Workforce Diversity and Stock Returns

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Abstract

This paper examines if firms with the most racially diverse employees enjoy superior benefits and performance above the market average. The problem of the study is to analyze risk premiums and risk-adjusted excess returns of a portfolio of firms with most diverse employees in the United States from 2006 to 2011. The results show that the portfolio average risk premiums are positive and greater than the market risk premiums in 2006 and from 2009 to 2011. The portfolio average risk-adjusted excess returns from the single-index model and factor-model are positive, although not statistically significant, for the 5-year holding period intervals.

JEL Classifications: G11, G12, G14
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1. Introduction

People are more linked than ever to the success and competitiveness of firms operating and competing in the knowledge-based and information-driving economy. The only sustainable source of any firm's competitiveness is people who are valuable, rare, imperfectly imitable and unsubstitutable (Barney & Wright, 1998; Gorman, Nelson, & Glassman, 2004; Lopez-Cabrales, Valle, & Herrero, 2006; Shee & Pathak, 2005; Wright, McMahan, & McWilliams, 1994).

Knowledge heterogeneity is the key to the firm's success. Firms with more racially diverse employees should be able to be more productive, respond to market threats and opportunities faster, solve problems and make decision more efficiently and effectively and innovate better than firms with fewer racially diverse employees on average. Therefore, employment of more racial diverse personnel likely leads to superior benefits and performance for firms relying on their people to generate a sustained competitive advantage. Cox and Blake (1991) assert that "if people from different gender, nationality, and racioethnic groups hold different attitudes and perspectives on issues, then cultural diversity should increase team creativity and innovation" (p. 50), and "decision quality is best when neither excessive diversity nor excessive homogeneity are present" (p. 51). Richard (2000) reports a positive relation between racial diversity and performance in firms that pursue a growth strategy. Another study by Richard, Murthi, and Ismail (2007) shows productivity and long-term profitability (Tobin's *q*) are partially determined by racial diversity. Milliken and Martins (1996) shows that more

diverse groups are likely to make higher quality decisions through creativity and introduction of new perspectives. Richard, Barnett, Dwyer, and Chadwick (2004) reveal a positive nonlinear relationship between innovativeness and racial heterogeneity.

Other studies addressing the relationship between diversity and performance offer contrary results. A review by Milliken and Martins (1996) shows that racial diversity can have negative effects on individual and group outcomes. Another observation reveals few positive or negative direct effects of diversity on the firm's performance (Kochan, Bezrukova, Ely, Jackson, Joshi, Jenh, Leonard, Levine, and Thomas, 2003). Jayne and Dipboye (2004) mention that research findings cast doubt on the relationship between diverse workforce and the firm's performance. Cox and Blake (1991) assert that "an expected consequence of increased cultural diversity in organizations is the presence of different perspectives for problem solving, decision making and creative tasks" (p. 50).

The current study examines if firms with more racially diverse employees enjoy superior benefits and performance above the market average. The problem of the study is to analyze risk premiums and risk-adjusted excess returns of a portfolio of firms with most diverse employees in the United States from 2006 to 2011. This study is needed because literature reports mixed results of the relationship between workforce diversity and the firm's performance. In addition, no existing study in the literature examines this issue of diversity in the manner proposed in this study before. The results from this study further our understanding of the relationship between racial diversity and the firm's performance. This study also offers important information and implications to the pricing and valuing of stocks. In an attempt to challenge the efficient market hypothesis, many researchers have compared the performance of a specialized portfolio to the market index (Anderson & Smith, 2006; Clayman, 1987; Lovisceka & Jordan, 2000; O'Neal, 2000; Staman, 2000; Sum, 2012).

2. Data and Method

An equal-weighted portfolio of publicly-traded companies ranked consecutively from 2006 to 2001 by Fortune Magazine as the most racially diverse companies Table 1 shows the names of the companies in the portfolio from 2006 to 2011, respectively. The monthly return data are obtained from CRSP database maintained by the University of Chicago accessed through the Wharton Research Data Services at the University of Pennsylvania. The monthly data related to risk-free rate, size, growth, and momentum factors are obtained from Kenneth R. French's data library located at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. To compare the portfolio risk premiums to the market risk premiums, equation (1) is used. The single-index model (2) (Sharpe, 1966) and four-factor model (3) (Carhart, 1997) are used to calculate risk-adjusted excess returns on the portfolio.

