

Overconfidence Bias in International Stock Prices

Consistent across countries and trading environments.

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The overconfidence hypothesis suggests that investors systematically misprocess publicly available information. Might investor overconfidence systematically bias stock prices and create investment opportunities across different countries and different cultures?

We use valuation theory to suggest where overconfidence biases are most likely to occur. The speed at which a company is growing seems to be the most important characteristic affecting overconfidence bias.

A considerable amount of research suggests that people are overconfident, and that investors in particular are overconfident about their abilities to predict the future. De Bondt and Thaler [1995] note that psychologists find overconfidence to be a pervasive human characteristic. Daniel, Hirshleifer, and Subrahmanyam [1998] present an asset pricing model that incorporates a version of the overconfidence hypothesis, and De Bondt and Thaler [1985], Odean [1998], and Daniel and Titman [1999] provide evidence they interpret as consistent with overconfidence.

Here we extend our research on U.S. stocks in Scott, Stumpp, and Xu [1999] that links overconfidence with valuation theory. We argue there that, although overconfidence can bias stock prices in systematic ways, uncovering evidence of bias requires use of different techniques for stocks with different growth rates.

Stock prices of rapidly growing companies react too slowly to news conveying changes in fundamental valuation parameters, such as revisions in security analyst

earnings forecasts, or earnings surprises. The effect is weaker for slowly growing companies. For slowly growing companies, biased prices are best identified by conventional measures such as price-to-earnings ratios and price-to-book ratios. Valuation-based measures are less effective if at all for rapidly growing firms. The stock prices of companies with intermediate growth rates exhibit both characteristics, although in a muted way.

We test this framework in the case of international stocks, and find the same behavior observed in U.S. stocks. Our tests include the U.K., Japan, Germany, and France besides the U.S.

Of the non-U.S. markets, Japan presents a particularly challenging—and illuminating—test. Its culture and regulatory environment differ from that in the U.S., and its disappointing stock market experience also diverged markedly from that in the U.S. over the interval studied. The Japanese results suggest that absolute growth rates are more important than relative ones in determining the likely effect of investor overconfidence on stock prices.

We first review the overconfidence hypothesis, and then show how valuation theory helps to uncover biased prices. We ultimately suggest how investors can use the empirical findings.

THEORY

In a fully rational market, stock prices would be determined according to valuation theory. Share price would reflect investor estimates of company fundamentals, as measured by the discounted value of expected future cash flows.

We assume that stock markets for the most part are efficient in this fundamental sense. We also assume there are enough overconfident investors to systematically, but temporarily, bias the prices of individual stocks away from fundamental value.

We define an overconfident investor as one who believes too strongly in his or her own assessments of a stock's fundamentals. If there are enough overconfident investors to affect the market, stock prices will partially ignore objective information or react too slowly to new information.

But eventually prices do react. The disparity between reality and the beliefs of the overconfident investors will be too great, or go on too long. At that point, fundamentals reassert themselves, as expectations realign with reality. This realignment moves prices closer to fundamental values.

We test the hypothesis that overconfidence is a pervasive trait of investors, and see whether the biases found

in U.S. stock prices appear in different countries and different cultures.

Daniel, Hirshleifer, and Subrahmanyam [1998], hereafter DHS, make a similar assumption. They assume a group of investors receive the same “private information,” and that they believe too strongly in its validity. As a result, when pertinent information is later released that is inconsistent with their beliefs, these investors only partially recognize the importance of the information.

We differ from DHS in that we assign a greater role to valuation theory to discover the types of commonly shared “private information” that are likely to have the greatest impact on share price.¹

The fundamental characteristics of a stock determine how it is most likely to be biased by investor overconfidence. Thus, to uncover evidence of investor overconfidence, one must first understand the relationship between valuation theory and investor overconfidence.

According to valuation theory, a stock's price should equal the present value of the future cash flows that investors expect to receive from owning it. A simple framework embodying this idea is the following:

$$P = (1 - k)E/(r - g) \quad (1)$$

where P is the stock price, $(1 - k)$ is the payout rate, E represents the expectation of next period's normalized earnings, so that $(1 - k)E$ is next period's expected dividend, r is the discount rate, and g is the rate of growth in normalized earnings.

