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On the importance of clean accounting measures for the tests of stock market efficiency

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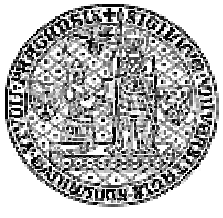

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On the importance of clean accounting measures for the tests of stock market efficiency

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Abstract:
Tests of the semi-strong form of the efficient market hypothesis (EMH) typically use earnings and book value of equity as benchmarks of fundamental value. Accounting earnings, however, are contaminated by noise due to their transient component and book value of equity tends to be biased downwards due to accounting conservatism. We investigate whether controlling for these effects impacts on the implications concerning the information efficiency of the Swedish stock market. We conclude that relevant adjustments increase both the magnitude and the consistency of the value premium earned on a contrarian investment strategy that buys (shorts) stocks with low (high) relative market valuation. The existence of the value premium cannot be explained by common risk proxies or transaction costs argument. Using cleaner accounting proxies thus strengthens the evidence on the imperfect efficiency of the Swedish stock market.

Keywords: market efficiency, investment, contrarian strategy, transitory earnings, accounting conservatism, Sweden, Scandinavia

JEL: G14.

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1. Introduction

The degree to which stock markets are capable of incorporating value-relevant information in stock prices is one of the most debated issues in modern finance. One of the most straightforward implications of fully informative prices is that investors cannot earn excessive returns on publicly available information. During the past decade, researchers have argued that buying (selling) stocks in companies that have a low (high) market value relative to accounting measures of fundamental values, such as earnings, cash flows, and book value of equity, generates high subsequent stock returns. It has been shown that investment strategies using this pattern generate a substantial value premium (e.g. Lakonishok, et al., 1994) [hereafter LSV].[1]

Despite of growing evidence on the relationship between the cross-sectional stock returns and numerous accounting measures, there is little agreement concerning the underlying explanation for this relationship. LSV propose an explanation based on the 'over-reaction hypothesis' that has been previously advocated by De Bondt and Thaler, 1985, De Bondt and Thaler, 1987 who propose that past losers outperform past winners because investors naively over-extrapolate a series of good (bad) news therefore over-(under-)value the winners (losers).

[1] The term *value premium* refers to the difference in returns on the value decile portfolio and the glamour decile portfolio. The term *value stocks* is used for companies with low market values relative to fundamentals (earnings, book value of equity, etc.), whereas *glamour stocks* is a term used for companies with high market values relative to fundamentals.

Subsequently, Pettengill and Jordan, 1990 found the price reversals to be more significant for past losers than for past winners and they identified size as an important conditioning variable as the reversals are more characteristic for stock performance of large rather than small firms. This idea is further developed by Davidson and Dutia, 1989 who find that prior the long term reversal there is a short term persistence in stock prices – phenomenon that has later become known as 'momentum' Jegadeesh and Titman, 1993. LSV use this idea and compare the actual future growth rates in earnings with the growth rates implied in stock prices and conclude that investors tend to over-(under-)estimate the growth prospects of glamour (value) stocks that leads to subsequent correction in stock prices that provides the opportunity for contrarian investing. This proposition is further supported by La Porta*, et al.*, 1997 who find out that the abnormal returns in the post-formation period are concentrated around earnings announcements. In particular, they are substantially higher for value stocks than for glamour stock, which indicates that investors are consistently surprised by better-than-expected performance of value stocks.

An alternative explanation for the existence of value premium is advocated by Fama and French, 1992. They argue that ratios used for sorting stocks into portfolios (e.g. E/P, B/M) are correlated with an underlying risk variable that makes the values stocks fundamentally riskier, hence justifying the superior returns earned on them. This idea has been further developed in the construction of the 3-factor asset pricing model Fama and French, 1993.

Most of the initial studies testing the performance of contrarian strategies have been performed on U.S. data. This created a concern that the empirical patterns may be unique to the U.S. market and hence not generalizable for other settings. This would have significant implications for their usefulness for future theory building as well as policy making. This concern is voiced by Conrad*, et al.*, 2003 who propose that more than 50 per cent of the in-sample relation between stock returns and the underlying accounting characteristics can be a

results of data snooping, which is possible due to the familiarity of the research community with the characteristics of U.S. stock returns. Although the returns of modern stock exchanges are highly correlated (e.g. Lucey, et al., 2004), it cannot be ruled out that abnormal returns are randomly generated and thus that the value premium of a contrarian investment strategy (CIS) is largely unique to a few equity markets and the methods that have been used in past research. This calls for verifying the value and glamour returns patterns in different markets to provide out-of-sample evidence allowing us to assess the universality of these patterns.

One of the first studies documenting a relationship between stock returns and other accounting-based variables is performed by Chan*, et al.*, 1991 who use Japanese data to show that earnings yield, size, book to market ratio, and cash flow yield all predict future stock returns. Cai, 1997 elaborates on these findings by explicitly testing for the conventional risk proxies and concludes that they cannot fully explain the superior returns on contrarian investment strategies, which indicates the existence of the extrapolation bias in the Japanese market. One of the first European studies is performed by Brouwer and Van Der Put, 1997 who use data pooled from France, Germany, the Netherlands and the UK who confirm the existence of value premium in these markets. They investigate the performance of contrarian strategies in good and bad states of the economy and conclude that viewed from this perspective the value stocks do not appear to be riskier than glamour stocks. They conclude that behavioral biases of small investors coupled with incentive schemes of fund managers are likely to account for these patterns. Gregory*, et al.*, 2001 use UK data to further illuminate the controversy between the risk-based vs. the overreaction-based explanation of the value premium. They use the 3-factor model Fama and French, 1993 and show that while it is capable of explaining the value premium based on one-way sorting, it fails to explain the difference in stock returns on two-way sorting that uses the information about future implied growth alongside with the information on past performance for sorting the stocks in the

portfolios. Chin, *et al.*, 2002 provide results that also corroborate with the overreaction explanation. They argue that in a less liquid market the contrarian returns should take longer to materialize due to lower trading volumes and less intense competition promoting the price corrections. Consistent with this prediction they show that in New Zealand (that is seen as an example of a less liquid market) the value portfolios underperform during the first year after formation but outperform in the subsequent periods. Similar results are reported by Forner and Marhuenda, 2003 who show a short-term persistence of Spanish stock returns (over 6 months) and a long-term reversal (over 3 years).

In this study we use Swedish data for the period between 1980 and 2004. The Stockholm Stock Exchange (SSE) is of interest for several reasons. First, the Scandinavian corporate governance system is usually described as distinct from both the Anglo-Saxon and Germanic corporate governance systems (La Porta and Lopez-de-Silanes, 1999) in which most studies have been made (LSV, Brouwer and Van Der Put, 1997, Gregory, et al., 2001). This provides an opportunity to study the CIS in an environment with different characteristics. Second, its size is limited (with an average of 240 companies) and hence we can ensure that all companies meeting the sample selection criteria are included. Thus, our results cannot be caused by any sample selection error. Third, although the SSE is a reasonably large stock exchange, it has not been extensively studied in the past. Given the critique by Conrad, et al. (2003), a study of such a stock exchange seems relevant. To the best of our knowledge, there are no established factors (such as book-to-market or size) that influence Swedish stock returns even though such patterns might exist.

In the first part of this paper we report results obtained by implementing a strategy similar to the one used by LSV. Value and glamour stocks are identified using different measures of operating performance, namely earnings and book value of equity. The success of the trading strategy depends on its ability to earn a value premium in the years following portfolio

formation. We calculate both average and cumulative buy-and-hold returns and then evaluate value and glamour strategies against the market return. This approach enables us to investigate whether value strategies consistently overperform or whether glamour strategies consistently underperform the market. While both over- and underperformance violate market rationality, they have different implications for minimal market rationality (Rubinstein, 2001). Because short selling tends to be restricted, an observed consistent underperformance of glamour stocks does not necessarily violate minimal rationality of the market. This is because it is difficult (and costly) for rational arbitrageurs to drive the price back to the fundamental value. Conversely, persistent overperformance of value stocks cannot be easily explained by cost of arbitrage.

To account for risk associated with pursuing the contrarian strategy we investigate the consistency of its ability to generate a value premium over time, where we explicitly control for risk by measuring size- and beta-adjusted abnormal returns. Furthermore, we examine the value premium's dependence on economic conditions. Neither of these approaches suggests that risk is capable of explaining the value premium.

One of the strengths with the LSV model is its simplicity, in that all non-financial securities are used when formulating the investment strategy. Such a simple strategy, however, does not account for investors' ability to see systematic differences in valuation between companies. We therefore create investment strategies that consider the accounting bias in book value of equity and volatility of earnings.[2] Accounting standards allow some assets, typically tangible assets (such as production plants and machines) to be recognized, whereas other assets, typically intangible assets (such as brand names and patents), remain unrecognized. Similarly, some companies have volatile earnings and therefore current

[2] We denote book value of equity as *B*, and earnings as *E* throughout the text. When relating these measures to the share price we use the standard abbreviations *B-M* for the Book value of equity relative to Market value of equity (ie, the share price), and *E-P* for the Earnings to the share price (Market value of equity).

performance measures are contaminated with a substantial transient element. Acknowledging this fact when forming portfolios for CIS improves the efficiency of our proxies for company fundamentals and hence increases the value premium.

The rest of this paper is organized as follows. Section 2 describes the rationale underlying CIS and specifies the hypotheses that we test. Section 3 introduces the dataset and outlines the methodology used to compute the returns of contrarian strategies. In Section 4 we present the results of simple contrarian investment strategies, which are followed by sections on transitory earnings and accounting conservatism. Section 7 summarizes and concludes.

2. Theoretical Background and Research Hypotheses

The ability to earn an abnormal return with the use of CIS has attracted investors' attention for many years (e.g. Lefevre, 1923, Graham and Dodd, 1934). Recently, the idea to 'buy when many others sell and sell when many others buy' has been given new support, however. Research in behavioral finance suggests that heuristics systematically bias investor decisions (Hirshleifer, 2001). Investors might extrapolate past events too far into the future and construct favorable scenarios for stocks with a glamorous past. In the past decade researchers have expended a considerable amount of effort trying to test these behavioral ideas (LSV, Cai, 1997, Gregory, et al., 2001).

To implement a CIS one has to first identify stocks, which are likely to have temporarily depressed prices, and then hold them for a sufficiently long time, during which other investors recognize that they are underpriced and correct the mispricing. This price correction then generates the excess return. Similarly, one might short sell overpriced stocks during a certain period waiting until other investors realize their weak operating performance and again correct the mispricing. In principle, the idea is that other naïve investors in the future will be surprised by a company's operating performance.

The evidence of superior returns generated by holding value stocks instead of glamour stocks has increased over the years. Early studies examine the relationship between security prices and book value of equity, earnings, and cash flows, providing direct evidence that companies with low values relative to fundamentals are better investments (LSV, Chan, et al., 1991). Within the capital market literature, there is a vast amount of studies spanning the past three decades that document a relationship between variables, such as B/M, and subsequent stock returns (e.g. Fama and French, 1992). Although most past studies have been made with the use of US data, there are a few European contrarian investment studies. Gregory, et al. (2001) [hereafter GHM] make a comprehensive study of CIS using UK data. Their study includes a large varied sample from 1975-1993. Following the procedure of LSV, they formulate both one- and two-variable classifications of value and glamour stocks based on past growth and future expected growth. Their contrarian strategy works very well and, in particular, the first year returns are high. Based on B/M, the value portfolio outperforms the glamour portfolio with 22.2%. These results are followed up by a second study (Gregory, et al., 2003) in which macroeconomic risks are considered. The conclusions from this study, however, are the same: value stocks outperform glamour stocks in the UK and no identifiable risk factor seems able to explain the pattern. Outside Anglo-Saxon stock exchanges, there is not much evidence. Examining a selection of large German, Dutch, French, and British companies Brouwer and Van Der Put, 1997 find that value strategies generate superior returns. There are no similar studies based on Scandinavian data. The Fama-French three-factor model, which has been tested with significant results, includes the B/M variable (Asgharian and Hansson, 2000). Some past studies question market efficiency (e.g. Booth, et al., 1996, Jokipii and Vahamaa, 2006) but none of the existing Scandinavian studies directly targets CISs.

Based on past research, the first task is to examine whether a CIS generates superior returns at the SSE. Such a study is noteworthy for several reasons: (i) many studies of

corporate governance have claimed that Scandinavian countries have unique governance features (e.g. La Porta and Lopez-de-Silanes, 1999) that might impact the functioning of the equity market, (ii) the size of the market is limited and complete data exist for an extended period, and (iii) knowledge about existing empirical relationships between security return and variables, such as beta, size, B/M, and E/P, is scarce for the SSE. Consequently, we are exploring a known phenomenon in a relatively unknown market. We formulate the following first hypothesis:

H_1: Value stocks yield higher returns than glamour stocks in the years following portfolio formation.

