Capturing the Value Premium in the United Kingdom

Elroy Dimson, Stefan Nagel, and Garrett Quigley

Using a new data set of accounting information merged with share price data, we found a strong value premium in the United Kingdom for the period 1955–2001. It existed among small-capitalization and large-capitalization stocks. But small-cap stock managers who wish to capture the higher expected returns face some challenges. We show that rebalancing-induced portfolio turnover for indexed small-cap value strategies can be substantial. Coupled with the relative illiquidity of the U.K. market for small-cap value stocks, such high turnover calls for strategies that sacrifice tracking accuracy in favor of reducing trading needs and lowering trading costs.

Return premiums for value stocks have been documented around the world (Capaul, Rowley, and Sharpe 1993; Fama and French 1998). Unfortunately, lack of data has limited the studies of non-U.S. markets to samples of relatively large-capitalization stocks and recent time periods. In this study, we analyzed the U.K. evidence and addressed some of the data and sample-period problems. We used a new data set of accounting information that covers the whole population of stocks ever listed on the London Stock Exchange (LSE) since 1955. We examined value effects from 1955 through 2001. Our focus here is on the ratio of book value to market value of equity, but we also provide information on the role of dividend yields as a measure of value.

Of course, the premiums found in historical returns are only hypothetical. The implementation of strategies to capture the value premium is potentially costly, particularly within the small-cap segment. Stocks migrating in and out of the small-cap value universe, dividends, and delistings—all give rise to trading needs even for a passive manager. We analyze this rebalancing-induced portfolio turnover for a simple small-cap value strategy. We then show that trading costs are an important determinant of performance because of the relative illiquidity in the small-cap value segment in the United Kingdom. Our results highlight the warning that the implementation of small-cap and value strategies outside the United States requires particular attention to trading costs.

Elroy Dimson is professor of finance at the London Business School. Stefan Nagel is a lecturer on economics at Harvard University, Cambridge, Massachusetts. Garrett Quigley is vice president and portfolio manager at Dimensional Fund Advisors, London.

Data

Our source of share price and listing information was the London Share Price Database (LSPD) maintained at the London Business School.[1] The master index of this database covers all listed stocks in the U.K. market since 1955. It also includes all nonsurviving companies and is, therefore, free of survivor bias. We selected stocks officially listed on the LSE and excluded foreign companies.[2] Investment trusts (closed-end funds) were also excluded. We obtained listing information, monthly returns, and monthly market values from the LSPD.

We linked the LSPD with accounting information from the database described in Nagel (2001). It combines data from three sources. The first source is Datastream, which started to cover U.K. companies in the late 1960s. Levis and Liodakis (1999) and Leledakis and Davidson (2001) used this source, but its coverage prior to the 1980s is limited. For the 1953–76 period, we supplemented the Datastream data with information from the Cambridge/DTI database, which covers U.K. manufacturing companies (see Meeks and Wheeler 1999). For companies not in Cambridge/DTI or Datastream, we collected balance sheets from the official stock exchange yearbooks. In total, we gathered about 100,000 company-years of accounting data, with each data source covering about a third of the total. As a result, we have accounting data for virtually all listed companies since 1953 and survivor bias has been eliminated.

We computed monthly returns and market caps from share prices, dividends, and capital changes in the LSPD files. For the 20-year period starting in 1955 for which the LSPD does not have full coverage, we used the one-in-three random sample provided in the LSPD. This sample contains a third of all stocks listed at the start of 1955 and a third of all new listings each year until 1975. Thus, it is fully representative, and because it includes all nonsurviving companies, the data are not subject to survivor bias.

The data we were able to use and U.S. data used by other researchers have some interesting differences. Equities traded on the LSE in 1955 numbered more than 3,500, many more than today; we had accounting data for all these companies and return data for a third of them (the LSPD random sample). With U.S. data, the opposite pattern prevails; the Davis, Fama, and French (2000) Compustat/Moody's data set, which is the most extensive one available for the United States, provides accounting information for 834 NYSE companies in June 1956, with the sample growing to 4,562 NYSE/Amex/Nasdaq companies by 1996.

Methodology

To investigate value effects while size was controlled for, we formed portfolios based on independent sorts on the ratio of book value of equity to market value of equity and on market cap. We defined book value of equity (BE) as ordinary share capital plus reserves plus deferred and future taxation. We excluded companies with negative book values. The formation mechanism closely followed Fama and French (1993), with adjustments where necessary to account for characteristics of the U.K. data.

At the end of June each year t, we formed two size groups based on end-of-June market value of ordinary shares (market value of equity, ME) and a breakpoint at the 70th percentile of ranked ME. We formed book-to-market (BE/ME) groups based on the ratio of book value of the fiscal year ending in year $t - 1$ and the market cap of ordinary shares at the end of December year $t - 1$. Breakpoints were set at the 40th and 60th percentiles, which resulted in three groups—low, medium, and high BE/ME.

For the six portfolios resulting from the intersection of these independent sorts, we calculated value-weighted monthly returns during a 12-month buy-and-hold period. The proceeds from a stock that delisted during the holding period were distributed among the other stocks in the portfolio according to their value weights. We adjusted the delisting returns to –100 percent when the delisting code reported in the LSPD indicated that the stock delisted valueless. In case of a suspension of trading, we held the stock until it either was delisted or resumed trading.