A more general formula separates the right-hand side into two components, one representing the value of the current earnings stream, and the other the present value of future growth. If r^* represents the expected return on the incremental equity investment, k , then the growth of dividends g equals kr^* , and algebraic manipulation shows that Equation (1) is equivalent to Equation (2).

Equation (2) expresses the valuation relationship in terms of earnings-to-price ratios, E/P , which we use in the empirical section:

$$E/P = r + k(r - r^*)/(1 - k) \quad (2)$$

The first term on the right-hand side of Equation (2) represents what the E/P ratio would be for a firm with no growth prospects. It would simply equal the firm's equity discount rate. The second term on the right-hand side represents the effect of the present value of future growth opportunities on the E/P ratio. The greater the

growth prospects, the lower the ratio.

As Equation (2) makes clear, growth opportunities and the profitability of those opportunities, represented by k and the spread between r^* and r , respectively, are central to stock price determination. Furthermore, the mistakes made by overconfident investors display themselves differently, depending on how rapidly a company is growing.

Slowly Growing Companies

If stocks that are not growing have the same systematic risk, they will all have the same discount rate, r . The fact that they are not growing implies either that there is no investment, i.e., $k = 0$, or the investment is unprofitable, $r^* = r$. It follows from Equation (2) that these non-growing stocks should all have an E/P ratio equal to r .

Occasionally, however, investor expectations for such stocks are swayed by stories. For example, a coal company may establish a website. The company may be misconstrued as an Internet company and its stock price bid up. Or, unfounded rumors of potential bankruptcy may drive down the prices of a company subject to temporary bad news.

More generally, stock prices become biased when overconfident investors become captivated by stories that are inconsistent with the objective data. In forming their beliefs, overconfident investors place too much weight on the stories and not enough on objective data, such as E/P or B/P ratios.

Non-growing stocks with especially high or low E/P or B/P ratios are likely to be “story stocks,” and subject to overconfidence bias. When overconfident investors have an influence in the market, an investor can outperform a randomly chosen portfolio of non-growing stocks. Assuming that trailing or forecasted earnings are a noisy approximation of normalized earnings, the investor should hold the ones with high E/P ratios and not hold, or sell short, the ones with low E/Ps.

Why wouldn't rational investors arbitrage away these opportunities? Theoretically, as long as the rational investors are risk-averse and have limited capital, they will not completely arbitrage away these opportunities (see, for example, Lintner [1969]; Rubinstein [1974]; DHS [1998]). They will reduce the price biases created by overconfident investors, but it is an empirical question as to the extent of the remaining price biases, and thus the investment opportunities for rational investors.

Rapidly Growing Companies

Although valuation theory also suggests how one can find biases among growth stock prices, note that E/P ratios are likely to be of little help. Growth stock E/P ratios depend in a complex way on expected growth and risk, as well as the extent of the overconfidence bias. In addition, for growth stocks trailing and forecasted earnings are frequently negative, and poor proxies for normalized earnings.

An overconfidence bias can be seen in the reaction of stock prices to news about company fundamentals. Like all stocks, growth stock prices are sensitive to news that changes investor estimates of normalized earnings. Most important, growth stocks are particularly sensitive to news about future growth opportunities.

As a consideration of Equation (2) makes clear, news that conveys information about the profitability of investment, r^* , can have an especially important effect. Similarly, if investors believe the investment is likely to be profitable ($r^* > r$), the opportunity for larger investments, i.e., a higher k , can also have dramatic price effects. Overconfident investors believe too strongly in their beliefs about r^* and k , and should react too slowly to news.

Thus, we would expect that a favorable news event would elicit an immediate move upward in price; an unfavorable event would prompt a downward move. The stock price reaction, however, will be incomplete, and the price will only slowly reach a new equilibrium after overconfident investors eventually come to terms with the reality of the news event. Because news is more important for growth stocks, the delayed reaction to news should be greater for growth stocks than for non-growth stocks.

This line of argument is similar to that of DHS, who suggest that stock prices should underreact to public information. For DHS, however, the private information that overconfident investors cling to is unspecified.