Value (glamour) stocks are defined as stocks that have a high (low) market value relative to some proxy of fundamental value. Although not all stocks with high relative valuations need to be overvalued, we expect the overvaluation (undervaluation) to be more frequent in a portfolio of stocks with high (low) relative market valuation. Hence, the difference in returns (i.e. value premium) earned on these portfolios captures the difference in relative occurrence of over- and undervalued stocks in value and glamour portfolios.

According to past research, a CIS yields a significant excess return. However, this investment strategy is a very simple strategy in which all companies are treated equally. Such a strategy is convenient mainly because it is easy to implement and replicate; however, from an economic standpoint, it has several drawbacks that might understate the strategy's functionality and power. In essence, there are differences between companies concerning their future abnormal earnings growth capacity. Some companies have a very low (high) market value relative to fundamentals simply because they have a very small (large) potential to provide future returns above the cost of capital. In other words, for these companies the low

(high) value is appropriate. If, for example, a steel producer is likely to face lower growth opportunities than a profitable medical technology company, it deserves a lower valuation. The steel producer would then correctly have a high B/M and E/P ratio relative to the medical technology company. In addition, the usefulness of operating performance measures (earnings) can be contaminated by annual fluctuations. We argue that investors can exploit this and thereby increase the return of the CIS. We adjust the accounting measures of fundamental value to make them more effective in identifying over- and undervalued stocks and test whether this manipulation leads to higher value premiums and improved consistency of contrarian strategies.

First, most companies' operating performance is, to some extent, affected by known and predictable factors in the business environment. Such factors, for example, are exchange rates, commodity prices, interest rates, and consumer demand. The extent to which the operating performance is predictable varies between different companies and to a large extent this variation is industry-related. If the level of predictability is high and investors know that the measure of operating performance varies substantially, current operating performance will be only marginally connected to future returns. For instance, consider a paper pulp producer. It has high fixed costs that create a substantial operating leverage. When sales prices and exchange rates vary, this leverage makes earnings and operating cash flows fluctuate even more. Because both sales prices and exchange rates are known to investors, earnings/cash flows are largely transitory. Investors pay less attention to current earnings/cash flows for a company with predictable and volatile earnings/cash flows relative to companies acting in stable environments. Although this has a limited effect on the B/M measure, it greatly affects the E/P measure. We expect that companies experiencing large transitory earnings more often will be overrepresented among value stocks in good times and glamour stocks in bad times. It is likely that the simple CIS overlooks this fact and hence the value premium is understated.

To provide a better benchmark of operating performance we clean the earnings of the noise that is due to the transient component. This leads to our second hypothesis:

H_2: The value premium generated by CIS increases when the effect of the transitory component of performance measures is taken into account.

Second, it is recognized that different companies rely on different kinds of resources; however, some of these resources are less frequently recognized in the balance sheet. Because of accounting conservatism, accounting standards do not allow all investments to be recognized as assets and they are asymmetric in treating expected future losses and gains. Thus, assets are likely to be understated, whereas liabilities may be overstated. Consequently, the book value of equity tends to be understated. Typically, property, production plants, and equipment are capitalized as tangible fixed assets, valued at historical cost, and depreciated over the estimated economic life. On the other hand, internally generated intangible assets are, according to accounting rules, recognized in the balance sheet to only a limited extent. Most of the costs related to the internal acquisition of resources (such as research, marketing, and personnel training) are taken directly through the income statement. Companies with a substantial amount of assets unrecognized (recognized) under the existing accounting principles are more likely to end up in glamour (value) portfolios when sorting on simple *B/M* multiples. We expect that companies relying heavily on unrecognized resources are overrepresented among glamour stocks and that (to some extent) companies with recognized resources are overrepresented among value stocks. If this is true, the use of simple *B/M* multiples understates the magnitude of value premium. Hence, we expect that after we adjust the book value of equity in *B/M* for the bias (due to accounting conservatism) the multiple will identify over- and undervalued stocks more effectively. We formulate the following third

hypothesis:

H_3: The value premium generated by CIS increases when the effect of accounting conservatism on asset and liability recognition is taken into account.

3. Research Design

We evaluate the contrarian investment strategy using data from all companies excluding banks and insurance companies quoted at the SSE between 1980 and 2004.[3] The data are obtained through the Trust database provided by Six Estimates. In total, we use accounting data for 602 companies producing 6 006 firm-year observations, i.e. on average 240 observations a year (increasing over time). The companies are classified into one of nineteen industries based on their operations during the year. Table 1 reports descriptive statistics for the sample. There is a general tendency for the market value of equity to increase over time, but there are three periods when it dips: 1984-85, 1991-93, and 2001-02. While B/M and E/P ratios vary over time they do not seem to be systematically affected in these periods as both multiples are relatively low in 1984-85, relatively high in 1991-93 and close to their median values in the period 2001-02. Overall, B/M and E/P ratios are lower in the early 1980s and 1990s. The difference between value and glamour portfolios also changes over time and is largest in the late 1990s (not reported in Table 1). We believe that the extensive length of the analyzed period ensures that the results are not time specific.

At the end of March each year, all companies are ranked based on current market value relative to last year's measures of operating performance. Constructing portfolios in March

[3] As it is difficult to interpret the operating performance of banks and insurance companies using E/P and B/M, these companies are excluded. We also exclude companies with share price data from less than 12 months. These companies represent less than 0.3% of all firm-year observations.

ensures that accounting information is available to investors at the time of portfolio formation, which would avoid a hindsight bias (Banz and Breen, 1986).[4] Two measures of operating performance are used: net earnings and book value of equity (including minority interests). We exclude companies with negative earnings from E/P portfolios and companies with negative equity from the B/M portfolios because negative earnings or book value of equity are not representative of company fundamental value.

The sample period is characterized with increasing stock market activity, and the number of companies in the value/glamour decile portfolios increases from 10 in 1982 to 23 in 2002 (not shown specifically in the tables). Based on the ranking, ten equally-weighted portfolios are formed. The decile with lowest ratios (1) is referred to as the glamour portfolio and the decile with the highest ratios (10) is referred to as the value portfolio.

The CIS is primarily evaluated based on the dividend-adjusted annual stock returns for three years following portfolio formation. Overall, the investigated period has provided high returns to investors. The SSE was highly oriented toward internet and telecommunication stocks in the late 1990s when returns were exceptionally high. Many stocks earned substantial negative returns in the aftermath of the sharp decrease of prices of high-tech stocks. Overall many stocks experienced exceptionally large value changes in the years 1997-2002.

The analysis is based on both annual and cumulative returns. When estimating the annual returns, proceeds from delisted companies (if any) are reinvested in the corresponding size-decile portfolio until the annual portfolio is rebalanced at the end of March (when all the stocks remaining in portfolios are again equally weighted).[5] While monthly rebalancing is

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[4] Companies for which the fiscal year differs from the calendar year are included in the ranking in March of the year starting after the end of the fiscal year-end. This procedure ensures that there are at least three months for accounting data dissemination and that there are no missing observations but is likely to introduce some noise. Excluding these companies does not materially affect our results.

[5] We use size decile portfolio as a proxy for an investment with comparable risk characteristics. The size-adjusted decile portfolios are formed at the end of March each year based on the market values at that time. In

possible, we follow the procedure of LSV and utilize a long-term perspective, which also reduces transaction costs. Cumulative returns are calculated somewhat differently. This is because portfolios are not rebalanced each year and therefore all stocks retain the weight that they have gained through increases or decreases in value during past years. If a stock is delisted, its return is replaced with the return of the corresponding size decile for the rest of the cumulative period (which can be longer than one year). The difference between these two approaches can be illustrated with a simple example. When a stock doubles its value (+100%) in the first year following portfolio formation and then returns to its previous value in the next year (-50%), its cumulative return is going to be 0% while its average annual return is going to be +25%. The use of both annual and cumulative returns increases the understanding of the strategy's ability to earn a value premium. One advantage with the cumulative returns is that it is suffering less from the problem with transaction costs. On the other hand, because size-decile returns are used to replace returns of delisted companies for the rest of the three-year period and because many companies might drop out of the sample during this period, cumulative returns can contain a substantial portion of these 'replacement' returns.

The reported value premium shows the difference in returns on the value and glamour portfolios. This implicitly assumes a zero-investment trading strategy in which the purchase of value stocks is financed by the short selling of glamour stocks. However, in reality it is much easier for an investor to buy value stocks than to short sell glamour stocks. The CIS is therefore easier to implement for value stocks. Hence, we examine how the value and glamour portfolios perform relative to the market, which decomposes the value premium into two components: value overperformance of the market and glamour underperformance of the market. If CISs generate excessive returns, but most of it comes from an underperformance of

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line with past international research (e.g., Fama and French, 1992) we find that portfolios with small stocks tend to earn slightly higher returns than large stocks. Details on the returns of size-decile portfolios can be obtained upon request.

the glamour portfolio, then transaction costs associated with short selling could explain why the phenomenon persists. It is then merely a paper product on a researcher's desk.

Furthermore, we perform a number of risk adjustments to determine whether the value premium is likely to be a compensation for higher risks associated with value stocks. After comparing the volatility of glamour and value portfolio returns, we explicitly control for the effect of established risk factors – size and CAPM beta. In addition, to account for additional unknown risk factors we analyze the dependence of value premium on economic conditions. These adjustments are described in detail in the empirical section of the paper.

4. Simple Contrarian Investment Strategies

Table 2 shows returns on simple CISs using decile portfolios based on E/P and B/M ranking. Individual columns show portfolio returns in the first, second, and third year after the time of formation (labeled *R1*, *R2*, and *R3*), then the average annual return (*AR3*) computed as the mean of annual returns in the first three years, and finally, the cumulative buy-and-hold return for three years after the formation of portfolios (*CR3*)[6]. We also report (i) the zero-investment value premium, i.e. the difference in returns earned on value and glamour portfolios (portfolios 10 - 1 and the less extreme 9 - 2), (ii) the success rate of contrarian strategy and the standard deviations of market, glamour, and value returns, and (iii) value overperformance and glamour underperformance measured in relation to an equal-weighted market portfolio consisting of stocks excluding banks and insurance companies.

The results reported in Table 2 support the hypothesis that value stocks outperform glamour stocks. The annual value premium for the zero-investment portfolio (10-1) is, on

[6] We have also calculated returns in the fourth and fifth year after portfolio formation. In general, the value premium is positive but vey small. Because we presume that rebalancing once in three years is acceptable, even for for investors with very long investment horizons, we only report results for the first three years.

average, 10.8% when using the E/P and 13.8% when using the B/M. For the cumulative buy-and-hold return, this translates into a 63.0% (49.9%) value premium over the three-year period based on the E/P (B/M) ratio. When considering that the average annual market return is 24.9%, these value premiums are, in economic terms, rather substantial. It is also evident that the value premium is not only concentrated to the extreme portfolios (10 and 1). While portfolios 9 and 2 show a lower value premium, it remains substantially positive. For E/P, the average value premium decreases from 10.8% to 5.1% and for B/M from 13.8% to 7.1%.[7] [8]

Transaction Costs

It is sometimes suggested that CIS may produce abnormal returns on paper, but that these are not achievable in practice. Substantial transaction costs can turn any investment strategy unprofitable. We identify two potential sources of these transaction costs: (i) annual rebalancing of portfolios and (ii) the need for short selling.

Annual rebalancing ensures that all surviving stocks in a portfolio are held in equal proportion measured in terms of their current valuation. This means that part of one's holding of a stock that performed very well in year one are sold at the end of that year and the money obtained is used for acquiring more of those stocks that performed less well in year one (in order to maintain equal weighting of all stocks in terms of their market value). To investigate potential transaction costs from annual rebalancing we estimate the three-year cumulative returns reported in Table 2. Stocks that produce substantially higher/lower returns than the

[7] To investigate the effect of outliers we also Winsorize all stock returns at 2% from each side (tables with Winsorized results can be obtained from the authors upon request). Winsorizing does not have a substantial impact on the value premium for raw returns or for risk-adjusted returns. When considering raw returns, Winsorizing marginally increases both 10-1 and 9-2 value premiums earned on the E/P strategy to 11.0% and 7.3%, respectively. For the B/M strategy, the 10-1 value premium decreases to 12.7%, whereas the 9-2 value premium increases to 7.9%. A similar pattern is generated when Winsorizing size-adjusted and CAPM beta-adjusted returns.