Table 1 presents summary statistics for the set of six portfolios. These are the portfolios that allowed us to calculate the Fama and French (1993) HML ("high minus low") and SMB ("small minus big") factors, where HML is the average of the

Table 1. Portfolio Summary Statistics, 1955–2001

	Percent of Aggregate Market Value		Average BE/ME	
BE/ME Group	Small	Big	Small	Big
Low	2.43	55.59	0.57	0.53
Medium	1.22	22.09	1.04	1.03
High	2.07	16.60	2.30	1.74
	Minimum Number of Companies		**Average Number of Companies**	
	Small	Big	Small	Big
Low	145	87	258	202
Medium	87	34	157	72
High	188	30	383	72
	Average Monthly Return		**Standard Deviation**	
	Small	Big	Small	Big
Low	1.26%	1.06%	5.14%	5.70%
Medium	1.52	1.47	4.91	5.65
High	1.74	1.56	4.77	5.84

returns on the two high-BE/ME ("value") portfolios minus the average of the returns on the two low-BE/ME portfolios and SMB is the average return on the three small-cap portfolios minus the average return on the three large-cap portfolios.

Our size and BE/ME breakpoints are different from the NYSE-based breakpoints set by Fama and French (1993)—namely, 50 percent (ME) and 30 percent/70 percent (BE/ME)—for the following reasons. In the United Kingdom, size and value are negatively correlated. This characteristic is evident from the minimum and average number of portfolio constituents shown in Table 1. Large-cap stocks are concentrated in the low-BE/ME segment; small-cap stocks are concentrated in the high-BE/ME class. By choosing less extreme BE/ME breakpoints and a wider range for the small-cap group than in Fama and French, we ensured acceptable levels of diversification in these corner portfolios throughout our sample period. As a side effect, the 70 percent breakpoint for size resulted in a distribution of aggregate market value across portfolios that is relatively similar to the distribution in Fama and French, where most Nasdaq stocks sorted into the small-cap group. Taken together, our small-cap portfolios cover about 6 percent of aggregate market cap. For comparison, the Hoare Govett Smaller Companies Index (HGSC)—a popular small-cap index in the United Kingdom—covers the bottom 10 percent of the aggregate market.[3]

The value-weighted averages of BE/ME ratios shown in Table 1 indicate that our independent sorts largely achieved their purpose—namely, to create variation of size while holding book-to-market constant and vice versa. Only the Big High portfolio is an exception to some extent. Because of the negative correlation between value and size in the U.K. market, only a few large companies make it into a high-BE/ME group. And those that do tend to have relatively low BE/MEs compared with their small-cap counterparts. The Big High companies also tend to be smaller than their Big Medium and Big Low peers, which explains the relatively low share in aggregate market value of this portfolio and its low average BE/ME.

Historical Performance of Small Cap and Value

The bottom of Table 1 presents monthly arithmetic average returns and standard deviations for the six portfolios. A small-cap premium independent of a value (low-BE/ME) premium is evident, and also a value premium independent of the small-cap premium. (Keep in mind that the standard deviations of the small-cap portfolios are likely to be understated because of autocorrelation in portfolio returns. To some extent, this situation is the consequence of thin trading. We return to this issue later.)

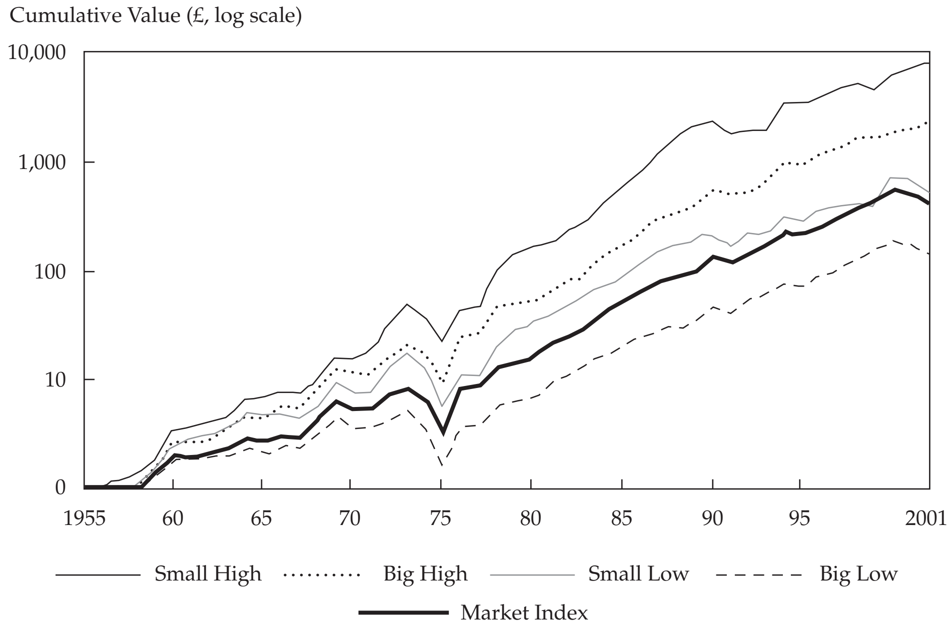
Figure 1 allows comparison of the cumulative performance of size and BE/ME portfolios with a U.K. value-weighted market index, the ABN AMRO/LBS Equity Index presented in Dimson and Marsh (2001a), which is the U.K. counterpart to the CRSP value-weighted index in the United States. The graph tracks the value of a hypothetical investment of £1 at the beginning of July 1955, with dividends reinvested in the index constituents. Compounding produced a dramatic difference in final values for high-BE/ME versus low-BE/ME portfolios. With value controlled for, size produced a smaller, but nevertheless substantial, difference in final values.