$$R_{pt} - R_{ft} = R_{mt} - R_{ft} = R_{S\&Pt} - R_{ft} \quad (1)$$

$$R_{pt} - R_{ft} = \alpha_1 + \beta_m\left(R_{mt} - R_{ft}\right) + \varepsilon_{t1} \quad (2)$$

$$R_{pt} - R_{ft} = \alpha_4 + \beta_m\left(R_{mt} - R_{ft}\right) + \beta_{smb}SMB + \beta_{hml}HML + \beta_{mom}MOM + + \varepsilon_{t4} \quad (3)$$

Where:
R_{pt} = the return on the equal-weighted portfolio in month *t*
R_{ft} = the return on a thirty day T-bill in month *t*
R_{mt} = the return on the CRSP value-weighted index in month *t*
$R_{S\&Pt}$ = the return on the S&P 500 index in month *t*
SMB = the difference between the return on a small-cap portfolio in month *t* and return on a large-cap portfolio in month *t*
HML= the difference between return on a high book-to-market (value-stock) portfolio in month *t* and return on a low book-to-market (growth-stock) portfolio in month *t*
MOM = the difference between return on portfolio with higher year (from month -12 to -2) return and return on portfolio with lower prior year (from month -12 to -2) return
α_1 = The risk-adjusted excess return on the equal-weighted portfolio from the single-index model
α_4= The risk-adjusted excess return on the equal-weighted portfolio from the four-factor model
β_m = the sensitivity of the excess return on the equal-weighted portfolio to the excess return on the CRSP value-weighted index
β_{smb} = the sensitivity of the excess return on the equal-weighted portfolio to a size factor
β_{hml} = the sensitivity of the excess return on the equal-weighted portfolio to a value factor
β_{mom} = the sensitivity of the excess return on the equal-weighted portfolio to a momentum (hot-hand) factor
e_{t1} = random error term: excess return on the equal-weighted portfolio in month *t* not explained by the single-index model
e_{t4} = random error term: excess return on the equal-weighted portfolio in month *t* not explained by the four-factor model

3. Results

A list of the most racially diverse companies in the United States from 2006-2011 is reported in Table 1, and the portfolio average risk premiums are reported in Table 2. The results show that the portfolio average risk premiums are positive and greater than the market risk premiums in 2006 and from 2009 to 2011. The portfolio average risk-adjusted excess returns from the single-index model and factor-model are positive, although not statistically significant, for the 5-year holding period intervals.

Table 1 The Most Racially Diverse Companies in the United States from 2006-2011

This list of the most racially diverse companies in the United States from 2006-2011 is obtained from the Fortune Magazine. An equal-weighted portfolio of these companies is formed for the analysis of risk premiums and risk adjusted excess returns reported this this study.

Name of the Companies	Ticker	Industry
Aflac	AFL	Insurance (Accident and Health)
CarMax	KMX	Retail (Specialty)
Cisco	CSCO	Communications Equipment
Marriott	MAR	Hotels and Motels
Nordstrom	QCOM	Retail (Apparel)
Qualcomm	WFM	Communications Equipment

Whole Foods Market	MSFT	Retail (Grocery)

Table 2 Portfolio Arithmetic Average Risk Premiums and Market Risk Premiums

To compare portfolio risk premiums, CRSP value-weighted index and S&P 500 index risk premiums, monthly return data are calculated using equation (1). The portfolio arithmetic average risk premiums, CRSP value-weighted index and S&P 500 index risk premiums are calculated for the 1-year holding, 3-year-holding and 5-year-holding period intervals. Respective average risk premiums for the portfolio, CRSP value-weighted index and S&P 500 index are reported in column 2, 3, and 4. The differences in arithmetic averages risk premiums for the portfolio, CRSP value-weighted index and S&P 500 index are reported in column 4 and 5. $R_p - R_f$ *= average risk premiums of the equal-weighted portfolio;* $R_m - R_f$ *= CRSP value-weighted index average risk premiums;* $R_{S\&P} - R_f$ *= S&P 500 index average risk premiums.*

