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I. INTRODUCTION

For many years, stock market analysts have argued that value strategies outperform the market (Graham and Dodd, 1934). These value strategies call for buying stocks that have low prices relative to earnings, dividends, historical prices, book assets or other measures of value. In recent years, value strategies have attracted academic attention as well. Basu (1977); Jaffe, Keim, and Westerfield (1989); Chan, Hamao, Lakonishok (1991); and Fama and French (1992a) have shown that stocks with high earnings price ratios earn higher returns. De Bondt and Thaler (1985, 1987) have argued that extreme losers outperform the market over the subsequent several years. Despite considerable criticism (Chan 1988, Ball and Kothari 1989), their analysis has generally stood up to the tests (Chopra, Lakonishok, Ritter 1992). Rosenberg et al (1984) show that stocks with high book relative to market values of assets outperform the market. Further work (Chan, Hamao and Lakonishok 1991, Fama and French 1992a), has both extended and refined these results. Finally, Chan, Hamao, and Lakonishok (1991) show that a high ratio of cash flow to price also predicts higher returns. Interestingly, many of these results have been obtained for both the U.S. and Japan. Certain types of value strategies, then, appear to beat the market.

While there is some agreement that value strategies work, the interpretation of why they work is more controversial. Value strategies might work because they are contrarian to naive strategies followed by other investors. These naive strategies might range from extrapolating past earnings growth too far into the future, to assuming a trend in stock prices, to overreacting to good or bad news, or to simply equating a good investment with a well-run company irrespective of price. Regardless of the reason, some investors tend to get overly excited about stocks that have done very well, buy them up, and these stocks become overpriced. Similarly, they overreact to stocks that have done very badly, oversell them, and

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these out-of-favor stocks become underpriced. Contrarian investors bet against such naive investors. Because contrarian strategies invest disproportionately in stocks that are underpriced, and underinvest in stocks that are overpriced, they outperform the market. This view of value strategies as contrarian to naive strategies is taken by De Bondt and Thaler and others.

An alternative explanation of why value strategies work, argued most forcefully by Fama and French, is that they are fundamentally riskier. That is, investors in value stocks, such as high book to market stocks, tend to bear higher fundamental risk of some sort, and their higher average returns compensate for this risk. Critics of De Bondt and Thaler (Chan, 1988; Ball and Kothari, 1989) have also argued that buying losers is a fundamentally riskier strategy. Whether value strategies work because they are contrarian to naive strategies or because they are fundamentally riskier remains an open question.

In this paper, we try to shed further light on the two potential explanations for why value strategies work. We do so along two directions. First, we examine more closely the predictions of the contrarian model. In particular, one natural version of the contrarian model argues that the overpriced glamour stocks are those which, first, have grown in price, sales, or earnings in the past, and, second, are expected by the market to continue to grow in the future. Similarly, the underpriced value stocks are those that have not grown fast in the past and are expected to continue to grow slowly. Value strategies that bet against those investors who extrapolate past growth produce superior returns. In principle, this version of the contrarian model is testable because past growth and expectation of future growth are two separate and separately measurable characteristics of glamour and value.

In this paper, past growth is measured using past information on sales, earnings, etc, and expected future growth is measured by multiples of price to current earnings, cash flow etc. We then examine the predictions of the contrarian model, namely that value stocks indeed outperform glamour stocks when both are classified using past growth and current multiples, and that this definition of value and glamour works at least as well as more ad hoc strategies such as that based on book to market. In addition, we compare past, expected, and future growth of glamour stocks to see if their expected growth rates are similar to past growth rates and higher than actual future growth rates, as our version of the contrarian

model predicts. We show that a wide range of value strategies produce higher returns, and that the pattern of returns, and of past, expected, and actual growth rates are consistent with the contrarian model.

The second question we ask is whether value stocks are indeed fundamentally riskier than glamour stocks. To be fundamentally riskier, value stocks must underperform glamour stocks with some regularity, and particularly in the states of the world when the marginal utility of consumption is high. This view of risk motivates our tests. We look at the frequency of superior (and inferior) performance of value strategies, as well as at their performance in bad states of the world, such as extreme down markets and economic recessions. We also look at the betas and standard deviations of value and glamour strategies. We find little if any support for the view that value strategies are fundamentally riskier.

Our results raise the obvious question of how the higher expected returns on value strategies could have continued if such strategies are not fundamentally riskier? We will present some possible explanations that rely both on behavioral strategies favored by individual investors and on agency problems plaguing institutional investors.

The next section of the paper briefly discusses our methodology. Section III looks in much greater detail at the book to market strategy that has attracted much recent attention, and discusses some characteristics of this strategy. It argues that book to market is a "reduced form" proxy for a contrarian value strategy, and that a more natural definition would look separately at past growth and at current multiples. Section IV then examines the performance and other characteristics of these more natural contrarian strategies, and provides evidence that these strategies work because they exploit the extrapolation mistakes implicit in glamour strategies. Section V considers the risk characteristics of these value strategies. Section VI attempts to interpret our findings.

II. METHODOLOGY

The sample period covered in this study is from the end of April, 1963 to the end of April, 1990. Some of our formation strategies require 5 years of past accounting data. Consequently, we look at portfolios formed every year starting at the end of April, 1968. We

examine subsequent performance and other characteristics of these portfolios for up to 5 years after formation using returns data from CRSP and accounting data from COMPUSTAT. The universe of stocks is NYSE and AMEX.

Within each of our groups such as deciles based on book-to-market ratios, we equally weight all the stocks. For each of our portfolios, we compute returns using a buy-and-hold strategy for years +1,+2,...+5 relative to the time of formation. If a stock disappears from CRSP during a year, its return is replaced until the end of the year with the return on an investment in its size decile. At the end of the year, the portfolio is rebalanced and each stock gets the same weight. (A stock that disappeared in the previous year is no longer part of the portfolio.)

For most of our results, we present size-adjusted returns. To adjust for size, we first identify, for every stock in the portfolio, its size decile at the formation time. We then construct a size reference portfolio so that for every stock in the original portfolio we have a benchmark which is its size reference portfolio. At the end of each year, we recompute the market capitalization for each stock and update its size affiliation to obtain a more current size benchmark. In computing the return on the benchmark portfolio we assume annual buy-and-hold. The annual size-adjusted return on the original portfolio is then computed as the return on that portfolio minus the return on the size reference portfolio.

In addition to returns for the various portfolios, we compute growth rates for accounting measures such as sales, earnings, cash flow and operating income. Let us illustrate our procedure for the case of sales. To compute the growth of sales in year -3 relative to formation, we consider a portfolio that invests $1 in each stock, and look at the sales generated by this portfolio in years -4 and -3, and use the percentage change as our growth measure. In this fashion, we can compute the growth in sales for every year prior to formation. To compute post-formation growth, the same methodology is used. The 5-year growth rates we present are annual geometric average growth rates. This procedure computes growth rates in accounting measures in the same way as stock returns and also deals with the problems of outliers and calculating growth rates in the presence of negative base year earnings or cash flows.

Finally, we compute several accounting ratios, such as cash flow to price and earnings to

price. These ratios are also used to classify individual stocks into different portfolios. For these classifications, we consider only stocks with positive ratios of cash flow to price or earnings to price because negative ratios cannot be interpreted as reflecting expected growth rates. For purposes other than classifying individual stocks into portfolios, these ratios are computed for entire equally-weighted portfolios. In particular, we compute the total cash flow or earnings from a dollar invested in each stock in the portfolio, add them up, and then divide by the value of that equally-weighted portfolio. Negative values for earnings or cash flow are simply added in to the portfolio computation along with the positives and therefore present no special problems.

III. THE BOOK-TO-MARKET STRATEGY

Table 1 presents the returns on the book to market strategy. We divided the universe of stocks annually into book to market deciles, where book value is taken from COMPUSTAT for the end of the previous year, and market value is taken from CRSP as the market value of equity at portfolio formation time. In general in this paper, we focus on long horizon returns (of up to 5 years) on various strategies. The reason for looking at such long horizons is that we are interested in performance of alternative investment strategies over horizons suitable for professional investors.