Figure 2 shows annual returns on the SMB (small minus big) zero-investment portfolio (i.e., the difference in annual returns between the three small and the three big portfolios). The payoff to size has been variable in the United Kingdom. The time-series patterns documented here for a BE/ME-neutral SMB strategy are similar to those reported by Dimson and Marsh (1999) for simple small-cap returns in excess of the market return. The pre-1989 premium on small size and the subsequent reversal documented in the Dimson–Marsh study, as well as the extraordinary rebound in 1999, are similar for the BE/ME-neutral strategies that we investigated here.

The annual performance of the HML (high BE/ME minus low BE/ME) zero-investment portfolio is depicted in **Figure 3**. In contrast to the relatively volatile size premium, the value premium was surprisingly stable and persistent until the mid-1970s. In the 1990s and the first years after the millennium, however, HML returns were highly volatile. In absolute terms, the four largest returns on the HML factor occurred in this time period.

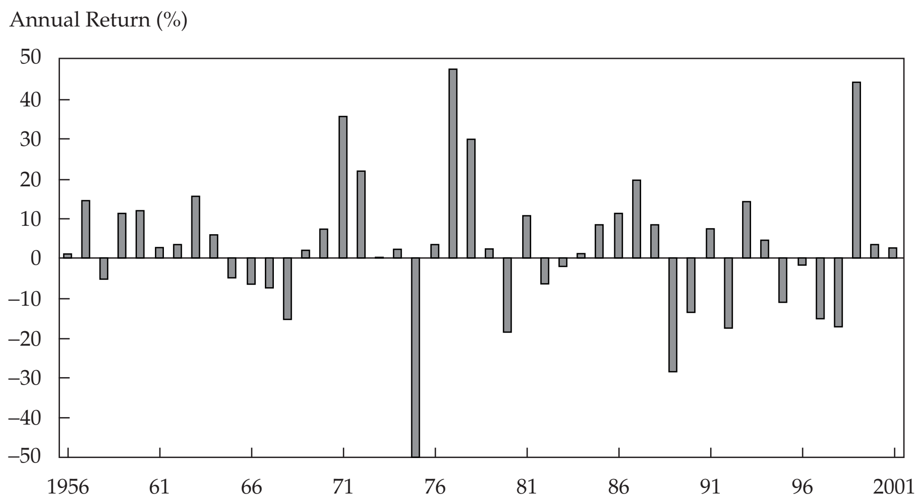
There is strikingly persistent outperformance by value stocks during the first two decades plotted in Figure 3. To some extent, this performance may simply reflect a lucky draw for a value investor, but it also raises concerns that some look-ahead bias could be involved. However, we took care to rule out such a bias. For example, to ensure that only public information was used, we required that accounting data be at least six months old before we used it. Nevertheless, a question can be raised about whether this assumption really reflects circumstances in the United Kingdom during the 1950s and 1960s, when financial reporting was slower than today. Because of this possibility, we also formed portfolios with the requirement that

Figure 1. Cumulative Return to Size and BE/ME Portfolios, July 1955–December 2001



Note: Ending values are Small High, £8,265; Big High, £2,301; Small Low, £524; Big Low, £147; index, £444.

Figure 2. Annual Performance of SMB Portfolio, 1956–2001



accounting data be at least 18 months old. The results are almost the same as those presented here. HML returns for the first two decades were persistently positive, as shown here, and the arithmetic mean annual return for HML over the whole period dropped only marginally—from about 7 percent to 6.6 percent. This result is reassuring. It also highlights the fact that the predictive power of BE/ME comes mainly from the denominator. Book values in the numerator are relatively slow moving, and their variation over time is less important than that of market capitalizations.

Table 2 reports various performance statistics for the SMB and HML strategies. The positive small-cap and value premiums reflected in the arithmetic mean returns to the SMB and HML strategies confirm previous observations. The value premium is notably higher than the small-cap premium. To some extent, however, the difference is driven by the choice of the small–big cutoff. Although we have three BE/ME groups, we have only two size groups. The lower standard deviation for HML reflects the relative stability and persistence of HML that are visible in Figure 3.

