Canadian Journal of Administrative Sciences
Revue canadienne des sciences de l'administration
30: 71–85 (2013)
Published online in Wiley Online Library (wileyonlinelibrary.com). **DOI**: 10.1002/CJAS.1251

Beyond clusters: How regional geographic signature affects firm value and risk

Geoffrey G. Bell*
University of Minnesota Duluth

Saiying Deng
Southern Illinois University

Abstract
Existing studies examining how geography affects firm outcomes primarily consider how clusters affect performance. We examine how regional geographic signature—industry clusters, regional economic diversity, region size, and regional innovativeness—affects firm value and systematic and unsystematic risk using a sample of publicly traded American bank holding companies. After controlling for endogeneity of clusters, we find that locating in large and innovative regions enhances firm value, while locating in clusters and diversifying into many regions reduces value. Clusters reduce systematic risk and increase unsystematic risk, while economic diversity and innovativeness increase systematic risk. Thus, geographic locales exert multifaceted influences on value and risk, and we need to consider more than industry clusters and geographic diversification when considering geographic influence. Copyright © 2013 ASAC. Published by John Wiley & Sons, Ltd.

JEL Classifications: M10, R12

Résumé
Les travaux courants sur l'influence que la géographie a sur la performance de l'entreprise examinent surtout l'impact des concentrations sur la performance. Cette étude s'appuie sur un échantillon de sociétés de portefeuille bancaire américaines cotées en bourse pour se pencher sur la manière dont la signature géographique régionale-concentrations de l'industrie, diversité de l'économie régionale, taille de la région et capacité de la région à innover-influe sur la valeur de la firme et sur le risque systématique et non systématique. Après avoir neutralisé le caractère endogène des concentrations, l'étude révèle que les firmes installées dans de grandes régions innovantes gagnent en valeur tandis que les firmes installées dans les concentrations et diversifiées par régions en perdent. Les concentrations réduisent le risque systématique et augmentent le risque systématique, tandis que la diversité de l'économie et l'innovativité augmente le risque non systématique. Il s'ensuit que les milieux géographiques exercent des influences multiples sur la valeur et le risque. Par conséquent, dans l'étude de l'influence géographique, il faut aller au-delà des concentrations de l'industrie et de la diversification géographique.

Keywords: geographic signature, cluster, performance, risk, banking

Mots-clés : signature géographique, concentration, performance, risque, bancaire

What characteristics of a firm's geographic location(s) affect its performance? Scholars have primarily examined how industry clusters influence firm performance (Almeida & Kogut, 1997; Folta, Cooper, & Baik, 2006; Pouder & St. John, 1996) and entrepreneurial activity (Sorenson & Audia, 2000; Stuart & Sorenson, 2003) and generally find that firms benefit from locating in clusters (Bathelt, Malmberg, & Maskell, 2004; Bell, 2005; Gertler, 2001; Saxenian, 1994; Sorenson, 2003) arising from agglomeration, knowledge spillover, and network effects.

Geographers examine regional characteristics, including clusters, region size, economic diversity, and innovativeness (Florida, 2003; Glaeser, Kallal, Scheinkman, & Shleifer, 1992; Henderson, Kuncoro, & Turner, 1995; Jacobs, 1969, 1992 [1961]; Prevezer, 1997)—what we term *regional geographic signature*—but the simultaneous impact of these regional characteristics on firm performance and risk rarely examined. Developing a more complete model of the effects of regional geographic signature on firm outcomes helps scholars avoid attributing effects to one dimension that are actually caused by another. If clusters tend to occur in innovative, large, economically diverse regions (termed geographically complex regions), it is critical to disentangle these multiple geographic effects in order to develop appropriate theory and inform practice.

We thank Chang Hoon Oh (the associate editor) and two anonymous reviewers for their careful and thorough review of our paper. Their thoughtful comments have greatly improved the paper.
*Please address correspondence to: Geoffrey G. Bell, Ph.D., Department of Management Studies, Labovitz School of Business and Economics, University of Minnesota Duluth, 365Q LSBE, 1318 Kirby Drive, Duluth, MN 55812 USA. Email: ggbell@d.umn.edu

Existing finance studies have documented significant impact of geographic diversification on firm performance and risk (Acharya, Hasan, & Saunders, 2006; Akhigbe & Whyte, 2003; Deng & Elyasiani, 2008; Deng, Elyasiani, & Mao, 2007; Denis, Denis, & Yost, 2002; Hughes, Lang, Mester, & Moon, 1999, among others). However, this literature presumes that performance is influenced by the act of diversification itself, while the characteristics of a firm's specific geographic locations are relatively immaterial. McCann and Folta (2008) call for controlling factors other than clusters that might drive firm performance. To answer this call and better understand how specific locational characteristics influence the effect of geographic diversification, we explore how regional geographic signature affects firm value and risk using a sample of publicly traded American bank holding companies (BHCs). The US banking industry is an excellent context in which to examine the role of geography, as banks provide a natural laboratory in which to observe the effect of geography on performance and risk. Subsequent to the passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, organizations formerly operating in single geographic areas expanded and became exposed to the multiple regional geographic signatures of the regions in which they located.

Moreover, while existing studies focus on clusters and firm performance, risk remains a largely unexplored area in the geography context. However, risk is an important concept in strategic management (Bromiley, Miller, & Rau, 2001; Bromiley & Rau, 2010; Lubatkin & Chatterjee, 1994), and especially in banking (Akhigbe & Whyte, 2003; Barry, Lepetit, & Tarazi, 2011; Houston, Lin, Lin, & Ma, 2010; McNamara & Bromiley, 1997; Pathan, 2009; Wiseman & Catanach, 1997). While risk has been conceptualized many ways, we rely on the conception of systematic and unsystematic risk as developed in Lubatkin and Chatterjee (1994). They defined systematic risk as the "variability of a firm's stock returns that moves in unison with... macroeconomic influences," and unsystematic risk as the component of stock returns that does not vary with macroeconomic influences (p.110).

After controlling for the self-selection bias of cluster location, we find that locating in clusters (i.e., financial centers) and geographic diversification reduce BHC firm value, while locating in large and innovative regions enhances firm value. Locating in clusters reduces systematic risk, while economic diversity and regional innovativeness increase it. Finally, clusters increase unsystematic risk. Our paper makes several contributions. First, we introduce the concept of "regional geographic signature," which includes cluster, regional economic diversity, region size, and regional innovativeness to describe the multiple regional geographic characteristics that comprise geographically-complex regions. In so doing, we consider the simultaneous effects of multiple geographic mechanisms on important firm outcomes. Second, to the extent that existing finance studies on geographic diversification do not consider the impact of the characteristics of a firm's specific geographic locations on firm value and risk, we are the first to account for both regional geographic signature and geographic diversification to provide a more comprehensive view of how geography affects firm value and risk. We find regional geographic signature significantly impacts firm value and risk, while geographic diversification negatively affects firm value and has no influence on risk. Third, to our knowledge, we are the first to examine regional geographic signature and firm risk.

Theory and Hypothesis

In developing our theory, we examined sequentially the mechanisms underlying each of the dimensions of the firm's regional geographic signature. We began with industry clusters and then considered economic diversity, region size, and regional innovativeness.

Industry Clusters

Industry clusters are geographically co-located concentrations of firms in the same industry (Bell, 2005). Clusters foster networks (Boschma & Ter Wal, 2007) among firms and their employees (Sorenson, 2003), creating communities of practice (Grabher, 2002; Wenger, 1998) that both generate and transmit knowledge among firms in the cluster (Bathelt et al., 2004; Bell, 2005; Bell & Zaheer, 2007; Christoffersen & Sarkissian, 2009; Gertler, 2001; Maskell & Malmberg, 1999; Saxenian, 1994; Wenger, 2000), that often increase performance (Almeida & Kogut, 1997; Inkpen & Tsang, 2005; Porter, 1990; Pouder & St. John, 1996). Performance-enhancing technology spillovers also occur in clusters, and cluster-member firms have better access to those spillovers (Marshall, 1920; McCann & Folta, 2008). Clusters generate agglomeration economies (Appold, 1995; Gordon & McCann, 2000; Harrison, Kelley, & Gant, 1996) that reduce cluster-member costs (Malmberg & Maskell, 2002), enhancing performance and potentially firm value. Therefore:

H1a: Clusters enhance firm value.

