sectional Yearly Characteristics for Individual Stocks

In this table we show the year-by-year full Swedish sample cross-sectional distributions for key firm characteristics, covering the 10-year period from end-of-June 2000 to end-of-June 2010. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD. The variables described are:

(1) $SIZE$ = end-of-June market capitalization of common equity in SEK million.
(2) $BV\ LEV$ = ratio of accounting leverage, calculated by $\frac{year-end\ book\ value\ of\ assets}{year-end\ book\ value\ of\ common\ equity}$.
(3) $MV\ LEV$ = ratio of market leverage, calculated by $\frac{year-end\ book\ value\ of\ assets}{end-of-June\ market\ capitalization\ of\ common\ equity}$.
(4) B/M = book-to-market ratio, calculated by $\frac{year-end\ book\ value\ of\ common\ equity}{end-of-June\ market\ price\ of\ share}$.
(5) E/P = earnings-to-price yield, calculated by $\frac{year-end\ Earnings\ Per\ Share\ (EPS)}{end-of-June\ market\ price\ of\ share}$.
(6) $EBITDA/EV$ = EBITDA-to-Enterprise-Value yield, calculated by $\frac{year-end\ Earnings\ Before\ Interest, Taxes, Depreciation\ and\ Amortization}{end-of-June\ Enterprise\ Value\ (EV)}$ (7) $FCFF/EV$ = Free-Cash-Flow-to-Enterprise-Value yield, calculated by $\frac{year-end\ Free\ Cash-Flow\ to\ Firm}{end-of-June\ Enterprise\ Value\ (EV)}$.

The statistics presented are as follows: $Mean$ = period mean. Median = period median. Min = period minimum. Max = period maximum. # = number of observations for variable in period.

All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Variable	Statistic	Year 2000 /2001	2001 /2002	2002 /2003	2003 /2004	2004 /2005	2005 /2006	2006 /2007	2007 /2008	2008 /2009	2009 /2010	Full Sample
(1) ***SIZE***	*Mean*	14178	13891	10103	20349	18167	17349	16257	20102	13459	13835	15944
	Median	942	896	690	514	664	736	871	959	734	767	794
	Min	89	114	98	87	78	77	76	70	61	80	61
	Max	992644	885178	666710	2170979	1964863	1606034	1245656	1228196	700198	784452	2170979
	#	229	207	195	190	221	232	273	317	316	273	2453
(2) ***BV LEV***	*Mean*	2.29	2.39	2.42	1.60	2.29	2.32	2.29	2.43	2.53	2.57	2.34
	Median	2.14	1.99	2.14	2.16	2.12	1.96	1.93	2.11	2.05	2.10	2.00
	Min	-26.21	-6.27	-9.79	-176.13	-17.82	0.00	-7.00	-4.90	-0.52	-9.12	-176.13
	Max	19.82	12.88	15.79	28.62	14.65	12.57	11.19	21.55	22.36	16.53	28.62
	#	229	207	195	190	221	232	273	317	316	273	2453
(3) ***MV LEV***	*Mean*	1.39	2.25	2.52	2.93	1.82	1.31	1.12	0.80	1.16	1.35	1.56
	Median	0.40	0.81	0.99	1.13	0.61	0.62	0.50	0.39	0.55	0.60	0.59
	Min	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Max	25.35	98.33	89.39	135.30	94.97	76.26	68.03	28.65	32.59	23.23	135.30
	#	226	204	194	188	221	231	272	315	315	273	2439
(4) $\boldsymbol{B/M}$	*Mean*	0.47	0.98	0.85	0.76	0.44	0.54	0.38	0.38	0.61	1.01	0.63
	Median	0.23	0.46	0.52	0.54	0.32	0.29	0.26	0.24	0.37	0.46	0.35
	Min	-0.39	-0.04	-1.32	-1.55	-0.06	0.00	-17.01	-0.12	-1.22	-0.51	-17.01
	Max	6.18	79.30	24.97	12.30	3.38	19.57	17.63	8.53	16.90	48.49	79.30
	#	219	203	194	188	220	231	265	305	304	270	2399
(5) $\boldsymbol{E/P}$	*Mean*	0.00	0.03	-0.22	-0.34	-0.04	0.00	0.00	-0.03	-0.07	-0.10	-0.068
	Median	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.06	0.05	0.032
	Min	-1.74	-5.93	-11.00	-36.72	-0.80	-1.13	-2.25	-6.19	-11.56	-13.52	-36.72
	Max	0.49	21.13	0.42	0.93	0.24	1.58	1.83	2.06	1.32	2.92	21.13
	#	220	203	194	188	221	230	271	315	311	273	2426
(6) ***EBITDA /EV***	*Mean*	0.07	-0.016	-0.81	0.05	0.06	0.09	0.03	0.02	0.14	0.03	-0.014
	Median	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.023
	Min	-0.33	-8.11	-154.91	-6.12	-0.77	-5.15	-1.86	-1.03	-2.14	-3.17	-154.91
	Max	1.07	1.09	1.12	4.17	3.64	14.27	0.78	0.64	30.90	0.62	30.90
	#	219	203	190	188	218	230	269	308	308	264	2397
(7) ***FCFF /EV***	*Mean*	-0.01	-0.32	-0.17	-0.09	0.01	0.01	-0.04	-0.00	0.04	-0.01	-0.047
	Median	-0.00	-0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.001
	Min	-0.37	-55.04	-22.11	-8.73	-1.67	-4.67	-12.75	-0.98	-1.97	-2.39	-55.04
	Max	0.62	0.53	1.03	1.01	3.03	13.28	0.68	3.08	15.53	0.81	15.53
	#	226	207	195	190	220	232	272	315	315	273	2445

Appendix Table 2.3.
Yearly Cross-Sectional Variable Correlations for Individual Stocks

