

## SOLUTIONS

# Active Share: Predicting Alpha and Risk

By

**Kent Stahl, CFA**  
*Director, Investments and  
Risk Management*

**Gregg Thomas, CFA**  
*Director, Risk Management*

**Tom Simon, CFA, FRM**  
*Manager, Risk Management*

## SUMMARY

As one of our 35-year equity veterans has often said, “The best way to beat a benchmark is to be as different from it as possible.” Simply put, active share quantifies this difference. What’s more, a growing body of evidence suggests that active share is highly predictive of alpha potential. Thus far, however, the research has focused only on US-oriented mutual funds in aggregate. While the general conclusion is that high active-share managers have performed well overall, very little research has been done on whether this is the case across investment categories. In addition, almost no research has been done on the potential benefits of active share as a risk measure and on whether pursuing high active-share strategies is practical within the typical institutional investment framework.

This paper summarizes our research on the predictive capabilities of active share within key investment categories in terms of both alpha potential and relative risk. Our key findings are:

- ▶ High active-share managers have outperformed low active-share managers across a variety of equity categories, particularly US all-cap, global, and international.
- ▶ Active share forecasts alpha well in most categories, with the exception of large-cap growth and small-cap stocks.
- ▶ Active share is comparable to projected tracking risk as a tool for forecasting relative risk.
- ▶ High active-share managers experience more significant drawdowns, and may not be practical for many institutions.
- ▶ Diversified high active-share strategies tend to improve alpha while minimizing drawdowns associated with high active-share managers.

## Background

For the better part of a decade, Wellington Management has utilized active share in various internal peer review settings with our equity portfolio teams, as a gauge of “money at risk” in our client portfolios. Active share is the sum of the absolute value of all the overweights and underweights in a portfolio relative to a benchmark, divided by 2. As an example, if Cisco is 2% of an index and the manager has a 4% position in the stock, this would be counted as 2% in active share. If the manager does not own Cisco, this would also count as 2% in active share. After completing this calculation for every stock in the portfolio and the benchmark, these absolute weighting differences are summed and the total is divided by 2. An index fund would have an active share of 0%, while a portfolio that does not own any stocks within the benchmark would have an active share of 100%.

New York University Professor Antti Petajisto, one of the leading researchers of active share, has done much to popularize the concept among investment industry practitioners. In his 2010 paper, “Active Share and Mutual Fund Performance,” Professor Petajisto draws on broadly available mutual fund holdings data to map the decline of high active-share funds from the 1980s to the present. As **Figure 1** shows, during the 1990s, the percentage of US-oriented equity mutual funds with high active share dropped by an astounding 70%. This

may be explained in part by the fact that the late 1990s were associated with incredibly high stock-specific volatility due to the TMT (technology, media, and telecom) bubble and, as a result, many managers began to employ more sophisticated risk-control techniques. This was also a period when the nine-style-box-evaluation framework (large/mid/small by growth/value/core) was becoming more widely adopted by the mutual fund industry. Thus, managers were, to an extent, forced to control risk to stay within their box. More recently, the percentage of US-oriented equity mutual funds with active share greater than 80% has remained relatively constant at about 20% of all funds.

## A More Detailed Picture of Active Share

While previous studies like Professor Petajisto’s have inter-mixed investment styles, most institutions allocate assets across more narrowly defined categories. Therefore, to further assess the merits of active share, we developed a proprietary peer risk database. Though it is similar to databases used in most academic studies in that it relies on mutual fund holdings (all mutual funds with more than \$10 million in assets were included), it is built with a broader array of information to test other relationships and investment types. Based on this database, **Figure 2** shows the percentage of equity mutual funds with active share greater than 80% in some of the main categories considered by institutional investors.

## About the Authors

The members of the Investments and Risk Management team focus on investment trends and major risks across our equity, asset allocation, and fixed income products, platforms, and clients. They are actively involved in portfolio oversight processes and conduct style, performance attribution, correlation, risk, and capacity analysis across the firm’s portfolios. In addition, Kent Stahl and Gregg Thomas are portfolio managers for multi-manager solutions offered by the firm. Tom Simon serves as an analyst for these multi-manager solutions.