Firms in clusters may be able to access resources unavailable to firms outside the cluster (Bell, 2005). Moreover, while Pouder and St. John (1996) predicted that firms in clusters will be insulated from the outside world and presumed that the insulation would negatively affect the firms' performance, this insulation may also protect the firms from macroeconomic forces and subsequently reduce the variability of the firms' stock movement brought on by those macroeconomic forces, suggesting:

H1b(i): Clusters reduce firm systematic risk.

Can J Adm Sci
30(2), 71–85 (2013)

Conversely, Porter (1998) argued the local competition is more intense in the cluster, so firms may take riskier actions to remain competitive. In a competitive system, some firms will fail in their competitive effort and see diminished performance. Folta et al. (2006) found that firm survival rate decreases with cluster size. Similarly, Shaver and Flyer (2000) found that industry clusters negatively influenced firms' survival when the industry was geographically concentrated. Firms in clusters may also experience an increased risk of having their knowledge expropriated by geographically proximate industry rivals, which will increase the variability of those firm's stock returns. Therefore, we anticipated that increased competition increases the unsystematic risk of firms in the cluster, hence:

H1b(ii): Clusters increase firm unsystematic risk.

Economic Diversity

McCann and Folta (2008) called for scholars to examine how factors, such as economic diversity, might drive agglomeration economies and firm performance. Glaeser, Kallal, Scheinkman, and Shleifer (1992) and Henderson, Kuncoro, and Turner (1995) hypothesized that firms benefit from sharing knowledge across industry boundaries in economically diverse regions, allowing those firms to exploit knowledge spillovers across industries. Because firms in different industries are less likely to compete with one another, they may be more willing to share knowledge than firms within a single industry because there is less likelihood that such knowledge will be exploited in a manner detrimental to the originating firm. Cross-industry knowledge sharing should enhance the performance of firms in economically diverse areas. Additionally, economic diversity promotes innovative behaviour (Harrison et al., 1996), which in turn, fosters performance (Bell, 2005), and possibly firm value. Thus:

H2a: Regional economic diversity increases firm value.

Firms in diverse regions will not be unduly affected by the fortunes of any particular industry. Thus, one would expect firms in economically diverse regions would experience less unsystematic risk than firms in economically concentrated regions. In the context of banking, Wiseman and Catanach (1997) anticipated that market cycles increase components of unsystematic (specifically, liquidity) risk. Thus, we anticipated that in an economically diverse area, there will be a dampened market cycle, reducing unsystematic risk. Moreover, BHCs operating in economically diverse regions have easy access to a readily-diversified loan portfolio, which should also reduce unsystematic risk. Therefore:

H2b: Regional economic diversity reduces firm unsystematic risk.

Region Size

Firm performance increases with city size (Malmberg & Maskell, 2002). City size enhances knowledge spillover and learning opportunities (Glaeser et al., 1992; Henderson et al., 1995; Jacobs, 1992 [1961]). Increasing urban size allows firms to specialize their product offerings (Glaeser et al., 1992; Henderson et al., 1995; Pred, 1965), and specialists can better meet customer needs than can generalists (Hannan & Freeman 1977; Jacobs 1969). Financial services firms should especially benefit from locating in large cities because of job matching (Christoffersen & Sarkissian 2009): In large cities, there are many more potential job candidates for a particular job, thereby improving the choice among candidates. Large cities also provide superior learning environments that enhance worker– and firm–performance and likely, firm value. Therefore:

H3a: Region size enhances firm value.

As region size increases, so does the range of locally available services. Thus, firms will be more likely to find readily specialized services (such as legal and taxation services relating to their specific industry, specialized consultancies, and graduates from local community colleges trained for their specific industry), all reducing the likelihood of interruption to the firm's business pending access to services, which mitigates unsystematic risk. Additionally, investors tend to invest in local stocks (Coval & Moskowitz, 1999, 2001; Ivkovic & Weisbenner, 2005). As a city increases in size, any given stock is "local" to more investors. Moreover, geographically proximate financial analysts tend to be more accurate than non-local analysts (Malloy, 2005), partially because there may be more information available in local media in large cities (Bell. 2005), which increases efficiency (Peavy, 1984). Therefore, as a city increases in size, the number of investors and analysts following a given stock increases, which adds to the information available. The available information then tends to be more accurate, which produces fewer surprises (either positive or negative) and therefore decreases unsystematic risk. Hence:

H3b: Region size reduces unsystematic risk.

Regional Innovativeness

Regional innovativeness ties together the concepts of geography, innovation, and absorptive capacity (Boschma & Ter Wal, 2007). Firms in innovative regions tend to

bemore innovative than firms in regions lacking innovative activity (Florida, 2003). First, firms in a region rich in innovation come to take innovative behaviour as normal, so they try to enhance their own innovative activities. Second, residents in regions with high levels of regional innovative capital are more leading-edge and apt to take risks than their counterparts in regions lacking in innovative capital (Florida, 2003). Thus, they will generate new, innovative ideas, which enhance firm performance (Bell, 2005). Hence:

H4a: Regional innovativeness enhances firm value.

There are some existing studies examining the relationship between firm innovativeness and risk. Agrawal, Bharath, and Viswanathan (2004) found that firms' stock return volatility increased when they introduced eCommerce. Sorescu and Spanjol (2008) found that breakthrough innovation was associated with higher unsystematic risk as well as total risk, while having no effect on systematic risk. Mazzucato and Tancioni (2012) observed that firm R&D and patenting increased stock return volatility. Finally, McAlister, Srinivasan, and Kim (2007) argue that a firm's advertising and R&D expenditures create intangible assets that could insulate the firm from market shocks, which lowers systematic risk. Extending this to a regional level, one might anticipate that regional innovativeness would have an increasing effect on both systematic risk and unsystematic risk. Moreover, in regions characterized by high levels of innovativeness, there will be an enhanced willingness to take on risk. People in these regions are leading edge, more willing to take on risk, and have a higher risk tolerance than people in less innovative regions (Florida, 2003). In these regions then, risk-taking may be seen as more normal, and firms may willingly undertake more risk. People in innovative regions may be relatively more receptive to firms engaging in innovative activities. These factors associated with regional innovativeness will make the region more vulnerable to market shock and increase systematic and unsystematic risk of the firms in the region. Thus, we anticipated:

H4b: Regional innovativeness increases both systematic- and unsystematic-risk in firms.

Method

Sample Selection

We assembled our sample of listed BHCs from various databases including the Center for Research in Security Prices (CRSP), the Bank Holding Company (BHC) database from the Federal Reserve Bank of Chicago, and the FDIC's Summary of Deposits (SOD) database. The CRSP database provides stock prices and returns data. We used the BHC database to generate BHC-specific variables such as total assets, total equity, and total loans. The SOD database provides the most detailed data available on bank geographic expansion including annual information on the location and total assets of every subsidiary bank as well as their associated parent BHC. Herein, *subsidiary* refers to bank subsidiaries of a BHC. The SOD database does not provide information on nonbanking subsidiaries.

Our industrial concentration and region size data are taken from the 1998-2006 County Business Patterns (CBP) database (U.S. Census Bureau, 2007). The CBP database breaks down the number of firms by 2-digit NAICS-code for each metropolitan statistical area (MSA) in the United States. We gathered our patent data from the US Patent and Trademark Office (USPTO) database and population data from the Census website.

We selected our sample as follows. We started from a dataset of publicly traded banks and BHCs complied by Federal Reserve Bank of New York that documents the historical linkage between regulatory entity codes from the BHC database, or the Bank Call Report, and the PERMCO from the CRSP database for publicly traded financial institutions. There are 887 traded banks and BHCs in this dataset between 1990 and 2007. Next, we obtained 15,525 BHC-subsidiary pairs for 1998-2008 from the FDIC's SOD database and matched them with the 887 publicly traded financial firms, yielding 4,843 unique BHC-subsidiary pairs with 632 BHCs over the time period of 1998-2007. Then, we matched the 4,843 unique BHC-subsidiary pairs with the CRSP database so that each BHC is associated with its CRSP PERMCO and obtained 4,525 unique BHC-subsidiary pairs with 625 BHCs over the period of 1998-2007.

