

## Location Isn't Everything

### Diversification across industries, instead of regions, may be most important.

**ASSET ALLOCATION**

Philip Straehl

*This is a Morningstar Investment Management working paper. Please send comments to Philip Straehl at pstraehl@ibbotson.com.*

Investing's gone global, as the drive for return and diversification has pushed investors outside their borders into international markets. Similarly, major companies—whose stocks global investors are buying—increasingly get their revenue from a global consumer base, incur costs across offices around the world, and are supplied by global goods markets. In this global economy, how relevant is the location of a stock's listing as a determinant of company performance?

Our research suggests, not much. Across world markets in the short and long term, we find that a sector plays a much larger role in determining a company's growth than does its region. These conclusions not only weaken arguments that investors should reduce their home-country bias for diversification reasons, but they also weaken the case for endorsing home-country bias to match local liabilities. Investors, therefore, need to look beyond geography when assessing the fundamental diversification of their equity portfolios.

**The Study**

Investors need an in-depth understanding of the underlying drivers of company performance when building diversified portfolios. Investors buy international stocks in the hope that the drivers of corporate revenue growth in that country will differ from those in their own. But what if that benefit is diminishing as companies themselves are becoming more global? To answer that question,

we analyze the relative importance of regional versus industry factors across 23 developed and 23 emerging equity markets in explaining differences in fundamental growth. Past research on the primacy of region- versus industry-specific factors has focused on total returns (Cavaglia, Brightman, and Aked, 2006). But the fundamental perspective gets at the root of total return: the determinants of earnings and dividend growth. The intrinsic value of a company is fundamentally linked to the cash flow a business generates. As such, the drivers of earnings and dividend growth are also a key determinant of long-term company performance.

In this study, we provide considerable evidence that industry factors are a more important determinant of differences in earnings and dividend growth than regional factors across country indexes. In particular, regional effects provide no additional information in explaining differences in growth rates in the developed-market sample. Strikingly, we find that industry factors alone explain more than 50% of variability in the growth across developed countries.

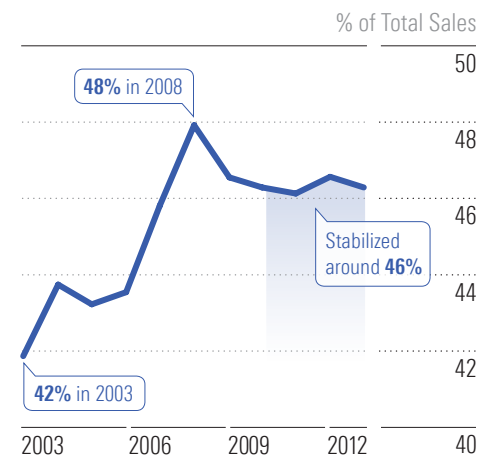
This finding suggests that balanced industry exposure may be a more important fundamental source of diversification than regional diversification, particularly in a developed-market portfolio.

**The Rise of the Global Firm**

The globalization of firms' cost and revenue base has affected the usefulness of global diversification. In general, the more global the underlying sources of company cash flows already are, the less effective geographic diversification becomes for the investor. Foreign revenues of S&P 500 companies stood at 42% in 2003, peaked at 48% in 2008 before the financial crisis, and

**EXHIBIT 1**

**Home Bias?** Foreign revenues make up about 46% of total sales of S&P 500 companies.



Source: S&P 500 2013: Global Sales Year in Review

stabilized around 46% in recent years, according to data from S&P Dow Jones Indices (EXHIBIT 1). For a relatively closed economy like that of the United States, the fact that nearly half of S&P 500 revenues are international is significant. Other country indexes are even more extreme. A 2013 report, for example, shows that only 23% of revenues of the FTSE 100—the main gauge of U.K. stock market performance—come from domestic sources, highlighting the truly global nature of revenue sources of across major country indexes<sup>1</sup>.

EXHIBIT 2 breaks down the contribution by sector to total foreign sales by S&P 500 companies in 2013. Interestingly, the contributions are relatively diversified across sectors, with consumer sectors leading the pack. The global nature of foreign revenues is a phenomenon not limited to a single sector but is a consistent theme across different businesses. Indeed, cash-flow sources are truly globalized.