In Panel A of Table 1, we present the size-adjusted returns for years 1 through 5 after the formation, the average annual return, the cumulative 5 year return, and the cumulative return for years 3 through 5. The numbers presented are the averages across all formation periods in the sample. The results confirm and extend the results established by Rosenberg et al (1984), Chan et al (1991), and Fama and French (1992a). On average over the post-formation years, the low BM (glamour) stocks have the abnormal return of -4.3 percent and the high BM (value) stocks have the abnormal return of 3.5 percent. The extra return on value stocks relative to glamour stocks is 4.5 percent in the first year, 8.3 percent in the second year, 6.7 percent in the third year, 9.9 percent in the fourth year, and 9.8 percent in the fifth year. If portfolios are held with the limited rebalancing described above, then cumulatively value stocks outperform glamour stocks by 26.2 percent over years 3 through 5, and 38.7 percent over years 1 through 5. There is little doubt that, during this time period,

the BM value strategy outperformed the glamour strategy and the market.

The real question is what does a high BM ratio really capture? Unfortunately, a high book to market ratio can stand for a variety of factors. It can describe a company with particularly low intangible assets--perhaps because it is in a permanently unprofitable industry. For example, steel or paper companies might have permanently low market values of assets relative to large book values, which tells us little about how they grew in the recent past or are expected to grow in the near future. A high BM can also describe a company with low temporary profits which bring down the market value even though the book value is fairly high. Such a company would have low past growth of profits and a high expected growth of future profits. A high BM can also describe a company with a high or normal level of profits but low expected growth of profits, which brings down the market value. Finally, a high ratio of book to market might pick out particularly risky stocks with high discount rates of future cash flows. The point here is simple: book to market is not a "clean" variable uniquely identifiable with economically interpretable characteristics of the firms. To find such variables, we need to know more about the glamour and value firms as defined by the book to market strategy.

Panel B of Table 1 presents characteristics of BM decile portfolios. The first row confirms that decile 1 stocks have almost ten times lower BM ratio than top decile stocks. Also, glamour stocks are about 5.5 times larger in size than value stocks, which confirms that size adjustments we made are indeed needed.

We have divided characteristics of portfolios into two broad groups. First, we consider multiples of broadly defined measures of profitability to price. The idea behind this is Gordon's formula that $C/P = r - g$, where C is cash flow, P is price, r is discount rate and g is the expected growth rate of cash flow. A similar formula would apply to dividends, earnings, and operating income, except that their own respective expected discount and growth rates should be used. The Gordon formula allows us to infer from the cash flow to price ratio the growth rate of cash flow expected by the market holding discount rates constant. Under this assumption, a high C/P firm has a low expected growth rate of cash flow, while a low C/P firm has a high expected growth rate of cash flow. The same is true about the ratio of dividends to price (DP), or cash flow to price (CP), and of operating income to price (OP),

except that the relevant growth and discount rates are their own. The ratios thus give us economically meaningful information about firms, namely the market's expectation about their future growth.

The critical assumption made in using current multiples to infer expected growth rates is that discount rates of dividends, earnings, operating income or cash flows are the same across stocks. This assumption presumes a negative answer to one of the fundamental questions of this paper, namely whether differences in returns across stocks are driven by fundamental risk. In section IV, we provide evidence for this assumption. Meanwhile, we use differences in current multiples to infer differences in expected growth rates recognizing that doing so assumes that discount rates do not differ much across stocks.

The second set of characteristics we consider is past growth rates of sales (SG), earnings (EG), operating income (OG) and cash flow (CG). These variables provide us with information about the past growth of these stocks, which is different from information about the market's expectation of their future. A stock can at least in principle have high past growth of, say, earnings but low expected future growth. The book to market ratio does not disentangle the past and the future growth. For this reason, we look at variables that concern the past and the future separately.

Panel B of Table 1 presents the results on multiples. Here and below, earnings, dividends, cash flow, and operating income are taken for the previous calendar year from COMPUSTAT. Earnings are measured before extraordinary items, cash flow is defined as earnings plus depreciation, and operating income is defined as earnings before interest, taxes and depreciation. Going across BM deciles, the pattern of EP, DP and CP is U-shaped. That is, both low BM and high BM stocks have low EP, DP, and CP ratios, suggesting that both the extreme portfolios tend to have higher expected rates of growth of earnings, dividends, cash flow and operating income than middle portfolios. This result suggests that a single variable such as BM confounds several economically interpretable characteristics. The low BM stocks probably have high expected growth and high prices because they are dominated by true "glamour" stocks. In contrast, high BM stocks also have high expected growth but low prices because they have temporarily low earnings, but are expected to recover at least partly.

These results suggest that the BM strategy might be correlated with the contrarian strategy in that low BM firms, which the BM strategy avoids buying, indeed have high expected growth and so would also be avoided by our contrarian strategy. On the other hand, some low BM stocks may have experienced high recent past growth that the market does not expect to continue. These should not be classified as glamour stocks. Alternatively, some low BM firms may be in industries with a lot of intangible assets or a high ratio of earnings to assets, but may have experienced slow recent growth. These low BM stocks probably should not be classified as glamour stocks either. As we show in Table 5B, classifying firms by BM and past sales growth simultaneously is much more informative about future returns than classifying by BM alone.

Looking at recent past growth across BM deciles sheds further light on the BM strategy. The relationship between BM and past growth of earnings, sales, and operating income is approximately monotonic. Low BM (glamour) stocks have higher past growth of earnings than high BM (value) stocks. The same is true for operating income. These results are not new (see Fama-French (1992b)) and come as no surprise in any case. The results suggest that the BM strategy is similar to a contrarian strategy in that it picks out stocks with low past growth and avoids stocks with high past growth.

In summary, this section has confirmed the earlier findings that the strategy of buying high BM stocks significantly outperforms the market. An analysis of this variable suggests, however, that BM might not be an ideal way to measure a strategy contrarian to extrapolation. On the one hand, the BM strategy generally picks out low past growth stocks and avoids high past growth stocks, which is exactly what a strategy contrarian to extrapolation would call for. On the other hand, not all high BM firms have experienced low recent growth and not all low growth firms have their poor growth experience extrapolated by the market.

IV. ANATOMY OF A CONTRARIAN STRATEGY

Defining a Contrarian Strategy

The previous section has argued that BM might not be an ideal way to define a strategy contrarian to extrapolation. To define such a strategy, it is better to start by defining an

extrapolation strategy from first principles, and then bet against it. This approach is used in this section.

For market participants to extrapolate the performance of a given stock, they must expect its future performance to be similar to past performance. That means that a glamour stock would be a stock with high growth in the past and expected continued high growth in the future. In this section, we continue to associate high multiples of prices to earnings (dividends, operating income, or cash flow) with high expected growth rate of the same, rather than with a low discount rate. We will substantiate this association in section IV. On this theory, a glamour stock must have both high past growth and a high multiple, not just one of these. A glamour stock thus must be distinguished from a temporary loser, which had low growth in the past but is expected to recover and hence has a high multiple. A glamour stock must also be distinguished from a temporary winner, which had high growth in the past but is expected to slow down and hence has a low multiple. On this definition, a value stock is the reverse of a glamour stock. It is a stock that has had low growth in the past and is expected by the market to continue to grow slowly, giving this stock a low multiple.

The idea behind these definitions of glamour and value is that at least some market participants extrapolate past performance. As a result, some securities with high past growth become overvalued as their growth is expected to continue. Because growth is expected to continue, these securities have high multiples. Conversely, value stocks have low past growth, which the market participants erroneously expect to continue and hence give these value stocks low multiples.

On these definitions, the value strategy is indeed contrarian to glamour strategy, since it would involve selling glamour stocks and buying value stocks. The previous section is at least suggestive that our contrarian strategy need not coincide with the BM strategy. This raises the obvious questions: does the strategy contrarian to extrapolation indeed work? Does it measure up against the BM strategy? And finally, do all of these strategies work because they are contrarian to extrapolation or for some other reason? These questions are addressed below.

Performance of Contrarian Strategies

To implement our definitions of value and glamour stocks, we need a measure of past growth and a measure of expected future growth. Strictly speaking, these should be measures of past and expected growth of the same variable. However, for data reasons, we will work in this paper with past growth in sales and the cash flow to price multiple as a measure of expected future growth of cash flow. Theoretically, it would be better to look at both past and expected growth of cash flow. However, cash flows are extremely volatile and sometimes negative, which poses a problem for defining past growth rates, particularly for the extreme portfolios that we are most interested in. Even ignoring the problem of negatives, cash flow and earnings growth measures are very noisy on an individual firm basis and therefor yield noisier classification of firms into appropriate deciles, especially for the extreme deciles. In contrast, growth in sales is a much better behaved variable. For this reason, we will work with past growth in sales (GS) and the ratio of cash flow to price (CP). In order to reduce the noise from year-to-year sales growth volatility, our classification of stocks into GS deciles is based on a 5-year weighted average of percentile rankings of firms according to annual sales growth. The weights assigned to sales growth rankings in years -1, -2, -3, -4 and -5 are 5,4,3,2,1 respectively.