Lastly, we matched the 4,525 BHC-subsidiary pairs with the MSA and CBP datasets and construct clusters, regional economic diversity, region size, and regional innovativeness measures at the BHC level (detailed below). Since the MSA and CBP datasets are available between 1998 and 2006, our sample is limited to this period. After deleting observations with missing values, our final sample consists of 2,128 BHC-year observations with 426 BHCs.

Variable Construction

Firm performance. We used Tobin's Q (*Tobinq*) to proxy for firm value (Deng & Elyasiani, 2008; Laeven & Levine, 2007; Lang & Stuzl, 1994; Servaes, 1996; Varaiya, Kerin, & Weeks, 1987). As market values of BHC liabilities are unavailable, we calculated Tobin's Q as the book value of total assets plus market value of equity minus book value of equity divided by book value of total assets.

Firm risk. We employed two risk measures: systematic and unsystematic risk (Lubatkin & Chatterjee, 1994; Miller & Bromiley, 1990). Systematic risk (*SysRisk*) is measured by market beta derived from the one-factor market model, and unsystematic risk (*UnSysRisk*) is measured by

the standard deviation of stock return residual derived from the one-factor market model.

Industry clusters. The banking industry provides a unique opportunity to examine an industry with multiple clusters. Several seminal studies in finance (Christoffersen & Sarkissian, 2009, 2011; Hong, Kubik, & Stein, 2005) identified New York, Boston, Philadelphia, Chicago, Los Angles, and San Francisco as financial centers, so we defined these six cities as clusters in the banking industry. Moreover, we used several different measures of clusters, each tapping into a different facet of the clusters phenomenon, to facilitate a richer analysis. To consider these rich clusters effects, we adopted the following multiple measures of clusters:

Cluster indicator: This is a dichotomous (dummy) variable taking on the value of one (1) if a BHC's headquarter is located in *any* of the above-mentioned six financial centers.

Cluster share: This variable measures the firm's presence in clusters as a function of its assets under management. Cluster share assesses whether increasing concentration of firm assets in clusters benefits the firm. We measured it as the total of all subsidiary assets in clusters divided by the total firm assets.

Cluster depth: This variable seeks to assess whether the depth of firm activity in clusters affects firm outcomes. It is calculated as the sum of the number of firm subsidiaries in any of the six cluster locations divided by the total number of firm subsidiaries.

Economic diversity. We used one minus industry concentration to proxy for economic diversity (*Diversity*). Industry concentration is the 5-industry concentration ratio for each MSA, which we computed as follows: First, we summed the number of firms in each 2-digit NAICS industry class in the MSA. Then, we totalled the number of firms from the five largest industries (measured by number of firms) in the MSA and then divided that by the total number of firms in the MSA. For each geographic region in which the BHC has a presence, we multiplied the region's 5-industry concentration ratio by the subsidiary's assets as a percentage of total BHC assets, and then we summed the total across all geographic regions where a BHC operates to provide industry concentration. Finally, we subtracted this concentration score from one to yield *Economic Diversity*.

Region size. Region size (*RegionSize*) assesses the overall size of the MSA measured by the logarithm of weighted average total number of firms in the MSA. For each location in which a BHC has a presence, we multiplied the total number of firms in the MSA by the subsidiary's assets as a percentage of total BHC assets and then summed the total across all geographic regions where a BHC operates to provide *RegionSize*. To reduce the skewness, we took the natural logarithm of region size.

Regional innovativeness. We used the number of patents issued per capita (in 1,000 people) in each MSA to proxy for regional innovativeness (*Innovativeness*). We hand collected the number of patents issued data from the US Patent and Trademark Office (USPTO) database and obtained population data from the Census website, then divided the number of patents issued by the population size in each MSA for the period of 1998-2006. We then multiplied the number of patents per capita in each MSA by the subsidiary's assets as a percentage of total BHC assets, and then summed the total across all geographic regions where a BHC operates to provide *Innovativeness*.

Control variables. Following Saunders and Cornett (2010) and Saunders, Strock, and Travlos (1990), we included firm size, profitability, capital ratio, and liquidity as control variables in the models, and we included bank market concentration in each MSA to control for local competition. We measured BHC size (*Size*) by the logarithm of total assets, and expected it to positively relate to firm value and negatively relate to firm risk, as larger BHCs are more profitable and generally better-established and associated with lower risk. According to Saunders and Cornett (2010), larger BHCs often outperform smaller BHCs in both return on assets (ROA) and return on equity (ROE), especially those with total assets under $100 million. We measured profitability by ROA and expect it to increase firm value. Capital ratio (*Capratio*) was measured as the ratio of book value of total equity to book value of total assets. A higher capital ratio serves as a cushion against bank insolvency and, hence, contributes to higher survival probability; therefore, it is associated with lower firm risk. It should be positively related to firm value because better-capitalized firms will be regarded by investors as less risky and so should command a market premium. Following Angbazo (1997) and Saunders and Cornett (2007), we measured liquidity risk (*Liquidity*) as (liquid assets – liquid liabilities) total assets. Liquidity risk should be negatively associated with firm value and positively associated with firm risk. We measured bank market concentration (*BankConc*) by the sum of squared shares of deposits of all BHCs for each MSA, which is a Herfindahl index with higher values indicating greater market concentration and less competition. Higher market concentration should reduce competition in the MSA, increasing firm value and lowering risk. Since the banking industry has undergone a wave of mergers and acquisitions (M&A) during the sample period, we included an M&A dummy (*MADummy*) in the models to control for this trend. If the BHC experienced an M&A during the sample period, then the M&A dummy equals one and zero otherwise. We included a set of year dummies to control for year effects.

Additionally, we controlled for the geographic diversification (*GeoDiv*) of the BHCs since the regional geographic signature is highly related to geographic diversification. Prior studies in finance found that geographic diversification

Table 1
Sample Statistics (N = 2,128)

Panel A. Regional geographic characteristics							
Variable	Mean	Median	Std Dev	Minimum	25th	75th	Max
Cluster indicator	0.0888	0	0.2845	0	0	0	1
Cluster share	0.0828	0	0.2629	0	0	0	1
Cluster depth	0.0701	0	0.2311	0	0	0	1
Total	81376.3	34647	110414	75.132	11432	103848	476430
RegionSize	10.4404	10.453	1.4207	4.3192	9.3442	11.5507	13.0741
Diversity	0.4415	0.4251	0.0863	0.3387	0.4033	0.4439	0.9914
Innovation	0.2054	0.1204	0.3883	0	0.0774	0.209	4.8679
Panel B. BHC-specific variables							
Tobinq	1.0013	0.9649	0.1434	0.6317	0.9384	1.0164	3.5963
UnSysRisk	0.0197	0.0181	0.0085	0.0039	0.0139	0.0239	0.0858
SysRisk	0.6097	0.5376	0.4975	-4.6147	0.2408	0.903	7.5717
GeoDiv	0.2738	0.1207	0.311	0	0	0.5297	0.9739
Size	14.5666	14.2273	1.6938	11.9274	13.3175	15.5149	21.3568
Capratio	0.0886	0.0841	0.0393	0.0353	0.072	0.0976	0.7349
Liquidity	0.2106	0.1965	0.1136	-0.194	0.1334	0.2744	0.6815
ROA	0.0109	0.0107	0.0072	-0.0306	0.00804	0.0135	0.1421
BankConc	0.9273	0.9751	0.097	0.5082	0.8772	1	1
Total assets ($bil)	21.6539	1.5095	115.9376	0.1514	0.6078	5.4709	1884.3180
Total equity ($bil)	1777538	0.1213	9.1569	0.009	0.0511	0.4637	135.2715

results in lower cost of debt, enhanced firm value, and decreased risk in the banking industry (Acharya et al., 2006; Akhigbe & Whyte, 2003; Deng & Elyasiani, 2008; Deng et al., 2007; Hughes et al., 1999, among others). Geographic diversification may enhance firm value due to synergy gains, improved managerial efficiency, and increased revenue

Table 2
Correlation Matrix

	2	3	4	5	6	7	8
1.TobinQ	-0.0229	0.3162***	0.1631***	0.2319***	0.2058***	0.1204***	0.0003
2.UnSysRisk	1	-0.3062***	-0.0026	-0.0069	0.0126	-0.076***	0.004
3.SysRisk		1	0.1497***	0.1443***	0.1054***	0.0728***	0.0546**
4.Cluster indicator			1	0.8842***	0.8101***	0.0578***	-0.0201
5.Cluster share				1	0.9373***	0.0428**	-0.0197
6.Cluster depth					1	-0.0089	-0.0149
7.ResRegionSize						1	0.0753***
8.Diversity							1
9.Innovation							
10.GeoDiv							
11.Size							
12.Capratio							
13.Liquidity							
14.ROA							
15.BankConc							

Note:
*,
**, and
***indicate $p < .10$, $p < .05$, and $p < .01$, respectively.

sources. On the other hand, geographic diversification can lead to value loss due to the lack of managerial skills in the new markets and more complicated organization and product structure, which may intensify agency problems (Acharya et al., 2006; Baele, De Jonghe, & Vander Vennet, 2007). Moreover, portfolio theory suggests geographic diversification may reduce earnings volatility through the coinsurance effect (Boot & Schmeits, 2000; Lewellen, 1971), thereby reducing firms' unsystematic risk. Following Deng et al. (2007), we used deposit dispersion in an MSA to proxy for geographic diversification.