Table shows yearly average pair-wise correlation between pairs of variables for all individual stocks in Swedish sample, covering the period June 30, 2000 to June 30, 2010 and a total of 2,453 firm years. The Swedish firms included for each year were listed on Nasdaq-OMX Nordic (formerly Stockholmsbörsen), Nasdaq-OMX First North, NGM (formerly SBI) and Aktietorget. Year-by-year in end-of-June the sample's firm constituents are filtered out based on primarily the following criteria: 1) An end-of-June active trading price is available, 2) an end-of-June 10 USD million minimum equity common market capitalization is met, 3) firms classified as belonging to the *Financials* ICB level 2 sector are removed and 4) all yearly accounting data needed to calculate at least one of the four valuation ratios considered in this study (B/M, E/P, EBITDA/EV and/or FCFF/EV) were available as of each preceding year end (i.e. end-of-December annual accounting data was available on each end-of-June portfolio formation date). The variables shown are as follows:

(1) r_{yr} = one year end-of-June to end-of-June buy-and-hold gross total return, not reinvesting dividends nor reinvesting when stocks quit trading.
(2) $SIZE$ = end-of-June market capitalization of common equity in SEK million.
(3) $BV\ LEV$ = ratio of accounting leverage = $\frac{year-end\ book\ value\ of\ assets}{year-end\ book\ value\ of\ common\ equity}$.
(4) $MV\ LEV$ = ratio of market leverage = $\frac{year-end\ book\ value\ of\ assets}{end-of-June\ market\ capitalization\ of\ common\ equity}$.
(5) B/M = book-to-market ratio = $\frac{year-end\ book\ value\ of\ common\ equity\ per\ share}{end-of-June\ market\ price\ of\ share}$.
(6) E/P = earnings-to-price yield = $\frac{year-end\ Earnings\ Per\ Share\ (EPS)}{end-of-June\ market\ price\ of\ share}$.
(7) $EBITDA/EV$ = EBITDA-to-Enterprise-Value yield = $\frac{year-end\ Earnings\ Before\ Interest, Taxes, Deprectiation\ and\ Amortization}{end-of-June\ Enterprise\ Value\ (EV)}$
(8) $FCFF/EV$ = Free-Cash-Flow-to-Enterprise-Value yield = $\frac{year-end\ Free\ Cash-Flow\ to\ Firm}{end-of-June\ Enterprise\ Value\ (EV)}$.
(9) # = yearly average number of observations.

All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Variable	(1) r_yr	(2) $SIZE$	(3) $BV\ LEV$	(4) $MV\ LEV$	(5) B/M	(6) E/P	(7) $EBITDA/EV$	(8) $FCFF/EV$
r_yr	1.00							
#	245							
$SIZE$	-0.03	1.00						
#	245	245						
$BV\ LEV$	0.04	0.01	1.00					
#	245	245	245					
$MV\ LEV$	0.05	-0.04	0.10	1.00				
#	244	244	244	244				
B/M	0.03	-0.04	0.07	0.13	1.00			
#	240	240	240	240	240			
E/P	0.04	0.03	0.07	-0.02	-0.12	1.00		
#	243	243	243	243	239	243		
$EBITDA/EV$	0.04	0.00	0.01	0.04	0.00	0.19	1.00	
#	240	240	240	240	236	239	240	
$FCFF/EV$	-0.01	0.02	0.01	-0.01	-0.04	0.12	0.57	1.00
#	245	245	245	243	239	242	239	245

Appendix Table 2.3. above shows that yearly BAH gross total returns have weakly positive correlation with MV LEV and BV LEV, supportive of a higher risk premium for increased leverage. BAH total gross returns have weak positive correlations with all valuation ratios except FCFF/EV. We also find a weak negative size effect in yearly BAH gross total returns. The highest positive average correlation estimate, of +0.57, is recorded between the firm valuation ratios EBITDA/EV and FCFF/EV, not a surprising finding since both ratios have a cash-flow-oriented numerator and share the same denominator. The correlation between B/M and MV LEV should be noted at +0.13. Here the variables are economically linked through sharing the same denominator and both can be seen as expressing how much leverage the accounting balance sheet numerator provides at the current market valuation of firm equity. In the special case of an equity-only financed firm, then B/M will equal MV LEV[15]. In addition, with both being ratios of equivalent adjusted share price denominator, the -0.12 correlation between B/M and E/P indicate that firms priced at a high earnings yield will trade at a lower discount (higher premium) to book-value of equity. This indicates that a B/M value stock is unlikely to simultaneously be an E/P value stock[16].

Our final examination of the individual firm sample data is an explanatory multi-factor regression with the individual firm year returns as dependent variable. The methodology primarily follows Lakonishok et al (1994), but also Fama and French (1992) who both obtain their model from Fama and MacBeth (1973). Our model output is summarized in Appendix Table 2.4. below. We sum up the estimation procedure as follows: We first generate natural logarithm variables for market capitalization (ln$[SIZE]$) and our two leverage ratios ($ln\,[BV\ LEV]$ and ln$[MV\ LEV]$). We separate out negative observations for the four valuation ratios as dummy variables; DB/M, DE/P, $DEBITDA/EV$ and $DFCFF/EV$. Remaining positive observations for the valuation variables, $B/M+$, $E/P+$, $EBITDA/EV+$ and $FCFF/EV+$ are winsorized such that the 0.5 % smallest and 0.5 % largest observed values are set to equal the next smallest/largest observations. Fama and French (1992) found suppression of extreme outliers to be necessary.

Then in a first stage of regressions we run 10 yearly cross-sectional regressions for each set of regressors (each row in Appendix Table 2.4. represents one model). From these yearly regressions we extract the full sample average OLS coefficient estimates. Then in a second stage we test the full sample slope coefficient averages on their year-by-year time-series of yearly slope coefficients, also from the first stage. The OLS regressions employs White's heteroskedasticity-corrected standard error estimates since Breusch-Pagan heteroskedasticity tests on the BAH-return OLS regression residuals indicate non-constant variance.