We suggest it is not private at all. Rather, the information consists of commonly held expectations about a company's future profitability and, most important, the rate and profitability of its future expansion. When they are confronted with information that is inconsistent with those expectations, overconfident investors react too slowly.

News About Company Fundamentals

Earnings announcements and analysts' revisions of anticipated earnings represent noisy sources of news about company fundamentals. These sources of news provide

EXHIBIT 1
Growth Classifications

		HISTORICAL SALES GROWTH RANK		
		0	1	2
FY1 TO FY2	0	Low	Low	Average
CONSENSUS EPS	1	Low	Average	High
GROWTH RANK	2	Average	High	High

information about normalized earnings, future growth opportunities, transitory events, and simple randomness.

It is useful to rank the type of information implicit in earnings news in order of its importance to valuation and consider its likely effect on stocks with different growth rates. Least important is simple randomness, such as a mandated but cosmetic change in the way a revenue or cost item is reported. Next most important are transitory items, which should affect valuation only by the amount of the item. That is, if because of a temporary event, company earnings are \$1 million higher this quarter, then the total value of the equity should increase by \$1 million.

Changes in normalized earnings are more important. As Equation (1) shows, a 10% change in normalized earnings changes fundamental value by 10%. This proportional effect is independent of a company's rate of growth. To the extent that earnings news conveys information about normalized earnings, even a no-growth firm should display both an immediate and then a delayed reaction.

The trick for investors is to disentangle the random and transitory information from the news, if any, about normalized earnings. For firms with little or no growth prospects, changes in normalized earnings may be rare or be overwhelmed by randomness and transitory items, so there may be little evidence of a delayed reaction to news.

Finally, for rapidly growing companies the most important type of news is information that affects estimates of the speed and profitability of future growth. Rapidly growing firms are expected to regularly report earnings gains, so that deviations from expected gains provide an important signal about future gains. Even small changes in estimated growth can have a large impact on price.

The overconfidence hypothesis suggests that biased investors remain anchored in their beliefs, and even if news causes an immediate and large move in price, rapidly growing stocks should also exhibit a significant and lagged response to news.

Hypotheses

According to valuation theory, overconfident investors cause: 1) a greater lagged response to news for rapidly growing stocks than for slowly growing stocks, and 2) a low P/E effect that is greater for slower-growing stocks than for their faster-growing counterparts. Overconfidence biases for stocks with intermediate growth rates may be detectable by both methods.

DATA AND METHODOLOGY

We test these hypotheses using data for France, Germany, Japan, the U.K., and the U.S. The empirical work is based on quarterly data from 1987 through 2000. To be included, firms must be followed by at least two analysts (as reported by IBES), and have a minimum of three years of annual sales data (as reported by Worldscope).

The sample is drawn from the Worldscope research tape to control for potential survivorship bias. It includes up to 1,500 of the largest-capitalization stocks in each country. Variables and results are measured in local currency.

For consistency with valuation theory, we first separate stocks for each country into slow, average, and fast growth categories. Exhibit 1 demonstrates division by two variables: 1) the average rate of growth in sales measured over the previous five years, and 2) the expected rate of growth in earnings over the next two fiscal years.²

We use direct measures of growth to differentiate stocks rather than indirect measures (such as price-to-book) that entangle valuation parameters like profitability and risk with growth. Ideally, we would also use estimates of long-term earnings growth made by security analysts to segment stocks, but these data are not widely available for non-U.S. stocks.