Bromiley and his colleagues (Bromiley, 1991; Miller & Bromiley, 1990; Wiseman & Bromiley, 1996) found that income stream uncertainty negatively affects firm performance. Bromiley (1991) and Singh (1986) found firms with poor performance take more risk. Therefore, we included firm value in both unsystematic and systematic risk models and both systematic and unsystematic risk in the firm value model. As a result, firm value, unsystematic risk, and systematic risk are simultaneously determined. Since our sample is time series cross sectional panel data, the error terms may be subject to heteroskedasticity and autocorrelation problems, rendering inefficient estimates generated by ordinary least squares (OLS).

We used the Pagan-Hall test (Pagan & Hall, 1983) to test for heteroskedasticity and found that heteroskedasticity is present in our full model (Pagan-Hall general test statistic =362.827, Chi-sq(20), P = 0.0000). We used the Arellano-Bond test (Arellano & Bond, 1991) to test for autocorrelation (z = 9.18, P = 0.0000) and found that autocorrelation is an issue. Therefore, we estimated our simultaneous equation models using two-step Generalized Method of Moments (GMM) and adjusted for heteroskedasticity and autocorrelation.

Controlling for Collinearity

There is likely to be relatively high levels of collinearity among our various geographic measures. Indeed, this is one of the underlying motives for our study—region size, diversity, and clusters tend to occur together, so scholars need to carefully disentangle these closely-related mechanisms in order to make proper causal attributions. Thus, these collinearity issues are simultaneously both an issue and a motivator. Indeed, the correlation of clusters with region size, regional economic diversity, and regional innovativeness is 0.34, -0.02, and -0.03, respectively. To overcome these collinearity issues, we orthogonized region size against cluster (proxied by *Cluster Depth*), regional economic diversity, and regional innovativeness, and used the residual of region size (*ResRegionSize*) in the regressions. Thus, the relationships we observed are the distinct effects of these geographic causal mechanisms.

Controlling for Endogeneity

The geographic location of a BHC could be an endogenous choice. In other words, firms are likely to choose their geographic locations, whether inside or outside a cluster, for

Table 2
Continued

9	10	11	12	13	14	15
0.2015***	0.0841***	0.3096***	0.1344***	0.0126	0.2924***	-0.0195
0.0169	-0.0151	-0.3896***	-0.0919***	0.0721***	-0.2047***	-0.0376*
0.0553**	0.0987***	0.5315***	0.0723***	-0.0783***	0.1976***	0.0361*
-0.0272	-0.0265	0.262***	-0.0362*	0.0572***	0.0315	-0.1717***
-0.027	-0.0576***	0.203***	0.1021***	0.0744***	0.1525***	-0.1746***
-0.0214	-0.0772***	0.1333***	0.0612***	0.0448**	0.115***	-0.163***
-0.0067	-0.0768***	0.1047***	0.0225	-0.0088	0.0532**	-0.4696***
-0.0576***	0.2504***	0.1072***	0.0246	-0.0442**	0.0323	0.0732***
1	0.0147	0.0017	-0.0059	0.0424*	0.0274	0.0684***
	1	0.4437***	-0.0744***	-0.0457**	0.0334	0.1691***
		1	0.0040	-0.1050***	0.2280***	0.0498**
			1	0.0741***	0.6901***	0.0646***
				1	0.0478**	-0.0313
					1	0.0367*
						1

Can J Adm Sci
30(2), 71–85 (2013)

strategic rather than random reasons. For example, larger and more profitable banks may choose to locate in a financial center, because of the perceived prestige and visibility of the financial center, or perhaps to access key customers. To address this self-selection problem, we estimated a treatment effect model (Villalonga, 2004) using Heckman's (1979) two-step procedure.

In step one, we employed a Probit model with Cluster Indicator as the dependent variable. We included firm size (*Size*), profitability (*Profitability*), and growth opportunity (*Growth*) as the independent variables for cluster location (Almazan, de Motta, & Titman, 2007) and included expenses of premises and fixed assets scaled by total noninterest expense (*Pexpense*) and trading revenue scaled by total non interest income (*Trading*) as our instruments. Our rationale is as follows: banks whose operations necessitate large expenses for premises and fixed assets are less likely to move to a cluster, as clusters likely command higher rents for premises and fixed assets. Banks with more trading revenues are more likely to operate in financial centers. Large banks are more likely to operate in financial centers, and we measure firm size (*Size*) by the logarithm of total assets. We used annual loan growth rate (*Growth*) to proxy for bank growth opportunity (Houston & James, 1998), as banks with higher growth opportunity may move to cluster to take advantage of the bigger market there. Clusters may also attract more profitable banks that seek the advantages of knowledge spillovers and the extensive network clusters provide. We used ROA to measure bank profitability (Garcia-Herrero, Gavilá, & Santabárbara, 2009). In step two, we used the predicted value of cluster, the inverse Mill's ratio produced from the Probit model in step one, other control variables in the firm value and risk models to control for the self-selection bias.

Results

We present the summary statistics for the 2,128 BHC-year observations from 426 BHCs in Table 1. There are two categories of variables: regional economy characteristics and BHC-specific variables. About 7.01% of subsidiary banks of the sample BHCs operate in a financial center; the average number of total firms across all industries in an MSA is 81,376; the 5-industry concentration ratio is 55.85%; the average number of patents per 1,000 people in an MSA is 0.2054. The means for BHCs' total assets and equity are $21.65 billion and $1.78 billion respectively, suggesting BHCs in our sample are quite large. The mean capital ratio is 8.86%, indicating that the sample BHCs generally satisfy the capital adequacy requirement set by the Basel Accord. The mean stock return volatility is about 1.09%. The average systematic and unsystematic risk is 60.97% and 1.97% respectively.

We present the correlation matrix of the major variables in Table 2. Firm value proxied by Tobin's Q is positively and significantly correlated with all three of our cluster measures. Region size and regional innovativeness are both positively related to firm value. Systematic risk measured by market beta is positively and significantly correlated with all cluster measures. Regional diversity, region size, and regional innovativeness are all positively related to systematic risk. Unsystematic risk, measured by the standard deviation of stock return residual, is related negatively and significantly to region size.

Regional Geographic Signature and Firm Value and Risk – GMM Model

Existing studies suggest risk may affect firm performance and vice versa (Bromiley, 1991; Miller & Bromiley, 1990; Singh, 1986; Wiseman & Bromiley, 1996), so we included total risk in the firm value model and firm value in both risk models and estimated our firm value and risk models simultaneously using two-step Generalized Method of Moments (GMM). We adjusted for heteroskedasticity and autocorrelation. Results of how regional geographic signature affects firm performance are presented in Table 3. We present our results of the effect of regional geographic signature on systematic and unsystematic risk in Panels A and B of Table 4, respectively.

Endogeneity of Cluster Location

It is possible that the choice of whether to locate to a cluster is endogenous. That is, banks may choose to operate in financial centers for strategic or firm-specific reasons. To address this self-selection issue, we estimated a treatment effect model using Heckman's (1979) two-step procedure (Villalonga & Amit 2006). We report our results in Table 5. Column 1 of the Table exhibits the results of stage one of *Cluster Indicator* as a Probit model. The coefficients for *Size, Growth*, and one instrument *Trading* are all positive and significant, while the coefficient for the other instrument *Pexpense* is negative and significant. The coefficient of ROA is insignificant. The results suggest that banks that are larger have more growth opportunities, spend less on premises and fixed assets, and generate more trading revenue are more likely to locate in a financial center. Column 2 summarizes our results for firm value, while columns 3 and 4 present systematic and unsystematic risk. The variables of primary interest in step two of the firm value and risk models are the Inverse Mill' s ratio (λ) and *Cluster Indicator*. In all models, the Inverse Mills ratio (λ) is significant, suggesting the presence of a self-selection bias of cluster location in the estimation of firm value and risk models.