To understand the GS and the CP variables, Tables 2 and 3 present the analysis similar to that in Table 1 for GS and CP respectively. On average, over the 5 post-formation years, the low GS strategy earns an abnormal return of 2.2 percent, and the high GS strategy earns the abnormal return of -2.4 percent. The cumulative difference in size-adjusted returns over 5 years is 22.7 percent, and the value strategy outperforms the glamour strategy, on average, in each of the 5 post-formation years. These magnitudes are not as dramatic as those for the BM strategy, but show clearly that a GS-based strategy works as a value strategy. Note also that when we confine ourselves to the largest 50% of all firms in Table 5A, the GS strategy works as well as the BM strategy.

An examination of the characteristics of GS decile portfolios reveals several interesting results. First, low GS stocks have an annualized sales growth of -3.5 percent over 5 years prior to formation, compared to 12.5 percent for high GS firms. The BM of a decile declines sharply as GS rises, confirming that high GS stocks have high prices relative to book values of

assets. There is some indication that lowest GS decile stocks have a lower BM than next lowest GS decile stocks. This indicates that lowest GS stocks include some stocks that have had low growth but are expected to recover and hence have a reasonably low BM. This result is consistent with our earlier argument that sorting just on low GS would pick out some temporary losers expected to recover, which need not be the underpriced "value" stocks. The multiples show steady increases as GS rises, except for decile ten where the multiples typically fall. Some of the fastest past growth stocks are expected to slow down and hence have relatively low multiples, which suggests that sorting on GS alone is not an ideal contrarian strategy. Finally, the pattern of other past growth measures across GS deciles largely follows the pattern of GS. In summary, we see that sorting on GS alone gives us a strategy that works as value strategy, but does not necessarily coincide with an ideal contrarian strategy. This is exactly what we would expect.

Table 3 presents the results of sorting on CP, which proxies for the expected growth of cash flow on the assumption--which we are still maintaining--that discount rates across stocks are approximately the same. Like BM and GS before it, CP identifies a value strategy. On average, over the 5 post-formation years, first decile CP stocks have an abnormal return of -4.9 percent per annum, whereas the tenth decile CP stocks have an abnormal return of 3.9 percent per annum, for a difference of 8.8 percent. Over the 5 year horizon, the difference in cumulative abnormal returns between lowest CP and highest CP portfolios is 42.9 percent. Sorting on CP is an even more effective value strategy by itself than sorting on book to market. If nothing else, this result shows that there is absolutely nothing unique about BM as the basis for either a contrarian value strategy or for a high expected return strategy. In fact, while we lacked the space to include them in the present draft, our regression results confirm that the variables used here have significant explanatory power even when the BM ratio is included in the regressions.

The characteristics of CP deciles again show some interesting results. The average CP in the first decile is .044, which is 8 times lower than the average CP of the highest decile of .345. BMs largely line up with CPs and increase monotonically, which suggests that future growth expectations "dominate" the determination of BM. Multiples basically line up with CP and increase with CP deciles. The results on past growth, in contrast, show the familiar U-

shaped pattern. For example, both low CP and high CP stocks have low past sales growth. This suggests that the low CP decile contains many stocks that have had low growth in the past but are expected to recover, which are not the stocks which a contrarian strategy would pick out. We thus again have evidence that sorting on multiples alone, just like sorting on past growth alone, does not give us the most natural strategy contrarian to extrapolation. To design such a strategy, it is necessary to sort on past growth and multiples simultaneously.

Table 4 presents the evidence on one such natural contrarian strategy. Since we are sorting on 2 variables, sorting stocks into deciles on each variable is impractical. Accordingly, we independently sort stocks into three groups (bottom 30%, middle 40% and top 30%) by GS and by CP, and then take intersections resulting from the two classifications. Because the classifications are done independently, extreme glamour and value portfolios (high GS, low CP and low GS, high CP) contain greater than average numbers of stocks since GS and CP are negatively correlated. We can identify the extreme glamour portfolio as one that has the highest GS and the lowest CP rank, and the extreme value portfolio as one that has the lowest GS and the highest CP rank. These portfolios are listed in the first and last columns of Table 4.

In an average post-formation year in this sample, the glamour portfolio had an abnormal size-adjusted return of -3.3 percent, and the value portfolio had the abnormal return of 5.4 percent, for a difference of 8.7 percent per year. In no post-formation year is the average difference in returns between the extreme portfolios below 8 percent! Over the 5 post-formation years, the cumulative difference in abnormal returns is 46 percent. This difference in returns between the value and the glamour strategies seems to us to be very large. It is larger, in particular, than the difference predicted by the BM strategy or by the CP strategy alone. Interestingly, both CP and GS contribute a great deal of explanatory power in these bivariate classifications. For example, choosing a low CP stock with low past sales growth actually produces a positive abnormal return of .005, but a low CP stock with a high past sales growth has a future abnormal return of -.029.

In summary, the results of this section have established three propositions. First, a broad variety of value strategies, constructed using several distinct classification techniques, outperform glamour strategies. There is nothing special about book-to-market or any other

individual measure of value. Second, the amounts by which value strategies outperform glamour strategies are extremely large. In many cases, they are on the order of 7 to 8 percent per year, and persist for several years. Given the failure of standard fundamental risk measures to explain even small differences in returns, it is hard to believe that 7 to 8 percent a year can be explained by risk. Finally, the results suggest that strategies explicitly constructed to be contrarian to extrapolation of past growth produce higher abnormal returns than more ad hoc value strategies, such as that based on book-to-market. This result suggests that value strategies might indeed work because they are contrarian, rather than for some other reason.

Additional Results (incomplete section)

One objection to this analysis is that, even though we corrected the returns for size, we have not done so perfectly and small firms still "dominate" our analysis. Larger firms may also be of more interest because they contain most of the market's capitalization and because they are heavily traded by sophisticated institutions. Table 5A presents the summary of the previous analysis for the largest 50 percent of our firms. The table shows that our previous results still hold for every method of sorting stocks, including GS, CP, BM and GS X CP. In fact, the difference in the two way classification in the post-formation returns between the glamour and the value portfolios is 8.7 percent per year, which is almost as large as the 9.1 percent obtained for all stocks. We have also done the analysis for the largest 20 percent of the stocks, which effectively mimics the S&P 500, and got similar results.

Table 5B contains returns and other characteristics for portfolios classified by BM and growth in sales. The results show that growth in sales has significant explanatory power for returns even after sorting by BM. For example, within the set of firms whose BM ratios are in the middle-third of the distribution, the average difference in returns between the low sales growth and high sales growth subgroups is over 3% per year. A similar result holds for the set of firms in the upper-third of the BM distribution. Note that these results do not appear to be driven by the role of the superimposed GS classification in creating a more precise partition of the firms by BM. The BM ratios across GS subgroups are not very different.

Further Evidence of Extrapolation

So far we have shown that strategies contrarian to extrapolation earn high abnormal returns relative to the market and to extrapolation strategies. We have not, however, provided any direct evidence that extrapolation is indeed what characterizes the glamour strategies. In this subsection, we try to provide such evidence. The essence of extrapolation is that investors are excessively optimistic about glamour stocks because they tie their expectations of future growth to past growth, and excessively pessimistic about value stocks for the same reason. But if investors make mistakes, these mistakes can presumably be detected in the data. A more direct test of extrapolation, then, is to look directly at future growth rates and to compare them to the past growth rates and the expected growth rates as implied by the multiples.

Specifically, we will compare value and glamour portfolios along three dimensions. First, we will present the (difference between) their past growth rates of sales, earnings, operating income, and cash flow. Second, we will present the (difference between) their expected future growth rates of the same variables as implied by the relevant price multiples--again assuming that discount rates are not different across portfolios. Third, and most importantly, we will present the (difference between) actual growth rates of these variables in each of the five years after the formation period. We can then compare past growth, expected growth, and actual growth of glamour and value portfolios to see if indeed expectations are tied too much to past performance and so are systematically biased about the future.