In a stand-alone regression, firm size (ln[SIZE]) generates a weakly significant (at the 10 % level) coefficient estimate of negative sign, as one would expect from presented previous evidence of a size effect. Firm size does however turn out insignificant for all combined regressions except for its combinations with earnings yield (E/P) together either of the two firm valuation ratios, EBITDA/EV or

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[15] A simplified example: If $Book\ Value\ of\ Liabilities$ is set to 0 (zero) then the identity $Book\ Value\ of\ Assets\ = [Book\ Value\ of\ Equity\ +\ Book\ Value\ of\ Liabilites]$ shows that

$MV\ LEV = \frac{[Book\ Value\ of\ Assets]}{[Market\ Value\ of\ Equity]} = \frac{[Book\ Value\ of\ Equity+0]}{[Market\ Value\ of\ Equity]} = \frac{B}{M}$.

[16] Dividing E/P by B/M note that $\frac{E/P}{B/M} = \frac{EPS/P}{BVPS/P} = \frac{Net\ Earnings}{Book\ –Value-of-Common-Equity}\ =\ Return\ on\ Equity\ (ROE)$. Intuitively, with a negative correlation between E/P and B/M this *implied* ROE offered in the market is such that a high earnings yield $\Delta E/P\uparrow$ is associated with a lower book-to-market discount (a higher premium), $\Delta B/M\downarrow$, ceteris paribus. In the opposite case of positive correlation investors could over time be offered higher *implied* ROE in stocks that have glamour valuations and lower *implied* ROE in value stocks, ceteris paribus.

FCFF/EV, where it is significantly negative. This result makes us curious whether returns associated with E/P, EBITDA/EV and FCFF/EV strategies have different robustness in firm size sub-samples.

Table 2.4.
Explanatory Regression of Annual Returns on Characteristic Variables for All Individual Firms

Table summarizes the results of a cross-sectional OLS regression of annual end-of-June to end-of-June 1-year buy-and-hold (BAH) gross total returns on a number of sets of different explanatory regressors. Procedure follows primarily Lakonishok et al (1994, pp. 1557-1559) but also Fama and French (1992, pp. 438-439), developed from Fama and MacBeth (1973). In a first stage we for each model run one cross-sectional OLS regression for each year, employing White's heteroskedasticity-corrected standard error. Then in a second stage we perform a t-test of whether the full sample 10-year average OLS coefficients of the first stage can explain the times series year-by-year variation in the average OLS coefficients over these 10 years. Each row section summarizes a separate set of explanatory regressors. The first value of each such row section represents the mean annual OLS coefficient estimates from the first stage cross-sectional regressions and the following value in brackets are the t-statistics from second stage time-series regressions. The reported t-statistics are estimated using White's heteroskedasticity-corrected standard error estimates. ***, ** and * denotes significance at 1 %, 5 % and 10 % levels, respectively, of a 2-sided t-test. Except the first column, which represents the OLS intercept, and the last column, where the mean annual R^2 of the second stage time series regressions are presented, each column header represents a regressor, as follows:

(1) $\boldsymbol{ln}[\boldsymbol{SIZE}]$ is the natural logarithm of the end-of-June common equity market capitalization, in SEK million.
(2) $\boldsymbol{ln}[\boldsymbol{BV\ LEV}]$ is the natural logarithm of preceding year-end accounting leverage = $\frac{year-end\ book\ value\ of\ assets}{year-end\ book\ value\ of\ common\ equity}$.
(3) $\boldsymbol{ln}[\boldsymbol{MV\ LEV}]$ is natural logarithm of year-end market leverage = $\frac{year-end\ book\ value\ of\ assets}{end-of-June\ market\ value\ of\ common\ equity}$.
(4) $\boldsymbol{B/M+}$ are positive observations for the year-end book-to-market ratio = $\frac{year-end\ book\ value\ of\ common\ equity}{end-of-June\ market\ price\ of\ share}$.
(5) $\boldsymbol{DB/M}$ is a dummy variable, set equal to one for negative book-to-market ratio observations.
(6) $\boldsymbol{E/P+}$ are positive observations for the earnings-to-price = $\frac{year-end\ Earnings\ Per\ Share\ (EPS)}{end-of-June\ market\ price\ of\ share}$.
(7) $\boldsymbol{DE/P\ M}$ is a dummy variable, set equal to one for negative earnings-to-price observations.
(8) $\boldsymbol{EBITDA/EV+}$ are positive observations for EBITDA-to-Enterprise Value = $\frac{year-end\ Earnings\ Before\ Interest,Taxes,Depreciation\ and\ Amortization}{end-of-June\ Enterprise\ Value\ (EV)}$.
(9) $\boldsymbol{DEBITDA/EV}$ is a dummy variable, set equal to one for negative EBITDA-to-Enterprise Value observations.
(10) $\boldsymbol{FCFF/EV+}$ are positive observations for the Free-Cash-Flow-to-Enterprise Value = $\frac{year-end\ Free\ Cash-Flow\ to\ Firm}{end-of-June\ Enterprise\ Value\ (EV)}$.
(11) $\boldsymbol{DFCFF/EV}$ is a dummy variable, set equal to one for negative FCFF-to-Enterprise Value observations.
Regressors $\boldsymbol{B/M+}$, $\boldsymbol{E/P+}$, $\boldsymbol{EBITDA/EV+}$ and $\boldsymbol{FCFF/EV+}$ are winsorized in the 0.5 % extreme tails of the distributions such that the 0.5 % smallest and 0.5 % largest observations are set to equal the next smallest/largest observation.