Exhibit 2 presents summary statistics for each country. In the U.S., despite the meltdown of technology stocks in 2000, high-growth stocks still outperformed other groups over the interval studied (all returns include both dividends and capital gains). The modest positive correla-

EXHIBIT 2
Summary Statistics by Country and Growth Category—1987–2000

COUNTRY	GROWTH CATEGORY			Total
	0 (slow)	1 (average)	2 (fast)	
U.S.	TR = 3.78	4.37	5.35	4.50
	SG = 4.8	9.8	28.0	14.4
	EPSP = 8.4	24.2	32.6	21.4
	EP = 0.087	0.077	0.065	0.076
	(21615)	(16173)	(20846)	(58634)
Japan	TR = -0.95	0.11	1.56	0.29
	SG = 1.1	4.0	9.0	4.9
	EPSP = -3.1	18.3	28.0	15.0
	EP = 0.032	0.033	0.034	0.033
	(8246)	(8857)	(9278)	(26381)
U.K.	TR = 2.52	2.69	2.39	2.53
	SG = 4.7	12.2	26.3	14.4
	EPSP = 7.6	20.4	27.5	18.5
	EP = 0.089	0.086	0.084	0.086
	(9883)	(9740)	(9841)	(29464)
France	TR = 3.67	3.38	2.97	3.34
	SG = 3.9	8.9	18.4	10.5
	EPSP = 7.7	24.4	31.9	20.4
	EP = 0.083	0.078	0.071	0.077
	(3361)	(3254)	(3449)	(10064)
Germany	TR = 2.32	2.51	1.05	1.97
	SG = 3.5	7.7	18.2	9.7
	EPSP = 4.2	21.0	30.7	18.8
	EP = 0.066	0.063	0.061	0.063
	(2795)	(3065)	(2830)	(8690)

TR: mean return in the quarter subsequent to portfolio formation.
SG: average annual growth in sales measured over prior five years.
EPSP: expected rate of growth in consensus earnings between fiscal years 1 and 2.
EP: earnings-to-price ratio using 12-month-ahead earnings forecasts. □

□ □

All statistics are the equal-weighted means of all stocks in that category. □

The number of observations is in parentheses.

tion between growth and performance also holds for Japan, where slowly growing stocks lost an average of 0.95% per quarter and trailed all other categories. In the U.K., France, and Germany, although slowly growing stocks have done a little better than the fast-growing stocks, the relationship is not monotonic and is weak at best.

Interestingly but not surprisingly, Japanese stocks experienced much lower sales growth over this period than other countries. For example, even the fastest-growing stocks in Japan had only 9.0% annual sales growth—a rate

more consistent with sales growth for an average firm in other countries.

Finally, consistent with valuation theory, there is a clear correlation between E/P ratio and growth (i.e., fast-growth stocks have lower E/P ratios, and slow-growth stocks have higher E/P ratios). This normal relationship is distorted for Japanese stocks. During the recession years, many Japanese firms experienced losses and consequently exhibited low E/P ratios.

EXHIBIT 3

E/P Ratios, Growth, and Stock Returns by Country—1987–2000

	SLOW GROWTH			AVERAGE GROWTH			FAST GROWTH		
	Low E/P	Avg. E/P	High E/P	Low E/P	Avg. E/P	High E/P	Low E/P	Avg. E/P	High E/P
US	-1.94	-1.20	0.28	-1.05	-0.46	0.60	0.61	0.22	1.20
JP	-2.30	-1.57	0.81	-1.26	0.19	0.94	0.60	0.91	2.00
UK	-0.71	-0.45	1.05	0.39	0.09	-0.36	0.87	-0.42	-0.84
FR	-0.46	0.41	0.98	-0.58	0.66	-0.04	1.18	-0.24	-1.65
GM	-0.86	0.83	1.33	0.43	0.59	0.47	-0.54	-1.17	-0.73

EMPIRICAL RESULTS

E/P and Growth

Exhibit 3 reports on the relationship between E/P at the beginning of a quarter and subsequent performance during the quarter. Numerous researchers demonstrate that E/P ratios are positively correlated with future stock returns; examples are Basu [1977] and Chan, Hamao, and Lakonishok [1991]. As in Lakonishok, Shleifer, and Vishny [1994]), who study the E/P effect in the U.S., the results in Exhibit 3 control for growth.

Our hypothesis, which links valuation and overconfidence, suggests that simple valuation measures like E/P should better predict subsequent performance for low-growth firms. The data for each country are consistent with this hypothesis.

Slowly growing, cheaper (high E/P) stocks tend to outperform. Conversely, Exhibit 3 suggests that E/P has little relationship with subsequent performance for high-growth stocks. In fact, for the U.K., France, and Germany, the more expensive high-growth stocks have higher returns than their cheaper counterparts.