**Kent Stahl, CFA**  
*Director, Investments  
and Risk Management*



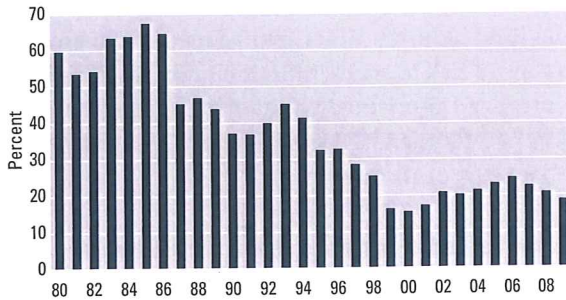
**Gregg Thomas, CFA**  
*Director, Risk  
Management*



**Tom Simon, CFA, FRM**  
*Manager, Risk  
Management*

Figure 1

**Percent of Mutual Funds with Active Share Greater Than 80% Has Declined Significantly**



Source: Petajisto, "Active Share and Mutual Fund Performance," 2010.

In market segments where benchmarks are more concentrated — and where risk control is more important — fewer mutual funds had high active share. Specifically, in large-cap equity categories, roughly 1 in 5 funds had an active share greater than 80%. However, in broader, less constrained categories, such as multi-cap or global equity, the majority of funds had a relatively high active share. So, the lack of managers with high active share observed in Professor Petajisto's research appears to be limited to larger-cap US equity segments.

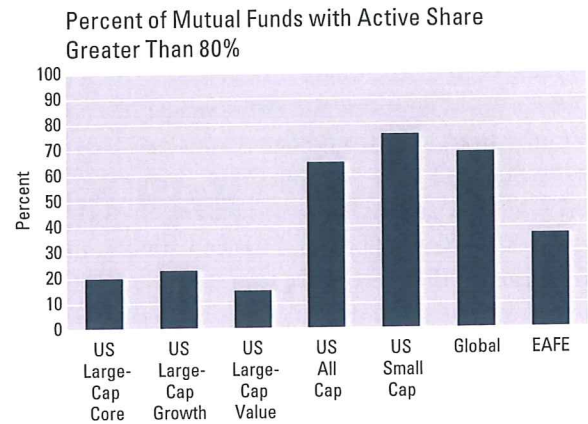
**High Active-Share Managers Have Outperformed**

Using our database, we also discovered that high active-share managers have shown a tendency to outperform low active-share managers in most of the primary institutional investment categories, *but not all*. In our analysis, we grouped all funds within a category into quintiles based on their active share at year-end 2002, 2005, and 2007. We then compared the difference in the before-fee returns between the top 20% of managers in terms of active share and the bottom 20% through the end of 2010. **Figure 3** shows the difference in returns over the various time periods.

Taking the average alpha across all categories, high active-share managers outperformed low active-share managers by 2% annually for the 3-year period and by approximately 1.5% annually for the 5- and 8-year periods. The difference was most notable in the more broadly defined categories,

Figure 2

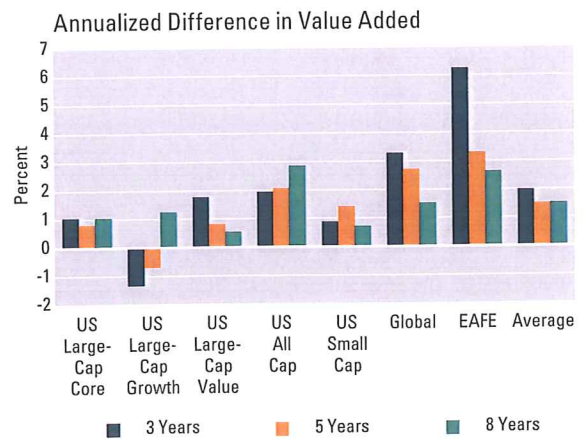
**A Closer Look at Investment Categories**



Source: Wellington Management Peer Risk Database, as of December 31, 2010.

Figure 3

**High Active-Share Managers Have Added More Value Over Time**



Source: Wellington Management Peer Risk Database, based on holdings at the beginning of the period. As of December 31, 2010.

including US all-cap, global equity, and international equity. In US large-cap growth and US small cap, the difference was small or inconsistent over time.

### Active Share as a Predictor of Alpha

To evaluate the significance of active share as a predictor of alpha potential, we ranked all funds within a category based on their active share as of year-end 2007 and then compared the results with the rank of their alpha over the following three years ended December 31, 2010. **Figure 4** shows the rank correlation of active share and alpha potential.