Figure 3. Annual Performance of HML Portfolio, 1956–2001

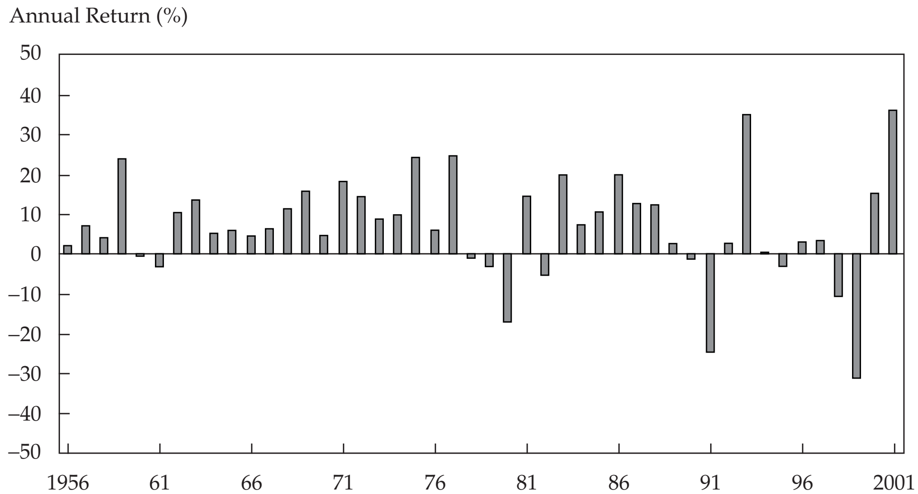


Table 2. Size and Value Premiums in the United Kingdom, 1955–2001

Statistic	SMB	HML
Arithmetic mean monthly return (%)	0.15	0.49
Standard deviation (%)	3.40	2.17
t-Statistic[a]	0.91	4.13**
First-order autocorrelation	0.12**	0.19**

[a] Based on autocorrelation-consistent standard errors.

**Significant at the 1 percent level.

SMB and HML returns are significantly autocorrelated, as shown in the bottom row of Table 2. Thin and, therefore, nonsynchronous trading can be one cause of this autocorrelation, although with returns measured at monthly frequencies, such trading is unlikely to be a full explanation, even with very thin trading (Lo and MacKinlay 1990). In any case, *t*-statistics computed with unadjusted standard errors would overstate the statistical significance of the premiums. For this reason, we used Newey–West (1987) autocorrelation-consistent standard errors and allowed for autocorrelation up to lag 6. We found that the premium on value is significant at the 1 percent level, whereas the small-cap premium is insignificant at conventional significance levels. The reason is a lower mean for SMB coupled with a higher variation in factor returns than for HML. Note, however, that despite its statistical insignificance, the small-cap premium gives rise to economically important differences in long-run performance, as is evident in Figure 1.

Interestingly, the experience in the United States is quite similar. **Table 3** shows the results of the same analysis of SMB and HML returns for the period June 1926 through 2001 for NYSE, Amex, and Nasdaq stocks.[4] The mean premiums are somewhat lower for HML and higher for SMB than they were for the U.K. data. The U.S. zero-investment HML portfolio returns are also autocorrelated, to much the same extent as they are in the United Kingdom.

Table 3. Size and Value Premiums in the United States, 1926–2001

Statistic	SMB	HML
Arithmetic mean monthly return (%)	0.20	0.39
Standard deviation (%)	3.38	3.62
t-Statistic[a]	1.73	3.01**
First-order autocorrelation	0.07	0.18**

[a] Based on autocorrelation-consistent standard errors.

**Significant at the 1 percent level.

Dividend Yield and BE/ME

Given our new data set of book values for U.K. companies, we could compare performance based on BE/ME-sorted portfolios with the results obtained by sorting on dividend yield. For long-run historical analyses going back as far as 1955, dividend yield has until now been the only widely available measure of value in the United Kingdom. In many other international markets, it continues to be the only measure.

We repeated the portfolio formation procedure described previously with dividend yield replacing BE/ME. For each year, we ranked all stocks in our sample by ME and dividend yield as of the end of June. Dividend yield was defined as the sum of dividends on a stock over the preceding

12 months divided by ME. We formed three groups along the dividend yield dimension with 40 percent/60 percent breakpoints; these groups intersected with two size groups split, as in the previous tests, at the 70th percentile of ranked ME.

Based on these six portfolios, we then formed a factor, similar to HML, which we denoted "income minus capital gains" (IMC). For the same reason that we excluded companies with negative book values, we excluded from this analysis non-dividend-paying stocks. Throughout the period since 1955, the category of non-dividend-paying stocks has included many small U.K. companies with value characteristics.

Figure 4 provides a comparison of annual returns for HML portfolios with annual IMC portfolio returns. The patterns are very similar; indeed, the correlation of the annual returns is 0.82. This similarity suggests that in the United Kingdom, IMC captures much of the cross-sectional variation in returns that is associated with HML. The exclusion of non-dividend-paying stocks apparently makes dividend yield a meaningful measure of value.

The fact that dividend yield does relatively well as a value measure in the United Kingdom, even in recent years, may be somewhat surprising. In the United States, the usefulness of dividend yield for these purposes has declined dramatically with the disappearance of dividend-paying companies. Fama and French (2001) found that by the end of the 1990s, only about 50 percent of companies on the NYSE paid dividends. On Nasdaq and Amex, the proportion was much lower. In the United Kingdom, however, despite some decline since the mid-1980s, about 75 percent of all listed companies still paid dividends in 2001. In terms of market value, dividend-paying companies account for 95 percent of total market cap. Hence, cross-sectional sorts on dividend yield are likely to be more informative in the United Kingdom than in the United States.

When it comes to average returns, however, dividend yield cannot fully measure up to BE/ME as a criterion for investment strategy. A comparison of the statistics on IMC provided in **Table 4** with the statistics on HML in Table 2, shows that the IMC premium is only a bit more than half of the HML premium. Nevertheless, it is significant at the 5 percent level. The small-cap premium was largely unaffected by whether we used BE/ME or dividend yield as a measure of value.