In part this reflects the fact that value investing (which typically involves buying high E/P stocks) has fared poorly in recent years. Although high E/P stocks have performed poorly in aggregate, Exhibit 3 shows that slowly growing high E/P stocks have outperformed their more expensive peers in all five countries.

Exhibit 4 presents the extra return earned by cheap stocks compared to expensive stocks (low E/P minus high E/P). It shows the results within each country according to the real rate of growth of sales. The return advantage of cheap stocks seems particularly strong when real growth is less than about 5%.

The E/P effect seems to be the strongest in Japan,

where the payoff to E/P is monotonic in each growth category and greater than in other countries. Perhaps the out-performance of cheap Japanese stocks in all growth categories is attributable partially to the unwinding of the Japanese valuation bubble, or perhaps continuing macroeconomic disappointments in the Japanese economy caused all stocks to behave somewhat like no-growth or slow-growth stocks. As we have noted, the fastest-growing Japanese stocks had the actual growth rates of an average growth stock in other countries.

The Japanese data are also consistent with evidence suggesting that value investing performs better in recessions and in periods of slow economic growth (see Fama and French [1989]).

News and Growth

The news that is most important for growth stock valuation is new information concerning the rate and profitability of future growth. According to efficient markets theory, good news should immediately raise price, and bad news should reduce it. The overconfidence hypothesis suggests there should be a delayed reaction too.

Because this type of news is hard to measure, we proxy it with revisions of analyst earnings estimates. As Exhibit 5 shows, the correlation between past estimate revisions and subsequent returns seems to have been more consistent than the E/P effect. Stocks that have experienced favorable estimate revisions in one quarter subsequently outperformed those with less favorable activity in the next quarter. This pattern appears in all growth categories and across all markets.

While the overall extent of the excess returns is similar to that documented in earlier studies (see Bernard and Thomas [1989, 1990]), we find that the effect of news on future excess returns is substantially stronger for fast-growth