Table 6 presents the results. The first comparison is between past growth and expectation of future growth. Using BM and GS classifications, the expectations of future growth of earnings, operating income and cash flow of value and glamour portfolios tend to be closer together than the actual past growth. Using the GS classification alone, it appears in fact that market participants expect higher growth from value stocks even though in the past glamour stocks have grown faster. The CP classification, on the other hand, suggests that the market expects a greater difference in growth rates after the formation than before. That is, the market expects glamour stocks to grow even faster (in various dimensions) relative to value stocks than they have grown before. The same is generally true using the CP

X GS classification: the market expects glamour stocks to grow even faster relative to value stocks than they have grown before. With the exception of the CP classification, where the market does expect the relative growth rates to switch, the comparison between the past and the expected growth rates shows clearly that the market typically expects much higher growth rates from glamour than for value stocks, in line with the past differences. To us, this looks like extrapolation.

The second comparison is between expected growth and actual growth, and it tells an even more consistent picture. Specifically, the actual growth of glamour portfolios relative to value portfolios is always inferior to the growth implied by their relative multiples. If we look at BM classification, the market expects the earnings of glamour stocks to grow a little slower than those of value stocks, but they actually grow a lot slower. The market expects the operating income and cash flow of glamour stocks to grow faster than those of value stocks, but they actually grow slower. Using the GS classification is even more interesting. The market consistently expects the glamour stocks to grow less than the value stocks, but the market is still always too optimistic, in that glamour stocks grow much less relative to value stocks even than the market expects. Similar findings obtain for the CP classification, where the market expects much higher growth of glamour stocks relative to value stocks than actually occurs. Finally, these results show up very cleanly for the GS X CP classification, where the market expects glamour stocks to grow a lot faster, but they grow only a little faster, and not at all faster in earnings. All these findings present a consistent picture: the market exaggerates the growth rates of glamour stocks relative to what actually occurs.

One other interesting observation emerges from this comparison of expected and actual future growth rates, particularly using the GS X CP classification. That is, the difference in the growth rates between glamour and value stocks in the first year after the portfolio formation is large, particularly looking at earnings and operating income. This difference however shrinks rapidly over time, and in many cases the growth rate eventually becomes higher for value stocks. Similarly, if we compare the future growth in sales to <u>past</u> growth, we see the slow deterioration of the relative performance of glamour stocks in all classifications. At the same time, if we look at earnings, glamour stocks sometimes take a bath relative to value stocks right away. This evidence suggests that in some, though not in

all, cases the market's belief about the continued superior growth of glamour stocks is valid in the short run, even though the market is always overly optimistic about glamour stocks in the long run.

In summary, the evidence in Table 6 is very suggestive of the extrapolation model. The glamour stocks have historically grown fast in sales, earnings, cash flow, and operating income relative to the value stocks. Market participants in general expect these differential growth rates to continue, and in some cases they even expect the difference to widen. In the short run, their forecasts of continued superior growth of glamour stocks are sometimes right, though in some cases the forecasts are too optimistic even in the short run. However, in the long run, the evidence shows quite clearly that growth rates of glamour stocks either converge to the growth rates of value stocks, or even overshoot them and become substantially lower. This table suggests, then, that forecasts tend to be tied to past growth rates, and at the same time tend to be far too optimistic. This, of course, is precisely what the extrapolation model would predict. In this respect, the evidence is Table 6 goes significantly beyond the customary evidence on returns in that it shows the relationship between the past, the forecasted, and the future growth rates that is largely consistent with the predictions of the extrapolation model.

V. ARE CONTRARIAN STRATEGIES RISKIER?

We began this paper by noting that two alternative theories have been proposed to explain why value strategies work. The first theory said that they work because they are contrarian to extrapolation. The previous section has produced some positive evidence suggesting that indeed value strategies constructed as contrarian strategies work better than ad hoc value strategies. It also showed that investors in glamour strategies indeed appear to be extrapolating. The second explanation of the superior returns to value strategies is that they expose investors to greater systematic risk. In this section, we attempt to test this theory directly.

Value stocks would we fundamentally riskier than glamour stocks if two conditions held. First, they would underperform glamour stocks in some not-too-infrequent states of the world. Second, those would on average be the "bad" states of the world in which the

marginal utility of consumption is indeed high, so that investors would avoid value stocks if they are risk averse. This simple theory motivates our empirical approach.

To begin, we will look at the consistency of performance of the value and glamour strategies over time and ask how often value underperforms glamour. We will then try to check whether the times when value underperforms are recessions, times of severe market declines or otherwise "bad" states of the world in which the marginal utility of consumption is high. These tests do not provide much support for the view that value strategies are fundamentally riskier. Finally, we will look at some additional measures of risk, such as beta and the standard deviation of returns, to compare value and glamour strategies.

Table 7 presents the results on the consistency of the performance of the value strategy relative to the glamour strategy. We consider differences in returns between deciles (1,2) and (9,10) for GS, CP and BM and between groups 1 and 9 for GS x CP over 1, 3, and 5 year horizons starting each year in the sample (1968, 1969, etc). The deciles are defined, as usual, using GS, CP, GS X CP, and BM. The returns in table 7 are raw, rather than size-adjusted, returns. The results show that at least some value strategies outperform glamour strategies quite consistently. Using a 1 year horizon, value outperformed glamour in 13 out of 22 years using GS to classify deciles, in 17 out of 22 years using CP, in 19 out of 22 using CP X GS, and in 17 out of 22 using BM. As we use longer horizons, the consistency of performance of the value strategy increases. Over a 5 year horizon, the value strategy does worse than glamour in only 2 periods using GS classification, and in NO periods using CP, GS X CP, or BM classification. Over the 5 year horizon, then, the value strategy is completely safe relative to the glamour strategy in this sample.

One could perhaps object that raw returns do not adequately account for the potential risk factors associated with different sizes of stocks picked out by the value and glamour strategies. Table 8 replicates the results in Table 7 using size-adjusted returns. Again, we see inferior performance of the value strategy in only a few cases using the one year horizon, and never using the 5 year horizon unless GS is used as the sole classifier. Both Table 7 and Table 8 show that low GS by itself might be a bad way to define a value strategy--which is not surprising. Many low GS stocks are stocks expected to recover, and hence as we mentioned throughout the paper are not necessarily stocks that a true contrarian strategy would pick out.

The GS X CP strategy, which is our preferred contrarian strategy, picks out a portfolio of value stocks that always outperforms the portfolio of glamour stocks over a 5 year horizon.

Given that value stocks underperform infrequently, do they at least underperform in recessions, when the marginal utility of consumption is high? According to the NBER, there were four notable recessions during our sample period: a mild one Dec 1969- Nov 1970, a very deep one Nov 1973- March 1975, and also significant ones Jan 1980- Jul 1980 and Jul 1981- Nov 1982. An examination of Table 7 shows that the value strategy did about the same or somewhat better than glamour just before and during the 1970 recession, did much better around the severe recession of 1973-1975, did somewhat though not a lot worse in 1979-1980, and did significantly better in 1981-1982. It is implausible to conclude from this that value strategies do particularly badly in recessions, when the marginal utility of consumption is especially high.

A second way to look at precisely the same question is to compare the performance of value and glamour portfolios in the worst months for the stock market as a whole. Table 9 presents the performance of our decile portfolios in each of 4 states of the world; the 25 worst stock return months in the sample based on the equally-weighted index, the 88 negative months other than the 25 worst, the 122 positive months other than the 25 best, and the 25 best months in the sample. The results in this table are very clear. Using every single classification, the value portfolio outperformed the glamour portfolio in the market's worst 25 months. For example, using the GS X CP classification, the value portfolio lost an average of 8.6 percent of its value in the worst 25 months, whereas the glamour portfolio lost 10.3 percent of its value. The index lost 10.2 percent, so the value portfolio is safer than the index. Similarly, using every single classification scheme, the value portfolio outperformed the glamour portfolio and the index in the months in which the value of the index declined. So the value strategy clearly does better when the market falls. The value strategy performs most closely to the glamour strategy in the 122 positive months other than the best 25. In the very best months, the value strategy significantly outperforms the glamour strategy and the index, but not by as much as it does when the market falls sharply. Overall, the value strategy appears to do somewhat better than the glamour strategy in all states and significantly better in some states. If anything, the superior performance of the value strategy

is skewed toward negative return months rather than positive returns months. The evidence in Table 9 indicates that the value strategy does not expose investors to greater fundamental risk.