[8] When keeping the observations with negative earnings in the sample, the value premium earned on the *E/P* strategy is smaller, 9.9%, for the 10-1 value premium (and reduced to 2.9% for the 9-2 value premium). This finding is consistent with the intuitive argument that negative earnings are not representative of a company's fundamental value as they are bound to revert in the future unless the company goes bankrupt.

rest of the stocks in a portfolio will affect cumulative returns more significantly than annual returns. In general, we find that cumulative returns are higher than average returns. The E/P (B/M) three-year cumulative return is 63.0% (49.9%), whereas multiplying the average returns for three years yields a return of 35.6% (47.3%). Thus, avoiding annual rebalancing does not have a negative effect on the results (in fact, the return earned would be somewhat higher). The positive effect seems to arise because of a positive autocorrelation in returns. Value stocks that yield a high return in the first year tend to do so in the second and third year as well. Avoiding portfolio rebalancing both removes transaction costs and increases the value premium, but it also increases company-specific risk.

Another transaction cost argument is that short selling of stocks is so costly that it eliminates any incentive for rational arbitrage. To determine how much of the value premium can be obtained without the need of short selling we split the value premium into a value overperformance component and a glamour underperformance component. If short selling constraints are to explain the value premium, the glamour underperformance component must constitute most of the value premium. Results summarized in Table 2 do not support this reasoning. When comparing with an equal-weighted market portfolio (Rm), the value overperformance constitutes approximately one half of the value premium. This is somewhat less when measured in terms of average annual returns (5.0% compared with -5.7% for the E/P strategy and 5.2% compared with -8.6% for the B/M strategy) and it is somewhat more than one half when measured in terms of cumulative three-year returns (33.1% compared with -29.9% for the E/P strategy and 26.0% compared with -23.9% for the B/M strategy). The relative contribution of value overperformance is even greater for contrarian strategies using the combination of E/P and B/M reported in Table 6 (8.1% compared with -3.9% for average annual returns and 41.0% compared with -13.5% for the cumulative three-year returns). Given that the value overperformance of the market return on average constitutes at least one half of

the entire value premium (depending on the measure used) the results cannot be viewed as an artifact of short-selling restrictions.

Value Premium and Risk

The greatest challenge for anyone suggesting the superiority of a CIS is to show that the documented value premium is not just an appropriate compensation for holding a riskier portfolio. It should be pointed out that no researcher can completely refute the idea that value stocks are riskier than glamour stocks, as it is impossible to exhaust the universe of all possible risk factors. Hence, regardless of how comprehensive a test may be there is always a chance that some omitted risk factors actually make value stocks riskier. Recognizing the inability to refute the risk argument fully we conduct some typical tests to give us an indication whether it is likely that the value premium exists because value stocks are riskier than glamour stocks.

In Table 2 we report the success rate of contrarian strategies, as well as standard deviations of the market, glamour portfolio returns, and value portfolio returns. Because it measures the frequency with which the glamour portfolio underperforms the value portfolio, the success rate captures the inter-temporal consistency of the value premium. On an annual basis, the value portfolio outperforms the glamour portfolio in 66.5% (61.3%) of the cases for the E/P (B/M) strategy. When extending the investment horizon to three years, the consistency improves to 87.0% (73.9%) for the E/P (B/M) strategy. Thus, if investors consistently apply the zero-investment strategy with a three-year horizon, they would find themselves worse off in only 3 (6) out of 23 portfolio formation years. Table 2 also shows that the average annual standard deviation of market returns is somewhat lower than the standard deviation of value and glamour portfolio returns (this is expected because of the diversification effect, as the market includes ten times as many stocks as compared with value

or glamour portfolio). The standard deviation of value portfolio returns is lower for the E/P and higher for the B/M strategy than the standard deviation of glamour portfolio returns. However, the differences in annual standard deviations seem to be rather small in comparison with the difference in returns. We note that the standard deviation for cumulative returns differs substantially, making value stocks appear considerably more risky without an annual rebalancing of the portfolios.

Next, we calculate returns with adjustments for size and CAPM beta. Table 3 shows size-adjusted abnormal returns (SAAR) on contrarian strategies based on E/P and B/M. Stocks are allocated to size decile portfolios for which annual dividend-adjusted returns are computed. To obtain SAAR we subtract from each stock's actual return the return of its corresponding size decile. Hence, SAAR shows how much individual stocks earn above/below to what is earned on stocks of comparable size. Table 3 shows that even though the value premium for size-adjusted returns is lower than the one for raw returns (i.e. value stocks tend to be somewhat smaller and hence riskier than glamour stocks), the premium is still positive and substantial. In case of E/P the size adjustment reduces the average annual value premium only marginally from 10.8% to 10.3%. In case of B/M the value premium declines more (from 13.8% to 9.5%). The cumulative three-year returns are reduced only marginally (from 63.0% to 61.6% for E/P and from 49.9% to 41.4% for B/M).

Table 4 shows the beta-adjusted abnormal returns (BAAR) on contrarian strategies based on E/P and B/M. To ensure availability of normal return estimate for all stocks we estimate beta by regressing an individual stock's excess return over its entire existence in the sample on market index excess returns.[9] To obtain BAAR from each stock's raw return we subtract

[9] The ten-year government bond is used as a risk-free interest rate. As a proxy for expected market return, the geometric average of the past five-year return of AFGX (relative to the time of portfolio formation) is used. Several other approaches, including estimating CAPM beta based on the past 60 monthly returns relative to the time of portfolio formation, provide qualitatively similar results.

the normal return of a stock estimated with the use of CAPM. Overall, Table 4 shows that adjusting for sensitivity of an asset return on the market return does not impact the magnitude of the value premium. The average annual value premium earned on E/P adjusted for CAPM beta decreases slightly from 10.8% to 10.2%, whereas the cumulative three-year return decreases from 63.0% to 59.8%. For the B/*M*, the adjustment actually increases the average annual value premium from 13.8% to 14.5%, whereas the three-year cumulative return increases from 49.9% to 52.4%. Thus, adjustments for size and beta erode only a fraction of the value premium (about one tenth for most of the measures). If the two commonly used risk factors effectively capture portfolio risk, these results suggest that value stocks are not riskier and hence the value premium's existence cannot be explained by risk.

Certainly, CAPM beta and size may fail to capture fully all dimensions of risk. In that case, value premiums can possibly constitute just a compensation for non-captured risk (LSV). However, regardless of the underlying (hidden) risk factor, if riskier, the contrarian strategies should perform poorly in bad states of the economy when wealth is scarcer and the marginal utility of consumption is high. Hence, we investigate the dependence of value premium on the state of the economy by regressing the value premium and its components on proxies of economic conditions – Swedish stock market index (AFGX) and Swedish GDP growth. The risk-related explanation predicts a positive relationship between the value premium and AFGX and between the value premium and GDP growth. On the contrary, if the value premium is a result of a market correction to previously generated mispricing, one can anticipate a negative relation between the value premium and the economic conditions. This is anticipated because we expect value stocks to be less sensitive to market conditions than glamour stocks. During favorable economic conditions, the correction of overvalued (glamour) stocks may be postponed as the inadequacy of a high valuation becomes less apparent. Conversely, when the economic conditions are poor and the stock market is weak, the

overvaluation quickly becomes evident. Therefore, if correction of mispricing were the underlying reason for the existence of value premium, one would expect the contrarian strategies to work particularly well when the economy is weak: hence, a negative hypothesized relation between value premium and stock market return and between value premium and GDP growth.

Panel B in Table 5 presents the results from the regression of the value premium on the AFGX return. Even though none of the slope coefficients is significant at the 5% level, most of them are negative (with the exception of the 10-1 value premium based on the B/M sorting), with some approaching the cut-off for negative significance. The results from the regression of the value premium on GDP growth are given in Panel C in Table 5. All slope coefficients are negative and with insignificant t-stats ranging from -0.494 for the (10-1) value premium for the B/M strategy to -1.591 for the (10-1) value premium for the E/P strategy. Hence, it seems unlikely that the value premium is caused by some hidden economy-related risk factor because the relationship of value premium (both to stock market return and to GDP growth) is, if anything, slightly negative.

Value Premium over Time

Next, we analyze changes in the value premium over time. Few inferences useful for future investing and for assessment of stock market efficiency can be drawn from our findings in case the value premium has significantly declined over time, possibly because of investors becoming increasingly aware of its existence and trading on it. [10] Hence, we regress the value premiums and their components on a time variable. The unadjusted results presented in Panel D of Table 5 indicate that the AFGX return, the E/P value premium, and the B/M value premium have all decreased over time (although with statistically insignificant coefficients).

[10] We thank an anonymous referee for drawing our attention to this aspect.

However, closer inspection reveals that these results are severely affected by extremely high returns and value premiums in the early 1980s and extremely low returns and value premiums around the year 2000 (the time of an unusually high valuation and a subsequent sharp decline of high-tech stocks). A removal of all years that are more than 1.5 standard deviations away from their sample mean (marked with an asterisk in Table 5) renders all coefficients insignificant. The t-statistic of the 10-1 premium earned on the E/P strategy is insignificantly negative, whereas the t-statistic on the other three value premiums (9-2 for E/P and 10-1 and 9-2 for B/M) are insignificantly positive. Our interpretation is that there is no support for the idea that value premiums decrease over time.

Furthermore, removing outliers does not systematically affect the mean value premium in that the 10-1 premium increases for the E/P strategy from 11.2% to 13.6% and decreases for the B/M strategy from 11.9% to 8.1% and the 9-2 premium increases substantially for both E/P and B/M measures (Panel A of Table 5). Hence, our conclusions regarding the existence of value premiums are robust to the removal to unusual years.

Combined Contrarian Strategies

In this subsection we report results on contrarian strategies that sort the stocks on both E/P and B/M. By combining the two measures, we conduct a 'broader' screening that also allows for a comparison with LSV. First, we sort all the stocks existing at a given time of portfolio formation to terciles based on E/P and subsequently sub-sort each terciles into three sub-terciles based on B/M. We label the nine resulting portfolios as 11, 12, 13, 21, 22, 23, 31, 32, and 33, with the first digit denoting the E/P tercile and the second digit the B/M sub-tercile (in terciles 1 we expect a higher occurrence of glamour stocks, whereas value stocks should be concentrated in tercile 3). We compute the value premium as the difference in returns on value portfolio 33 (that contains stocks classified as value for both the E/P and B/M measures)

and glamour portfolio 11. None of the other portfolios is considered in the analysis.

Results for the combined contrarian strategy reported in Table 6 generally show the same pattern as the individual CIS. In the first three years after portfolio formation the zero-investment portfolio earns an average annual value premium of 12.0%. The three-year cumulative value premium is 54.5%. These returns are not surprising as they fall between the returns on the simple E/P and simple B/M strategy. However, the success rate for the average annual returns increases marginally (to 68.1%) and the value overperformance component constitutes a higher portion of the entire value premium (68%). Hence, the excess returns may be easier to obtain in practice in that they require less short selling.

5. Transitory Earnings

In this and the following section we extend the design of contrarian strategies by adjusting for two issues that contaminate our proxies of accounting fundamentals. First we control for noise in earnings that is caused by the transient component and in the next section we adjust for the bias in book value of equity that is caused by accounting conservatism. We test whether the enhanced measures are more effective in identifying under- and overvalued stocks, and consequently, whether they lead to a larger value premium earned more consistently. To avoid confusion about various benchmarks all results are reported in a condensed form showing the incremental value premiums and incremental success rates. These are the differences in the respective measures obtained by the enhanced strategy and a corresponding benchmark.

We decompose earnings into a permanent and a transitory component. While the permanent component constitutes the earnings, the company is expected to sustain in the future; in contrast, the transient component reflects annual idiosyncratic effects on earnings unrelated to a company's fundamental value. When earnings are stable, the transient component is of lesser importance. Hence, we first run contrarian strategies separately for

industries/companies with stable and volatile earnings to confirm the relevance of our transitory earnings idea. Subsequently, we directly estimate the sustainable earnings (*sE*) that are free from noise, which is caused by the transient earnings component, and we examine the performance of contrarian strategies based on this measure.

Stable and Volatile Industries

Initially, we test whether an E/P-based CIS works better for industries with stable earnings. When earnings are inter-temporally stable, the transient component of earnings is less prominent, and consequently, current earnings are more indicative of future earnings. Because the E/P measure should be more effective in isolating the over- and undervalued companies, we expect that the value premium is higher within industries with stable earnings.

For each industry, we compute the median industry earnings coefficient of variation (*md(iECV)*) based on the earnings coefficient of variation for individual companies. Table 7 shows *md(iECV)*, which varies from 0.660 for chemicals to 2.061 for services (excluding IT and consulting). Based on *md(iECV)*, the industries are placed into two groups. Table 8 presents the results of the contrarian strategy performed on the sub-sample of companies belonging to stable industries (Panel A) and on the sub-sample of companies in industries with volatile earnings (Panel B).

