Ethnic diversity and small business venturing

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Abstract

While researchers have examined how ethnic diversity affects regional organizational performance, little research has been done to examine how ethnic diversity affects the creation of firm establishments for different sized firms. By generating additional market segments, in addition to fostering supply-side effects, we propose that a region's ethnic diversity fosters an environment that is conducive to the growth of small firm establishments but not medium or large sized establishments. Using county-level data on U.S. firm establishments and ethnic diversity, we find that a one standard deviation increase in ethnic diversity is associated with a six to eight percent increase in the number of small firm establishments and a 26-28 percent decrease in the number of large sized firm establishments.

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1. INTRODUCTION

A well-established literature now supports the notion that ethnic diversity, in addition to economic and gender diversity, enhances organizational performance (e.g., Becker, 1957; Cox, 1993; Richard, 2000; Richard et al., 2003; Richard et al., 2004; Herring, 2009; Ely, Padavic, and Thomas, 2012). Ethnic diversity also affects the performance of organizations in the regional economy by leading to greater productivity (Ager and Bruckner 2013), higher rates of new start-up intensities among the highly skilled workers (Rodriguez-Pose and Hardy 2015), and larger increases in wages and rents (Ottaviano and Peri 2006), especially in the presence of well-grounded informal institutions like social trust (Kemeny 2012). However, while the extant literature has examined how ethnic diversity affects organizational performance, less is known about how ethnic diversity affects the development of different sized firm establishments within the regional economy. Our contribution expands this discussion by suggesting a previously unexplored issue—that greater ethnic diversity might lead to more business venturing[1] for small and small-to-medium sized firms (SMEs) rather than for large firms.

There are several reasons to believe that a region's ethnic diversity might lead to more business venturing for small firms but not larger firms. First, idiosyncratic information held by locals is often not known to the broader population (Hayek 1945), and research in emerging markets notes that cultural information is often easier to capture by small businesses that are familiar with the region. Larger businesses, on the other hand, will have a more difficult time understanding cultural nuances in specific regions (Bhattacharya and Michael 2008). Second, even if large businesses can correctly adjust to serve local cultures, the scale of the business might not permit too many local offerings within a geographical region. By doing so, large businesses risk damage to their economies of scale and scope (Prahalad and

Hamel 1990; 2006). Lastly, we expand upon the Knowledge Spillover Theory of Entrepreneurship (KSTE) to examine how diversity specifically affects small business entrepreneurship. The KSTE predicts that when the larger incumbent firms are less able to exploit new knowledge flows, small start-ups are better able to exploit the stock of new knowledge (Acs et al. 2009). Taken together, we predict that a region's diversity should affect new venture creation more for small businesses that are in better positions to take advantage of local customer bases and consumer preferences. To our knowledge, our study is the first to examine how regional diversity affects organizational performance differently for small firms than large firms.

Increasing business activity is important for a variety of reasons. More business venturing suggests a more vibrant economy, which has desirable effects for economic growth and the factors associated with it. Some of these effects include reduced poverty rates (Fields 1977) and overall health and nutrition (Bloom and Canning 2000), among others. Since economic growth is determined by the extent of entrepreneurial activity within the regional economy (Porter 1998), exploring determinants that increase the creation of firm establishments becomes an important area of inquiry. Moreover, economic policy often depends on features of competitive markets (Porter 2003), and Storey's (1994) work explains that, in a cohort of small firms, only 4% of the firms provide 50% of the jobs over that decade. Thus, we contribute to this area of study by proposing that, by fostering an enhanced entrepreneurial environment, ethnic diversity may affect the competitiveness of a regional economy, particularly for small businesses.

We empirically test this hypothesis using data on ethnic diversity and the number of establishments at the United States county level and compare new venture creation outcomes between different size firms. Our evidence suggests that more diversity is positively associated with more business venturing—as measured by the number of establishments—, but we also find this relationship does not hold for firms of all sizes. We observe a positive relationship between ethnic diversity and the number of establishments but only for small businesses and SMEs. In contrast, we do not find any relationship between ethnic diversity and the number of medium sized firm establishments and we even find a negative relationship between ethnic diversity and large sized establishments that exceed 500 employees. We also consider the possibility that our model might suffer from reverse causality issues that lead to an endogeneity bias in estimation. We

control for this concern by utilizing several instruments including voter turnout and the neighboring region's degree of diversity. These instruments are used in a two-stage least squares regression and our results continue to suggest that diversity leads to greater rates of new business venture creation for SMEs, but in contrast to our previous findings, we do not find any relationship between ethnic diversity and the number of large firm establishments when controlling for reverse causality These findings have important implications.