We have already shown that value rarely underperforms glamour for horizons of 1 year or more and that the few instances of this do not typically coincide with recessions. We have also shown that the relative performance of the value strategy is not worse in "bad" states as defined by stock market declines. On the other hand, perhaps there is still a positive relation between the relative return on the value strategy and the degree of prosperity in the economy. Investigating this relation is akin to the approach taken by various APT researchers seeking to give their "factors" a basis in economic theory.

Tables 10A and 10B provide numbers analogous to those in Table 9 except now the states of the world are realizations of real GNP growth and changes in the unemployment rate. The data are quarterly, so that we have 88 quarters in the sample. These quarters are classified into 4 states of the world; the worst 10 quarters, the next worst 34 quarters, the best 10 quarters, and the next best 34 quarters. The quarterly returns on the various glamour and value portfolios are then matched up with the changes in macro variables for one quarter ahead, since both our results and the results of others indicate that the stock market leads these variables by approximately one quarter. Average quarterly returns for each portfolio are then computed for each state.

The results in Tables 10A and 10B mirror the basic conclusions from Table 9; namely, that the value strategy is not fundamentally riskier than the glamour strategy. For every classification scheme, the value strategy performs at least as well as the glamour strategy in each of the 4 states and substantially better in most states. Unlike the results in Table 9, there is some tendency for the relative returns on value to be higher in good states than in bad states, especially for extreme good states. Roughly speaking, value stocks could be described as having higher up betas and lower down betas than glamour stocks with respect to economic conditions. Importantly, while the value strategy does disproportionately well in extreme good times, its performance in extreme bad times is also quite impressive. Performance in extreme bad states is often the last refuge of those claiming that a high return strategy must be riskier, even when conventional measures of risk such as beta and

standard deviation do not show it. Overall, the evidence indicates some positive relation between relative performance of the value strategy and measures of prosperity, but there are no significant traces of a conventional asset pricing equilibrium in which the higher returns on the value strategy are compensation for higher fundamental risk.

Finally, Table 11 presents some summary risk characteristics of the decile portfolios using our four classifications. First, the betas of value portfolios with respect to the value weighted index tend to be about .1 higher than the betas of the glamour portfolios. As we have seen earlier, the high betas come largely from value stocks having higher "up" betas, and that if anything the superior performance of the value strategy occurs disproportionally during "bad" realizations of the stock market. Even if one takes an unreasonably strong pro-beta position, the difference in betas of .1 can explain the difference of returns of perhaps 1 percent per year, and surely not 8 percent that we find. The evidence on beta thus completes our findings that systematic risk, no matter how measured, cannot explain the findings of this paper.

Table 11 also presents average annual standard deviations of the decile portfolio returns. The results show that value portfolios have higher standard deviations of returns than glamour portfolios. Using the CP X GS classification, the value portfolio has an average standard deviation of returns of 24.1 percent relative to 21.6 for the glamour portfolio. Closer examination reveals that these differences in standard deviation may just be related to the differences in betas we found or else to the average size of the firms in the different portfolios. When we look at the average standard deviation of size-adjusted returns (which also end up taking out the effect of the market), the value strategy looks no riskier than the glamour strategy, although both are riskier than the more middle-of-the-road strategies. Similar results have been obtained by Fama-French (1992b) for the BM strategy. Overall, it is hard to believe that the small differences in standard deviations that we are finding can explain the 8 percent per year difference in average returns.

VI. SUMMARY AND THE INTERPRETATION OF THE FINDINGS

The results in this paper establish (in varying degrees of detail) three propositions. First, many different investment strategies that involve buying out-of-favor (value) stocks

outperform glamour strategies and the market. Second, the likely reason that these value strategies work so well relative to the glamour strategies is in fact that the actual growth rates of earnings, sales etc of glamour stocks are not nearly as high as they were in the past, or as the multiples on those stocks indicate the market expects them to be. That is, market participants appear to consistently overestimate the growth rates of glamour stocks relative to value stocks. Third, using conventional approaches to fundamental risk, value strategies appear to be less risky than glamour strategies. Reward for bearing fundamental risk does not seem to explain higher average returns on value stocks than on glamour stocks.

While one can never reject the "metaphysical" version of the risk story, in which securities that earn higher returns must by definition be fundamentally riskier, the weight of evidence suggests the more natural model. In this model, out of favor (or value) stocks are underpriced relative to their risk and return characteristics, and investing in them indeed earns abnormal returns.

This conclusion raises the obvious question: how can the 7-8% per year in extra returns on value stocks have persisted for so long? One possible explanation is that investors simply did not know about them. This explanation has some plausibility in that quantitative portfolio selection and evaluation are relatively recent activities. Most investors might not have been able, until recently, to perform the analysis done in this paper. On the other hand, advocacy of value strategies is decades old, going back at least to Graham and Dodd. Overall, the ignorance story is not completely persuasive.

We conjecture that the results in this paper can best be explained by the preference of both individual and institutional investors for glamour strategies and by their distaste for value strategies. Below we suggest some reasons for this preference, which might potentially explain the observed returns anomaly.

Individual investors might focus on glamour strategies for a variety of reasons. First, they may make judgment errors and extrapolate past growth rates of glamour stocks, such as Walmart or Home Depot, even when such growth rates are highly unlikely to persist in the future. Alternatively, they may just equate well-run firms with good investments regardless of price. In their portfolio selection, individuals may tend to focus on tips, and to look for individual stock picks that would give them a good return in the short run. This is also what

investment advisors and brokers encourage. Individuals are less interested in selecting balanced portfolios such as the ones described here. They are also probably less interested in strategies that only earn an extra few percent per year. In the short and even the long run, individual investors cannot become "rich" from the value strategies described here.

Presumably, the institutional investors should be more free from judgment biases and excitement about hot tips than individuals. Such investors should then flock to value strategies. But for several reasons, institutional investors might themselves prefer glamour stocks even if they were free from extrapolation biases afflicting individuals. The reason is the agency context of institutional money management. For example, institutions might prefer glamour stocks because they appear to be "prudent" investments. Such stocks have done well in the past, and are unlikely to become financially distressed in the near future. They are easy to explain to sponsors, unlike the value stocks which have previously done poorly and are more likely to go bankrupt. Because they are far away from the prospect of bankruptcy, glamour stocks may appear to sponsors to be safer than value stocks, even though, as we have seen, a portfolio of value stocks is actually less risky. The strategy of investing in glamour stocks, while appearing "prudent" is not prudent at all in that it earns a lower expected return and is not fundamentally less risky. Nonetheless, the agency problems between money managers and their sponsors would cause money managers to concentrate their portfolios in the more attractive "glamour stocks" or to "window dress" (see Lakonishok et al 1991, Lakonishok, Shleifer, and Vishny 1992).

Another important factor is that most investors have shorter time horizons than are required for value strategies to consistently pay off. As we mentioned, individuals typically look for stocks that will earn them high abnormal returns within a few months, rather than 4 percent per year over the next five years. Institutional money managers may have even shorter time horizons. They often cannot afford to underperform the index or their peers for any non-trivial period of time, for if they do, their sponsors will withdraw the funds. A value strategy that takes 3 to 5 years to pay off but may underperform the market in the meantime might simply be too risky for money managers from the viewpoint of career concerns. When both individuals and institutional money managers prefer glamour and avoid value strategies, value stocks will be cheap and earn a higher average return.

Are the anomalous excess returns on value stocks likely to persist? It is possible that over time more individual investors will become convinced of the value of being a contrarian with a long horizon and the returns to our strategies will fall. Perhaps more likely, investment advisors will make a big move into selling quantitative strategies at the expense of stock picking. This will simultaneously increase the use of quantitative value strategies such as those discussed here and also decrease the need for window dressing ones portfolio with glamour firms. Finally, the mutual funds sector is likely to be an important source of investors pursuing value strategies. Not only is the mutual funds sector growing rapidly, but also, window dressing portfolios for clients is almost certainly less important for mutual funds than it is for most investment advisors of pension funds. All of these factors will reduce the future returns to value strategies as such strategies become less contrarian.

Perhaps the most interesting implication of the conjecture that many of the glamour stock investors are money managers is that this may explain their inferior performance. In an earlier paper, we have focused on the striking underperformance of pension fund money managers relative to the market index (Lakonishok, Shleifer, and Vishny 1992). The large difference in returns on glamour and value can at least in principle explain how money managers can underperform the market by 150 basis points per year. By looking at the actual portfolios of institutional money managers, one can find out whether they are overinvested in glamour stocks and underinvested in value stocks. We plan to do that in a follow-up paper.