All metrics are calculated using Swedish kronor (SEK) inputs. The cross-sections constitute our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2.453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization of less than 10 million USD.
Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

OLS Intercept	(1) $ln[SIZE]$	(2) $ln[BV\ LEV]$	(3) $ln[MV\ LEV]$	(4) $B/M+$	(5) DB/M	(6) $E/P+$	(7) DE/P	(8) $EBITDA/EV+$	(9) $DEBITDA/EV$	(10) $FCFF/EV+$	(11) $DFCFF/EV$	R^2
0.197 (1.29)	-0.016 (-1.91*)											0.010
0.062 (0.57)		0.033 (1.12)										0.007
0.114 (1.14)			0.041 (3.74***)									0.033
0.158 (1.01)	-0.007 (-0.68)	-0.000 (-0.01)	0.038 (3.19**)									0.047
0.084 (0.83)				0. 008 (0.29)	-0.035 (-0.11)							0.037
0.183 (1.14)	-0.008 (-0.84)		0.040 (3.80***)	-0.025 (-1.08)	-0.021 (-0.07)							0.073
0.108 (1.09)						0.088 (0.32)	-0.077 (-1.83)					0.036
0.100 (1.04)								0.093 (1.23)	-0.099 (-2.26**)			0.033
0.107 (1.15)										0.117 (1.44)	-0.042 (-1.59)	0.014
0.249 (1.68)	-0.015 (-1.80)		0.034 (3.03**)			-0.138 (-0.54)	-0.093 (-2.58**)					0.067
0.221 (1.48)	-0.014 (-1.55)		0.031 (2.67**)					0.0138 (0.17)	-0.097 (-3.13**)			0.066
0.212 (1.46)	-0.010 (-1.14)		0.039 (3.33***)							-0.031 (-0.40)	-0.049 (-2.10*)	0.055
0.271 (1.76)	-0.022 (-2.74**)					0.032 (0.12)	-0.035 (-0.71)	0.012 (0.15)	-0.098 (-2.86**)			0.057
0.284 (1.88*)	-0.022 (-2.91**)					0.028 (0.10)	-0.094 (-2.32**)			0.022 (0.27)	-0.022 (-1.13)	0.050

Concerning the leverage variables we note that on a stand-alone basis ln[MV LEV] has a highly significant (at the 1 % level) positive coefficient for explaining variation in individual annual returns while ln[BV LEV] turns out insignificant. We then run the two leverage ratios together and combine with ln[SIZE] and ln[MV LEV] is still found significantly positive while ln[BV LEV] and ln[SIZE] are insignificant. For this test on monthly average returns Fama & French (1992, p. 439) found ln[MV LEV] to be significantly positive while ln[BV LEV] was significantly negative, with opposite sign coefficients in the same order of absolute magnitude. Our limited sample does not support this finding and our inclusion of negative book value of equity observations in book-to-market calculations complicates further analysis of ln[BV LEV] against our negative book-to-market dummy (DB/M). We drop accounting leverage and will exclusively employ market leverage (MV LEV) as our leverage control variable.

For B/M neither positive values (B/M+) or our negative value dummy (DB/M) can significantly explain our yearly average returns[17], neither on a stand-alone basis or combined with ln[MV LEV] and ln[SIZE]. On stand-alone basis E/P, EBITDA/EV and FCFF/EV all have expected coefficient signs; positive for increasing positive yield values and negative for the negative yield dummy variables. In terms of statistical significance only the negative EBITDA/EV dummy was significant in stand-alone regressions. Combined with ln[SIZE]and ln[MV LEV] all negative yield dummies receive significant negative coefficients. This implies previous year's loss-making/negative cash-flow firms are associated with significantly lower subsequent July to June 1-year returns. Thus loss-making/negative cash-flow glamour firms[18] will generate poor 1-year returns.

As shown by the mean annual R^2 of the models above, the average extent to which the return variability of annual cross-sections of *individual* securities can be explained by these models ranges from non-existent to poor over the full 10-year sample period. For all four valuation ratios R^2 increases by controlling for firm size and market leverage.

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[17] We note that Fama & French's (1992) highly significant positive book-to-market coefficient was obtained employing 1) a considerably larger panel of firms and longer time span, 2) monthly return regressions instead of yearly and 3) log-transforming the book-to-market variable. Our choice of including negative book value of equity firms prohibits log-transformation. Lakonishok et al (1994) who like this paper employed yearly returns and did not log-transform had weaker significance for their positive stand-alone B/M coefficients than Fama & French, and low to insignificant t-statistics for B/M in combination with other regressors.

[18] As we will see in portfolio evaluations in some years all glamour firm are loss-making/have negative cash-flows.

Appendix 3: Additional Valuation Portfolio Sample Statistics and Results

Appendix Table 3.1.
Risk-Return of B/M Portfolio Strategy by Market Leverage Sub-Sample

Table summarizes risk-return performance of book value of common equity-to-market value of capitalization (B/M) strategies in leverage tertile sub-samples. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization of less than 10 million USD. Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market leverage (MV LEV). $MV\ LEV$ = ratio of market leverage = $\frac{year-end\ book\ value\ of\ assets\ in\ SEK\ million}{end-of-June\ market\ capitalization\ of\ common\ equity\ in\ SEK\ million}$. Then three strategies evaluated are 1) Long Glamour, buying B/M-quintile 1 with the highest premium (lowest discount), 2) Long Value buying B/M-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value B/M-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first two sections represent the full sample period and latter half sub-sample period cumulative annual gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. We present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$) and 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$) monthly returns. Our first Hypothesis (H1) is that Value returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value returns should not deviate positively from Glamour returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$ and $\boldsymbol{r_{mo_{N43}}}$The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.
All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0