The results clearly support the above-stated proposition. The average incremental value premium for the extreme portfolios 10-1 is positive for stable industries (+4.2%) and negative for volatile industries (-7.5%). Furthermore, the incremental success rate is positive for stable industries (+5.7%) and negative for volatile industries (-12.5%). This observation means that when performed within a sub-sample of stable (volatile) industries, contrarian strategies earn a higher (lower) value premium of 15.0% (3.3%) at a higher (lower) degree of consistency in comparison with the benchmark of 10.8% that is obtained by pooling all industries. These

results clearly suggest that volatility of earnings impairs the ability of earnings to serve as a proxy for fundamental value. When earnings are volatile, the relevant sustainable component is obscured with noise, which makes the sorting on E/P less effective in separating over- and undervalued stocks and reduces the magnitude and consistency of value premium.

Volatile earnings indicate the presence of a substantial transient component in earnings. If the transient component is not identifiable, it creates noise that impairs earnings ability to proxy for fundamental value. However, if the transient component is pegged to the business cycle, it is relatively easily separable, even though it may be quite large. In these industries earnings tend to be volatile but, depending on the business cycle phase, the transient component is systematically high or low and hence the sustainable earnings can be isolated. We therefore refine the analysis by sub-dividing the volatile half of industries into those pegged to the business cycle (raw materials, forestry, and transportation) and the rest. Panel C of Table 8 shows that after sub-sorting separately within cyclical industries, the incremental 10-1 value premium for volatile industries improves from -7.5% to -4.1% and the incremental success rate improves from -12.5% to -6.8%. Thus, when earnings are volatile, treating cyclical industries separately generates a higher and more consistent value premium.

Taken together, these results highlight the importance of distinguishing the sustainable component of earnings from the transient one. For industries with a large transient component in earnings (i.e. industries with volatile earnings), the value premium earned is smaller and less consistent in comparison with all industries. Furthermore, if the transient component is large but relatively easily separable (as it is in cyclical industries), both the incremental value premium and the incremental success rate improve somewhat. This observation suggests that the transitory component of earnings is relevant for the effectiveness of contrarian strategies.

Investment strategy based on historical earnings volatility

Even though the previous analysis provides insights into the effect earnings quality has on the E/P-based CIS, it has a limited usefulness for investors. Because we purposely introduced hindsight bias when we used earnings volatility data from the entire sample period for computing earnings volatility. Unless the 'nature' of industries were common knowledge, the strategy is infeasible because investors in the past did not have sufficient information. Now we use the same strategy but based on information available at the time of portfolio formation.

We compute the coefficient of variation for each company based on the past five years of earnings (requiring at least three available observations). At each formation time, we divide the companies into halves according to their historical earnings volatility and then perform the contrarian strategy within each half. Table 9 shows that even though both the incremental value premiums and the incremental success rates are smaller in magnitude, the pattern documented for stable and volatile industries remains unchanged. The incremental value premium for firms with historically stable earnings is +2.3%, whereas it is -3.1% for firms with volatile earnings. Furthermore, the incremental success rate is +9.4% for stable companies and -4.4% for volatile companies. These results are consistent with our previous conclusion that the stability of earnings is relevant for the effectiveness of contrarian strategies.

Sustainable Earnings

Building on our previous conclusion that adjusting for transience of earnings is crucial for the effectiveness of contrarian strategies, we now isolate a sustainable component of earnings (*sE*) and use it rather than plain earnings as a proxy for a company's fundamentals. We use two methods to estimate *sE*. For every year, we calculate for each company the average return on assets for the past five years (minimum three years). We then obtain *sE* by multiplying the

average historical company return on assets *mn(cROA)* by the company's total assets. Subsequently, we construct a ratio of sustainable earnings to market value of equity (*sE/P*) that is used in our CIS. The second method uses the historical mean for the past five years of industry median return on assets (calculated in cross-section every year) *mn(iROA)* multiplied by an individual company's assets.

In Table 10 we report the results for a CIS based on sustainable earnings (*sE/P*). Panel A, in which *sE* are estimated based on *mn(cROA)*, shows that using sustainable earnings instead of plain earnings not only increases the average annual value premium by 2.1% but also improves the consistency of the strategy (the incremental success rate is +3.7%). Note that this incremental premium earned on the entire sample is comparable with the incremental premium on stable companies (+2.2%). Panel B shows that these results can be even further improved by using an industry-based (rather than company-based) return on assets *mn(iROA)*: the incremental value premium is +2.7% and the incremental success rate is +11.0%.

We conclude that distinguishing between the sustainable and transient components of earnings increases the value premium earned on contrarian strategies and increases the consistency of producing positive value premiums. With the use of a simple technique to estimate the sustainable component of earnings for all stocks in the sample, one may produce value premium comparable with the one earned on the sub-sample of stocks with stable earnings (where the transient component of earnings is less significant).

6. Accounting Conservatism

Next, we test if the value premium generated by CIS increases when the effect of accounting conservatism on asset and liability recognition is taken into account. Although accounting conservatism affects all companies to some extent, companies whose future performance largely relies on intangible assets are more affected. Overall, our method resembles the one

used for extending the E/P-based CIS. First, we explore the B/M-based investment strategy by constructing portfolios that include foresight and then evaluate strategies that can easily be implemented by investors.

To identify the normal levels of B/M for individual companies reflecting the typical bias in B that is due to accounting conservatism relevant for each company, we make use of both a cross-sectional industry and a time-series analysis. We assume that the impact of the accounting bias is similar within industries (mainly because of similar asset structures) and that it does not change substantially over time. Thus, averaging across the two dimensions removes most of the effect of mispricing on B/M and excludes the effect of accounting bias. In particular, averaging within industries eliminates the effect of mispricing of individual companies. Averaging across time eliminates the impact of temporary industry-wide mispricing.

Industry Levels of B/M over the Entire Sample Period

We compute the median book-to-market ratio $md(i(B/M))$ for each industry across the whole period. Table 11 shows $md(i(B/M))$ for individual industries, which varies from 0.293 for high-tech development to 0.928 for transportation. These industries are divided into two roughly equal parts (as shown in Table 11) and we sort the companies into decile portfolios separately within each group. If companies within each industry are homogenously affected by accounting conservatism, sorting separately within these groups should partially control for the effect of accounting conservatism on company B/M and hence highlight the effect of mispricing on B/M. This procedure should make the identification of under- and overvalued stocks more effective.

Table 12 shows that pre-sorting on $md(i(B/M))$ improves the performance of contrarian strategies. The incremental average annual value premium is +3.3%, which means

that the value portfolio outperforms, on average, the glamour portfolio by 17.1%. The positive incremental success rate of 9.7% implies that the consistency in producing positive value premium over time also increases. It should be noted, however, that because this investment strategy requires information on B/M values from the whole sample period, it is not feasible unless the typical level of unrecognized assets in individual industries is common knowledge to investors. Nevertheless, it does indicate the extent to which the effect of accounting bias in B/M contaminates the results of the initial strategy reported in Table 2. In the following subsection we attempt to capture the benefits of the adjustment for the typical level of B/M using only information available at the time of portfolio formation.

Historical Industry Levels of B/M

To avoid hindsight bias we divide companies into groups according to historical mean industry book-to-market ratio $mn(i(B/M))$ based on the date from the past five years preceding the time of portfolio formation. We report the incremental value premium generated by this strategy in Table 13. The incremental value premium averaged over the three holding years is not more than +0.5%. The increase in success rate is also very small (+1.4%). Although these results indicate that it might be possible to enhance the performance of B/M-based contrarian strategies with the use of historical information, the improvement is economically marginal. The reason for this is that using only historical $mn(i(B/M))$ from a short period introduces noise that disturbs our measure and deteriorates the return. Using only five years of time from the industry does not fully capture the typical effect of accounting conservatism on B/M.

Unbiased Book Value of Equity

The results presented so far suggest that the varying level of accounting bias in the book value of equity impedes its ability to proxy for fundamental value and therefore contaminates B/M as an indicator of market mispricing. In this subsection we explicitly adjust for the level of

accounting conservatism in book value of equity based on industry estimates of the permanent measurement bias (*PMB*) for Swedish quoted companies. Runsten (1998) classifies all companies at the SSE into industries and then estimates the level of accounting bias affecting their book value of equity. He suggests that the *PMB* arises because of (1) unrecognized assets, (2) hidden reserves that create an understatement of company assets, and (3) deferred tax liabilities that result in overstated liabilities. Whereas the first factor is an issue in most countries, the last two factors are somewhat peculiar to the Swedish accounting system. We use *PMB* to compute the 'unbiased' book value of equity (*uB*) by multiplying the book value of equity by (1 + *PMB*). Furthermore, we use ratio *uB/M* for sorting companies into decile portfolios. We expect that *uB* is superior to simple *B* in capturing the level of company fundamentals and therefore *uB/M* is more effective than B/M in identifying mispriced stocks.

Panel A of Table 14 shows Runsten's industry classification (Runsten, 1998, p. 153) and the *PMB* for each industry. As expected, the highest level of estimated bias is found in pharmaceuticals (1.74) and the lowest for conglomerates (0.28) with a median value of 0.58. Panel B shows the matching of industry classifications.

Table 15 summarizes the results for the contrarian strategies when portfolios are sorted applying *uB/M*. We can see that the *uB/M* strategy generates a positive incremental value premium of +1.7% and that the success rate slightly increases with +2.8%. Although these results are consistent with our predictions, they are smaller in magnitude than the ones for *sE/P* strategy, suggesting that adjusting for the accounting bias in book value of equity is more problematic than estimating the level of permanent earnings. We find this rather intuitive considering that the book value captures the cumulative effects of economic events occurring over the entire existence of a company, whereas earnings are affected only by factors relating to a given accounting period.

7. Summary and Conclusions

This study investigates whether CISs that buy stocks with a low stock price relative to measures of fundamental value and short sell stocks with high relative market valuation earn a positive value premium. Furthermore, we examine if adjusting for transience of earnings and for an accounting bias in book value of equity affects the magnitude and consistency of value premium. It is first shown that the CIS is capable of producing excess returns. The average annual value premium in the first three years after portfolio formation is 10.8% and 13.8% for strategies based on E/P and B/M, respectively. Accordingly, the value premium is about one-half the annual return of the market, which we deem economically significant. It is also shown that the value premium has not decreased over time. The value premium's persistence is not likely to be explained by transaction costs because a substantial excess return can be earned without any short selling and with portfolio rebalancing once in three years. Considering risk, we use two commonly recognized risk proxies (size and CAPM beta) to directly control for risk of individual portfolios. These adjustments reduce the magnitude of value premiums only marginally. Furthermore, we report that the correlation between value premiums and economic conditions is slightly negative, which makes it unlikely for the value premiums to arise because of some unknown risk factor unrelated to CAPM beta or size. Thus, we conclude that the use of earnings and book value of equity as proxies of company fundamentals is effective in isolating under- and overvalued companies.

Subsequently, we document that the average return and consistency of contrarian strategies can be improved by adjusting for transitory earnings and for a bias caused by accounting conservatism. We show that contrarian strategies produce positive incremental value premiums that are more consistent over time when we use only the sub-sample of companies stable with stable earnings that are characterized by less noise because of transience of earnings. We also show that if the volatile earnings are predictable, pre-sorting

on predictability produces relatively higher and more consistent value premiums. Interpreting these results as confirming the significance of transience of earnings, we directly estimate the sustainable component of earnings. Sorting the entire sample based on a measure relating sustainable earnings to market value produces value premium comparable with the one earned when using plain earnings within the stable half of companies.

Finally, we find that controlling for the accounting bias in book value improves the capacity of B/M to identify under- and overvalued stocks. When we pre-sort the sample on the average industry B/M and subsequently form decile portfolios separately within each of the pre-sorted halves, the value premium as well as its consistency increases. This gives an indication about how severely the company B/M is affected by accounting conservatism. Thereafter, we estimate the 'unbiased' book value of equity and conduct a contrarian strategy that produces better results regarding the magnitude and consistency of value premium.

In sum, strategies based on refined measures of company fundamentals are shown to be generally superior to the simple strategies using unadjusted accounting figures. However, we find that the improvement of E/P-based strategies (i.e. controlling for transience of earnings) is larger and more consistent than the improvement of B/M-based strategies (i.e. controlling for the accounting bias in book value of equity). This suggests that estimating the level of permanent earnings is relatively easier than estimating the level of unbiased book value of equity. Therefore, we expect that designing procedures that are more sophisticated for cleaning the accounting bias out of the book value of equity may further improve the premium and consistency of B/M-based CIS.