Because we found evidence for our concern that location choice is endogenous (that is, firms appear to choose their location based on unmeasured strategic or firm-specific characteristics), we focused our analysis of

Table 3
Regional Geographic Signature and Firm Value (GMM regression)

	Cluster indicator	Cluster share	Cluster depth
GeoDiv	-0.0161	-0.0115	-0.0101
	(-1.02)	(-0.75)	(-0.66)
Cluster	0.0337*	0.0857***	0.0747***
	(1.89)	(3.48)	(3.7)
ResRegionSize	0.0091***	0.0108***	0.01***
	(3.24)	(4.04)	(3.65)
Diversity	-0.0377*	-0.0432**	-0.0391*
	(-1.71)	(-2.01)	(-1.8)
Innovation	0.0655***	0.0656***	0.0661***
	(3.61)	(3.61)	(3.61)
Size	0.0176***	0.017***	0.0161***
	(5.46)	(5.62)	(5.26)
Capratio	-0.2216	-0.2321	-0.2573
	(-0.95)	(-.99)	(-1.11)
Liquidity	0.0187	0.0175	0.0122
	(0.49)	(0.47)	(0.32)
BankConc	0.0207	0.0465	0.0435
	(0.53)	(1.19)	(1.11)
MADummy	0.0154***	0.0172***	0.0166***
	(2.68)	(3.05)	(2.93)
ROA	5.5731***	5.3114***	5.3689***
	(4.3)	(4.13)	(4.22)
SysRisk	0.0542***	0.0533***	0.0528***
	(3.32)	(3.33)	(3.31)
UnSysRisk	3.5126***	3.3932***	3.3834***
	(4.56)	(4.45)	(4.45)
Constant	0.5566***	0.5456***	0.5623***
	(8.12)	(8.25)	(8.52)
No. of obs.	2128	2128	2128
F-Value	18.45	20.74	19.28

Note: T-statistics are reported in parentheses.
*,
**, and
***indicate $p < .10$, $p < .05$, and $p < .01$, respectively.

our regression results primarily on those of our two-step self-selection procedure presented in Table 5. Where material, we have noted significant differences from our GMM analysis (Tables 3 and 4). In the firm value model, the coefficient for *Cluster* is significantly, but modestly, negative (p value < 0.10), which is contrary to our prediction in *H1a*. The coefficient for *Diversity* is insignificant, providing no support for *H2a*. The coefficient of *ResRegionSize* is significantly positive (p value $< .01$), which supports *H3a*. Finally, the coefficient for *Innovativeness* is significantly positive (p value < 0.01), supporting *H4a*. When comparing firm value results from our GMM regression with those controlling for endogeneity, we have noted that our results differ for *Clusters* (formerly marginally positive), *Diversity* (significantly negative with p value 0.10), and *Geodiv* (previously nonsignificant). In terms of our control variables, *GeoDiv* becomes marginally negatively significant (p value < 0.10), and ROA, *SysRisk*, and *UnSysRisk* are all positively significant.

We now examine the influence of regional geographic signature on risk. In the systematic risk model, the coefficient for *Cluster* is negative and significant (p value 0.01), supporting *H1b(i)*. *Cluster* is positively related to unsystematic risk, supporting *H1b(ii)*. We found that *Diversity* is positively related to systematic risk (which we did not anticipate), and is unrelated to unsystematic risk, contrary to *H2b*. *ResRegionSize* is related to neither measure of risk, refuting *H3b*. Finally, *Innovativeness* is positively significantly related to systematic risk (p value 0.05), but not to unsystematic risk, providing partial support for *H4b*. *GeoDiv* is not related to risk. Of our other control variables, *Size* is positively related to systematic risk (p value $< .01$) and negatively related to unsystematic risk (p value $< .01$) leverage is negatively related to unsystematic risk (p value $< .01$); and Tobin's Q is positively related to both forms of risk (p value .01 in both cases).

Robustness Check

We conducted a variety of robustness checks. First, we calculated our *Diversity* variable using 3- and 10-industry concentration ratios rather than 5-industry ratios for the MSA, and our results do not differ from those reported. Second, we calculated *RegionSize* using either total number of employees or total number of establishments in the MSA as alternative measures, and again, our results do not differ significantly from those reported. Finally, because New York City (NYC) is the largest cluster location (in terms of number of banks), it could potentially dominate regional specifications and our results may be driven by BHCs located in NYC, so we accounted for that possibility by deleting the BHCs located in NYC from the sample and re-estimated the models. The results remain qualitatively similar. Overall, our findings are robust after a battery of robustness checks.

Discussion

Summary

While there is a large and growing strategy literature on the effect of clusters on firm performance (Bell, 2005; Porter, 1998; Pouder & St. John, 1996), the extant literature has barely begun to examine the influence of multiple geographic effects on firm performance. McCann and Folta (2008) call on scholars to examine multiple geographic effects on important firm outcomes, and this paper responds to that call. We consider multiple components of regional geographic signature including clusters, economic diversity, region size, and regional innovativeness on both firm value

Table 4
Regional Geographic Signature and Firm Risk (GMM regression)

	Panel A. Systematic risk			Panel B. Unsystematic risk		
	Cluster indicator	Cluster share	Cluster depth	Cluster indicator	Cluster share	Cluster depth
GeoDiv	0.2103***	0.1968***	0.1959***	0.0035***	0.0031**	0.0032***
	(2.86)	(2.65)	(2.64)	(2.83)	(2.48)	(2.58)
Cluster	-0.1690	-0.3649**	-0.2825**	-0.0002	-0.0046**	-0.0029*
	(-1.60)	(-2.14)	(-2.01)	(-0.18)	(-2.27)	(-1.69)
ResRegionSize	-0.0348**	-0.043**	-0.0388**	-0.0004	-0.0005**	-0.0004*
	(-1.99)	(-2.41)	(-2.16)	(-1.58)	(-2.03)	(-1.71)
Diversity	0.4513***	0.4816***	0.4629***	0	0.0002	-0.0001
	(3.22)	(3.37)	(3.24)	(0.02)	(0.10)	(-0.03)
Innovation	-0.2301**	-0.2403**	-0.2377**	-0.004***	-0.0041***	-0.004***
	(-2.02)	(-2.00)	(-1.99)	(-2.85)	(-2.81)	(-2.79)
Size	0.0482*	0.0453	0.0491*	-0.0032***	-0.0031***	-0.0031***
	(1.73)	(1.56)	(1.75)	(-8.28)	(-7.89)	(-8.06)
Capratio	1.7987	1.8676	1.9115	0.0046	0.0042	0.0058
	(1.17)	(1.16)	(1.19)	(0.26)	(0.23)	(0.32)
Liquidity	0.1764	0.1699	0.1863	-0.0016	-0.0007	-0.0007
	(0.83)	(0.79)	(0.86)	(-0.57)	(-0.24)	(-0.22)
BankConc	-0.1832	-0.2788	-0.2499	-0.0015	-0.003	-0.0024
	(-0.83)	(-1.25)	(-1.12)	(-0.48)	(-0.98)	(-0.78)
MADummy	-0.0363	-0.0453	-0.041	-0.0012**	-0.0014***	-0.0013**
	(-0.96)	(-1.14)	(-1.04)	(-2.35)	(-2.63)	(-2.48)
Tobinq	3.8375***	4.0000***	3.9314***	0.0578***	0.0594***	0.0581***
	(3.41)	(3.33)	(3.31)	(4.52)	(4.38)	(4.34)
Constant	-4.1093***	-4.1362***	-4.1533***	0.013	0.0118	0.012
	(-4.75)	(-4.59)	(-4.59)	(1.34)	(1.16)	(1.18)
No. of obs	2128	2128	2128	2128	2128	2128
F-Value	28.213	27.372	26.511	21.284	20.225	20.446

Note: T-statistics are reported in parentheses.
*,
**, and
***indicate $p < .10$, $p < .05$, and $p < .01$, respectively.

and risk. Moreover, to the best of our knowledge, no prior papers have considered the impact of geography on risk, and this relationship is important because risk is a key outcome, particularly in banking (McNamara & Bromiley, 1997, 1999; Wiseman & Catanach, 1997). Finally, the finance literature has considered the impact of geographic diversification on firm value and risk. However, no prior studies have simultaneously considered the implication of regional characteristics, which are highly related to geographic diversification on firm value and risk. This may lead to an incomplete understanding of the role of geographic diversification on value and risk.