Years	$R_p - R_f$	$R_m - R_f$	$R_{S\&P} - R_f$	$(R_p - R_f) - (R_m - R_f)$	$(R_p - R_f) - (R_{S\&P} - R_f)$
2006	1.32%	0.88%	0.69%	.44%	0.63%
2007	-0.94%	0.25%	-0.06%	-1.19%	-0.88%
2008	-4.77%	-3.85%	-3.93%	-0.92%	-0.84%
2009	6.42%	2.49%	1.96%	3.94%	4.46%
2010	2.49%	1.51%	1.14%	0.98%	1.35%
2011	0.30%	0.02%	0.09%	0.28%	0.21%
2006-2008	-1.46%	-0.91%	-1.10%	-0.55%	-0.36%
2009-2011	3.07%	1.34%	1.06%	1.73%	1.34%
2006-2010	0.91%	0.26%	-0.04%	0.65%	0.95%
2007-2011	0.70%	0.08%	-0.16%	0.62%	0.86%

Table 3 Portfolio Geometric Average Risk Premiums and Market Risk Premiums

To compare portfolio risk premiums, CRSP value-weighted index and S&P 500 index risk premiums, monthly return data are calculated using equation (1). The geometric average portfolio risk premiums, CRSP value-weighted index and S&P 500 index risk premiums are calculated for the 1-year holding, 3-year-holding and 5-year-holding period intervals. Respective average risk premiums for the portfolio, CRSP value-weighted index and S&P 500 index are reported in column 2, 3, and 4. The differences in geometric averages risk premiums for the portfolio, CRSP value-weighted index and S&P 500 index are reported in column 4 and 5. $R_p - R_f$ *= average risk premiums of the equal-weighted portfolio;* $R_m - R_f$ *= CRSP value-weighted index average risk premiums;* $R_{S\&P} - R_f$ *= S&P 500 index average risk premiums.*

Years	$R_p - R_f$	$R_m - R_f$	$R_{S\&P} - R_f$	$(R_p - R_f) - (R_m - R_f)$	$(R_p - R_f) - (R_{S\&P} - R_f)$
2006	1.24%	0.87%	0.68%	0.37%	0.56%
2007	-0.99%	0.21%	-0.09%	-1.20%	-0.90%
2008	-5.23%	-4.07%	-4.11%	-1.16%	-1.12%
2009	5.96%	2.29%	1.76%	3.67%	4.20%
2010	2.15%	1.37%	1.00%	0.78%	1.15%
2011	0.13%	-0.09%	0.00%	0.22%	1.13%
2006-2008	-1.70%	-1.02%	-1.20%	-0.68%	-0.50%

2009-2011	2.78%	1.18%	.92%	1.60%	1.86%
2006-2010	0.56%	0.11%	-.17%	0.45%	0.73%
2007-2011	0.39%	-0.08%	-0.31%	0.47%	0.70%

Table 4 Average Portfolio Risk Adjusted Excess Returns

To obtain the portfolio average risk adjusted excess returns (alphas), monthly return data are calculated using equation (2) and (3). The portfolio average risk adjusted excess returns are calculated for the 1-year holding, 3-year-holding, 5-year-holding period intervals. The portfolio average risk adjusted excess returns from the single-index model are reported in column 2. The portfolio average risk adjusted excess returns from the four-factor model are reported in column 3.

Years	Average Risk Adjusted Excess Returns (α_1) from the Single-Index Model	Average Risk Adjusted Excess Returns (α_4) from the Four-Factor Model
2006	-0.18%	1.72%
2007	-1.10%	-1.22%
2008	-0.06%	0.18%
2009	3.35%	3.48%
2010	0.27%	-0.41%
2011	0.28%	1.84%
2006-2008	-0.41%	-0.09%
2009-2011	1.29%	0.99%
2006-2010	0.57%	0.26%
2007-2011	0.59%	0.41%

4. Conclusion

Firms with more racially diverse employees should be able to be more productive, respond to market threats and opportunities faster, solve problems and make decision more efficiently and effectively and innovate better than firms with fewer racially diverse employees on average. Therefore, employment of more racial diverse personnel likely leads to superior benefits and performance for firms relying on their people to generate a sustained competitive advantage. The current study examines if firms with more racially diverse employees enjoy superior benefits and performance above the market average. The problem of the study is to analyses risk premiums and risk-adjusted excess returns of a portfolio of firms with most diverse employees in the United States from 2006 to 2011.

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excess returns from the single-index model and factor-model are positive, although not statistically significant, for the 5-year holding period intervals.

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