EXHIBIT 4
Strong E/P Effect for Real Growth Below 5%

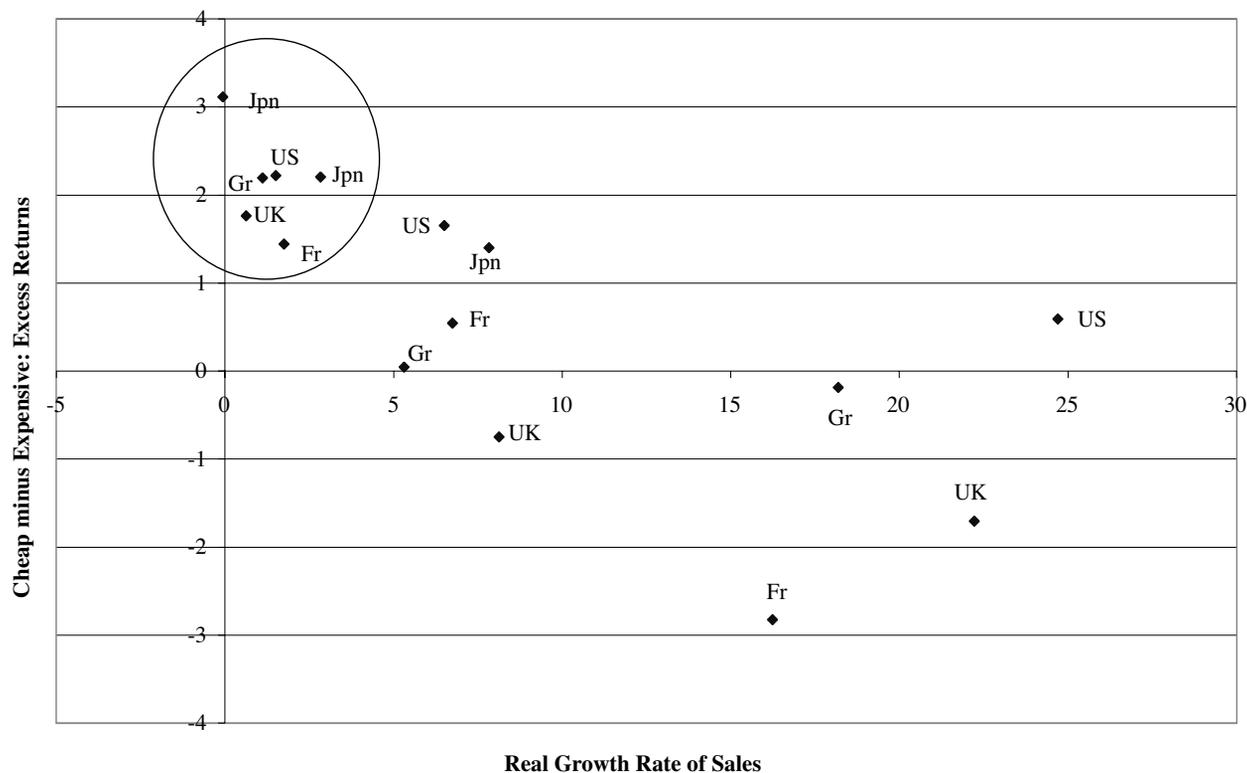


EXHIBIT 5
Earnings Estimate Revisions, Growth, and Stock Returns by Country—1987–2000

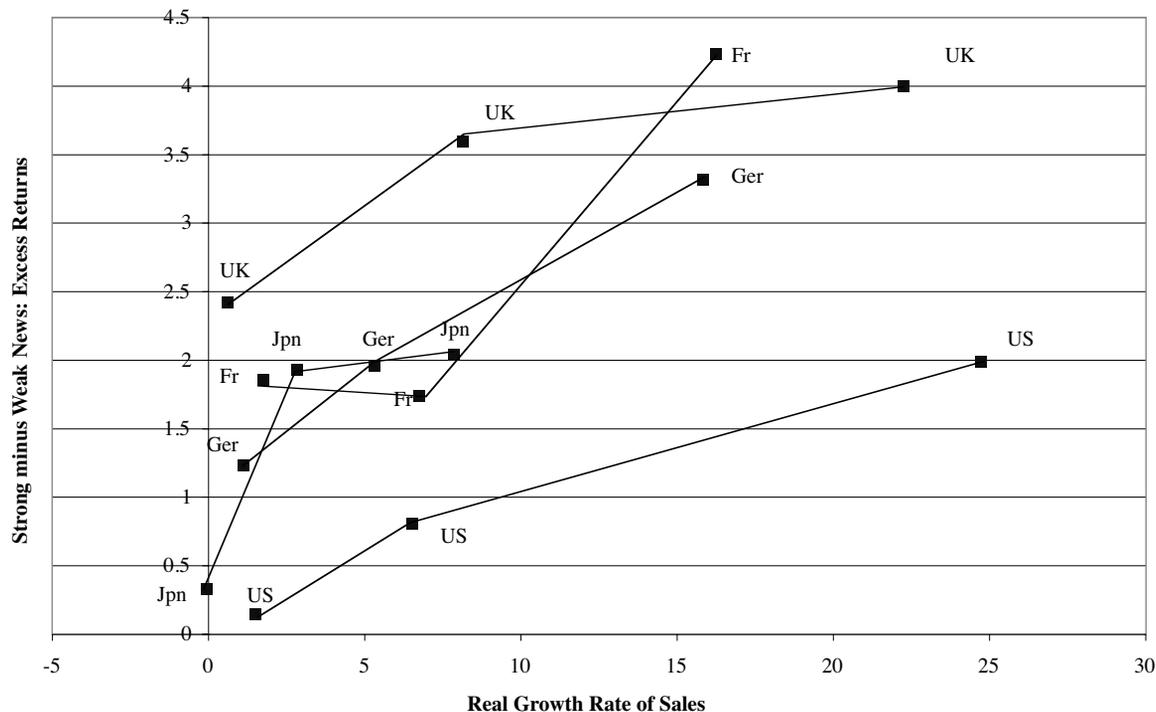
	SLOW GROWTH			AVERAGE GROWTH			FAST GROWTH		
	Weak News	Avg. News	Strong News	Weak News	Avg. News	Strong News	Weak News	Avg. News	Strong News
US	-1.09	-0.86	-0.94	-0.64	-0.42	0.17	-0.27	0.45	1.72
JP	-1.01	-1.33	-0.68	-1.07	0.10	0.86	0.37	0.72	2.41
UK	-1.24	0.04	1.18	-1.76	0.02	1.84	-2.22	-0.17	1.78
FR	-0.88	0.70	0.98	-0.92	0.19	0.82	-2.31	-0.33	1.92
GM	0.07	0.10	1.30	-0.31	0.08	1.65	-2.36	-1.14	0.96