			B/M Strategy								
Variable	**Period**	***MV LEV Tertile***	***Long Glamour*** (quintile 1)	***Long Value*** (quintile 5)			***Long Value*** (quintile 5) ***Short Glamour*** (quintile 1)			***MSCI Sweden***	***rf***
CAR	Jul 2000-Jun 2010	1	-0.117	0.026			0.099			0.003	0.027
CR_maxDD			-0.873	-0.566			-0.348			-0.674	0.000
CAR	Jul 2000-Jun 2010	2	0.025	0.071			0.041			0.003	0.027
CR_maxDD			-0.747	-0.371			-0.543			-0.674	0.000
CAR	Jul 2000-Jun 2010	3	0.076	0.090			-0.004			0.003	0.027
CR_maxDD			-0.611	-0.695			-0.525			-0.674	0.000
CAR	Jul 2005-Jun 2010	1	0.001	0.062			0.043			0.071	0.022
CR_maxDD			-0.672	-0.601			-0.497			-0.523	0.000
CAR	Jul 2005-Jun 2010	2	0.163	0.018			-0.128			0.071	0.022
CR_maxDD			-0.456	-0.550			-0.477			-0.523	0.000
CAR	Jul 2005-Jun 2010	3	0.049	-0.005			-0.062			0.071	0.022
CR_maxDD			-0.158	-0.305			-0.389			-0.523	0.000
					H1 Tests			*H2 Tests*			
					H_0	*t-statistic*		H_0	*t-statistic*		
ER_{mo}	Jul 2000-Jun 2010	1	-0.008	0.004	≤ $ER_{MSCI_{mo}}$	0.45	0.009	≤ 0	1.16	-0.004	
$\sigma[ER_{mo}]$			0.098	0.089			0.085			0.087	
$Sharpe$			-0.08	0.04			0.11			-0.04	
$Sortino$			-0.03	0.02			0.06			0.00	
ER_{mo}	Jul 2000-Jun 2010	2	0.003	0.010	≤ $ER_{MSCI_{mo}}$	1.11	0.004	≤ 0	0.54	-0.004	
$\sigma[ER_{mo}]$			0.081	0.120			0.087			0.087	
$Sharpe$			0.04	0.08			0.05			-0.04	
$Sortino$			0.02	0.05			0.03			0.00	
ER_{mo}	Jul 2000-Jun 2010	3	0.007	0.008	≤ $ER_{MSCI_{mo}}$	1.42*	-0.001	≤ 0	-0.31	-0.004	
$\sigma[ER_{mo}]$			0.075	0.072			0.049			0.087	
$Sharpe$			0.09	0.10			-0.03			-0.04	
$Sortino$			0.04	0.05			-0.01			0.00	
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	1	-0.008	0.003	= 0	0.48	0.009	= 0	1.17		
$\beta_{\_mo\_MSCI}$			0.903	0.761	= 1	-2.96***	-0.136	= 1	-10.05***		
R^2			0.448	0.382			0.013				
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	2	0.002	0.009	= 0	1.11	0.004	= 0	0.53		
$\beta_{\_mo\_MSCI}$			0.889	1.126	= 1	0.92	0.243	= 1	-5.63***		
R^2			0.636	0.460			0.041				
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	3	0.006	0.007	= 0	1.56	-0.001	= 0	-0.30		
$\beta_{\_mo\_MSCI}$			0.832	0.730	= 1	-3.15***	-0.097	= 1	-16.37***		
R^2			0.639	0.533			0.021				
r_{mo_W12}	Jul 2000-Jun 2010	1	-0.138	-0.103	= r_{mo_MSCI}	2.009*	-0.036	= 0	1.111	-0.137	0.003
r_{mo_N43}			-0.040	-0.028	= r_{mo_MSCI}	0.275	0.016	= 0	1.102	-0.030	0.002
r_{mo_W12}	Jul 2000-Jun 2010	2	-0.121	-0.125	= r_{mo_MSCI}	0.751	-0.004	= 0	-0.326	-0.137	0.003
r_{mo_N43}			-0.024	-0.031	= r_{mo_MSCI}	-0.145	-0.005	= 0	-0.789	-0.030	0.002
r_{mo_W12}	Jul 2000-Jun 2010	3	-0.117	-0.090	= r_{mo_MSCI}	2.701**	0.030	= 0	2.317**	-0.137	0.003
r_{mo_N43}			-0.017	-0.028	= r_{mo_MSCI}	0.584	-0.008	= 0	-1.531	-0.030	0.002

Appendix Table 3.2.
Risk-Return of E/P Portfolio Strategy by Market Leverage Sub-Sample

Table summarizes the risk-return performance of net earnings-to-market capitalization of common equity yield (E/P) strategies in leverage tertile (MV LEV) sub-samples. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization of less than 10 million USD. Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market leverage (MV LEV). $MV\ LEV$ = ratio of market leverage = $\frac{year-end\ book\ value\ of\ assets\ in\ SEK\ million}{end-of-June\ market\ capitalization\ of\ common\ equity\ in\ SEK\ million}$. Then three strategies evaluated are 1) Long Glamour, buying E/P-quintile 1 with the highest premium (lowest discount), 2) Long Value buying E/P-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value E/P-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$) and 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$) monthly returns.
Our first Hypothesis (H1) is that Value returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value returns should not deviate positively from Glamour returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, $\boldsymbol{r_{mo_{W12}}}$ and $\boldsymbol{r_{mo_{N43}}}$. The null hypotheses and corresponding t-statistics are reported for each such test. ***, **, *, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$. All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