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TABLE 1: Decile Returns and Characteristics Based on Book to Market

A. RETURNS

	Glamour									Value
	1	2	3	4	5	6	7	8	9	10
AB1	-.022	-.019	-.002	-.013	-.007	.011	.008	.022	.031	.023
AB2	-.047	-.027	.003	.004	.011	.013	.020	.014	.030	.036
AB3	-.036	-.021	-.004	.009	.005	.009	.022	.036	.026	.031
AB4	-.055	-.017	-.016	.004	.016	.012	.027	.034	.045	.044
AB5	-.056	-.017	.003	.013	.008	.013	.046	.031	.032	.042
AAB	-.043	-.020	-.003	.004	.006	.012	.024	.028	.033	.035
CAB5	-.199	-.098	-.016	.018	.032	.057	.128	.146	.175	.188
CAB3	-.141	-.055	-.017	.026	.029	.034	.097	.105	.106	.121

B. CHARACTERISTICS OF DECILES

	1	2	3	4	5	6	7	8	9	10
BM	.225	.414	.556	.685	.810	.936	1.082	1.270	1.548	1.988
Size	663.3	563.6	508.8	447.6	430.3	394.4	386.5	304.3	209.2	120.0
EP	.029	.059	.071	.079	.084	.089	.092	.083	.066	.004
DP	.012	.017	.022	.027	.032	.036	.038	.037	.033	.032
CP	.059	.100	.124	.145	.158	.173	.186	.186	.187	.172
SP	.993	1.462	1.881	2.198	2.517	2.880	3.192	3.904	4.789	4.906
OP	.116	.173	.212	.250	.274	.300	.322	.335	.347	.342
GE	.309	.218	.185	.154	.126	.099	.083	.061	-.004	-.274
GS	.091	.114	.098	.092	.076	.070	.066	.057	.046	.030
GO	.203	.178	.148	.126	.101	.088	.079	.068	.050	.028
GC	.234	.186	.159	.134	.108	.092	.079	.064	.035	-.035

TABLE 2: Portfolio Returns and Characteristics Based on Growth in Sales

A. RETURNS

	Value									Glamour
	1	2	3	4	5	6	7	8	9	10
AB1	.021	.025	.011	.019	.013	.007	.010	.019	-.002	-.028
AB2	.016	.017	.032	.018	.019	.013	.005	.007	.000	-.015
AB3	.020	.030	.022	.021	.018	.015	.003	.015	-.006	-.022
AB4	.032	.026	.031	.026	.019	.017	.003	-.002	.007	-.025
AB5	.020	.038	.028	.034	.006	.020	.017	.003	.003	-.028
AAB	.022	.027	.025	.024	.015	.015	.008	.008	.000	-.024
CAB5	.114	.144	.131	.123	.078	.075	.040	.042	.002	-.113
CAB3	.073	.097	.084	.083	.044	.054	.023	.016	.004	-.074

B. CHARACTERISTICS OF DECILES

	1	2	3	4	5	6	7	8	9	10
GS	-.035	.001	.015	.026	.040	.050	.061	.074	.092	.125
BM	1.184	1.194	1.114	1.054	.990	.945	.900	.842	.760	.638
Size	198.3	332.3	388.4	413.2	461.4	499.2	508.8	536.5	567.2	545.1
EP	-.029	.036	.055	.072	.079	.087	.087	.090	.092	.086
DP	.023	.032	.033	.035	.035	.034	.033	.030	.026	.019
CP	.078	.143	.153	.165	.169	.172	.167	.167	.160	.147
SP	4.280	4.100	3.699	3.448	3.159	3.031	2.928	2.858	2.616	2.227
OP	.203	.275	.285	.292	.295	.299	.292	.293	.281	.259
GE	-.187	-.019	.008	.043	.053	.075	.079	.099	.116	.141
GO	-.028	.007	.023	.032	.049	.062	.070	.089	.105	.138
GC	-.022	.032	.047	.071	.087	.097	.109	.127	.152	.198

TABLE 3: Portfolio Returns and Characteristics Based on Cash Flow to Price

A. RETURNS

	Glamour									Value
	1	2	3	4	5	6	7	8	9	10
AB1	-.049	-.012	-.002	.000	.010	.009	.014	.032	.035	.035
AB2	-.061	-.030	-.015	.013	.013	.027	.031	.032	.028	.037
AB3	-.050	-.024	-.007	.012	.008	.029	.025	.033	.024	.032
AB4	-.042	-.038	-.007	.001	.009	.014	.026	.032	.056	.051
AB5	-.040	-.023	.000	.002	.022	.015	.028	.041	.045	.037
AAB	-.049	-.025	-.006	.005	.013	.019	.025	.034	.037	.039
CAB5	-.220	-.120	-.031	.027	.065	.097	.130	.181	.201	.209
CAB3	-.127	-.082	-.014	.014	.040	.059	.081	.109	.129	.125

B. CHARACTERISTICS OF DECILES

	1	2	3	4	5	6	7	8	9	10
CP	.044	.081	.106	.128	.149	.171	.196	.226	.268	.345
BM	.526	.563	.680	.765	.851	.945	1.013	1.128	1.265	1.502
Size	438.2	463.3	428.6	421.4	394.3	393.0	399.9	439.9	407.5	263.3
EP	.010	.047	.062	.078	.089	.097	.106	.117	.127	.131
DP	.012	.018	.021	.026	.030	.034	.036	.038	.039	.034
SP	1.371	1.479	1.908	2.256	2.543	2.866	3.211	3.715	4.410	6.317
OP	.091	.141	.184	.219	.255	.287	.326	.373	.441	.575
GE	.172	.177	.160	.134	.123	.107	.106	.100	.095	.051
GS	.046	.081	.084	.085	.083	.073	.073	.071	.069	.060
GO	.108	.142	.132	.121	.110	.093	.094	.087	.087	.086
GC	.113	.150	.139	.120	.113	.096	.097	.090	.089	.082

TABLE 4: Portfolio Returns and Characteristics Based on Cash Flow to Price and Growth in Sales

A. RETURNS

	Glamour						Value		
CP	1	2	3	1	2	3	1	2	3
GS	3	3	3	2	2	2	1	1	1
AB1	-.027	-.005	-.007	-.015	.008	.050	-.005	.028	.054
AB2	-.040	.017	.011	-.022	.020	.026	-.015	.031	.054
AB3	-.036	.000	.003	-.016	.023	.026	-.011	.031	.048
AB4	-.036	.011	.011	-.024	.008	.041	-.006	.030	.061
AB5	-.029	-.010	.023	-.021	.013	.038	.005	.030	.056
AAB	-.033	.003	.008	-.020	.014	.036	-.006	.030	.054
CAB5	-.156	.013	.041	-.094	.074	.193	-.032	.160	.304
CAB3	-.097	.001	.037	-.059	.045	.108	-.012	.094	.174

B. CHARACTERISTICS OF DECILES

CP	1	2	3	1	2	3	1	2	3
GS	3	3	3	2	2	2	1	1	1
CP	.080	.159	.285	.084	.163	.278	.077	.166	.279
GS	.112	.105	.106	.053	.057	.056	-.018	.007	.013
BM	.385	.710	1.148	.566	.863	1.269	.898	1.074	1.414
Size	681.0	495.1	360.9	589.4	488.0	444.3	273.0	380.2	389.9
EP	.054	.100	.142	.048	.097	.134	.020	.085	.114
DP	.014	.024	.031	.020	.035	.042	.022	.036	.039
SP	1.115	2.446	4.470	1.539	2.571	4.604	2.450	3.200	5.279
OP	.139	.274	.487	.148	.275	.463	.144	.270	.449
GE	.142	.128	.143	.069	.086	.108	-.063	.050	.082
GO	.131	.117	.118	.059	.068	.075	-.028	.019	.035
GC	.205	.157	.140	.121	.097	.087	.018	.051	.047