A rank correlation of greater than ~0.20 is considered statistically significant (99% confidence). Accordingly, active share appears to be an excellent predictor of alpha potential in most categories. The exceptions are large-cap growth and small-cap equity. Large-cap growth tends to be a category where the median manager is likely to have a high beta bias. Consumer staples stocks, which represent a large weight in the index and have lower beta characteristics, tend to be a consistent underweight for growth managers. During the global financial crisis, this beta bias appears to have dominated the relative return profile of the universe, making active share less relevant. In the small-cap segment, most managers tend to have a high active share, so there is less predictive capability.

ity. Therefore, while active share is a very useful tool, it does have limitations in predicting alpha in certain categories.

### Does Active Share Forecast Relative Risk?

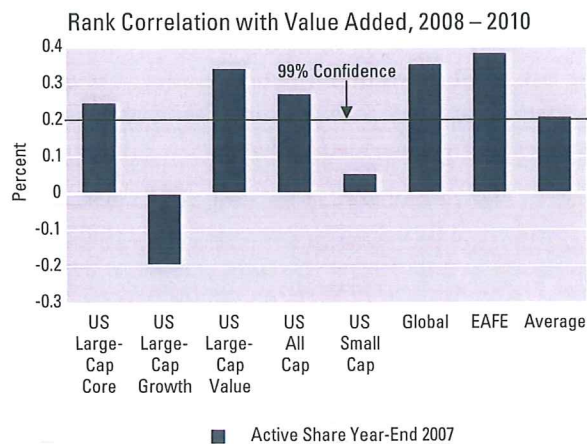
We also investigated the usefulness of active share as a forward-looking risk measure relative to another commonly used metric: tracking risk. Specifically, we evaluated the rank correlation between the active share of the various funds at year-end 2007 and the realized tracking risk rank of the funds over the ensuing three years ended December 31, 2010. We then compared the results with the rank correlation between the predicted tracking risk at year-end 2007 (based on BARRA's tracking-risk metric) and the realized tracking risk over the three years ended December 31, 2010. The results are shown in **Figure 5**.

Overall, both metrics have a very high rank correlation with future realized tracking risk. While projected tracking risk is slightly superior and more consistent than active share in forecasting risk, the incremental difference in predictive capabilities is relatively small given the effort and cost involved in determining projected tracking risk.

In addition, one reason we have used active share in our internal review settings is that it is consistent over time as a measure of relative risk. Most other commonly used risk

Figure 4

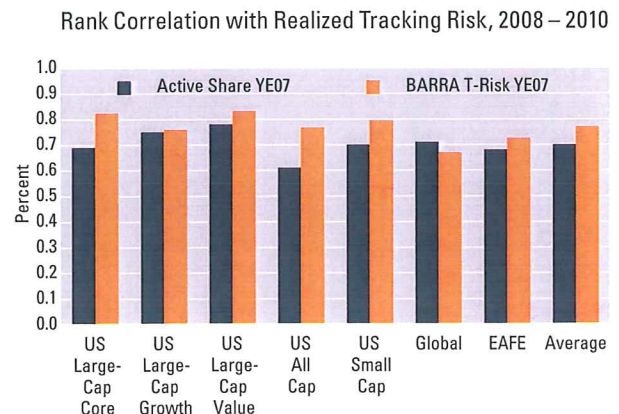
#### A Strong Signal of Value Added



Source: Wellington Management Peer Risk Database, based on holdings at the beginning of the period. As of December 31, 2010.

Figure 5

#### Predicting Risk: Active Share Versus Tracking Risk



Source: Wellington Management Peer Risk Database, based on holdings at the beginning of the period. As of December 31, 2010.

measures tend to use historical information in determining risk, and thus the results can vary significantly depending on the time period sampled. For example, we calculated the tracking risk for approximately 100 of our equity strategies at the end of the second quarter of 2009, just after the financial crisis ended. We then rolled back the clock and recalculated the tracking risk using the same portfolios and benchmarks from 2009 but with the risk model from the second quarter of 2007. The projected risk levels dropped by half using the earlier model! Clearly, risk increased precipitously during this period, and risk models continue to be an important element in the mosaic of information that we use to evaluate our strategies. However, active share lessens the ambiguity in interpreting time period-dependent results of risk models like this, as it should be constant as long as the manager is investing consistently.