The close association between HML and IMC returns is a useful fact, even if dividend yield does not do as well, on average, in predicting returns as BE/ME does. For instance, dividend yield may be helpful as a complementary measure of value in individual cases when BE/ME delivers doubtful results. Such cases may arise when accounting numbers change dramatically without a fundamental change in the "value" of the company, as with takeovers that give rise to large goodwill. In such cases, dividend yield may provide additional information to guide investment decisions.[5]

Implementation

Having documented the historical premiums for small-cap and value stocks in the United Kingdom, we now turn to issues in the implementation of

Figure 4. Annual Performance of IMC and HML Portfolios, 1956–2001

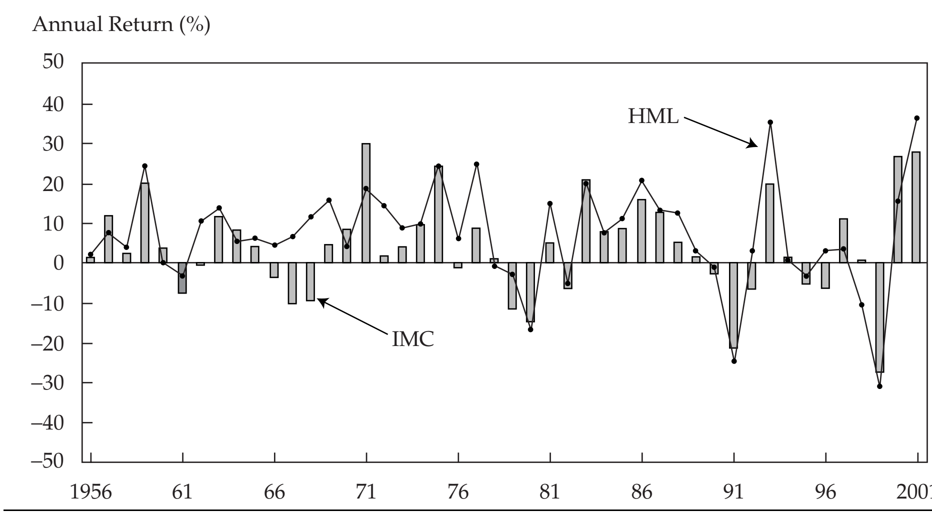


Table 4. Premiums with Dividend Yield as Value Measure: U.K. Data, 1955–2001

Statistic	SMB	IMC
Arithmetic mean monthly return (%)	0.14	0.29
Standard deviation (%)	3.20	2.09
t-Statistic[a]	0.96	2.44*
First-order autocorrelation	0.11**	0.28**

[a] Based on autocorrelation-consistent standard errors.

*Significant at the 5 percent level.
**Significant at the 1 percent level.

strategies designed to capture these premiums. We analyzed two issues: turnover in following a passive small-cap value strategy, which arises mainly from the need to rebalance portfolios, and illiquidity in the small-cap portion of the U.K. market.

Portfolio Turnover. We focus here on the small-cap value portfolio (Small High) and investigate its hypothetical portfolio turnover. In this simulation, we rebalanced the portfolio annually at the end of June. At that time, we sold all the stocks that had grown larger than the size breakpoint or whose BE/ME had declined below the BE/ME breakpoint. We also reinvested the proceeds from companies that had delisted (because, for example, they were taken over) since the last rebalancing date. For simplicity, we assumed that the proceeds were held in cash until the rebalancing date, at which time we reinvested them according to market-value weights. Additional reinvestment needs arose from dividends; again, we assumed that dividends were held in cash until the rebalancing date.

Panel A of **Figure 5** shows the percentage of total portfolio market cap that was realized from sales of stocks that crossed breakpoints (drop-outs), from delistings, and from dividends. The overall percentage was fairly stable over time, and it is surprisingly large. Commonly, approximately 40 percent of the portfolio market value was realized and hence needed to be reinvested at each annual rebalancing date. The amount accounted for by delistings increased over time. By the rebalancing date in 2000, it was about a third of the total volume. With dividend yields declining over time, the share of dividends seeking reinvestment decreased.