stocks than for slow-growth stocks. This finding is consistent with both overconfidence (as returns are measured at least three months after the estimate revisions occur) and valuation theory (which predicts that stock prices of high-growth firms should be more sensitive to news).

Exhibit 6 shows how this deviation from market efficiency differs depending on country and, within countries, for different rates of real sales growth. It presents the excess returns of stocks with strong news in the previous quarter compared to those with weak news.

The payoff to news is stronger in the U.K., France, and Germany than in the U.S. and Japan, particularly for the high-growth stocks. This contrasts with the E/P effect, which is weaker in the U.K., France, and Germany than in the U.S. and Japan. In the three European countries, the payoff to E/P is perverse for high-growth stocks. This is actually consistent with the strong news effect in Exhibit 5, because the cheaper stocks tend to be associated with more negative news, while the more expensive stocks tend to reflect more positive news. These results

EXHIBIT 6
Delayed Reaction to News Increases with Growth



support our hypothesis that, for fast-growing stocks, news dominates valuation measures.

The greater payoff to estimate revisions in the U.K., France, and Germany suggests that their underreaction biases are stronger and their stock markets may be less efficient than in the U.S. or Japan. Yet the E/P effect for slowly growing stocks is strong in both the U.S. and Japan, suggesting a level of inefficiency that is similar across all the countries. In the U.S., it may be that investors are just as overconfident as investors elsewhere, but that they are more likely to be aware of the lagged reaction to earnings revisions, and have added that to their investment processes.

Putting the Pieces Together

Exhibit 7 presents results from cross-sectional regressions that consider growth, E/P, and news jointly as well as the interactions among them. The dependent variable in the regressions is excess return measured over the quarter after portfolio formation. The independent variables are E/P, estimate revisions, and interaction terms of these two variables with growth. All independent variables are measured in the quarter prior to measurement of the dependent variable.

The independent variables, E/P and revisions, are assigned values of -1, 0, or 1, depending on their respective rank (where -1 represents the lowest third of stocks ranked in that category for that quarter). In the two interaction terms, the growth rank is assigned a value of 0, 1, or 2 for a stock in the slow-, average-, or fast-growth category.

The specification of the regression and independent variables affects the interpretation of coefficient estimates. The intercept represents the average excess return of stocks with both average valuation and news, and should be close to zero. The coefficient on E/P is a measure of the E/P effect for slow-growth stocks (i.e., the interaction term equals zero for slow-growth stocks), and should be positive. The coefficient of the interaction term between E/P and growth is the incremental E/P effect for a one-level increase in growth rank, and should be negative (i.e., the ability of E/P to identify bias should decline with growth). The estimated coefficients for the revision variable should be positive, and its interaction term with growth should also be positive, as news gains importance with growth. Finally, we expect the R^2 for these regressions to be low, due to the discrete nature of the independent variables.

EXHIBIT 7

E/P, News, Revisions, Growth, and Stock Returns by Country—1987–2000

REGRESSION COEFFICIENTS							
COUNTRY	INT	EP	REV	EP(G)	REV(G)	R ²	F
US	-0.21 (-2.77)	1.13 (8.08)	0.07 (0.48)	-0.29 (-2.65)	0.53 (4.83)	0.0025	36.5
JP	0.08 (0.74)	1.55 (7.68)	0.30 (1.44)	-0.43 (-2.80)	0.43 (2.79)	0.0049	32.3
UK	-0.06 (-0.59)	0.84 (4.41)	1.34 (7.03)	-0.78 (-5.32)	0.32 (2.19)	0.0078	57.9
FR	0.03 (0.17)	0.95 (2.98)	0.76 (2.34)	-1.00 (-4.01)	0.53 (2.15)	0.0065	16.4
GM	0.03 (0.19)	0.93 (2.98)	0.57 (1.78)	-0.55 (-2.28)	0.51 (2.06)	0.0050	10.9

INT: intercept.