**Is a Concentrated Portfolio Required for High Active Share?**

Many assume that high active share is synonymous with portfolio concentration. Concentrating a portfolio is one method for creating high active share as it generally forces a manager to make larger bets on individual securities. However, it is

not just the number of names but also the types of names a manager owns that determines active share. In fact, many of the highest active-share strategies at Wellington Management often own well in excess of 100 securities.

A common question we receive is whether concentrated funds do just as well as high active-share funds. To address this, we ranked each fund based on the number of holdings at year-end 2007 and then compared the result with the alpha realized over the following three years ended December 31, 2010. **Figure 6** shows the rank correlation between the number of names and alpha as compared to the rank correlation of active share and alpha in each of the major Lipper categories.

In every single category, active share had a higher rank correlation with future alpha than the concentration level, as measured by the number of names. Clearly, there is a relationship between the two metrics, but concentration alone does not fully explain the strong forecasting ability of active share.

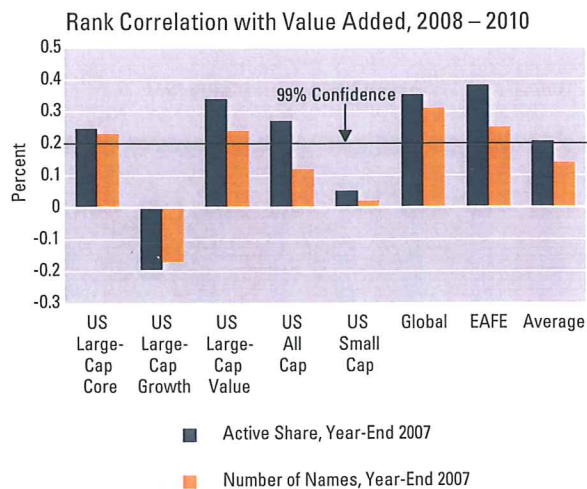
**Is Historical Tracking Risk A Good Proxy for Active Share?**

Since active share is not widely available in institutional universes, many use historical tracking risk as a proxy for identifying high active-share managers. But while many high active-share managers have high realized tracking risk, so do many low active-share managers. As an example, some managers make large factor or industry bets while running highly diversified portfolios. Therefore, a manager’s active share may be low but the tracking risk can be quite high. In addition, many high active-share managers have low to moderate tracking risk. Diversified managers focused on stock picking often exhibit this characteristic. Consistent with our other analyses, we ranked the three-year historical tracking risk of all funds in our database as of year-end 2007 and compared the result with the rank of their alpha over the ensuing three years ended December 31, 2010.

As shown in **Figure 7**, historical tracking risk is generally a poor predictor of future alpha potential. The relationship was significant in only two of the eight categories analyzed. In addition, tracking risk tends to do poorly in many of the broader categories where active share has a very strong relationship with alpha potential, like the global or US all-cap areas. So, high alpha is not necessarily associated with high tracking risk.

**Figure 6**

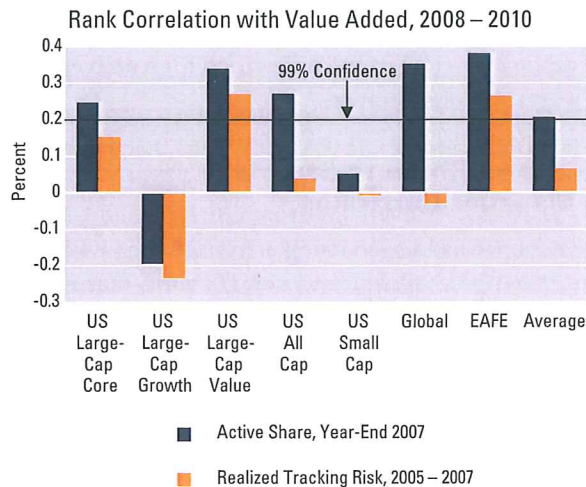
**Active Share a Better Alpha Indicator Than Portfolio Concentration**



Source: Wellington Management Peer Risk Database, based on holdings at the beginning of the period. As of December 31, 2010.

Figure 7

**Historical Tracking Risk:  
A Poor Substitute for Active Share**



Source: Wellington Management Peer Risk Database, based on holdings at the beginning of the period. As of December 31, 2010.