The value premium that can be earned on CIS is a puzzling phenomenon for both researchers and practitioners. Additional to the transaction cost and risk arguments, some researchers point to behavioral biases. Lakonishok, et al. (1994) argue that there is an excessive extrapolation of past success/failure into the future. Their line of reasoning,

however, has been challenged by later research (e.g. Dechow and Sloan, 1997). Although we try to avoid theoretical explanations, the empirical data show that CISs produce high returns. Value/glamour stocks are often mispriced in the short run; yet, there is no doubt that the market then corrects itself in two to three years time. During this period, it is possible to earn systematic excess returns.

Table 1

Descriptive Statistics

Year	*N*	*E*	*B*	*M*	*ROE*	*E/P*	*B/M*
Median Values for Individual Years							
1979	122	11.7	130.5	161.6	10.6%	0.084	0.917
1980	163	7.3	92.3	202.1	9.0%	0.066	0.737
1981	204	6.3	73.0	316.0	12.9%	0.069	0.622
1982	233	6.2	62.7	525.6	12.0%	0.037	0.374
1983	257	6.7	85.0	560.9	10.3%	0.027	0.289
1984	282	5.7	90.1	261.9	9.1%	0.036	0.436
1985	286	6.5	87.4	306.0	9.9%	0.039	0.384
1986	277	9.9	112.2	429.0	11.5%	0.036	0.287
1987	262	14.8	129.7	405.0	13.1%	0.049	0.345
1988	245	20.0	173.1	574.3	14.0%	0.043	0.296
1989	242	26.2	214.6	687.2	15.0%	0.057	0.370
1990	224	18.3	234.7	409.5	10.8%	0.064	0.555
1991	203	6.4	301.7	298.8	4.7%	0.064	0.881
1992	196	-0.3	341.8	256.7	0.2%	0.056	1.080
1993	211	15.9	372.8	583.6	7.2%	0.062	0.626
1994	206	38.0	415.1	549.2	14.4%	0.083	0.688
1995	213	44.2	492.2	676.8	14.6%	0.097	0.766
1996	201	49.1	612.2	1 244.5	11.3%	0.056	0.472
1997	234	45.1	475.2	1 166.8	11.3%	0.054	0.437
1998	252	40.8	426.7	789.8	11.1%	0.069	0.568
1999	260	35.8	395.1	1 145.3	10.1%	0.058	0.382
2000	264	35.8	492.1	763.4	9.2%	0.085	0.626
2001	256	6.7	422.9	693.6	2.1%	0.057	0.579
2002	244	2.3	387.6	376.6	1.8%	0.076	0.884
2003	233	10.1	341.9	741.4	5.1%	0.054	0.471
2004	227	30.1	402.0	999.1	10.1%	0.053	0.393
2005	9	112.0	460.0		12.6%		
total	6006						
Entire Sample Period							
median		15.2	239.0	576.4	10.2%	0.055	0.487
quartile 1		1.0	65.0	192.2	2.5%	0.028	0.285
quartile 3		92.2	929.7	2 243.9	18.2%	0.090	0.801

Notes:
Descriptive statistics showing annual averages of key variables for all stocks in the sample as well as quartile values for the entire sample period. *N* is the number of observations in each year (note: the values for 2005 arise because of irregular accounting periods ending in the beginning of 2005; these observations are not used for the analysis). *E* denotes company earnings and *B* the book value of equity of the corresponding accounting year (both in million SEK). *M* is the market value of equity at the end of March following the accounting year (i.e. the market value that is matched with the book value of equity in *B/M*). *ROE* denotes the return on shareholders' equity computed as a ratio of the end of the year's earnings and book value of equity (i.e. *ROE = E/B*). *E/P* and *B/M* are the earnings-to-price and book-to-market ratio multiples, respectively, used for sorting companies into decile

portfolios. They are constructed by matching accounting value of a corresponding accounting period with the market value of equity at the end of March following the accounting year.

Table 2

Simple Contrarian Strategies

		E/P					*B/M*				
		R1	*R2*	*R3*	*AR3*	*CR3*	*R1*	*R2*	*R3*	*AR3*	*CR3*
Raw Returns on Simple Contrarian Strategies											
glamour	1	21.6%	13.5%	22.4%	19.2%	52.7%	20.8%	13.3%	14.9%	16.3%	58.7%
	2	26.2%	27.6%	15.8%	23.2%	81.3%	25.2%	23.2%	16.8%	21.7%	65.2%
	3	22.4%	19.6%	22.2%	21.4%	80.1%	24.3%	19.8%	28.8%	24.3%	84.4%
	4	21.1%	20.4%	21.5%	21.0%	73.4%	23.5%	21.4%	19.7%	21.5%	75.0%
	5	23.1%	24.3%	29.4%	25.6%	98.5%	21.4%	27.0%	24.2%	24.2%	71.6%
	6	22.1%	22.4%	25.6%	23.4%	82.6%	26.5%	25.6%	23.7%	25.3%	87.3%
	7	24.4%	25.7%	24.0%	24.7%	81.8%	27.9%	29.3%	28.8%	28.7%	97.3%
	8	27.7%	25.5%	29.1%	27.4%	96.8%	26.7%	27.1%	24.3%	26.1%	88.8%
	9	31.7%	28.3%	25.0%	28.3%	101.1%	28.9%	29.9%	27.9%	28.9%	103.6%
value	10	32.8%	29.1%	27.9%	29.9%	115.7%	32.6%	27.0%	30.7%	30.1%	108.6%
10 - 1		11.2%	15.6%	5.5%	**10.8%**	**63.0%**	11.9%	13.7%	15.8%	**13.8%**	**49.9%**
9 - 2		5.5%	0.7%	9.2%	**5.1%**	**19.8%**	3.6%	6.6%	11.1%	**7.1%**	**38.4%**
success rate		68.0%	75.0%	56.5%	**66.5%**	**87.0%**	56.0%	58.3%	69.6%	**61.3%**	**73.9%**
market std.dev.		40.9%	41.4%	42.3%	41.5%	89.0%	40.9%	41.4%	42.3%	41.5%	89.0%
glamour std.dev.		52.3%	42.1%	47.9%	47.4%	71.6%	43.7%	42.1%	42.0%	42.6%	79.2%
value std.dev.		42.9%	46.4%	42.6%	43.9%	130.2%	50.6%	44.1%	45.8%	46.8%	116.8%
Rm		25.8%	24.7%	24.2%	24.9%	82.6%	25.8%	24.7%	24.2%	24.9%	82.6%
glamour underperformance		-4,2%	-11.2%	-1.8%	-5.7%	-29.9%	-5.0%	-11.4%	-9.3%	-8.6%	-23.9%
value outperformance		7.1%	4.4%	3.6%	5.0%	33.1%	6.9%	2.3%	6.5%	5.2%	26.0%

Notes:

Raw returns on simple CIS for 10 decile portfolios based on earnings-to-price ratio (*E/P*) and book-to-market ratio (*B/M*). *R1, R2,* and *R3* are annual returns in the first, second, and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the

portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. Rows *1* to *10* show the returns on individual decile portfolios. *10-1* and *9-2* show the value premium computed as returns on zero-investment consisting of short selling glamour portfolio 1 or 2 respectively and buying value portfolio 10 or 9 respectively. *Success rate* gives the annual frequency with which value portfolio 10 outperforms glamour portfolio 1, i.e. the proportion of years when the 10-1 value premium is positive. *Market std.dev*., *glamour std.dev.* and *value std.dev.* show standard deviation of returns for the market and for portfolios 1 and 10. *Rm* is the market return. *Glamour underperformance* (*value outperformance*) show the components of the value premium computed as the difference between the return on value portfolio 10 (glamour portfolio 1) and market return.

Table 3

Size-Adjusted Contrarian Strategies

		E/P					*B/M*				
		R1	*R2*	*R3*	*AR3*	*CR3*	*R1*	*R2*	*R3*	*AR3*	*CR3*
Size-Adjusted Returns on Simple Contrarian Strategies (SAAR)											
glamour	1	-3.9%	-9.6%	-0.4%	-4.6%	-24.7%	-2.4%	-8.0%	-7.3%	-5.9%	-15.6%
	2	2.9%	3.4%	-8.4%	-0.7%	3.6%	1.1%	-0.5%	-4.8%	-1.4%	-10.1%
	3	-1.6%	-0.6%	-1.2%	-1.1%	5.8%	-0.1%	-2.7%	3.8%	0.3%	5.2%
	4	-3.0%	-2.3%	-0.8%	-2.0%	-5.0%	-0.4%	-1.6%	-4.0%	-2.0%	-2.0%
	5	0.4%	1.2%	7.0%	2.9%	21.6%	-2.9%	1.3%	0.0%	-0.5%	-7.9%
	6	-2.1%	-1.2%	3.5%	0.1%	5.9%	0.7%	2.4%	1.0%	1.3%	8.6%
	7	3.0%	1.8%	-0.2%	1.5%	5.3%	1.7%	4.0%	4.4%	3.4%	16.8%
	8	5.7%	1.8%	4.3%	4.0%	20.0%	1.9%	1.4%	0.4%	1.2%	9.6%
	9	5.5%	3.4%	2.0%	3.6%	20.8%	2.3%	4.5%	2.3%	3.0%	22.5%
value	10	8.1%	5.1%	3.8%	5.7%	36.9%	4.9%	0.8%	5.1%	3.6%	25.8%
10 - 1		12.0%	14.7%	4.2%	**10.3%**	**61.6%**	7.2%	8.9%	12.4%	**9.5%**	**41.4%**
9 - 2		2.6%	0.0%	10.4%	**4.3%**	**17.3%**	1.2%	5.0%	7.1%	**4.4%**	**32.6%**
success rate		76.0%	75.0%	56.5%	**69.2%**	**87.0%**	52.0%	54.2%	69.6%	**58.6%**	**73.9%**
market std.dev.		40.9%	41.4%	42.3%	41.5%	89.0%	40.9%	41.4%	42.3%	41.5%	89.0%
glamour std.dev.		24.7%	12.2%	19.4%	18.7%	36.2%	26.0%	15.9%	17.4%	19.8%	37.2%
value std.dev.		22.1%	17.7%	15.1%	18.3%	59.5%	24.9%	23.5%	20.8%	23.1%	56.9%
Rm		25.8%	24.7%	24.2%	24.9%	82.6%	25.8%	24.7%	24.2%	24.9%	82.6%
glamour underperformance		-29,6%	-34.3%	-24.7%	-29.5%	-107.2%	-28.1%	-32.7%	-31.6%	-30.8%	-98.1%
value outperformance		-17.6%	-19.6%	-20.4%	-19.2%	-45.7%	-20.9%	-23.9%	-19.1%	-21.3%	-56.8%

Notes:

Size-adjusted abnormal returns on simple CIS for 10 decile portfolios based on earnings-to-price ratio (*E/P*) and book-to-market ratio (*B/M*). Size-adjusted

abnormal returns are obtained as a difference between raw returns on a stock and the raw return on its corresponding size-decile. *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. Rows *1* to *10* show the returns on individual decile portfolios. *10-1* and *9-2* show the value premium computed as returns on zero-investment consisting of short selling glamour portfolio 1 or 2 respectively and buying value portfolio 10 or 9 respectively. *Success rate* gives the annual frequency with which value portfolio 10 outperforms glamour portfolio 1, i.e. the proportion of years when the 10-1 value premium is positive. *Market std.dev*., *glamour std.dev.* and *value std.dev.* show standard deviation of returns for the market and for portfolios 1 and 10. *Rm* is the market return. *Glamour underperformance* (*value outperformance*) show the components of the value premium computed as the difference between the return on value portfolio 10 (glamour portfolio 1) and market return.