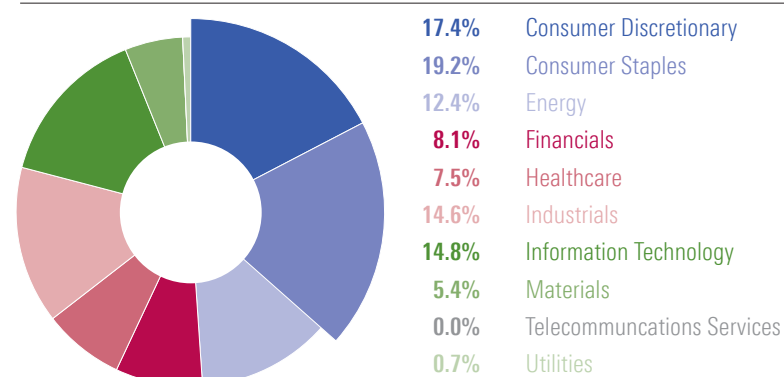
**Data and Methodology**

To compare regional determinants of fundamental growth with industry ones, we obtain monthly dividend yields, price/earnings ratios, and index

**EXHIBIT 2**

**Spread Across Businesses** The global nature of foreign revenues is not limited to a single sector.

**S&P 500 Sector Sales as a Portion of Total Foreign Sales as of 2013**



Source: S&P 500 2013: Global Sales Year in Review. Insufficient geographic revenue breakdowns are available for telecommunications and utility sectors, resulting in a lack of meaningful statistics for those sectors.

values for 23 developed- and 23 emerging-markets MSCI equity country indexes. The stocks in each index are weighted by market capitalization. The analysis of industry and regional drivers, therefore, is limited to aggregate country-level indexes. Next, we construct monthly real dividend and earnings growth series for each country-specific equity market from January 2000 to June 2014 using inflation data for each country from the International Monetary Fund, the International Labor Organization, and several government websites. Finally, we get data on the industry composition of the equity indexes based on MSCI's Global Industry Classification Standard from Morningstar Direct. The data set covers the monthly industry breakdown from January 2007 through June 2014. We use Fama and MacBeth (1973) cross-sectional regressions to measure the relative importance of regional and industry factors in determining growth rates. For each period  $t$ , the cross-sectional regression model is estimated and the coefficients are averaged to obtain the regression coefficients over the sample period. The cross-sectional regression model has the form:

$$G_t = b_0 + b_1 x_t + \epsilon_t$$

where the dependent variable  $G$  is the real dividend or earnings growth rate for country  $i$  at time  $t$ , and  $x$  is a set of independent variables that identify the regional and industry characteristics of country  $i$ . The growth rates for each time  $t$  are measured over a six-month period and rolled forward by one month over the sample period to smooth out some of the short-term volatility in the earnings and dividend growth series.

To measure the regional effects, we construct a set of dummy variables, identifying the country's development status (developed or emerging) and the region it belongs to (Asia or Europe, Middle East, and Africa) based on MSCI's definition of these variables. No distinct dummy for the third major region, Americas, is necessary, because its effect is captured indirectly by not being in Europe or Asia. Each regression dummy takes on a value of 1 if the given MSCI country index is in that region and a value of 0 otherwise.

The industry variable is constructed by averaging the weight for each country's industry across the sample period (January 2000 to June 2014) and normalizing the industry weight across the



universe of developed and emerging countries by calculating a z-score. Normalizing the industry weight allows for an easier interpretation of the regression coefficients. The z-score for industry  $p$  of country  $i$  is calculated as:

$$Z_{ip} = \frac{I_{ip} - \bar{I}_p}{O_p}$$

where  $I_{ip}$  is the average industry weight of country  $i$  in industry  $p$ ,  $\bar{I}_p$  is the average weight in industry  $p$  across all countries, and  $O_p$  is the standard deviation of the industry weight  $p$  across all countries. Of the 10 industries, only the z-scores of nine enter the regression model (utilities is excluded) to avoid multicollinearity in the regression model; industry weights sum to 100%, and the utilities weight is captured indirectly.

Finally, a variable to measure the industry concentration in a given country  $i$  is constructed based on the sum of squared industry weights:

$$C_i = \sum_{p=1}^{10} (I_{ip})^2$$

The definition of the industry concentration variable is consistent with the Herfindahl index.

We place some restrictions on the variables entering the regression to deal with incomplete sample data and outlier issues. Not all countries have continuous earnings and dividend growth data over the sample period, and only countries with available earnings and dividend growth data at time  $t$  are included. To mitigate outlier problems, we exclude earnings growth observations greater than 100%. Earnings growth rates are generally more volatile than dividend growth rates because of the impact negative earnings and extraordinary items have on growth rates.

### Empirical Analysis

We estimate the regression for the regional and industry variables separately as well as for the combined set of industry and regional variables. The results for the developed-market countries and for all countries (developed and emerging countries) are shown in **EXHIBIT 3**. First, we use the adjusted R-squared to evaluate the explanatory power of industry versus regional factors.