**Limitations of Active Share**

As noted earlier, active share is not without limitations. Traditional style analysis and performance evaluation tools are much less relevant to high active-share managers, as stock-specific characteristics tend to dominate performance. Style characteristics, like growth, value, or market cap, also change more frequently in high active-share strategies, making them challenging to utilize within the nine-style-box-evaluation framework that many have implemented. In addition, the performance of high active-share strategies tends to rely much more on manager skill than on process. This may require a more qualitative manager selection approach than most are accustomed to.

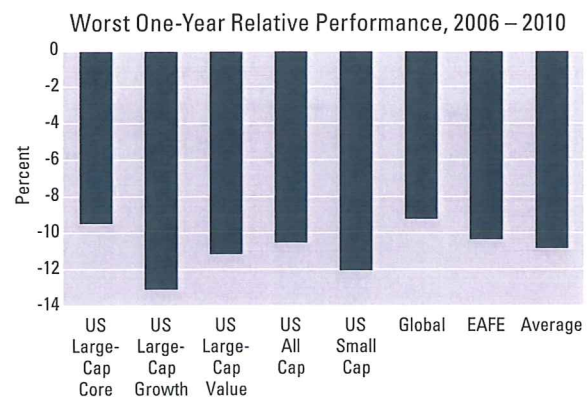
Capacity for many of these approaches may also be constrained, which may effectively rule out this type of approach for larger institutional investors. In addition, management fees are often relatively high given the active nature of these strategies, and many high active-share strategies have short track records or are relatively small in terms of assets, limiting the ability to research them through traditional channels.

High active-share strategies also tend to be inherently volatile. As an example, Figure 8 shows the median worst one-year relative performance for the top 20% of active-share managers in the different categories of our database over the five years ended December 31, 2010. On average, over any given 12-month period, high active-share managers have experienced underperformance in excess of 10% relative to their benchmark. For comparison, the average alpha draw-down of all the managers over this period was about 6%. Investing in high active-share strategies requires the ability to withstand periods of significant underperformance in pursuit of superior long-term returns.

Finally, there is no single “right” level of active share for all managers. As we have discussed, active share varies among different categories of managers. In the US large-cap space, an active share of 60% is fairly common. In highly diversified areas, like small cap, active share is often close to 90% as virtually every stock in the portfolio represents a significant bet versus the benchmark weight. What makes a good level of active share greatly depends on the peer investment universe and benchmark used. Importantly, as with any risk metric, active share should be used in combination with other measures in order to gain more robust insights into portfolio risks.

Figure 8

**Drawdowns: The Achilles Heel of High Active-Share Managers?**



Source: Wellington Management Peer Risk Database, based on holdings at the beginning of the period. As of December 31, 2010.

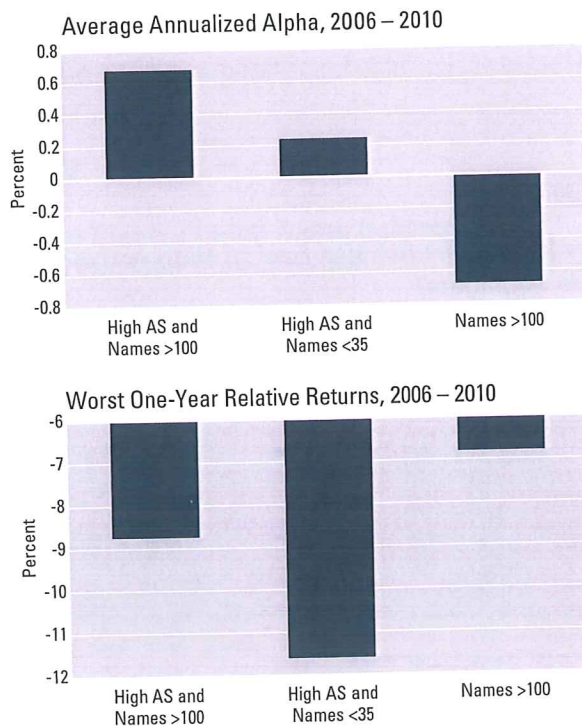
## Retain the Alpha, Curtail the Risk

While we have seen that high active-share strategies on average have greater risk potential, the evidence demonstrated in **Figure 9** indicates high active-share strategies that are also reasonably diversified tend to retain their edge in adding value while significantly dampening alpha drawdowns. **Figure 10** shows the average annual alpha and worst one-year alpha drawdown for all funds in our peer universe segmented between high active-share strategies with more than 100 names, high active-share strategies with less than 35 names, and all strategies with more than 100 names over the five years ended 2010, based on holdings as of December 31, 2005.