Table 4

Beta-Adjusted Contrarian Strategies

		E/P					*B/M*				
		R1	*R2*	*R3*	*AR3*	*CR3*	*R1*	*R2*	*R3*	*AR3*	*CR3*
Beta-Adjusted Returns on Simple Contrarian Strategies (BAAR)											
glamour	1	2.0%	-4.9%	5.0%	0.7%	-22.3%	0.5%	-5.8%	-2.9%	-2.7%	-19.7%
	2	6.3%	8.8%	-1.7%	4.5%	5.3%	5.5%	5.1%	-0.2%	3.5%	-9.4%
	3	3.3%	1.4%	4.9%	3.2%	6.1%	5.1%	1.4%	11.4%	6.0%	9.6%
	4	3.2%	3.1%	4.9%	3.7%	4.7%	4.4%	3.1%	2.3%	3.2%	1.3%
	5	4.5%	6.5%	12.6%	7.9%	27.1%	3.2%	9.5%	7.3%	6.6%	0.3%
	6	4.2%	5.0%	8.6%	5.9%	12.8%	8.3%	8.2%	6.5%	7.7%	16.8%
	7	5.9%	7.9%	6.8%	6.9%	9.7%	9.4%	11.2%	11.3%	10.6%	24.1%
	8	9.3%	7.6%	12.1%	9.7%	25.1%	7.8%	9.0%	7.2%	8.0%	15.0%
	9	12.9%	10.2%	7.5%	10.2%	27.4%	10.1%	11.9%	10.6%	10.9%	30.1%
value	10	13.4%	10.0%	9.3%	10.9%	37.4%	13.3%	8.7%	13.2%	11.7%	32.6%
10 - 1		11.4%	14.9%	4.3%	**10.2%**	**59.8%**	12.8%	14.5%	16.0%	**14.5%**	**52.4%**
9 - 2		6.5%	1.3%	9.2%	**5.7%**	**22.1%**	4.6%	6.8%	10.8%	**7.4%**	**39.5%**
success rate		68.0%	70.8%	52.2%	**63.7%**	**82.6%**	56.0%	58.3%	69.6%	**61.3%**	**73.9%**
market std.dev.		40.9%	41.4%	42.3%	41.5%	89.0%	40.9%	41.4%	42.3%	41.5%	89.0%
glamour std.dev.		56.4%	45.1%	53.6%	51.7%	67.3%	48.4%	45.8%	47.0%	47.1%	84.4%
value std.dev.		42.5%	46.1%	44.1%	44.2%	111.0%	49.4%	44.4%	46.7%	46.8%	86.6%
Rm		25.8%	24.7%	24.2%	24.9%	82.6%	25.8%	24.7%	24.2%	24.9%	82.6%
glamour underperformance		-23.7%	-29.6%	-19.3%	-24.2%	-104.9%	-25.3%	-30.6%	-27.1%	-27.6%	-102.3%
value outperformance		-12.4%	-14.7%	-14.9%	-14.0%	-45.1%	-12.4%	-16.1%	-11.1%	-13.2%	-49.9%

Notes:

Beta-adjusted abnormal returns on simple CIS for 10 decile portfolios based on earnings-to-price ratio (*E/P*) and book-to-market ratio (*B/M*). Beta-adjusted

abnormal returns are obtained as a difference between raw returns on a stock and the expected return on as stock based on CAPM. *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. Rows *1* to *10* show the returns on individual decile portfolios. *10-1* and *9-2* show the value premium computed as returns on zero-investment consisting of short selling glamour portfolio 1 or 2 respectively and buying value portfolio 10 or 9 respectively. *Success rate* gives the annual frequency with which value portfolio 10 outperforms glamour portfolio 1, i.e. the proportion of years when the 10-1 value premium is positive. *Market std.dev*., *glamour std.dev.* and *value std.dev.* show standard deviation of returns for the market and for portfolios 1 and 10. *Rm* is the market return. *Glamour underperformance* (*value outperformance*) show the components of the value premium computed as the difference between the return on value portfolio 10 (glamour portfolio 1) and market return.

Table 5

Dependence on Economic Conditions and Time

Year	*AFGX*	*g(GDP)*	*E/P*				*B/M*			
			10-1	*9-2*	*value*	*glamour*	*10 - 1*	*9 - 2*	*value*	*glamour*
Panel A - Individual Years										
1980	36.4%	1.7%	118.6% *	26.6%	88.5% *	-30.1%	102.9% *	7.7%	80.3% *	-22.6%
	0.505	*-0.255*	*2.405*	*0.629*	*3.446*	*-0.982*	*1.983*	*0.138*	*3.178*	*-0.622*
1981	30.0%	1.4%	23.9%	-15.7%	2.1%	-21.7%	-21.0%	23.9%	-8.3%	12.8%
	0.306	*-0.427*	*0.283*	*-0.632*	*-0.209*	*-0.664*	*-0.717*	*0.695*	*-0.656*	*0.626*
1982	92.2% *	1.2%	55.7%	7.9%	12.3%	-43.4%	117.3% *	27.8%	54.9% *	-62.3% *
	2.239	*-0.541*	*0.995*	*0.070*	*0.221*	*-1.485*	*2.296*	*0.826*	*2.078*	*-2.026*
1983	33.8%	1.8%	-9.7%	4.5%	16.2%	26.0%	46.2%	-20.0%	26.3%	-20.0%
	0.426	*-0.197*	*-0.470*	*-0.031*	*0.387*	*1.141*	*0.748*	*-0.810*	*0.838*	*-0.529*
1984	-18.6%	4.3%	23.4%	2.0%	12.5%	-10.9%	1.8%	20.7%	6.6%	4.8%
	-1.203	*1.236*	*0.272*	*-0.104*	*0.228*	*-0.256*	*-0.220*	*0.583*	*-0.015*	*0.345*
1985	48.2%	2.2%	23.6%	39.4%	10.5%	-13.1%	29.7%	5.1%	14.7%	-15.0%
	0.872	*0.032*	*0.276*	*1.011*	*0.144*	*-0.338*	*0.390*	*0.049*	*0.339*	*-0.355*
1986	31.6%	2.9%	-2.4%	-49.2% *	-15.2%	-12.8%	-11.6%	-13.1%	-1.7%	9.9%
	0.356	*0.433*	*-0.307*	*-1.633*	*-0.943*	*-0.325*	*-0.512*	*-0.574*	*-0.373*	*0.525*
1987	4.6%	3.5%	-1.5%	-5.7%	5.8%	7.3%	18.1%	10.3%	9.4%	-8.6%
	-0.484	*0.777*	*-0.285*	*-0.334*	*-0.053*	*0.434*	*0.135*	*0.227*	*0.110*	*-0.130*
1988	42.8%	2.7%	9.9%	17.4%	10.6%	0.7%	22.5%	16.5%	18.7%	-3.8%
	0.706	*0.319*	*-0.031*	*0.354*	*0.150*	*0.186*	*0.232*	*0.441*	*0.511*	*0.042*
1989	1.2%	2.8%	2.4%	-7.6%	2.9%	0.5%	-7.3%	5.9%	-2.3%	5.0%
	-0.590	*0.376*	*-0.198*	*-0.393*	*-0.177*	*0.176*	*-0.417*	*0.077*	*-0.397*	*0.352*
1990	-4.2%	1.0%	12.7%	8.9%	5.1%	-7.5%	-14.3%	-7.4%	-8.2%	6.0%
	-0.758	*-0.656*	*0.031*	*0.102*	*-0.082*	*-0.126*	*-0.569*	*-0.379*	*-0.654*	*0.388*
1991	-8.6%	-1.1% *	19.7%	14.0%	11.5%	-8.2%	-29.0%	-4.4%	-23.6%	5.4%
	-0.892	*-1.860*	*0.189*	*0.252*	*0.186*	*-0.152*	*-0.890*	*-0.277*	*-1.318*	*0.367*
1992	-0.5%	-1.2% *	3.7%	0.9%	3.2%	-0.5%	-27.0%	5.9%	-11.1%	15.9%
	-0.643	*-1.917*	*-0.168*	*-0.139*	*-0.164*	*0.138*	*-0.847*	*0.077*	*-0.779*	*0.737*
1993	41.1%	-2.0% *	19.6%	25.6%	-5.0%	-24.6%	35.9%	30.2%	-3.2%	-39.1%
	0.653	*-2.376*	*0.187*	*0.597*	*-0.509*	*-0.772*	*0.524*	*0.909*	*-0.435*	*-1.204*

1994	3.9%		3.9%		15.8%		8.9%		-6.5%		-22.3%		-11.9%		-12.1%		-1.0%		10.9%			
	-0.504		*1.007*		*0.103*		*0.100*		*-0.575*		*-0.688*		*-0.518*		*-0.539*		*-0.343*		*0.559*			
1995	29.9%		3.9%		-0.6%		0.0%		-3.9%		-3.3%		-13.9%		-16.1%		1.3%		15.2%			
	0.304		*1.007*		*-0.267*		*-0.165*		*-0.465*		*0.034*		*-0.561*		*-0.677*		*-0.244*		*0.711*			
1996	46.5%		1.3%		23.5%		34.1%		21.1%		-2.4%		-0.4%		6.3%		-7.2%		-6.8%			
	0.818		*-0.484*		*0.275*		*0.851*		*0.594*		*0.067*		*-0.268*		*0.090*		*-0.611*		*-0.064*			
1997	27.7%		2.3%		8.0%		3.3%		6.8%		-1.2%		0.0%		-10.5%		-2.8%		-2.8%			
	0.234		*0.089*		*-0.073*		*-0.065*		*-0.013*		*0.112*		*-0.257*		*-0.485*		*-0.419*		*0.075*			
1998	-1.1%		3.7%		-29.8%		-24.1%		-13.9%		15.9%		-29.5%		-1.4%		-7.0%		22.5%			
	-0.661		*0.892*		*-0.921*		*-0.883*		*-0.890*		*0.760*		*-0.901*		*-0.173*		*-0.601*		*0.970*			
1999	78.0%	*	4.5%		-150.1%	*	-113.4%	*	-50.5%	*	99.6%	*	-101.8%	*	-112.1%	*	-22.1%		79.6%	*		
	1.799		*1.351*		*-3.616*		*-3.547*		*-2.439*		*3.929*		*-2.475*		*-3.964*		*-1.257*		*2.987*			
2000	-36.9%	*	4.3%		50.6%		57.5%	*	26.5%		-24.1%		77.7%		43.5%		32.3%		-45.3%			
	-1.774		*1.236*		*0.881*		*1.550*		*0.822*		*-0.753*		*1.434*		*1.365*		*1.101*		*-1.426*			
2001	-0.8%		1.1%		48.3%		36.8%		29.1%		-19.3%		3.1%		13.6%		-5.2%		-8.3%			
	-0.651		*-0.599*		*0.831*		*0.934*		*0.932*		*-0.571*		*-0.191*		*0.341*		*-0.523*		*-0.118*			
2002	-40.3%	*	2.0%		39.2%		32.1%		22.7%		-16.5%		16.1%		18.3%		13.8%		-2.3%			
	-1.877		*-0.083*		*0.626*		*0.793*		*0.662*		*-0.466*		*0.092*		*0.502*		*0.298*		*0.094*			
2003	51.8%		1.7%		-11.6%		2.1%		-13.6%		-2.0%		48.5%		28.1%		-3.2%		-51.7%	*		
	0.984		*-0.255*		*-0.513*		*-0.103*		*-0.877*		*0.082*		*0.798*		*0.836*		*-0.437*		*-1.649*			
2004	14.8%		3.7%		-11.3%		31.9%		-1.8%		9.5%		44.5%		24.7%		21.0%		-23.6%			
	-0.167		*0.892*		*-0.506*		*0.786*		*-0.377*		*0.518*		*0.711*		*0.722*		*0.609*		*-0.656*			
mean	20.1%		2.1%		11.2%		5.5%		7.1%		-4.2%		11.9%		3.6%		6.9%		-5.0%			
mean outlier free	19.5%		2.6%		13.6%		11.1%		6.0%		-8.5%		8.1%		8.5%		1.6%		-4.1%			

Year	*AFGX*	*g(GDP)*	*E/P Strategies*				*B/M Strategies*			
			10-1	*9-2*	*value*	*glamour*	*10 - 1*	*9 - 2*	*value*	*glamour*
Panel B - Dependence on Stock Market Performance										
full sample	1.000	-0.005	-0.353	-0.381	-0.169	0.185	0.187	-0.292	0.119	-0.069
		-0.437	*-1.264*	*-1.885*	*-1.133*	*1.107*	*0.634*	*-1.628*	*0.802*	*-0.375*
Panel C - Dependence on GDP Growth										
full sample	-1.674	1.000	-8.057	-5.409	-2.860	5.197	-2.695	-4.388	1.799	4.494
	-0.437		*-1.591*	*-1.406*	*-1.036*	*1.752*	*-0.494*	*-1.303*	*0.657*	*1.381*

Panel D - Time Dependence

full sample	-0.012	0.000	-0.020	0.004	-0.010	0.010	-0.015	-0.002	-0.012	0.003
	-1.320	*0.732*	*-1.716*	*0.376*	*-1.651*	*1.389*	*-1.149*	*-0.275*	*-1.975*	*0.321*
outlier free	-0.001	0.000	-0.002	0.005	0.000	0.004	0.011	0.004	-0.001	-0.003
	-0.204	*1.129*	*-0.343*	*1.012*	*0.064*	*0.988*	*1.216*	*0.920*	*-0.163*	*-0.537*

Notes:
Value premiums and their components in individual years, their dependence on the market index return AFGX and on growth of gross domestic product, and their development over time. *AFGX* is the return on the Affars Varlden General Index from April to March of the following year (corresponding to portfolio holding periods). *G(GDP)* is the growth of Swedish gross domestic product in individual years. *10-1* and *9-2* show the value premium in the first year after portfolio formation computed as returns on zero-investment consisting of short selling glamour portfolio 1 or 2 respectively and buying value portfolio 10 or 9 respectively. *Glamour* (*value*) show glamour underperformance and (value outperformance) components of value premium computed as the difference between the return on value portfolio 10 (glamour portfolio 1) and market return. Panel A shows the values for individual years. The numbers in italics below show the deviation of the annual value from its sample mean measured as standard deviations. Stars indicate outliers, i.e. observations more that 1.5 standard deviations from their mean. Panel A also shows the mean values for the entire sample and the mean value for the outlier free sample. Panel B shows the coefficients (with -*t*-statistics in italics below) from time series regressions of individual variables on the market index AFGX. Panel C shows the coefficients (with *t*-statistics in italics below) from similar time series regressions of individual variables on the growth of gross domestic product. Panel D shows the coefficients (with *t*-statistics in italics) from time series regressions of individual variables on the time variable. These results are presented for the entire sample as well as for the outlier free sample.