TABLE 5A: Summary of Decile Returns for the Largest 50% of Stocks

	1	2	3	4	5	6	7	8	9	10
GS										
AAB	.031	.036	.021	.023	.012	.009	-.003	.000	-.006	-.036
CAB5	.166	.194	.111	.123	.060	.043	-.016	.000	-.027	-.169
CAB3	.099	.131	.089	.090	.039	.037	-.007	-.014	-.030	-.119
	1	2	3	4	5	6	7	8	9	10
CP										
AAB	-.052	-.030	-.007	.003	.015	.016	.017	.022	.030	.029
CAB5	-.235	-.142	-.034	.014	.078	.080	.087	.116	.158	.156
CAB3	-.146	-.091	-.015	.016	.049	.055	.059	.066	.086	.081
CP	1	2	3	1	2	3	1	2	3	
GS	3	3	3	2	2	2	1	1	1	
AAB	-.039	.001	-.010	-.020	.010	.021	.001	.030	.048	
CAB5	-.181	.002	-.049	-.097	.052	.110	.007	.160	.263	
CAB3	-.118	-.019	-.054	-.056	.038	.051	.032	.108	.158	
	1	2	3	4	5	6	7	8	9	10
BM										
AAB	-.043	-.016	.001	.002	.007	.007	.017	.028	.036	.022
CAB5	-.198	-.077	.007	.012	.036	.036	.088	.146	.193	.113
CAB3	-.142	-.043	-.001	.025	.023	.016	.069	.088	.108	.086

TABLE 5B: Portfolio Returns and Characteristics Based on Book-to-Market and Growth in Sales

A. RETURNS

	Glamour								Value
BM	1	1	1	2	2	2	3	3	3
GS	3	2	1	3	2	1	3	2	1
AB1	-.013	-.005	-.003	-.026	.009	.010	.003	.038	.038
AB2	-.019	-.007	-.017	.000	.019	.016	.021	.016	.038
AB3	-.021	-.008	-.017	-.016	.017	.024	.017	.028	.037
AB4	-.023	-.020	-.007	-.005	.014	.028	.034	.033	.044
AB5	-.029	-.019	-.001	.003	.018	.034	.009	.037	.041
AAB	-.021	-.012	-.009	-.009	.015	.022	.017	.030	.039
CAB5	-.100	-.058	-.044	-.043	.079	.116	.087	.160	.213
CAB3	-.071	-.046	-.025	-.017	.049	.088	.061	.101	.127

B. CHARACTERISTICS OF DECILES

BM	1	1	1	2	2	2	3	3	3
GS	3	2	1	3	2	1	3	2	1
CP	.105	.106	.074	.194	.180	.145	.248	.226	.160
GS	.113	.060	-.020	.101	.056	.003	.107	.053	.003
BM	.392	.440	.425	.849	.884	.912	1.50	1.55	1.66
Size	704	750	515	449	477	433	275	284	199

TABLE 6: Past, Expected, and Future Growth: Glamour - Value

	Δ Past Growth	Δ Expected Growth	Δ 1 Year Growth	Δ 2 Year Growth	Δ 3 Year Growth	Δ 4 Year Growth	Δ 5 Year Growth	Δ Average Growth
BM								
Sales	.061	X	.064	.042	.031	.039	.037	.042
Earnings	.583	-.025	-1.149	-.553	-.203	-.124	-.108	-.386
Operating Income	.231	.226	-.024	-.018	-.004	.012	.015	-.004
Cash Flow	.269	.113	-.074	-.084	.004	.005	-.005	-.030
GS								
Sales	.160	X	.094	.040	.032	.034	.010	.042
Earnings	.328	-.125	-2.090	-.681	-.343	-.203	-.079	-.570
Operating Income	.166	-.045	-.069	-.043	-.051	-.027	-.023	-.051
Cash Flow	.220	-.069	-.224	-.093	-.056	-.037	-.039	-.078
CP								
Sales	-.014	X	.032	.020	-.002	.011	.023	.017
Earnings	.121	.121	.285	-.012	-.010	.001	.023	.065
Operating Income	.022	.484	.113	.054	.030	.037	.062	.049
Cash Flow	.031	.301	.171	.037	.041	.037	.043	.065
CP GS								
Sales	.089	X	.116	.066	.056	.039	.036	.063
Earnings	.060	.060	.276	-.093	-.127	-.028	-.022	.003
Operating Income	.096	.310	.156	.023	.015	.011	.027	.046
Cash Flow	.158	.199	.024	-.015	.020	.017	.002	.027

TABLE 7: Raw Returns Consistency: Value - Glamour

	GS: 1, 2 - 9, 10			CP: 1, 2 - 9, 10			GS-CP: 1 - 9			BM: 1, 2 - 9, 10		
	1 Year	3 Year	5 Year	1 Year	3 Year	5 Year	1 Year	3 Year	5 Year	1 Year	3 Year	5 Year
1968	.130	.041	-.018	.022	.287	.474	.144	.153	.267	.098	.201	.344
1969	.070	-.097	.126	.123	.195	.410	.065	-.143	.283	.074	.070	.303
1970	-.108	.037	.193	.135	.246	.428	.002	.160	.356	.023	.032	.279
1971	-.059	.081	.231	-.078	.231	.478	-.144	.196	.531	-.108	.156	.463
1972	.074	.249	.544	.155	.319	.693	.134	.362	.932	.098	.328	.784
1973	.156	.424	.765	.021	.382	.846	.152	.702	1.416	.042	.450	.925
1974	.122	.488	.944	-.007	.496	1.343	.069	.650	1.597	.050	.642	1.726
1975	.261	.564	.311	.262	.816	1.310	.379	1.115	1.229	.418	1.034	1.182
1976	.030	.109	-.035	.174	.673	1.468	.217	.715	1.235	.132	.727	.993
1977	.146	.020	.308	.193	.247	.764	.219	.149	.844	.195	.181	.614
1978	-.002	-.029	.498	.048	-.106	.272	.039	-.072	.581	.037	-.264	.286
1979	-.062	.013	.332	-.168	-.102	.274	-.176	.098	.757	-.207	-.123	.569
1980	-.012	.650	.929	.039	.745	1.225	.110	1.246	2.000	-.034	1.066	1.676
1981	.154	.512	1.165	.203	.650	1.584	.236	.940	2.134	.185	.810	1.955
1982	.247	.394	1.304	-.032	.338	1.253	.118	.539	1.866	.240	.589	1.477
1983	.050	.167	.359	.204	.332	.851	.252	.578	1.470	.221	.256	.648
1984	-.126	-.090	.109	.192	.552	.888	.052	.641	1.092	.043	.324	.640
1985	-.081	.190	.301	.014	.322	.576	-.032	.531	.708	-.007	.237	.299
1986	.149	.288		.108	.339		.196	.427		.051	.149	
1987	.075	.175		.093	.170		.111	.290		.078	.015	
1988	-.009			.092			.089			-.037		
1989	-.010			-.063			.010			-.207		

TABLE 8: Size-Adjusted Returns Consistency: Value - Glamour

	GS: 1, 2 - 9, 10			CP: 1, 2 - 9, 10			GS-CP: 1 - 9			BM: 1, 2 - 9, 10		
	1 Year	3 Year	5 Year	1 Year	3 Year	5 Year	1 Year	3 Year	5 Year	1 Year	3 Year	5 Year
1968	.061	.037	.046	.014	.271	.455	.105	.129	.297	.049	.189	.356
1969	.101	-.055	.200	.104	.162	.353	.085	-.129	.332	.095	.092	.336
1970	-.117	.083	.255	.124	.291	.463	-.017	.243	.451	.002	.119	.387
1971	-.060	.148	.281	-.078	.250	.509	-.145	.266	.587	-.110	.240	.529
1972	.127	.306	.590	.175	.337	.721	.214	.453	1.003	.171	.420	.855
1973	.176	.404	.658	.043	.331	.593	.180	.644	1.165	.082	.387	.587
1974	.128	.369	.508	-.001	.299	.648	.078	.405	.743	.062	.406	.845
1975	.130	.161	-.307	.134	.365	.640	.191	.469	.238	.213	.388	.237
1976	.019	-.184	-.709	.148	.468	1.012	.183	.324	.381	.110	.356	.168
1977	.014	-.203	-.182	.079	.064	.382	.037	-.152	.230	.020	-.108	-.012
1978	-.049	-.225	-.216	.036	-.147	.083	-.001	-.235	.002	-.003	-.414	-.341
1979	-.051	-.048	-.081	-.163	-.135	.122	-.163	.056	.446	-.193	-.201	.111
1980	-.077	.291	.618	-.001	.550	1.029	.038	.874	1.653	-.113	.638	1.288
1981	.140	.305	1.034	.198	.623	1.536	.222	.776	2.000	.170	.621	1.808
1982	.082	.248	1.239	-.058	.308	1.212	-.008	.417	1.823	.078	.449	1.399
1983	.032	.249	.550	.207	.300	.757	.235	.619	1.574	.207	.311	.763
1984	-.076	.082	.431	.182	.475	.762	.084	.756	1.279	.078	.410	.795
1985	-.055	.285	.498	.014	.328	.566	-.016	.604	.815	.026	.357	.544
1986	.167	.392		.101	.322		.209	.496		.077	.291	
1987	.104	.268		.102	.192		.132	.361		.118	.149	
1988	.029			.105			.119			.020		
1989	.031			-.045			.045			-.130		