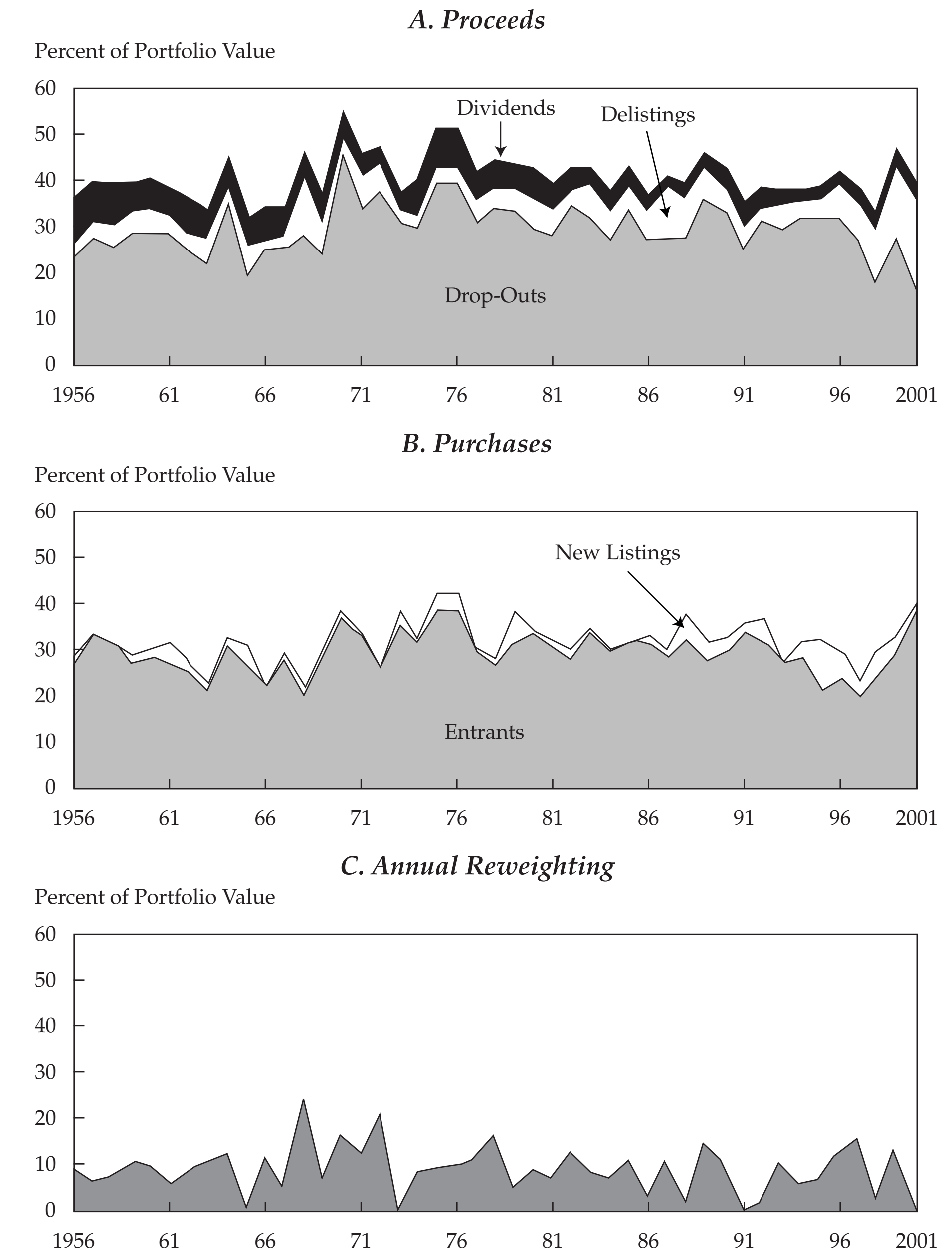
The proceeds realized in the first step were invested in two ways. First, we purchased newly eligible stocks according to their value weights. Panel B of Figure 5 breaks this group into stocks bought that were newly listed since the last rebalancing date and previously existing stocks that entered the small-cap value universe. The total portion of portfolio market cap invested in newly eligible stocks averaged about 30 percent. The second way in which proceeds were realized and reinvested was as follows: When a misfit occurred between the fraction of portfolio value realized through sales (and other means) and the fraction that was invested in newly eligible stocks, we had to adjust the portfolio weights of all stocks remaining in the portfolio to equal the value weights in the newly rebalanced portfolio. Panel C of Figure 5 shows the annual reweighting needs, which fluctuated quite a lot over time. On average, the fraction of market cap going into reweighting was close to 10 percent.

Despite being a passive strategy with only annual rebalancing, no in- and outflows, and fairly broad definitions of the universe of eligible stocks, the small-cap value portfolio nevertheless gave rise to the need for considerable trading. About 40 percent of portfolio market cap had to be traded each year. In terms of one-way transactions, 80 percent. If rebalancing had been carried out quarterly or monthly, one-way transactions would probably have exceeded 100 percent of portfolio value. In a high-trading-cost environment, this mechanical trading strategy could easily cut several percentage points off annual performance.

At present, no comprehensive small-cap value index is published in the United Kingdom. Nevertheless, the rebalancing mechanism simulated for our small-cap value portfolio appears realistic for typical benchmarks in the small-cap area. Wilshire Associates and Frank Russell International rebalance their U.S. and non-U.S. size-based indexes annually, as we did in our exercise. Similarly, in the United Kingdom, the HGSC small-cap index follows a once-a-year rebalancing rule. Compared with indexes that rebalance more frequently, our results may be too conservative. For example, the FTSE SmallCap Index rebalances on the basis of complex rules that include quarterly reviews and some intraquarter changes, and Dimson and Marsh (2001b) showed that this intrayear rebalancing greatly increases portfolio turnover.

Small-Cap Illiquidity. Because portfolio turnover for small-cap value strategies is obviously not negligible, trading costs are an important determinant of achievable returns. In this section, we provide some information on the liquidity of the U.K. market for small-cap and value stocks. We do not have extensive transaction-level data for the entire period under investigation that would allow us to analyze bid–ask spreads, trading volume, and market depth, but we do have information on trading frequency.