In this study, we found regional characteristics have a significant impact on both firm value and systematic and unsystematic risk in the American banking industry. Thus, our paper extends current knowledge in three dimensions. First, we considered multiple components of geography rather than just clusters. Second, we extended the finance literature on diversification by documenting that regional economic characteristics as well as geographic diversification affect firm outcomes. Third, we considered the influence of geography on systematic and unsystematic risk in addition to firm value outcomes.

Contributions to Scholarship

Interestingly, we found a negative, albeit weak, relationship between firm clusters and value that runs contrary to the received wisdom that firms benefit from locating in clusters. Our findings suggest that once we accounted for endogenous factors, firms perform slightly more poorly in clusters. This makes sense—firms with strategies or characteristics (potentially unmeasured variables in many studies) that would benefit from a clustered location locate to a cluster, while firms lacking those strategies or characteristics avoid clusters. Hence, once we accounted for this source of endogeneity, we saw that in general, BHCs suffer from locating in a financial center (i.e., a cluster).

In terms of our findings regarding clusters and risk, clusters may insulate firms from general economic variability,

Table 5
Addressing Endogeneity of Cluster Location

	Cluster indicator		Firm value	Sysrisk	UnsysRisk
Size	0.1788***	Geodiv	-0.022*	-0.0006	0
	(7.46)		(-1.69)	(-0.02)	(0.05)
Profitability	-6.0976	Cluster	-0.0804*	-0.6609***	0.00912***
	(-0.95)		(-1.73)	(-4.72)	(4.13)
Growth	0.3060**	ResRegionSize	0.0088***	-0.0059	-0.0002
	(2.17)		(3.65)	(-0.80)	(-1.56)
Pexpense	-2.9583**	Diversity	-0.036	0.2888***	-0.0013
	(-2.33)		(-1.08)	(2.90)	(-0.84)
Trading	4.0239***	Innovation	0.0666***	0.0485**	-0.0002
	(4.76)		(9.53)	(2.28)	(-0.59)
Constant	-3.6690***	Size	0.0242***	0.1618***	-0.0023***
	(-8.72)		(6.78)	(16.56)	(-15.27)
		Capratio	-0.1196	0.1452	-0.014***
			(-1.13)	(0.60)	(-3.72)
		Liquidity	0.0306	0.0313	-0.0003
			(1.24)	(0.43)	(-0.29)
		ROA	5.4267***		
			(9.25)		
		SysRisk	0.0507***		
			(6.96)		
		UnSysRisk	3.6283***		
			(7.90)		
		Tobinq		0.5268***	0.0072***
				(8.86)	(7.26)
		Bankconc	0.0156	-0.1335	0.0005
			(0.46)	(-1.31)	(0.30)
		MADummy	0.0135**	-0.0074	-0.0003
			(2.28)	(-0.42)	(-1.13)
		Lambda	0.0608***	0.3460***	-0.0033***
			(2.58)	(4.89)	(-2.94)
		Constant	0.4678***	-2.1996***	0.051***
			(7.77)	(-13.54)	(19.96)
No. of obs	*2085*	*No. of obs*	2085	2086	2085

Note: T-statistics are reported in parentheses.
*,
**, and
***indicate $p < .10$, $p < .05$, and $p < .01$, respectively.

leading to a reduction in systematic risk. Thus, Pouder and St. John (1996) provided only a partial explanation: While clusters seem to insulate the firms from outside events in a way such that locating in a cluster reduces firm value, it also appears that clusters insulate the firms from general economic pressure, thus reducing systematic risk. However, clusters do expose the firm to increased competition (Porter, 1998) leading to increased variability of returns, and hence, unsystematic risk.

Economic diversity provides some surprising results. It bore no relationship with value, while systematic risk increases with economic diversity. This suggests that as a firm is exposed to a local environment that is more fully diversified (i.e., reminiscent of the economy as a whole), the variability of its returns tend to be amplifications of market variability. Perhaps one explanation for this phenomenon can be derived from the work of Barker and Loughran (2007), who argued that as the geographic distance between two stocks increases, the correlation between them decreases. If we accept that systematic risk proxies the "variability of a firm's stock returns... with... macroeconomic forces" (Lubatkin & Chatterjee, 1994, p. 110), then by extension, BHCs located among concentrations of economically diverse firms should have higher correlations with the market as a whole—that is, firms should have more systematic risk.

We found the expected positive relationship between *ResRegionSize* and value. However, *ResRegionSize* has no

impact on systematic risk or unsystematic risk. This suggests that firms *may* be able to enhance their value without a commensurate increase in risk by locating in larger areas. This may reflect the idea that as urban areas increase in size, stocks in those regions are local to more people (Loughran & Schultz, 2005), and hence, investors may be better able to value them with no change in risk assessment.

Finally, we found that locating in an innovative region increases both BHC value and systematic risk. The increase in value may be attributed to two possible causes. First, banks in innovative locations may become more innovative themselves, using derivatives and other fee-based, off balance sheet activities that increase value. Alternatively, they may benefit from a "halo effect" by locating near innovative companies; that halo may increase the firm's value without it being more innovative. Further research is needed to explore these alternative explanations. The increased systematic risk may occur because people in these regions are more willing to take on risk and have a higher risk tolerance than people in less innovative regions, which makes the region more vulnerable to market shock, increasing the systematic risk of the firms in the region.

Our results regarding geographic diversification are particularly important given the previously documented relationship of geographic diversification on firm value and risk (Acharya et al., 2006; Akhigbe, Madura, & Martin, 2007; Deng & Elyasiani, 2008; Deng et al., 2007; Hughes et al., 1999, among others). We found that geographic diversification leads to a modest decrease in value, yet has no effect on risk. The value reduction effect may be due to the firm lacking necessary information when it enters new markets, a more complex organization structure, and intensified agency problems associated with geographic diversification (Deng & Elyasiani, 2008). This decrease in value is consistent with prior studies that document a value reduction effect of geographic diversification (DeLong, 2001). However, because we found that other elements of regional geographic signature also influence firm value and risk, merely modelling geographic diversification fails to account for all the geographic factors influencing firm value. Thus, scholars need to include the complete regional geographic signature into their models, rather than relying on geographic diversification as a catch-all proxy.

Applied Implications

Scholars have long argued that firms should locate in clusters (Porter, 1990, 1998). Our paper highlights that managers must be aware that clusters may in fact reduce firm value. Our model that accounts for endogeneity of cluster location finds a negative effect of clusters on firm value. Thus, firms should locate to clusters only when they have the strategy and resource base to support such a move, or alternately, they should avoid clusters when they do not want to expose their unique resource base to firms in a cluster. This finding helps account for anomalous counter-examples, such as Bank of America, which in 1998 moved its headquarters from San Francisco to Charlotte, NC (which is not a financial center).

Interestingly, managers may choose not to locate in an economically diverse region, because economic diversity does not affect value but increases systematic risk. Interestingly, we found evidence of a risk-free opportunity that managers may wish to exploit: Firms in large regions have increased value with no commensurate increase in either risk. Therefore, managers may want to site some of their operations in larger locales. Finally, managers may find it beneficial to locate in innovative regions; doing so enhances value, but at the cost of increased systematic risk.

We also documented the economic significance of our results. A BHC moving its headquarters from a non-financial center to a financial center leads to a 8.04% decline in firm value. An increase of one standard deviation in *Diversity* leads to a decrease of 0.31% of firm value. An increase of one standard deviation in *ResRegionSize* leads to an increase of 1.15% of firm value, and an increase of one standard deviation in *Innovativeness* leads to an increase of 2.59% of firm value. Given that the average total assets of the sample BHCs are $21.6539 billion, and average Tobin's Q is 1.0013, the changes in firm value that arise when a BHC moves its headquarters to a financial center is -$1.74 billion. Similarly, a one standard deviation change in *Diversity, ResRegionSize*, and *Innovativeness* corresponds to a change in market value of -$67.36 million, $250.28 million, and $560.72 million for an "average" BHC.