The adjusted R-squared measures the portion of the variance explained by either regional or industry factors, adjusted for the number of independent variables included in the regression. With 10 industry variables and only two or three regional variables, the statistic needs to be adjusted for the number “regressors” to perform a like-for-like comparison.

The verdict is clear: Industry factors significantly dominate the regional factors across all samples.

The difference in the explanatory power between industry and regional factors is particularly pronounced in the developed-market sample (the first table in **EXHIBIT 3**), where the inclusion of regional factors does not improve the adjusted R-squared of the model when both sets of factors are included. The dominance of the industry factors in explaining differences in earnings and dividend growth is further demonstrated by the fact that the industry factors explain 56.2% and 49.2% of the variance in dividend and earnings growth, respectively, as measured by the R-squared, suggesting that a majority of the differences in fundamental growth across countries stems from differences in their industry composition as opposed to their stock listing location by region. While industry factors are also dominant in the all-country sample, regional factors improve the explanatory power of the model once both sets of factors are included as measured by their adjusted R-squared.

The R-squared measure looks at the variability of return. However, what an investor cares about is whether regional or industry factors drive higher or lower long-run earnings or dividends growth. After all, higher fundamental growth translates into higher total returns in the long term. Therefore, we examined the significance of the regional and industry regression coefficients. A significant coefficient suggests that a particular factor is associated with a systematically higher or lower earnings or dividends growth rate over the sample period. The tables include the t-statistics for the regression coefficients, where the statistically significant coefficients are in bold.

Industry factors are more significant than regional factors across the different samples. The only

statistically significant regional variable is the “developed dummy” in the second table, which identifies whether a country is developed or emerging. Not surprisingly, developed equity markets had lower earnings and dividend growth than emerging markets had over the sample period. However, none of the other region-specific variables exhibited statistically significant coefficients.

At least one industry factor in each sample tested with a statistically significant coefficient. Notably, in the earnings growth sample across developed markets in the first table, all but one coefficient on the nine industry-specific factors is statistically significant at a 5% level. This suggests that the industry composition was a key determinant of differences in earnings growth across the 23 developed equity markets in our sample. Overall, these results suggest that industry factors are a more important determinant of both the variability and level of fundamental growth than are regional factors.

### A New Way to Consider Diversification

This empirical analysis provides considerable evidence that industry effects are key determinants of differences in growth rates across both developed and emerging countries. The evidence in favor of the importance of industry is conclusive across all specifications of the regression model examined. Industry effects were shown to be particularly important in explaining the variability and level of growth rates across the developed-market subsample, where regional effects were generally insignificant. Regional effects were only significant in the sample where both developed and emerging countries were included.

The dominance of industry effects supports the view that as firms become more global, the importance of a firms’ location as a determinant of growth diminishes. These findings have important implications for how investors should think about diversification in global equity portfolios. While equity investors have traditionally sought to diversify by allocating away from their local markets into international markets, our results suggest that the regional diversification effects are limited and that diversification across industries may be a more important fundamental

source of diversification, particularly in developed markets. More critically, sophisticated investors should look beyond simplified proxies of diversification and strive to develop a fundamental understanding of the diversity of economic forces that influence their stock portfolios. ■■

**Philip Straehl** is a portfolio manager and senior research consultant with Morningstar Investment Management.

References:  
Cavaglia, S., C. Brightman, C., and M. Aked (2000), “The Increasing Importance of Industry Factors.” *Financial Analysts Journal*, Vol. 56, No. 5, pp. 41.

Fama, E.F., and J.D. MacBeth (1973), “Risk, Return, and Equilibrium: Empirical Tests.” *Journal of Political Economy*, vol. 81, no. 3, pp. 607.

Ibbotson, R.G., and P. Chen (2003), “Long-Run Stock Returns: Participating in the Real Economy.” *Financial Analysts Journal*, vol. 59, no. 1, pp. 88.

### EXHIBIT 3

## Empirical Analysis Developed countries and all countries.

The tables show the results of the Fama-MacBeth cross-sectional regression—first for developed countries for the period from January 2000 to June 2014 and then for all countries for the same time period. The dependent variables are the six-month real dividend growth or real earnings growth rolled one month forward over the sample period. The average regression coefficients of the independent variables over the sample period are displayed. Newey-West robust t-statistics are used to control for serial correlation and heteroscedasticity. Statistically significant t-statistics at the 95% level are bold. Average R-squared and average R-squared adjusted for degrees of freedom are in the last two columns of the table.