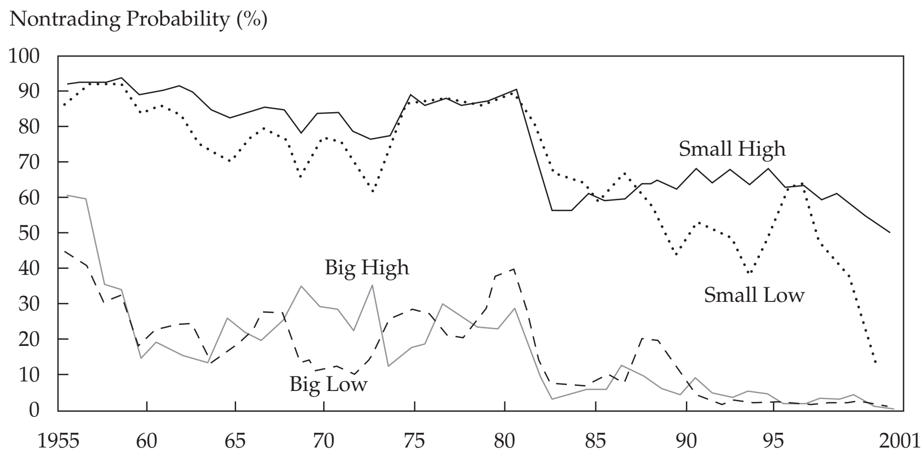
Figure 5. Turnover of Small High Portfolio, 1955–2001



At the end of each month, the LSPD provides the number of days since the last transaction in a stock took place. From these numbers, we could derive an estimate of daily nontrading probabilities—that is, the probability that a given stock did not trade the next day.[6] These nontrading probabilities illustrate the evolution of liquidity in various U.K. market segments since 1955.

Figure 6 shows annual averages of daily nontrading probabilities for our four corner portfolios. Overall, the probability of nontrading has apparently decreased over time. For example, Big stocks traded with a probability of only about 50 percent on a given day in the mid-1950s whereas trading in the most recent period is almost continuous. The Small stocks were commonly not traded for extended periods of time in the 1950s—for microcap stocks, sometimes not for months—which is reflected in daily nontrading probabilities higher than 90 percent. Although the Small nontrading probabilities also declined over time, even in 2001, the probability that a small-cap value stock (Small High) did not trade on a given day was still around 50 percent, implying that the average duration of nontrading is about one day. In other words, in value-weighted terms, the average small-cap value stock trades every second day. The equal-weighted average would be even lower.

Figure 6. Daily Nontrading Probabilities, 1955–2001



These findings suggest that the U.K. market for small-cap value stocks remains substantially less liquid than the market for large-cap stocks—with certain implications for investors. On the one hand, traders who demand immediacy of execution are likely to face substantially higher trading costs for the small-cap value stocks. On the other hand, patient investors may find opportunities to earn a premium by supplying liquidity to less patient traders.

Although trading costs in the United States are also substantially higher for small-cap stocks than large-cap stocks (see Keim and Madhavan 1997), the problem is likely to be more severe in the United Kingdom. Campbell, Lo, and MacKinlay (1997) reported equal-weighted daily nontrading probabilities for U.S. NYSE and Amex small-cap stocks over the 1962–94 period of between 22.5 percent for the lowest size decile and 5.2 percent for the fourth lowest size decile. Hence, nontrading probabilities for U.S. small-cap stocks in this entire past period were lower than those observed for U.K. small-cap stocks in 2001. In other words, even today, U.K. small-cap stocks are more thinly traded than the average U.S. small-cap stock was between 1962 and 1994.

This analysis highlights the fact that strategies designed to capture the value premium in the United Kingdom require particular attention to trading costs. Pure indexing strategies aimed at minimizing benchmark tracking error call for immediate execution of trading needs arising from inflows and outflows or from benchmark rebalancing. As a result, investors who follow such strategies tend to incur higher trading costs than investors who follow a more patient investment style (Keim and Madhavan). Given the low liquidity of small-cap stocks in the United Kingdom, the benefits from sacrificing tracking accuracy in favor of lower trading costs may be higher in the U.K. market than in the U.S. market. Hence, passive small-cap value managers are likely to benefit from a patient approach to trading. Similarly, active managers need to incorporate trading costs (and possibly slow execution) in their assessments of prospective excess returns.

Measures that help reduce trading needs in the first place may also be beneficial. Flexible definitions of the targeted universe of small-cap and value stocks can reduce the trading needs that arise from rebalancing. For example, a certain probability exists that stocks that cross breakpoints and leave the target universe may reenter at later rebalancing dates. Round-trip transactions of this sort can be (partly) avoided by a flexible definition of portfolio eligibility. Clever management of the trade-off between tracking accuracy and trading cost can be a source of substantial competitive advantage for small-cap value managers. Furthermore, small-cap value stocks in the United Kingdom may be most suitable for those managers who are not strictly subject to daily in- and outflows and the trading needs they cause.

The results for the United Kingdom also provide an important lesson for investors wishing to extrapolate from the U.S. experience to other international markets. Although value premiums appear to exist around the world (Fama and French 1998; Dimson, Marsh, and Staunton 2002), successful implementation of value strategies in the small-cap segments of these markets requires a particularly skillful approach to trading because of liquidity. And liquidity is likely to be even lower in other markets than in the United Kingdom.

Conclusion

Using a new data set of accounting information merged with share price data, we found a strong value premium in the United Kingdom for the period 1955–2001. The value premium existed within the small-cap and the large-cap universe.