Table 6

Combined Contrarian Strategies

		E/P				
		R1	*R2*	*R3*	*AR3*	*CR3*
Raw Returns on Combined Strategies Sorted on E/P and B/M						
glamour	11	25.5%	18.6%	18.9%	21.0%	69.1%
	12	21.9%	19.9%	20.3%	20.7%	68.8%
	13	22.5%	22.0%	20.6%	21.7%	73.3%
	21	21.2%	18.8%	25.6%	21.9%	82.8%
	22	22.3%	22.3%	21.8%	22.1%	73.4%
	23	23.2%	27.1%	31.1%	27.2%	100.1%
	31	26.9%	28.4%	25.7%	27.0%	96.3%
	32	27.5%	25.4%	22.3%	25.1%	89.7%
value	33	36.9%	31.2%	30.9%	33.0%	123.6%
33-11		11.4%	12.5%	12.0%	**12.0%**	**54.5%**
success rate		68.0%	62.5%	73.9%	**68.1%**	**78.3%**
market std.dev.		40.9%	41.4%	42.3%	41.5%	89.0%
glamour std.dev.		46.6%	46.9%	46.6%	46.7%	88.7%
value std.dev.		48.2%	47.0%	43.6%	46.2%	125.9%
Rm		25.8%	24.7%	24.2%	24.9%	82.6%
glamour underperformance		-0.2%	-6.1%	-5.3%	-3.9%	-13.5%
value outperformance		11.2%	6.4%	6.7%	8.1%	41.0%

Notes:

Raw returns on combined contrarian strategies that sort stocks into terciles on *E/P* and subsequently sub-sort each *E/P* terciles into sub-terciles based on *B/M*. *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. Rows *11, 12, 13, 21, 22, 23, 31, 32*, and *33* show returns on nine portfolios; the first digit in a portfolio label pertains to the *E/P* tercile and the second to *B/M* sub-tercile. Portfolio 11 in glamour portfolio and portfolio 33 is value portfolio. *33-11* shows the value premium computed as returns on zero-investment consisting of short selling glamour portfolio 11 and buying value portfolio 33. *Success rate* gives the annual frequency with which value portfolio 33 outperforms glamour portfolio 11, i.e. the proportion of years when the 33-11 value premium is positive. *Market std.dev.*, *glamour std.dev.* and *value std.dev.* show standard deviation of returns for the market and for portfolios 11 and 33. *Rm* is the market return. *Glamour underperformance* (*value outperformance*) show the components of the value premium computed as the difference between the return on value portfolio 33 (glamour portfolio 11) and market return.

Table 7

Median Industry Volatility of Earnings

	industry	*firms*	*firm-years*	*md(iECV)*	*half*
Median Industry Earnings Volatility over the Entire Sample Period					
16	Chemical	10	107	0.660	1
17	High-tech development	17	130	0.719	1
12	Consumer manufacturing	40	381	0.883	1
11	Industrial manufacturing	102	1142	0.968	1
26	Medical technology	12	102	0.976	1
13	Industrial development and prospecting	19	152	1.049	1
24	Miscellaneous	24	183	1.074	1
34	Real estate	63	585	1.174	1
31	Mixed investment company	50	562	1.239	2
15	Trading	43	435	1.244	2
25	Pharmaceuticals	3	36	1.254	2
19	Other production	18	274	1.371	2
23	Transportation	21	243	1.398	2
18	Building and construction	28	386	1.426	2
14	Raw materials and forestry	31	359	1.487	2
22	IT services (including consulting)	64	471	1.548	2
33	Other services	14	113	1.890	2
21	Consulting (excluding IT)	20	176	1.926	2
20	Services (excluding consulting and IT)	23	169	2.061	2
	Stable industries (half 1)	287	2782		
	Volatile industries (half 2)	315	3224		
	Total	602	6006		

Notes:
Median industry volatility of earnings computed over the entire sample period. *Firms* shows the number of stocks in each industry and *firm-years* is the number of firm-year observations for each industry during the entire sample period. *Md(iECV)* is the industry median coefficient of variation of earnings. For each company we calculate the coefficient of variation of its earnings over its entire existence in the sample and then we compute the median of coefficient of variation within each industry. *Half* classifies industries into stable (*1*) and volatile (*2*) based on the industry median coefficient of variation of earnings.

Table 8

Contrarian Strategies in Stable and Volatile Industries

	E/P				
	R1	*R2*	*R3*	*AR3*	*CR3*
Panel A - Stable Industries					
Δ 10 –1	5.5%	-4.3%	11.5%	**4.2%**	**-4.4%**
Δ 9 – 2	9.2%	7.7%	-4.4%	**4.2%**	**6.6%**
Δ success rate	4.0%	-4.2%	17.4%	**5.7%**	**-13.0%**
Panel B - Volatile Industries					
Δ 10 –1	-6.7%	-1.0%	-14.7%	**-7.5%**	**-21.7%**
Δ 9 – 2	-5.8%	5.4%	7.3%	**2.3%**	**26.0%**
Δ success rate	-16.0%	-8.3%	-13.0%	**-12.5%**	**-17.4%**
Panel C - Volatile Industries Sub-Divided for Cyclical Industries					
Δ 10 –1	-4.8%	1.5%	-9.1%	**-4.1%**	**-1.5%**
Δ 9 – 2	-2.2%	5.7%	0.5%	**1.3%**	**9.1%**
Δ success rate	-16.0%	0.0%	-4.3%	**-6.8%**	**-13.0%**

Notes:
Incremental value premium and incremental success rate of *E/P* contrarian strategies performed within stable and volatile industries. Panel A shows results for stable industries (classified as 1 in Table 7), Panel B shows results for volatile industries (classified as 2 in Table 7), and Panel C shows results for volatile industries when the industries whose volatility is pegged to GDP growth are sorted separately. *R1, R2,* and *R3* are annual returns in the first, second, and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. *Δ 10-1* and *Δ 9-2* show the incremental value premiums computed as the difference between value premiums earned on stable or volatile industries and the value premium of the benchmark strategy (i.e. simple *E/P* strategy). Positive incremental value premium indicates an increase in value premium in comparison with the benchmark strategy. *Δ success rate* shows the change in the success rate (measured as a proportion of years with positive value premium) in comparison with the benchmark strategy.

Table 9

Contrarian Strategies for Historically Stable and Volatile Companies

	E/P				
	R1	*R2*	*R3*	*AR3*	*CR3*
Panel A - Historically Stable Companies					
Δ 10 –1	-0.3%	-1.1%	8.1%	**2.2%**	**1.2%**
Δ 9 – 2	8.1%	1.4%	2.1%	**3.9%**	**24.9%**
Δ success rate	4.3%	0.0%	23.8%	**9.4%**	**-19.0%**
Panel B - Historically Volatile Companies					
Δ 10 –1	-4.3%	4.7%	-9.9%	**-3.1%**	**-21.8%**
Δ 9 – 2	2.1%	1.6%	-4.1%	**-0.1%**	**19.1%**
Δ success rate	-4.3%	-13.6%	4.8%	**-4.4%**	**-23.8%**

Notes:
Incremental value premium and incremental success rate of *E/P* contrarian strategies performed within historically stable and volatile companies. Panel A shows results for companies with historically stable earnings (in past 5 years); Panel B shows results for companies with historically volatile earnings. *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. *Δ 10-1* and *Δ 9-2* show the incremental value premiums computed as the difference between value premiums earned on stable or volatile companies and the value premium of the benchmark strategy (i.e. simple *E/P* strategy fulfilling the criteria of data availability for computation of coefficient of variation in earnings). Positive incremental value premium indicates an increase in value premium in comparison with the benchmark strategy. *Δ success rate* shows the change in the success rate (measured as a proportion of years with positive value premium) in comparison with the benchmark strategy.

Table 10

Contrarian Strategies Based on Sustainable Earnings

	sE/P				
	R1	*R2*	*R3*	*AR3*	*CR3*
Panel A - sE/P Strategy Based on Median Company ROA					
Δ 10 –1	-4.0%	-1.6%	12.1%	**2.1%**	**-17.3%**
Δ 9 – 2	2.4%	9.6%	1.1%	**4.4%**	**26.4%**
Δ success rate	-13.0%	-4.5%	28.6%	**3.7%**	**-4.8%**
Panel B - sE/P Strategy Based on Median Industry ROA					
Δ 10 –1	-5.0%	2.6%	10.6%	**2.7%**	**16.4%**
Δ 9 – 2	9.2%	9.3%	-1.6%	**5.6%**	**19.2%**
Δ success rate	4.3%	0.0%	28.6%	**11.0%**	**4.8%**

Notes:
Incremental value premium and incremental success rate of *sE/P* contrarian strategies based on sustainable earnings-to-price ratio. In Panel A the sustainable earnings are estimated by multiplying historical median company return on assets over past 5 years, i.e. *mn(cROA)* with total assets at the end of the accounting year. In Panel A the sustainable earnings are estimated by multiplying historical median industry return on assets over past 5 years, i.e. *mn(iROA)* with total company assets at the end of the accounting year. *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. *Δ 10-1* and *Δ 9-2* show the incremental value premiums computed as the difference between value premiums earned on *sE/P* strategy and the value premium of the benchmark strategy (i.e. simple *E/P* strategy fulfilling the criteria of data availability for computation of company or industry ROA). Positive incremental value premium indicates an increase in value premium in comparison with the benchmark strategy. *Δ success rate* shows the change in the success rate (measured as a proportion of years with positive value premium) in comparison with the benchmark strategy.

Table 11

Median Industry B/M

	industry	*firms*	*firm-years*	*md(i(B/M))*	*half*
Median Industry B/M over the Entire Sample Period					
17	High-tech development	17	130	0.293	1
25	Pharmaceuticals	3	36	0.296	1
20	Services (excluding consulting and IT)	23	169	0.304	1
13	Industrial development and prospecting	19	152	0.317	1
22	IT services (including consulting)	64	471	0.327	1
21	Consulting (excluding IT)	20	176	0.341	1
26	Medical technology	12	102	0.345	1
15	Trading	43	435	0.396	1
11	Industrial manufacturing	102	1142	0.450	1
33	Other services	14	113	0.460	2
12	Consumer manufacturing	40	381	0.477	2
19	Other production	18	274	0.485	2
18	Building and construction	28	386	0.491	2
24	Miscellaneous	24	183	0.517	2
31	Mixed investment company	50	562	0.589	2
14	Raw materials and forestry	31	359	0.654	2
16	Chemical	10	107	0.668	2
34	Real estate	63	585	0.680	2
23	Transportation	21	243	0.928	2
	Low B/M industries (half 1)	303	2813		
	High B/M industries (half 2)	299	3193		
	Total	602	6006		

Notes:
Median industry *B/M* multiple computed over the entire sample period. *Firms* shows the number of stocks in each industry and *firm-years* is the number of firm-year observations for each industry during the entire sample period. *Md(i(B/M))* is the median industry book-to-market multiple. We first compute the median *B/M* for each company over its entire existence in the sample; then industry *B/M* is calculated as the median of all company median *B/M* ratios belonging to that particular industry. *Half* classifies industries into low *B/M* (*1*) and high *B/M* (*2*) based on the median industry book-to-market multiple.