			E/P Strategy								
Variable	**Period**	***MV LEV Tertile***	***Long Glamour*** (quintile 1)	***Long Value*** (quintile 5)			***Long Value (*** quintile 5) ***Short Glamour (*** quintile 1)			***MSCI Sweden***	***rf***
CAR	Jul 2000-Jun 2010	1	-0.062	0.091			0.016			0.003	0.027
CR_maxDD			-0.838	-0.542			-0.805			-0.674	0.000
CAR	Jul 2000-Jun 2010	2	-0.077	0.134			0.088			0.003	0.027
CR_maxDD			-0.873	-0.536			-0.810			-0.674	0.000
CAR	Jul 2000-Jun 2010	3	0.025	0.155			0.059			0.003	0.027
CR_maxDD			-0.675	-0.646			-0.594			-0.674	0.000
CAR	Jul 2005-Jun 2010	1	0.020	0.090			-0.023			0.071	0.022
CR_maxDD			-0.697	-0.542			-0.533			-0.523	0.000
CAR	Jul 2005-Jun 2010	2	-0.037	0.116			0.121			0.071	0.022
CR_maxDD			-0.641	-0.536			-0.208			-0.523	0.000
CAR	Jul 2005-Jun 2010	3	-0.065	0.099			0.162			0.071	0.022
CR_maxDD			-0.675	-0.646			-0.118			-0.523	0.000
					H1 Tests			***H2 Tests***			
					H_0	*t-statistic*		H_0	*t-statistic*		
ER_{mo}	Jul 2000-Jun 2010	1	-0.001	0.006	$\leq ER_{MSCI_{mo}}$	1.22	0.005	≤ 0	0.57	-0.004	
$\sigma[ER_{mo}]$			0.119	0.053			0.101			0.087	
$Sharpe$			-0.01	0.12			0.05			-0.04	
$Sortino$			0.00	0.06			0.02			0.00	
ER_{mo}	Jul 2000-Jun 2010	2	-0.001	0.012	$\leq ER_{MSCI_{mo}}$	1.67**	0.010	≤ 0	1.13	-0.004	
$\sigma[ER_{mo}]$			0.133	0.094			0.102			0.087	
$Sharpe$			-0.01	0.13			0.10			-0.04	
$Sortino$			0.00	0.08			0.05			0.00	
ER_{mo}	Jul 2000-Jun 2010	3	0.004	0.012	$\leq ER_{MSCI_{mo}}$	2.49***	0.005	≤ 0	0.80	-0.004	
$\sigma[ER_{mo}]$			0.096	0.061			0.070			0.087	
$Sharpe$			0.05	0.19			0.07			-0.04	
$Sortino$			0.02	0.09			0.03			0.00	
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	1	-0.002	0.006	= 0	1.75*	0.006	= 0	0.63		
$\beta_{\_mo\_MSCI}$			0.923	0.508	= 1	-9.05***	-0.410	= 1	-10.29***		
R^2			0.313	0.481			0.087				
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	2	-0.002	0.011	= 0	1.71*	0.011	= 0	1.20		
$\beta_{\_mo\_MSCI}$			1.179	0.817	= 1	-1.57	-0.357	= 1	-6.89***		
R^2			0.414	0.393			0.065				
$\alpha_{\_mo\_MSCI}$	Jul 2000-Jun 2010	3	0.004	0.011	= 0	3.00***	0.005	= 0	0.89		
$\beta_{\_mo\_MSCI}$			0.988	0.633	= 1	-5.59***	-0.350	= 1	-11.40***		
R^2			0.553	0.556			0.130				
r_{mo_W12}	Jul 2000-Jun 2010	1	-0.114	-0.067	$= r_{mo\_MSCI}$	5.702***	0.056	= 0	2.038*	-0.137	0.003
r_{mo_N43}			-0.043	-0.011	$= r_{mo\_MSCI}$	2.927***	0.033	= 0	2.970***	-0.030	0.002
r_{mo_W12}	Jul 2000-Jun 2010	2	-0.144	-0.095	$= r_{mo\_MSCI}$	3.364***	0.061	= 0	1.943*	-0.137	0.003
r_{mo_N43}			-0.039	-0.014	$= r_{mo\_MSCI}$	2.001*	0.028	= 0	2.169**	-0.030	0.002
r_{mo_W12}	Jul 2000-Jun 2010	3	-0.134	-0.082	$= \boldsymbol{r_{mo\_MSCI}}$	3.927***	0.060	= 0	2.665**	-0.137	0.003
r_{mo_N43}			-0.028	-0.012	$= \boldsymbol{r_{mo\_MSCI}}$	2.850***	0.017	= 0	1.771*	-0.030	0.002

Appendix Table 3.3.
Risk-Return of EBITDA/EV Portfolio Strategy by Market Leverage Sub-Sample

Table summarizes the risk-return performance of EBITDA-to-enterprise value yield (EBITDA/EV) strategies in leverage tertile (MV LEV) sub-samples. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization equivalent to less than 10 million USD.
Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market leverage (MV LEV). $MV\ LEV$ = market leverage = $\frac{year-end\ book\ value\ of\ assets\ in\ SEK\ million}{end-of-June\ market\ capitalization\ of\ common\ equity\ in\ SEK\ million}$. Then three strategies evaluated are 1) Long Glamour, buying EBITDA/EV-quintile 1 with the highest premium (lowest discount), 2) Long Value buying EBITDA/EV-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value EBITDA/EV-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$) and 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$) monthly returns.
Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value returns should not deviate positively from Glamour returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$ and $\boldsymbol{r_{mo_{N43}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted and free-float adjusted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.
All metrics are calculated using Swedish kronor (SEK) inputs.
Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Variable	Period	*MV LEV Tertile*	*Long Glamour* (quintile 1)	*Long Value* (quintile 5)			*Long Value (*quintile 5) *Short Glamour (*quintile 1)			*MSCI Sweden*	*rf*
			EBITDA/EV Strategy								
CAR CR_maxDD	Jul 2000-Jun 2010	1	-0.097 -0.850	0.115 -0.462			0.134 -0.359			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2000-Jun 2010	2	-0.126 -0.901	0.110 -0.525			0.088 -0.815			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2000-Jun 2010	3	-0.012 -0.701	0.108 -0.571			0.053 -0.579			0.003 -0.674	0.027 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	1	0.040 -0.700	0.126 -0.462			0.028 -0.321			0.071 -0.523	0.022 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	2	-0.075 -0.701	0.056 -0.525			0.099 -0.183			0.071 -0.523	0.022 0.000
CAR CR_maxDD	Jul 2005-Jun 2010	3	-0.080 -0.671	0.103 -0.571			0.184 -0.219			0.071 -0.523	0.022 0.000
					H1 Tests H_0	*t-statistic*		***H2 Tests*** H_0	*t-statistic*		
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	1	-0.005 0.104 -0.05 -0.02	0.008 0.055 0.15 0.07	$\leq ER_{MSCI_{mo}}$	1.61*	0.011 0.080 0.14 0.07	≤ 0	1.56*	-0.004 0.087 -0.04 0.00	
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	2	-0.005 0.134 -0.04 -0.02	0.009 0.065 0.13 0.07	$\leq ER_{MSCI_{mo}}$	1.90**	0.011 0.107 0.11 0.04	≤ 0	1.16	-0.004 0.087 -0.04 0.00	
ER_{mo} $\sigma[ER_{mo}]$ $Sharpe$ $Sortino$	Jul 2000-Jun 2010	3	0.001 0.096 0.01 0.01	0.008 0.060 0.14 0.06	$\leq ER_{MSCI_{mo}}$	1.82**	0.004 0.068 0.06 0.03	≤ 0	0.71	-0.004 0.087 -0.04 0.00	
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	1	-0.006 0.893 0.390	0.008 0.526 0.476	= 0 = 1	2.18** -8.75***	0.011 -0.362 0.107	= 0 = 1	1.68* -11.94***		
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	2	-0.006 1.229 0.442	0.008 0.706 0.614	= 0 = 1	2.19** -4.42***	0.012 -0.518 0.123	= 0 = 1	1.28 -8.10***		
$\alpha_{\_mo\_MSCI}$ $\beta_{\_mo\_MSCI}$ R^2	Jul 2000-Jun 2010	3	0.001 0.983 0.544	0.008 0.648 0.620	= 0 = 1	2.27** -6.66***	0.005 -0.329 0.124	= 0 = 1	0.79 -11.15***		
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	1	-0.124 -0.038	-0.078 -0.003	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	4.447*** 3.094***	0.052 0.034	= 0 = 0	1.603 2.805*	-0.137 -0.030	0.003 0.002
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	2	-0.150 -0.046	-0.085 -0.015	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	4.974*** 2.296**	0.076 0.035	= 0 = 0	2.449** 2.524**	-0.137 -0.030	0.003 0.002
r_{mo_W12} r_{mo_N43}	Jul 2000-Jun 2010	3	-0.137 -0.030	-0.087 -0.016	$= r_{mo\_MSCI}$ $= r_{mo\_MSCI}$	4.806*** 2.556**	0.056 0.016	= 0 = 0	2.268** 1.743*	-0.137 -0.030	0.003 0.002