We also found that dividend yield as a measure of value produces results strikingly similar to those found using book value of equity to market value of equity. The time series of return spreads between portfolios sorted according to dividend yields closely matches the results obtained from sorts on BE/ME.

Managers who attempt to capture the value premium in the small-cap segment should pay particular attention, however, to rebalancing-induced portfolio turnover and market illiquidity. Compared with the U.S. market, the U.K. market for small-cap stocks is relatively illiquid. Trading costs are thus an even more crucial determinant of overall performance than in the United States—which is also likely to be the case in other non-U.S. markets.

We appreciate contributions from Paul Marsh and Mike Staunton and the comments of James Davis, Ken French, and Rex Sinquefield.

Notes

1. For detailed information on the LSPD, see Dimson and Marsh (1986).
2. The use of stocks officially listed on the LSE means that we did not include, for example, stocks traded in the Alternative Investment Market.
3. See Dimson and Marsh (2003) for details on the HGSC.
4. We thank Kenneth French for providing these data.
5. Other ratios may also be useful. Leledakis and Davidson, for example, found that the sales-to-price ratio provided explanatory power beyond that of BE/ME in the United Kingdom in the 1980–96 period. Unfortunately, because sales data are unavailable before the 1980s, we could not examine long-run returns of sales/price strategies.
6. The nontrading probabilities were computed as follows. For each of our portfolios, we calculated value-weighted averages of the number of days since the last trade, which gave us the average duration of nontrading, $\bar{k}$. We used the trading process analyzed in Campbell, Lo, and MacKinlay (1997, p. 87). A stock traded on a given day with probability $1 - \pi$. Furthermore, the variable δ_t took the value of 0 if there was a trade on day t and the value of 1 if there was no trade. In this case, the duration of nontrading was given by

$$k_t = \sum_{p=1}^{\infty} \prod_{j=1}^{p} \delta_{t-j}$$

and its expected value was

$$E(k_t) = \frac{\pi}{1-\pi}.$$

Substituting the average duration of nontrading $\bar{k}$ in a portfolio as a point estimate for $E(k_t)$, one can back out an estimate of the average nontrading probability as

$$\hat{\pi} = \frac{\bar{k}}{1+\bar{k}}.$$

References

Campbell, J.Y., A. Lo, and C. MacKinlay. 1997. *The Econometrics of Financial Markets*. Princeton, NJ: Princeton University Press.

Capaul, C., I. Rowley, and W.F. Sharpe. 1993. "International Value and Growth Stock Returns." *Financial Analysts Journal*, vol. 49, no. 1 (January/February):27–36.

Davis, J., E.F. Fama, and K.R. French. 2000. "Characteristics, Covariances, and Average Returns: 1929–1997." *Journal of Finance*, vol. 55, no. 1 (February):389–406.

Dimson, E., and P.R. Marsh. 1986. "Event Study Methodologies and the Size Effect." *Journal of Financial Economics*, vol. 17, no. 1 (September):113–142.

———. 1999. "Murphy's Law and Market Anomalies." *Journal of Portfolio Management*, vol. 25, no. 2 (Winter):53–69.

———. 2001a. "UK Financial Market Returns 1955–2000." *Journal of Business*, vol. 74, no. 1 (January):1–30.

———. 2001b. "Index Rebalancing and the Technology Bubble." *Journal of Asset Management*, vol. 1, no. 4 (March):1–10.

———. 2003. *The Hoare Govett Smaller Companies Index 2003*. ABN AMRO.

Dimson, E., P.R. Marsh, and M. Staunton. 2002. *Triumph of the Optimists: 101 Years of Global Investment Returns*. Princeton, NJ: Princeton University Press.

Fama, E.F., and K.R. French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics*, vol. 33, no. 1 (January):3–56.

———. 1998. "Value versus Growth: The International Evidence." *Journal of Finance*, vol. 53, no. 6 (December):1975–99.

———. 2001. "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?" *Journal of Financial Economics*, vol. 60, no. 1 (April):3–43.

Keim, D.B., and A. Madhavan. 1997. "Transaction Costs and Investment Style: An Inter-Exchange Analysis of Institutional Equity Trades." *Journal of Financial Economics*, vol. 46, no. 3 (December):265–292.

Leledakis, G., and I. Davidson. 2001. "Are Two Factors Enough? The U.K. Evidence." *Financial Analysts Journal*, vol. 57, no. 6 (November/December):96–105.

Levis, M., and M. Liodakis. 1999. "The Profitability of Style Rotation Strategies in the United Kingdom." *Journal of Portfolio Management*, vol. 26, no. 1 (Fall):1–14.

Lo, A., and C. MacKinlay. 1990. "An Econometric Analysis of Nonsynchronous Trading." *Journal of Econometrics*, vol. 45, nos. 1–2 (July/August):181–212.

Meeks, G., and J. Wheeler. 1999. *Cambridge/DTI Databank of Company Accounts, 1948–1990* [computer file]. 2nd ed. Department of Trade and Industry [original data producer]. Colchester, Essex: The Data Archive [distributor].

Nagel, S. 2001. "Accounting Information Free of Selection Bias. A New UK Database 1953–1999." Working paper, London Business School.

Newey, W.K., and K.D. West. 1987. "A Simple Positive Semi-Definite Heteroskedasticity and Autocorrelation Consistent Covariance Matrix." *Econometrica*, vol. 55, no. 3 (May):703–708