Limitations and Directions for Future Research

The primary limitation of our paper is the study setting of the US banking industry. While this industry provides a "natural laboratory," it is a service industry, so our findings and recommendations may not be applicable to manufacturing settings. However, this limitation also provides the primary direction for future research: it behooves scholars to extend the study of multiple facets of geography into other settings, including manufacturing industries and a variety of service industries, including retailing, transportation and logistics, and professional services. We were also limited to studying publicly traded bank holding companies because much of the data we analyzed is not available for privately owned banks. Were we able to access appropriate data for privately owned banks, the results of our analysis might change.

Conclusion

While strategy has recently turned its attention to question how a firm's geographic location affects its performance, scholars have mostly limited their study to an

examination of the influence of industry clusters on firm performance. We broaden the study of geographic components of a firm's regional geographic signature to include industry clusters, region size, regional economic diversity, and regional innovativeness, and consider their impact on both performance and risk.

Clusters provide only a partial picture of the influences of geography on firm value and risk. Scholars and managers must adopt a broader perspective of regional geographic signature to understand geographic influences on firm outcomes. We observe significant influences of geography on both firm value and risk, so scholars and managers must consider both the risk *and* value outcome effects of geography.

Notes

1. Almazan, de Motta, Titman, and Uysal (2010) provided an exception in which they control for regional attributes including MSA population growth rate and R&D intensity of the MSA, and found firms in industry clusters make more acquisitions and maintain more financial slack.
2. If an MSA had multiple cities, we collected the number of patents issued to individuals in each of the cities and aggregated them to obtain the number of patents issued in this MSA. For example, the Minneapolis-St. Paul MSA includes the identified cities of Minneapolis, St. Paul, and Bloomington, MN. We collected the number of patents issued to individuals in each of those three cities, and summed them up to obtain the number of patents issued in the Minneapolis-St. Paul MSA.
3. Liquid assets include the sum of cash and balance due from depository institutions, available-for-sale securities, and federal funds sold and securities purchased under agreements to resell. Liquid liabilities include federal funds purchased, and securities sold under agreements to repurchase.

References

Acharya, V.V., Hasan, I., & Saunders, A. (2006). Should banks be diversified? Evidence from individual bank loan portfolios. *Journal of Business*, *79*, 1355–1411.

Agrawal, D., Bharath, S.T., & Viswanathan, S. (2004). Technological change and stock return volatility: Evidence from eCommerce adoptions. *Working Paper, University of Michigan*.

Akhigbe, A., Madura, J., & Martin, A.D. (2007). Effect of Fed policy actions on the default likelihood of commercial banks. *The Journal of Financial Research*, *30*(1), 147–162.

Akhigbe, A., & Whyte, A.M. (2003). Changes in market assessment of bank risk following the Riegle-Neal Act of 1994. *Journal of Banking and Finance*, *27*, 87–102.

Almazan, A., de Motta, A., & Titman, S. (2007). Firm location and the creation and utilization of human capital. *Review of Economic Studies*, *74*(4), 1305–1327.

Almazan, A., de Motta, A., Titman, S., & Uysal, V. (2010). Financial structure, acquisition opportunities, and firm locations. *Journal of Finance*, *65*(2), 529–563.

Almeida, P., & Kogut, B. (1997). The exploration of technological diversity and geographic localization in innovation: Start-up firms in the semi-conductor industry. *Small Business Economics*, *9*(1), 21–31.

Angbazo, L. (1997). Commercial bank net interest margins, default risk, interest rate risk, and off-balance sheet banking. *Journal of Banking and Finance*, *21*, 55–87.

Appold, S.J. (1995). Agglomeration, interorganizational networks, and competitive performance in the U.S. metalworking sector. *Economic Geography*, *71*(1), 27–54.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Statistics*, *58*(2), 277–297.

Baele, L., De Jonghe, O., & Vander Vennet, R. (2007). Does the stock market value bank diversification? *Journal of Banking and Finance*, *31*(7), 1999–2023.

Barker, D., & Loughran, T. (2007). The geography of S&P 500 stock returns. *The Journal of Behavioral Finance*, *8*(4), 177–190.

Barry, T.A., Lepetit, L., & Tarazi, A. (2011). Ownership structure and risk in publicly held and privately owned banks. *Journal of Banking and Finance*, *35*(5), 1327–1340.

Bathelt, H., Malmberg, A., & Maskell, P. (2004). Clusters and Knowledge: Local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography*, *28*(1), 31–56.

Bell, G.G. (2005). Clusters, Networks, and Firm Innovativeness. *Strategic Management Journal*, *26*, 287–295.

Bell, G.G., & Zaheer, A. (2007). Geography, Networks, and Knowledge Flow. *Organization Science*, *18*(6), 955–972.

Boot, A.W., & Schmeits, A. (2000). Market discipline and incentive problems in conglomerate firms with applications to banking. *Journal of Financial Intermediation*, *9*, 240–273.

Boschma, R.A., & Ter Wal, A.L.J. (2007). Knowledge networks and innovative performance in an industrial district: The case of a footware district in the south of Italy. *Industry and Innovation*, *14*(2), 177–199.

Bromiley, P. (1991). Toward a causal model of corporate risk taking and performance. *Academy of Management Journal*, *34*, 37–59.

Bromiley, P., Miller, K.D., & Rau, D. (2001). Risk in strategic management. In M.A. Hitt, R.E. Freeman, & J.S. Harrison (Eds.), *The Blackwell Handbook of Strategic Management*, (pp. 259–288).

Bromiley, P., & Rau, D. (2010). Risk taking and strategic decision making. In P.C. Nutt, & D.C. Wilson (Eds.), *Handbook of Decision Making* (pp. 307–326) Chichester, UK: Wiley.

Census Bureau, U.S. (2007). *Statistics of U.S. Businesses*. Washington, D.C., Retrieved from http://www.census.gov/csd/susb/susb.htm

Christoffersen, S., & Sarkissian, S. (2009). City size and fund performance. *Journal of Financial Economics*, *92*, 252–275.

Christoffersen, S., & Sarkissian, S. (2011). The demographics of fund turnover. *Journal of Financial Intermediation*, *20*, 414–440.

Coval, J.D., & Moskowitz, T.J. (1999). Home bias at home: Local equity preference in domestic portfolios. *Journal of Finance*, *104*, 2045–2073.

Coval, J.D., & Moskowitz, T.J. (2001). The geography of investment: Informed trading and asset prices. *Journal of Political Economy*, *109*, 811–841.

DeLong, G.L. (2001). Stockholder gains from focusing versus diversifying bank mergers. *Journal of Financial Economics*, *59*, 221–252.

Deng, S., & Elyasiani, E. (2008). Geographic diversification, Bank Holding Company firm value and risk. *Journal of Money, Credit, and Banking*, *40*(6), 1217–1238.

Deng, S., Elyasiani, E., & Mao, C.X. (2007). Diversification and cost of debt of bank holding companies. *Journal of Banking and Finance*, *31*, 2453–2473.

Denis, D.J., Denis, D.K., & Yost, K. (2002). Global diversification, industrial diversification, and firm value. *Journal of Finance*, *57*, 1951–1979.

Florida, R. (2003). *The Rise of the Creative Class: And how it's transforming work, leisure, community and everyday life*. Basic Books.

Folta, T.B., Cooper, A.C., & Baik, Y.-s. (2006). Geographic cluster size and firm performance. *Journal of Business Venturing*, *21*, 217–242.

Garcia-Herrero, A., Gavilá, S., & Santabárbara, D. (2009). What explains the low profitability of Chinese banks? *Journal of Banking and Finance*, *33*, 2080–2092.

Gertler, M.S. (2001). Best practice? Geography, learning and the institutional limits to strong convergence. *Journal of Economic Geography*, *1*, 5–26.

Glaeser, E.L., Kallal, H.D., Scheinkman, J.A., & Shleifer, A. (1992). Growth in cities. *Journal of Political Economy*, *100*(6), 1126–1152.

Gordon, I.R., & McCann, P. (2000). Industrial clusters: Complexes, agglomeration and/or social networks. *Urban Studies*, *37*(3), 513–532.