Appendix Table 3.4.
Risk-Return of FCFF/EV Portfolio Strategy by Market Leverage Sub-Sample

Table summarizes the risk-return performance of free cash-flow-to firm-over-enterprise value yield (FCFF/EV) strategies in leverage tertile sub-samples. Data is based on our full Swedish sample covering the June 30, 2000 to June 30, 2010 period and a total of 2,453 firm years. Swedish firms included for each year were listed on *Nasdaq-OMX Nordic* (formerly *Stockholmsbörsen*), *Nasdaq-OMX First North*, *NGM* (formerly *SBI*) and *Aktietorget*. We exclude for each year *Financials* and firms with a market capitalization of less than 10 million USD. Strategy portfolios are rebalanced annually at the end of June each year. First we split the sample into three size tertiles based on end-of-June market leverage (MV LEV). $MV\ LEV$ = ratio of market leverage is calculated by $\frac{year-end\ book\ value\ of\ assets\ in\ SEK\ million}{end-of-June\ market\ capitalization\ of\ common\ equity\ in\ SEK\ million}$. Then three strategies evaluated are 1) Long Glamour, buying FCFF/EV-quintile 1 with the highest premium (lowest discount), 2) Long Value buying FCFF/EV-quintile 5 with the lowest premium (highest discount) and 3) Long-Value-Short-Glamour, a market neutral strategy where the full investment amount is used to buy the Value FCFF/EV-quintile (5) and an off-setting short-selling position is initiated in the Glamour B/M-quintile (1).
The first and second sections represents the full sample period and latter half sub-sample period cumulative annual buy-and-hold (BAH) gross total returns, $\boldsymbol{CAR}$, of each strategy, not reinvesting dividends nor reinvesting when stocks quit trading and the maximum peak-to-trough drawdown of the cumulative returns, $\boldsymbol{CR\_maxDD}$. The third section shows excess returns, $\boldsymbol{ER_{mo} = r_{mo} - rf_{mo}}$ where $\boldsymbol{r\_mo_{mo}}$ and $\boldsymbol{rf_{mo}}$ denote the monthly gross total return of the portfolios and the risk-free rate, $\boldsymbol{\sigma[ER_{mo}]}$ is standard deviation of excess return, $\boldsymbol{Sharpe = ER_{mo}/\sigma[ER_{mo}]}$ is the Sharpe ratio and $\boldsymbol{Sortino = ER_{mo}/\sigma_d[ER_{mo}]}$ is the Sortino ratio. $\boldsymbol{\sigma_d[ER_{mo}]}$ is the downside risk in terms of standard deviation of the negative excess return months only. The fourth section shows the CAPM alpha, $\boldsymbol{\alpha_{\_mo\_MSCI}}$, and CAPM beta coefficient estimates, $\boldsymbol{\beta_{\_mo\_MSCI}}$, from running OLS regressions of $\boldsymbol{ER_{mo}}$ on $\boldsymbol{ER_{MSCI_{mo}}}$, the market benchmark excess returns, using White's heteroskedasticity-corrected standard errors. In addition we present the $\boldsymbol{R^2}$ of the CAPM regressions. The fifth section shows the monthly gross total returns when the $\boldsymbol{MSCI\ Sweden}$ benchmark experienced its 12 worst ($\boldsymbol{r_{mo\_W12}}$), 43 negative but next to 12 worst ($\boldsymbol{r_{mo\_N43}}$), 53 positive but next to 12 best ($\boldsymbol{r_{mo\_P53}}$) and 12 best ($\boldsymbol{r_{mo\_B12}}$) monthly returns. Our first Hypothesis (H1) is that Value portfolio returns should not deviate positively from the market, neither in absolute terms or risk-adjusted. Our second Hypothesis (H2) is that Value portfolio returns should not deviate positively from Glamour portfolio returns, neither in absolute terms or risk-adjusted. H1 is tested on the Long-Value strategy (*H1 Tests*) and H2 on the Long-Value-Short-Glamour strategy (*H1 Tests*). Both strategies are tested on $\boldsymbol{ER_{mo}}$, $\boldsymbol{\alpha_{mo_{MSCI}}}$, $\boldsymbol{\beta_{mo_{MSCI}}}$, , $\boldsymbol{r_{mo_{W12}}}$, $\boldsymbol{r_{mo_{N43}}}$, $\boldsymbol{r_{mo_{P53}}}$and $\boldsymbol{r_{mo_{B12}}}$. The null hypotheses and corresponding t-statistics are resported for each such test. ∗∗∗, ∗∗, ∗, denote significance at the 1 %, 5 % and 10 % levels, respectively. $\boldsymbol{MSCI\ Sweden}$ represents the *MSCI Sweden Gross Total Return index*, a value-weighted and free-float adjusted market proxy. Our risk-free asset is the 3-month Swedish Treasury Bill yielding a risk-free rate $\boldsymbol{rf}$.All metrics are calculated using Swedish kronor (SEK) inputs. Primary source of all data is Thomson-Reuters DataStream Advance 4.0, compilation by author.