Similar to earlier results, both categories of high active-share strategies outperformed, with an edge to those owning more than 100 stocks. However, the bigger difference may

**Figure 9**

### Diversified High Active-Share Approaches



Source: Wellington Management Peer Risk Database, based on holdings at the beginning of the period. As of December 31, 2010.

be in the worst one-year alpha drawdown. For all diversified strategies, the drawdown averaged around 7%. For the high active-share/concentrated strategies, the worst one-year alpha drawdown averaged close to 12%. However, for high active-share but diversified strategies, the average alpha drawdown was around 8.5%. While marginally worse than the aggregate category of diversified strategies, the incremental alpha over time of the diversified high active-share subset warrants consideration.

## Using Active Share to Structure Multi-Manager Portfolios

For six years, we have been using active share as a key element in running US, global, and non-US multi-manager portfolios. The original concept was to create a high-alpha, high-capacity, all-weather portfolio that minimized the big drawdowns that typically accompany strategies that aggressively pursue total return. However, the challenge for most multi-strategy portfolios is that they tend to be over-diversified. We refer to this as “deworsification,” or paying an active management fee for a closet index fund.

Active share has been a key element in helping us accomplish our objectives and avoid the closet-indexing concerns. As a firm, we offer over 100 different equity strategies. Within our multi-manager portfolios, we focus on a select subset of these strategies that have very high active share; the median active share of the strategies we use is in excess of 90%. We ask all of the managers in our multi-manager portfolios to avoid risk-control positions, as we manage risk through our approach to combining the managers. As a result, most of the strategies we use are highly volatile and also have limited capacity, so they tend not to be those most commonly used in traditional investment channels.

In combining managers, we require that each approach be an independent alpha generator. While we use many of our internally developed risk-management systems to evaluate this, one that we find very informative is the portfolio overlap matrix. As an example, we calculate the portfolio overlap between a strategy and every other approach in the portfolio. We generally will not include any strategy where there is a

high degree of overlap with any other strategy. Figure 10 is the overlap matrix for the strategies included in our global portfolio at year-end 2010.

In almost all pairings, the overlap is less than 25%. In fact, across all pairings, the average overlap is approximately 7%, which means that on average only a couple of stocks are held in common across the different pairings. In those few pairings where the overlap is moderate, this tends to be only a temporary phenomenon. While the overall portfolio owns, on average, more than 400 stocks, nearly 80% of these holdings are unique to an individual manager. Despite the diversified nature of the portfolio, the active share is still very high overall, as virtually every single position represents a significant active bet for the underlying manager given the low overlap. By structuring portfolios in this way, our experience has been that it is possible to retain the alpha generation capability while limiting significant drawdowns, consistent with the academic research.

### Conclusion

Active share is a straightforward and effective tool for monitoring risk, evaluating managers, and structuring portfolios. Clearly, there are exceptions to every rule, as there are many great managers who have low active share and many poor managers who have high active share. In this context, no single metric should ever be used in isolation as they all have strengths and weaknesses. But the empirical evidence is supportive of this tool as part of the mosaic of information that should be considered.

Figure 10

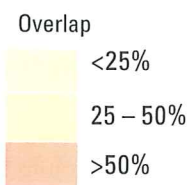
### Low Portfolio Overlap May Lead to Diversified Sources of Alpha

Overlap of Holdings (% of Equity Assets)

	Select Global Value	Global Growth Horizons	Global Opportunistic Value	Special Equity	Global Diversified Growth	Global All Cap Opportunities	Global Select Quality Equity	Global Contrarian Equity
Select Global Value								
Global Growth Horizons								
Global Opportunistic Value								
Special Equity								
Global Diversified Growth								
Global All Cap Opportunities								
Global Select Quality Equity								
Global Contrarian Equity								

77% of holdings are unique to one strategy

No stocks held by more than six of the managers



Holdings derived from representative accounts in each style. Shaded cells represent the percent of assets of the column heading that are contained in the row heading. Source: Wellington Management, as of December 31, 2010.