Developed Countries	Regional Factors				Industry Factors									Ind. Concentr.	R2	Adj. R2
	Intercept	Dev. Dummy	Asia Dummy	Europe Dummy	Cons. Discr.	Cons. Staples	Energy	Financials	Health Care	Industrials	IT	Materials	Telecom			
Dependent: Real DPS Growth																
Coeff. %	0.77	—	1.44	0.62	0.71	1.25	3.21	2.64	2.72	1.84	2.47	1.19	2.17	2.19	<b>62.97</b>	<b>18.53</b>
T Stat (NW)	0.29	—	1.32	0.49	0.74	1.83	2.47	1.91	2.21	3.41	1.79	1.51	1.75	0.20	—	—
Coeff. %	0.91	—	—	—	0.81	1.12	2.93	2.38	2.42	1.81	2.17	1.14	1.97	4.40	<b>56.22</b>	<b>19.74</b>
T Stat (NW)	0.37	—	—	—	0.98	1.74	2.56	1.77	2.11	3.54	1.84	1.62	1.64	0.41	—	—
Coeff. %	3.40	—	-1.75	-1.30	—	—	—	—	—	—	—	—	—	—	<b>11.03</b>	<b>-3.02</b>
T Stat (NW)	2.06	—	-1.25	-0.92	—	—	—	—	—	—	—	—	—	—	—	—
Dependent: Real EPS Growth																
Coeff. %	-0.07	—	3.53	1.68	2.78	3.69	5.51	3.79	4.28	2.15	4.65	2.83	3.43	12.07	<b>57.53</b>	<b>1.20</b>
T Stat (NW)	-0.03	—	1.10	0.61	1.98	2.66	3.21	2.78	3.05	2.74	2.32	2.68	2.04	1.08	—	—
Coeff. %	0.89	—	—	—	2.85	3.14	4.79	3.19	3.46	2.15	3.76	2.65	2.80	15.09	<b>49.19</b>	<b>3.20</b>
T Stat (NW)	0.31	—	—	—	2.30	2.39	3.16	2.41	3.17	2.83	2.37	2.82	1.86	1.44	—	—
Coeff. %	5.76	—	0.00	-1.61	—	—	—	—	—	—	—	—	—	—	<b>8.47</b>	<b>-6.74</b>
T Stat (NW)	2.19	—	0.00	-0.87	—	—	—	—	—	—	—	—	—	—	—	—
All Countries																
All Countries	Regional Factors				Industry Factors									Ind. Concentr.	R2	Adj. R2
	Intercept	Dev. Dummy	Asia Dummy	Europe Dummy	Cons. Discr.	Cons. Staples	Energy	Financials	Health Care	Industrials	IT	Materials	Telecom			
Dependent: Real DPS Growth																
Coeff. %	-0.68	-4.14	0.12	0.27	-0.30	-1.21	0.78	-2.85	-0.83	0.38	-2.16	-1.58	-1.81	25.27	<b>41.39</b>	<b>17.15</b>
T Stat (NW)	-0.20	-3.39	0.08	0.16	-0.37	-1.27	0.46	-1.68	-0.72	0.44	-2.48	-1.23	-2.02	2.15	—	—
Coeff. %	-3.10	—	—	—	-0.21	-1.28	0.84	-2.59	-1.29	-0.16	-1.87	-1.50	-1.33	27.19	<b>32.71</b>	<b>13.17</b>
T Stat (NW)	-1.03	—	—	—	-0.28	-1.33	0.49	-1.58	-1.07	-0.18	-2.25	-1.14	-1.60	2.18	—	—
Coeff. %	6.38	-3.95	-1.62	0.07	—	—	—	—	—	—	—	—	—	—	<b>11.11</b>	<b>4.67</b>
T Stat (NW)	3.91	-2.85	-1.24	0.04	—	—	—	—	—	—	—	—	—	—	—	—
Dependent: Real EPS Growth																
Coeff. %	3.25	-3.33	0.56	-0.98	0.47	0.38	1.16	-0.70	0.44	1.27	0.83	-0.17	-0.65	19.21	<b>38.72</b>	<b>11.74</b>
T Stat (NW)	1.86	-2.58	0.33	-0.83	0.67	0.62	1.28	-0.78	0.57	2.11	0.70	-0.23	-1.10	3.46	—	—
Coeff. %	1.28	—	—	—	0.51	0.16	1.00	-0.53	-0.25	0.81	0.92	-0.05	-0.44	19.15	<b>29.33</b>	<b>7.60</b>
T Stat (NW)	0.83	—	—	—	0.71	0.26	1.11	-0.58	-0.30	1.19	0.84	-0.07	-0.77	3.45	—	—
Coeff. %	7.61	-2.32	0.75	-1.02	—	—	—	—	—	—	—	—	—	—	<b>11.24</b>	<b>4.50</b>
T Stat (NW)	4.68	-1.69	0.53	-0.92	—	—	—	—	—	—	—	—	—	—	—	—

Source: Morningstar