Variable	Period	$MV\ LEV$ $Tertile$	***FCFF/EV Strategy*** Long Glamour (quintile 1)	Long Value (quintile 5)			Long Value (quintile 5) Short Glamour (quintile 1)			$MSCI$ $Sweden$	rf
CAR	Jul 2000-	1	-0.064	0.116			0.134			0.003	0.027
CR_maxDD	Jun 2010		-0.821	-0.422			-0.306			-0.674	0.000
CAR	Jul 2000-	2	-0.072	0.122			0.083			0.003	0.027
CR_maxDD	Jun 2010		-0.791	-0.491			-0.497			-0.674	0.000
CAR	Jul 2000-	3	0.021	0.127			0.065			0.003	0.027
CR_maxDD	Jun 2010		-0.651	-0.601			-0.329			-0.674	0.000
CAR	Jul 2005-	1	0.045	0.140			0.057			0.071	0.022
CR_maxDD	Jun 2010		-0.701	-0.422			-0.306			-0.523	0.000
CAR	Jul 2005-	2	-0.030	0.078			0.064			0.071	0.022
CR_maxDD	Jun 2010		-0.666	-0.491			-0.324			-0.523	0.000
CAR	Jul 2005-	3	-0.001	0.075			0.061			0.071	0.022
CR_maxDD	Jun 2010		-0.651	-0.601			-0.136			-0.523	0.000
					H1 Tests			***H2 Tests***			
					H_0	*t-statistic*		H_0	*t-statistic*		
ER_{mo}	Jul 2000-	1	-0.004	0.009	$\leq ER_{MSCI_{mo}}$	1.77**	0.010	≤ 0	1.85**	-0.004	
$\sigma[ER_{mo}]$	Jun 2010		0.090	0.060			0.060			0.087	
$Sharpe$			-0.04	0.15			0.17			-0.04	
$Sortino$			-0.02	0.07			0.09			0.00	
ER_{mo}	Jul 2000-	2	-0.002	0.009	$\leq ER_{MSCI_{mo}}$	2.14**	0.009	≤ 0	1.11	-0.004	
$\sigma[ER_{mo}]$	Jun 2010		0.121	0.062			0.085			0.087	
$Sharpe$			-0.01	0.15			0.10			-0.04	
$Sortino$			-0.01	0.07			0.04			0.00	
ER_{mo}	Jul 2000-	3	0.003	0.009	$\leq ER_{MSCI_{mo}}$	2.03**	0.004	≤ 0	0.90	-0.004	
$\sigma[ER_{mo}]$	Jun 2010		0.081	0.059			0.054			0.087	
$Sharpe$			0.03	0.16			0.08			-0.04	
$Sortino$			0.02	0.04			0.04			0.00	
$\alpha_{\_mo\_MSCI}$	Jul 2000-	1	-0.004	0.008	= 0	2.22**	0.010	= 0	1.97*		
$\beta_{\_mo\_MSCI}$	Jun 2010		0.859	0.603	= 1	-7.59***	-0.250	= 1	-16.05***		
R^2			0.474	0.536			0.093				
$\alpha_{\_mo\_MSCI}$	Jul 2000-	2	-0.002	0.009	= 0	2.57**	0.009	= 0	1.27		
$\beta_{\_mo\_MSCI}$	Jun 2010		1.178	0.677	= 1	-6.46***	-0.496	= 1	-9.61***		
R^2			0.495	0.632			0.177				
$\alpha_{\_mo\_MSCI}$	Jul 2000-	3	0.002	0.009	= 0	2.57**	0.005	= 0	0.96		
$\beta_{\_mo\_MSCI}$	Jun 2010		0.817	0.611	= 1	-6.79***	-0.200	= 1	-13.45***		
R^2			0.530	0.572			0.072				
r_{mo_W12}	Jul 2000-	1	-0.122	-0.082	$= r_{mo\_MSCI}$	5.823***	0.046	= 0	2.790**	-0.137	0.003
r_{mo_N43}	Jun 2010		-0.036	-0.009	$= r_{mo\_MSCI}$	2.485**	0.027	= 0	2.784***	-0.030	0.002
r_{mo_W12}	Jul 2000-	2	-0.141	-0.087	$= r_{mo\_MSCI}$	5.769***	0.061	= 0	2.579**	-0.137	0.003
r_{mo_N43}	Jun 2010		-0.038	-0.011	$= r_{mo\_MSCI}$	2.717***	0.028	= 0	3.161***	-0.030	0.002
r_{mo_W12}	Jul 2000-	3	-0.112	-0.087	$= r_{mo\_MSCI}$	3.682**	0.031	= 0	1.391	-0.137	0.003
r_{mo_N43}	Jun 2010		-0.029	-0.010	$= r_{mo\_MSCI}$	3.658***	0.020	= 0	2.790***	-0.030	0.002

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