Table 12

Contrarian Strategies Pre-Sorted for High B/M and Low B/M Industries

	B/M				
	R1	*R2*	*R3*	*AR3*	*CR3*
B/M Strategy Pre-Sorted for Sample-Wide Median Industry B/M					
Δ 10 –1	3.8%	2.8%	3.3%	**3.3%**	**16.3%**
Δ 9 – 2	2.3%	4.3%	-7.4%	**-0.3%**	**-5.2%**
Δ success rate	8.0%	12.5%	8.7%	**9.7%**	**13.0%**

Notes:
Incremental value premium and incremental success rate of *B/M* contrarian strategies pre-sorted for industries with high vs. low *B/M* measured over the entire sample period. We first divide industries into approximate halves based on their average level of *B/M*, and then we sort to decile portfolios within each half. *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. *Δ 10-1* and *Δ 9-2* show the incremental value premiums computed as the difference between value premiums earned on the pre-sorted strategy and the value premium on the benchmark strategy (i.e. simple *B/M* strategy). Positive incremental value premium indicates an increase in value premium in comparison with the benchmark strategy. *Δ success rate* shows the change in the success rate (measured as a proportion of years with positive value premium) in comparison with the benchmark strategy.

Table 13

Contrarian Strategies Pre-Sorted for Historically High B/M and Low B/M Industries

	B/M				
	R1	*R2*	*R3*	*AR3*	*CR3*
B/M Strategy Pre-Sorted for Historical Median Industry B/M					
Δ 10 –1	0.1%	0.1%	1.2%	**0.5%**	**5.7%**
Δ 9 – 2	3.3%	1.6%	-1.2%	**1.2%**	**-7.0%**
Δ success rate	4.3%	0.0%	0.0%	**1.4%**	**0.0%**

Notes:
Incremental value premium and incremental success rate of *B/M* contrarian strategies pre-sorted for industries with the history of high vs. low *B/M* measured over past 5 years. We first divide industries into approximate halves based on their average level of *B/M* in past 5 years, and then we sort to decile portfolios within each half. *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. *Δ 10-1* and *Δ 9-2* show the incremental value premiums computed as the difference between value premiums earned on the pre-sorted strategy and the value premium on the benchmark strategy (i.e. simple *B/M* strategy fulfilling the condition of at least 3 year *B/M* history). Positive incremental value premium indicates an increase in value premium in comparison with the benchmark strategy. *Δ success rate* shows the change in the success rate (measured as a proportion of years with positive value premium) in comparison with the benchmark strategy.

Table 14

Permanent Measurement Bias

industry		*firms*	*match*		*PMB*
Panel A - Permanent Measurement Bias					
			101	Pharmaceuticals	1.74
			102	Capital-intensive service	0.76
			103	Consumer goods	0.72
			104	Investment companies	0.68
			105	Pulp & paper	0.67
			106	Shipping	0.65
			107	Other service	0.62
			108	Consultants & computer	0.59
			109	Real Estate	0.56
			110	Mixed building & real estate	0.55
			111	Trading & retail	0.47
			112	Chemical industry	0.44
			113	Building & construction	0.48
			114	Engineering	0.33
			115	Other production	0.31
			116	Conglomerate & mix. inv.	0.28
				Median	0.58
Panel B - Matching of Runsten's Industry Classifications					
11	Industrial manufacturing	102	114	Engineering	0.33
12	Consumer manufacturing	40	103	Consumer goods	0.72
13	Industrial development and prospecting	19	114	Engineering	0.33
14	Raw materials and forestry	31	105	Pulp & paper	0.67
15	Trading	43	111	Trading & retail	0.47
16	Chemical	10	112	Chemical industry	0.44
17	High-tech development	17	108	Consultants & computer	0.59
18	Building and construction	28	113	Building & construction	0.48
19	Other production	18	115	Other production	0.31
20	Services (excluding consulting and IT)	23	107	Other service	0.62
21	Consulting (excluding IT)	20	108	Consultants & computer	0.59
22	IT services (including consulting)	64	108	Consultants & computer	0.59
23	Transportation	21	106	Shipping	0.65
24	Miscellaneous	24	107	Other service	0.62
25	Pharmaceuticals	3	101	Pharmaceuticals	1.74
26	Medical technology	12	114	Engineering	0.33
31	Mixed investment company	50	104	Investment companies	0.68
33	Other services	14	102	Capital-intensive service	0.76
34	Real estate	63	109	Real Estate	0.56
	Total	602			

Notes:
Panel A shows the permanent measurement bias (*PMB*) estimated by Runsten (1998). Panel B shows the matching of Runsten's (1998) industry classification with industry classification used by the authors. *Industry* pertains to industry classification used by the authors, while *match* shows the

matched industry reported by Runsten (1998).

Table 15

Contrarian Strategies Based on Unbiased Book Value of Equity

	uB/M				
	R1	*R2*	*R3*	*AR3*	*CR3*
uB/M Strategy Based on Runsten's PMB					
Δ 10 –1	1.2%	2.6%	1.5%	**1.7%**	**6.8%**
Δ 9 – 2	1.0%	-4.8%	-5.4%	**-3.1%**	**-19.5%**
Δ success rate	0.0%	8.3%	0.0%	**2.8%**	**8.7%**

Notes:
Incremental value premium and incremental success rate of *uB/M* contrarian strategies based on 'unbiased' book value of equity to market value of equity ratio. To estimate the 'unbiased' book value of equity (*uB*) we multiply the book value of equity by (1 + *PMB*) where *PMB* is the industry permanent measurement bias reported by Runsten (1998). *R1, R2,* and *R3* are annual returns in the first, second and third year after portfolio formation. *AR3* is the average annual return (assuming annual portfolio rebalancing) for three years after the portfolio formation. *CR3* shows the cumulative buy-and-hold return for three years after the portfolio formation. *Δ 10-1* and *Δ 9-2* show the incremental value premiums computed as the difference between value premiums earned on *uB/M* strategy and the value premium of the benchmark strategy (i.e. simple *B/M* strategy). Positive incremental value premium indicates an increase in value premium in comparison with the benchmark strategy. *Δ success rate* shows the change in the success rate (measured as a proportion of years with positive value premium) in comparison with the benchmark strategy.

Appendix

Paper	Market	Time	Findings	Interpretation
De Bondt, W. F. M. and R. Thaler (1985), 'Does the Stock Market Overreact?' *Journal of Finance*, Vol. 40, No. 3, pp. 793.	U.S.	1926 - 1982	Past losers (stocks with low past returns) outperform in the future past winners. The superior losers' performance starts to materialize only after the first year after the formation.	Authors use the overreaction hypothesis to explain their results. They suggest that losers outperform winners because investors overreact to a series of good (bad) news and bid up winners' (losers') stock price too high (low).
Davidson Iii, W. N. and D. Dutia (1989), 'A Note on the Behavior of Security Returns: A Test of Stock Market Overreaction and Efficiency', *Journal of Financial Research*, Vol. 12, No. 3, pp. 245-252.	U.S.	1963 - 1985	The paper provides evidence on momentum in stock prices. Stocks with high abnormal returns in past year continue to have high returns in the following year.	The author argues that these findings are not consistent with the overreaction hypothesis.
De Long, J. B., A. Shleifer, L. H. Summers and R. J. Waldmann (1990), 'Noise Trader Risk in Financial Markets', *Journal of Political Economy*, Vol. 98, No. 4, pp. 703.	---	---	Analytical paper presenting a model involving noise traders with erroneous beliefs. Unpredictability of these beliefs creates extra risk for rational arbitrageurs, which makes arbitrage incomplete, i.e. mispricing may persist. Creating this extra risk makes it possible for noise traders to earn higher returns than arbitrageurs.	This analytical model predicts the stock returns patterns that can be exploited with the CIS.
Pettengill, G. N. and B. D. Jordan (1990), 'The Overreaction Hypothesis, Firm Size, and Stock Market Seasonality', *Journal of Portfolio Management*, Vol. 16, No. 3, pp. 60-64.	U.S.		The price reversals are found to be more significant for past losers than for past winners. Size is documented as an important conditioning variable as the reversals are more characteristic for stock performance of large firms.	The authors argue that the overreaction hypothesis may be conditional on firm size as well as market seasonality.

Lakonishok, J., A. Shleifer and R. W. Vishny (1994), 'Contrarian Investment, Extrapolation, and Risk', *Journal of Finance*, Vol. 49, No. 5, pp. 1541-1578.	U.S.	1968 - 1990	Value stocks outperform glamour stocks for 5 years after the portfolio formation (the value premium gradually disappears in year 4 and 5); value stocks are not fundamentally riskier as they yield high returns in the bad states of the economy.	The authors argue that the value stock outperformance exists because the implied rate of growth of earnings are too high compared to the actual future rates, hence investor over extrapolate past growth rates.
La Porta, R., J. Lakonishok, A. Shleifer and R. W. Vishny (1997), 'Good News for Value Stocks: Further Evidence on Market Efficiency', *Journal of Finance*, Vol. 52, No. 2, pp. 859-874.	U.S.	1971 - 1993	Returns around earnings announcements are substantially higher for value stocks than for glamour stock, which indicates that investors are consistently surprised by better-than-expected performance of value stocks.	The authors interpret their findings as direct evidence on the importance of the expectation errors for the superior returns earned on accounting-based contrarian strategies.
Conrad, J., M. Cooper and G. Kaul (2003), 'Value Versus Glamour', *Journal of Finance*, Vol. 58, No. 5, pp. 1969-1996.	U.S.	1965 - 1995	Experimental paper showing data snooping may account up till 50% of the returns related to company characteristics.	The authors argue that these results arise due to the familiarity of the research community with the U.S. data and imply the need for international studies.
Jiang, X. and M. Zaman (2007), 'Aggregate Insider Trading and the Predictability of Market Returns: Contrarian Strategy or Managerial Timing?' SSRN eLibrary (SSRN).	U.S.	1975 - 2000	Insider trading has a strong predictive power and it is primarily related to the unexpected cash flow new rather than to aggregate market expectations.	The predictive power of insider trading for stock returns is caused by managerial timing rather than contrarian investment strategy.
Chan, L. K. C., Y. Hamao and J. Lakonishok (1991), 'Fundamentals and Stock Returns in Japan', *Journal of Finance*, Vol. 46, No. 5, pp. 1739.	Japan	1971 - 1988	Substantial relation between stock returns and earnings yield, size, book to market ratio, and cash flow yield.	The authors do not take a stance on whether their results are generated by irrational market overreaction of the correlation of the accounting variables to the underlying risk proxies.
Cai, J. (1997), 'Glamour and Value Strategies on the Tokyo Stock Exchange', *Journal of Business Finance & Accounting*, Vol. 24, No. 9/10, pp. 1291.	Japan	1971 -1994	Substantial returns on contrarian investment strategies documented on all standard measures.	The authors refute the risk argument after deploying the conventional risk proxies and conclude that the extrapolation bias is the likely explanation of the documented patterns.

Brouwer, I. and J. Van Der Put (1997), 'Contrarian Investment Strategies in a European Context', *Journal of Business Finance & Accounting*, Vol. 24, No. 9/10, pp. 1353.	France, Germany, Netherlands, UK	1982 - 1993	Contrarian strategies based on E/P, B/M, CF/P and dividend yield all generate substantial abnormal return.	By comparing the performance of value and glamour strategies in good and bad states of the economy, the authors argue that the difference in returns cannot be explained by higher risk of value stocks. They propose individual investors' biases as well as fund managers' incentive schemes as likely explanations for the documented patterns.
Gregory, A., R. D. F. Harris and M. Michou (2001), 'An Analysis of Contrarian Investment Strategies in the U.K.' *Journal of Business Finance & Accounting*, Vol. 28, No. 9/10, pp. 1192.	U.K.	1975 - 1998	Significant abnormal returns both for one-way and two-way sorted stocks documented (persistent even after controlling for size). Returns from one-way sort can be explained by Fama, French (1996) 3-factor model, but the two-way sorts cannot.	Higher returns earned on contrarian strategies cannot be fully explained by Fama, French (1996) 3-factor model; hence they seem to arise (at least partly) due to sub-optimal investor behavior.
Chin, J. Y. F., A. K. Prevost and A. A. Gottesman (2002), 'Contrarian Investing in a Small Capitalization Market: Evidence from New Zealand', *Financial Review*, Vol. 37, No. 3, pp. 421.	New Zealand	1986 - 1996	Value portfolios underperform during the first year after portfolio formation but outperform glamour portfolios in the subsequent periods.	The authors attribute this pattern to expectation errors caused by noise trading in the relatively illiquid market. The illiquidity delays the correction of the expectation errors. CIS then require longer horizon to pay off.
Forner, C. and J. Marhuenda (2003), 'Contrarian and Momentum Strategies in the Spanish Stock Market', *European Financial Management*, Vol. 9, No. 1, pp. 67-88.	Spain	1963 - 1997	Positive momentum returns exist in the Spanish market for the 6-month period and positive contrarian returns exist for the 3-year period. Provides additional evidence suggesting that previously documented momentum and contrarian returns are not due to data snooping.	The authors suggest the overreaction hypothesis as the explanation for their results, i.e. delayed incorporation of information to prices (creating the momentum) that eventually overshoots the price level leading to a subsequent correction (which creates the opportunity for the contrarian strategy).

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