TABLE 9: Performance of Portfolios in Best and Worst Stock Market Months

	1	2	3	4	5	6	7	8	9	10	Index
GS											
W25	-.104	-.092	-.094	-.091	-.088	-.094	-.093	-.093	-.101	-.110	-.102
N88	-.020	-.017	-.018	-.019	-.020	-.019	-.021	-.023	-.026	-.031	-.023
P122	.042	.039	.039	.038	.036	.037	.037	.039	.038	.038	.037
B25	.134	.118	.115	.110	.106	.110	.114	.113	.114	.124	.121
	1	2	3	4	5	6	7	8	9	10	Index
CP											
W25	-.118	-.111	-.106	-.103	-.097	-.095	-.090	-.087	-.088	-.098	-.102
N88	-.030	-.028	-.027	-.024	-.023	-.021	-.020	-.019	-.016	-.020	-.023
P122	.037	.039	.040	.038	.039	.038	.038	.038	.037	.038	.037
B25	.121	.125	.122	.119	.116	.109	.112	.115	.119	.136	.121

	Glamour							Value			
CP	1	2	3	1	2	3	1	2	3		Index
GS	3	3	3	2	2	2	1	1	1		
W25	-.103	-.100	-.105	-.103	-.091	-.080	-.114	-.090	-.086		-.102
N88	-.029	-.025	-.022	-.025	-.020	-.016	-.023	-.016	-.015		-.023
P122	.038	.039	.038	.039	.038	.038	.039	.040	.040		.037
B25	.110	.115	.124	.111	.104	.113	.131	.110	.124		.121

	1	2	3	4	5	6	7	8	9	10	Index
BM											
W25	-.112	-.110	-.104	-.100	-.097	-.091	-.093	-.092	-.098	-.102	-.102
N88	-.029	-.028	-.026	-.025	-.023	-.020	-.021	-.020	-.018	-.022	-.023
P122	.038	.040	.039	.037	.036	.037	.038	.037	.038	.039	.037
B25	.114	.114	.119	.113	.112	.113	.118	.126	.133	.148	.121

TABLE 10A: Performance of Portfolios in Best and Worst Quarters Based on Real GNP Growth One Quarter Ahead

	1	2	3	4	5	6	7	8	9	10	ΔGNP
GS											
W10	.040	.038	.022	.022	.020	.007	.017	.012	-.001	-.005	-.017
NW34	.022	.017	.015	.017	.009	.016	.017	.019	.010	.003	.000
NB34	.033	.036	.035	.037	.036	.033	.033	.033	.031	.023	.012
B10	.140	.133	.120	.121	.125	.123	.123	.124	.127	.109	.031
	1	2	3	4	5	6	7	8	9	10	ΔGNP
CP											
W10	.003	.007	.004	.017	.018	.016	.020	.025	.019	.015	-.017
NW34	.001	.007	.013	.009	.013	.014	.009	.016	.020	.018	.000
NB34	.017	.025	.031	.030	.034	.031	.036	.041	.041	.042	.012
B10	.101	.118	.117	.124	.128	.132	.136	.134	.135	.132	.031
	Glamour								Value		
CP	1	2	3	1	2	3	1	2	3		ΔGNP
GS	3	3	3	2	2	2	1	1	1		
W10	-.009	.013	.008	.014	.016	.020	.032	.037	.041		-.017
NW34	.011	.011	.012	.010	.014	.023	.021	.018	.027		.000
NB34	.026	.029	.034	.029	.033	.046	.026	.040	.046		.012
B10	.103	.123	.136	.107	.123	.133	.122	.140	.139		.031
	1	2	3	4	5	6	7	8	9	10	ΔGNP
BM											
W10	-.004	.001	.012	.018	.009	.016	.017	.028	.021	.015	-.017
NW34	.011	.008	.011	.009	.008	.010	.010	.016	.017	.012	.000
NB34	.022	.028	.027	.025	.030	.035	.036	.035	.041	.039	.012
B10	.092	.102	.118	.117	.117	.135	.132	.141	.145	.151	.031

TABLE 10B: Performance of Portfolios in Best and Worst Quarters Based on Change in Unemployment One Quarter Ahead

	1	2	3	4	5	6	7	8	9	10	ΔUnemp
GS											
W10	.016	.028	.014	.022	.019	.018	.015	.013	.006	.013	.008
NW34	.023	.027	.026	.028	.024	.023	.028	.029	.024	.015	.001
NB34	.059	.047	.044	.045	.044	.044	.042	.044	.040	.030	-.002
B10	.077	.072	.062	.059	.051	.050	.053	.050	.043	.031	-.005
	1	2	3	4	5	6	7	8	9	10	ΔUnemp
CP											
W10	-.011	.012	.008	.014	.018	.014	.013	.022	.020	.019	.008
NW34	.014	.021	.021	.022	.029	.026	.025	.030	.029	.023	.001
NB34	.035	.036	.044	.041	.040	.041	.043	.048	.049	.050	-.002
B10	.014	.030	.044	.048	.051	.057	.065	.067	.075	.085	-.005

	Glamour						Value				
CP	1	2	3	1	2	3	1	2	3		ΔUnemp
GS	3	3	3	2	2	2	1	1	1		
W10	.008	.016	.002	.004	.015	.032	.007	.021	.027		.008
NW34	.023	.026	.024	.021	.026	.031	.017	.033	.034		.001
NB34	.036	.036	.043	.044	.041	.052	.047	.050	.059		-.002
B10	.012	.045	.073	.030	.053	.072	.056	.069	.087		-.005
	1	2	3	4	5	6	7	8	9	10	ΔUnemp
BM											
W10	-.004	.003	.013	.010	.009	.020	.016	.023	.027	.012	.008
NW34	.023	.020	.022	.023	.021	.023	.023	.030	.021	.018	.001
NB34	.036	.037	.039	.035	.036	.045	.043	.044	.050	.051	-.002
B10	.007	.029	.042	.041	.050	.053	.065	.070	.092	.090	-.005

TABLE 11: Risk Characteristics of Portfolios

	1	2	3	4	5	6	7	8	9	10	EW Index
GS											
Average β	1.360	1.261	1.283	1.232	1.218	1.180	1.198	1.264	1.271	1.290	1.304
Average SD	.253	.230	.228	.217	.213	.205	.207	.218	.221	.236	.250
Average SD of size-adjusted return	.059	.052	.048	.039	.031	.033	.032	.036	.039	.072	--
	1	2	3	4	5	6	7	8	9	10	EW Index
CP											
Average β	1.268	1.293	1.321	1.333	1.318	1.237	1.182	1.247	1.224	1.384	1.304
Average SD	.224	.227	.239	.237	.232	.221	.212	.223	.224	.252	.250
Average SD of size-adjusted return	.037	.044	.049	.036	.033	.034	.042	.036	.048	.058	--
CP	1	2	3	1	2	3	1	2	3		
GS	3	3	3	2	2	2	1	1	1		EW Index
Average β	1.249	1.296	1.293	1.239	1.184	1.214	1.330	1.258	1.322		1.304
Average SD	.216	.232	.241	.215	.207	.213	.242	.224	.241		.250
Average SD of size-adjusted return	.061	.040	.066	.049	.033	.047	.066	.047	.065		--
	1	2	3	4	5	6	7	8	9	10	EW Index
BM											
Average β	1.248	1.268	1.337	1.268	1.252	1.214	1.267	1.275	1.299	1.443	1.304
Average SD	.223	.223	.236	.225	.221	.214	.225	.233	.248	.276	.250
Average SD of size-adjusted return	.076	.050	.040	.035	.031	.040	.035	.043	.046	.071	--