Grabher, G. (2002). The project ecology of advertising: Tasks, talents and teams. *Regional Studies*, *36*(3), 245–262.

Hannan, M.T., & Freeman, J. (1977). The population ecology of organizations. *The American Journal of Sociology*, *82*(5), 929–964.

Harrison, B., Kelley, M.R., & Gant, J. (1996). Innovative firm behavior and local milieu: Exploring the intersection of agglomeration, firm effects, and technological change. *Economic Geography*, *72*(3), 233–258.

Heckman, J.J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*, 153–161.

Henderson, V., Kuncoro, A., & Turner, M. (1995). Industrial development in cities. *Journal of Political Economy*, *103*(5), 1067–1090.

Hong, H., Kubik, J.D., & Stein, J.D. (2005). Thy neighbor's portfolio: word-of-mouth effects in the holdings and trades of money managers. *Journal of Finance*, *60*, 2801–2824.

Houston, J.F., & James, C. (1998). Do bank internal capital markets promote lending? *Journal of Banking and Finance*, *22*, 899–918.

Houston, J.F., Lin, C., Lin, P., & Ma, Y. (2010). Creditor rights, information sharing, and bank risk taking. *Journal of Financial Economics*, *96*(3), 485–512.

Hughes, J.P., Lang, W.W., Mester, L.J., & Moon, C.-G. (1999). The dollars and sense of bank consolidation. *Journal of Banking and Finance*, *23*, 291–324.

Inkpen, A.C., & Tsang, E.W.K. (2005). Social capital, networks, and knowledge transfer. *Academy of Management Review*, *30*(1), 146–165.

Ivkovic, Z., & Weisbenner, S. (2005). Local does as local is: Information content of the geography of individual investors' common stock investments. *Journal of Finance*, *60*(1), 267–306.

Jacobs, J. (1969). *The Economy of Cities*. New York, NY: Vintage Books.

Jacobs, J. (1992 [1961]). *The Death and Life of Great American Cities*. New York, NY: Vintage Books.

Laeven, L., & Levine, R. (2007). Is there a diversification discount in financial conglomerates? *Journal of Financial Economics*, *85*(2), 331–367.

Lang, L.H.P., & Stuzl, R.M. (1994). Tobin's Q, corporate diversification, and firm performance. *Journal of Political Economy*, *102*(6), 1248–1280.

Lewellen, W.G. (1971). A pure financial rationale for the conglomerate merger. *Journal of Finance*, *26*, 521–537.

Loughran, T., & Schultz, P. (2005). Liquidity: Urban versus rural firms. *Journal of Financial Economics*, *78*, 341–374.

Lubatkin, M., & Chatterjee, S. (1994). Extending modern portfolio theory into the domain of corporate diversification: Does it apply? *Academy of Management Journal*, *37*(1), 109–136.

Malloy, C. (2005). The geography of equity analysis. *Journal of Finance*, *60*(2), 719–755.

Malmberg, A., & Maskell, P. (2002). The elusive concept of localization economies: towards a knowledge-based theory of spatial clustering. *Environment and Planning A*, *34*, 429–449.

Marshall, A. (1920). *Principles of Economics*. London, UK: Macmillan.

Maskell, P., & Malmberg, A. (1999). Localised learning and industrial competitiveness. *Cambridge Journal of Economics*, *23*, 167–185.

Mazzucato, M., & Tancioni, M. (2012). R&D, patents and stock return volatility. *Journal of Evolutionary Economics*, *22*, 811–832.

McAlister, L., Srinivasan, R., & Kim, M. (2007). Advertising, research and development, and systematic risk of the firm. *Journal of Marketing*, *71*(January 2007), 35–48.

McCann, B.T., & Folta, T.B. (2008). Location matters: Where we have been and where we might go in agglomeration research. *Journal of Management*, *34*(3), 532–565.

McNamara, G., & Bromiley, P. (1997). Decision making in an organizational setting: Cognitive and organizational influences on risk assessment in commercial lending. *Academy of Management Journal*, *40*(5), 1063–1088.

McNamara, G., & Bromiley, P. (1999). Risk and return in organizational decision making. *Academy of Management Journal*, *42*(3), 330–339.

Miller, K.D., & Bromiley, P. (1990). Strategic risk and corporate performance: An analysis of alternative risk measures. *Academy of Management Journal*, *33*(4), 756–779.

Pagan, A.R., & Hall, A.D. (1983). Diagnostic tests as residual analysis. *Econometric Reviews*, *2*(2), 159–218.

Pathan, S. (2009). Strong boards, CEO power and bank risk-taking. *Journal of Banking and Finance*, *33*(7), 1340–1350.

Peavy, J.W.I. (1984). Modern financial theory, corporate strategy and public policy: Another perspective. *Academy of Management Review*, *9*(1), 152–157.

Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York, NY: The Free Press.

Porter, M.E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, *76*(6) 77–90.

Pouder, R., & St. John, C.H. (1996). Hot spots and blind spots: Geographical clusters of firms and innovation. *Academy of Management Review*, *21*(4), 1192–1225.

Can J Adm Sci
30(2), 71–85 (2013)

Pred, A. (1965). Industrialization, initial advantage, and American metropolitan growth. *Geographical Review*, *55*(2), 158–185.

Prevezer, M. (1997). The dynamics of industrial clustering in biotechnology. *Small Business Economics*, *9*, 255–271.

Saunders, A., & Cornett, M.M. (2007). *Financial institutions management*, 5th edn. New York: McGraw-Hill Irwin.

Saunders, A., & Cornett, M.M. (2010). *Financial Institutions Management*, 7th edn. McGraw-Hill Irwin.

Saunders, A., Strock, E., & Travlos, N.G. (1990). Ownership structure, deregulation, and bank risk taking. *Journal of Finance*, *45*, 643–654.

Saxenian, A. (1994). *Regional Advantage: Culture and competition in Silicon Valley and Route 128*. Cambridge: Harvard University Press.

Servaes, H. (1996). The value of diversification during the conglomerate merger wave. *Journal of Finance*, *51*(4), 1201–1225.

Shaver, J.M., & Flyer, F. (2000). Agglomeration economies, firm heterogeneity, and foreign direct investment in the United States. *Strategic Management Journal*, *21*, 1175–1193.

Singh, J.V. (1986). Performance, slack, and risk taking in organizational decision making. *Academy of Management Journal*, *29*, 562–585.

Sorenson, O. (2003). Social networks and industrial geography. *Journal of Evolutionary Economics*, *13*, 513–527.

Sorenson, O., & Audia, P.G. (2000). The social structure of entrepreneurial activity: Geographic concentration of footwear production in the United States, 1940-1989. *The American Journal of Sociology*, *106*(2), 424–462.

Sorescu, A.B., & Spanjol, J. (2008). Innovation's effect on firm value and risk: Insights from consumer packaged goods. *Journal of Marketing*, *72*(March 2008), 114–132.

Stuart, T.E., & Sorenson, O. (2003). Liquidity events and the geographic distribution of entrepreneurial activity. *Administrative Science Quarterly*, *48*, 175–201.

Varaiya, N., Kerin, R.A., & Weeks, D. (1987). The relationship between growth, profitability, and firm value. *Strategic Management Journal*, *8*(5), 487–497.

Villalonga, B. (2004). Diversification discount or premium? New evidence from the business information tracking series. *Journal of Finance*, *59*(2), 479–506.

Villalonga, B., & Amit, R. (2006). How do family ownership, control and management affect firm value? *Journal of Financial Economics*, *80*(2), 385–417.

Wenger, E. (1998). *Communities of Practice: Learning, meaning and identity*. Cambridge, UK: Cambridge University Press.

Wenger, E. (2000). Communities of Practice: The key to knowledge strategy. In E. Lesser, M.A. Fontaine, & J.A. Slusher (Eds.), *Knowledge and Communities*, (pp. 3–20). Boston, MA: Butterworth Heinemann.

Wiseman, R.M., & Bromiley, P. (1996). Toward a model of risk in declining organizations: An empirical examination of risk, performance, and decline. *Organization Science*, *7*, 231–241.

Wiseman, R.M., & Catanach, A.H.J. (1997). A longitudinal disaggregation of operational risk under changing regulations: Evidence from the Savings and Loan industry. *Academy of Management Journal*, *40*(4), 799–830.