EP: earnings-to-price rank.

REV: revision rank.

G: growth rank.

The interaction terms, EP(G) and REV(G), equal the product of the two individual independent variables.

T-statistics are in parentheses.

Exhibit 7 shows that except for the U.S. the estimated intercept is virtually zero for all four countries, indicating that a stock with average valuation and average estimate revision has average performance. The negative intercept for the U.S. is attributable to the significant outperformance of stocks with negative forecast earnings for the current fiscal year.

As we noted earlier, these stocks are not included in any growth categories but affect the average excess return of other stocks. In the U.S., even though these stocks represent only 5.4% of the sample, they significantly outperformed, causing the average stock in the three growth categories to have negative excess return of -0.19%.

Consistent with theory, the E/P effect is significant for slow-growth stocks, but is quickly offset as growth expands via the (negative) interaction term between E/P and growth. In the three European countries, France in particular, the interaction term between E/P and growth is large and negative, indicating that the E/P effect disappears, or is even perverse for high-growth stocks. In the U.S. and Japan, erosion in the E/P effect is weaker, but the interaction effect between E/P and growth is still negative and statistically significant.

While the payoff to news for slow-growth stocks is generally positive, it is not always significant. In the U.S. and Japan, the news effect for the slow-growth stocks is small and statistically insignificant. Consistent with our

theory, the sign of the interaction term between news (as proxied by estimate revisions) and growth is positive. This indicates that the positive relationship between estimate revisions and subsequent returns becomes stronger as the rate of growth increases. The coefficient of this interaction term between estimate revisions and growth is positive and statistically significant for all countries.

IMPLICATIONS FOR ACTIVE MANAGEMENT

When stock returns are viewed in terms of a simple framework that combines the hypotheses of investor overconfidence and valuation theory, we find consistent investor behavior across different countries and trading environments. A stock's growth rate is an important determinant of where to look for evidence of investor overconfidence.

Our results also suggest how portfolios should be managed across cultures and markets. Although the low P/E effect appeared to vanish during the technology stock bubble, our evidence suggests that it persists across time and markets, provided that investors search for it in the appropriate manner. The low P/E effect only seems to disappear, because the stocks of rapidly growing companies dominated market returns.

Conventional value-oriented investing works globally if active managers focus their attention on slower-growing firms for which conventional measures of valuation

such as E/P have a better chance of uncovering biased prices. Although there also appears to be a global payoff to exploiting investors' lagged responses to news, uncovering cheap values is a more fruitful endeavor for investors in slow-growing stocks, especially in the United States and Japan.

Trading disciplines, on the other hand, are critical for growth managers. Country-specific knowledge may be less important than the ability to trade in response to new and changing information regarding future profitability and growth. To avoid falling prey to the biases that affect other investors, successful growth managers around the globe should ride winners but be willing to sell when confronted with bad news.

Finally, our results suggest that the absolute rate of earnings growth may be important. If earnings growth is quite slow, as was the case in Japan through much of the 1990s, value-oriented investors may find many more opportunities than growth-oriented investors, and many low P/E stocks may exhibit a tendency to outperform their peers. Similarly, a lagged response to news may be a more important source of above-average investment performance in high-growth environments.

ENDNOTES

¹The commonly shared information that we assume important makes it difficult to map our interpretations into the DHS propositions. This is particularly true when they deal with "selective" and "non-selective" information.

²To calculate the expected earnings growth from the current to the next fiscal year, we require that the current fiscal year estimate be positive. Stocks with negative current fiscal year estimates are not included in any group. For the five countries combined, these stocks represent about 7.1% of the sample. Categorizing stocks according to historical sales growth alone does not materially change the results reported.

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