This study offers two primary contributions. First, the findings presented in this study are important because we tackle a research gap on the organizational consequences of diversity (see, e.g. Yang and Konrad 2011). Specifically, they cite that, a review of the literature on both explored and unexplored research topics in diversity cites "external legitimacy, social responsibility, social performance, and the impact on society as all consequences of diversity" that have yet to be explored in the literature. Second, the findings in this study also contribute to the literature on diversity and regional performance for different sized firms. While several studies have examined how diversity affects organizational performance within the region (Rodríguez-Pose and Hardy 2015; Ager and Bruckner 2013; Cheng and Li 2012; Audretsch et al 2010; Ottaviano and Peri 2006), we extend this literature by considering how a firm's size moderates the relationship between regional ethnic diversity and organizational performance. Thus, our study fills these holes in the literature by explaining how diversity leads to more business venturing, especially for small businesses.

2. THEORY AND HYPOTHESES

Although we can discuss diversity in many different realms, when we say diversity we refer to *ethnic diversity*, which includes aspects of both race and ethnicity. It is important to mention that, while we recognize other forms of diversity exist e.g., gender and economic diversity, we emphasize ethnic diversity in this manuscript. We do this because there is considerably less variation in gender diversity at the county level. In fact, most communities will be distributed at a rate of 50% men and 50% women.

Topics on gender diversity are more useful when the firm-level is the unit of analysis. Studies on diversity are especially important today because racial polarization is at an all-time high in the United States (NBC 2016b). We now begin to describe our model.

We posit that diversity will exert an influence on the overall level of entrepreneurial activity within the regional economy, especially as it relates to small businesses and SMEs. Our logic follows two rationales. Our first argument is that small businesses are in better positions to benefit from the diversity that demands more variety in the goods and services that producers provide to the market. Our second argument is that larger firms might be less willing or able to capture the diverse preferences in the regional market. Lastly, we expand upon the Knowledge Spillover Theory of Entrepreneurship (KSTE) to examine how diversity specifically affects small business entrepreneurship. The KSTE predicts that when the larger incumbent firms are less able to exploit new knowledge flows, small start-ups are better able to exploit the stock of new knowledge (Acs et al. 2009). We now proceed to our first argument pertaining to the ability of small businesses to respond and capture diversity.

2.1 Diversity and small business venturing

To see how ethnic diversity affects business venturing, consider the following thought experiment. Suppose, for simplicity, there is only one firm in the market (a monopolist), and it serves only one type of customer (call it customer A). This simple model would suggest that, if customer A purchases from the monopolist producer, he or she derives some satisfaction from the good or service that the monopolist provides. Now suppose that there is another customer (call this customer B). The monopolist continues to supply its product to the market, but now it must serve both customers. In the event that both customers A and B have similar preferences, the monopolist will have no problem serving the market. However, suppose that B's preferences are different from A. Under this scenario, the monopolist must also provide a different good or service to B, if it wants to complete a transaction with B. If it does not serve B, then in a competitive market, a new organization will enter the market to capture value from B. After all, this is the idea of entrepreneurial discovery (Venkataraman, 1997; Shane and Venkataraman, 2000; Eckhardt and Shane,

2003; Murphy and Marvel, 2007) where entrepreneurs must be alert to new opportunities (Kirzner 1978; Kirzner 1997; McMullen and Shepherd 2006; Alvarez, Barney, and Anderson 2013). As we explain below, there is reason to believe that small businesses are in better positions to serve diverse regions.

In a study of emerging markets, Bhattacharya and Michael (2008) argue that local firms are in better positions to serve the local region, unlike the large multinational corporations, "Unlike global companies, local leaders are not constrained by existing products or by preconceived notions about customer needs. They customize products and services to meet different consumer requirements, and they initially go after economies of scope." Our explanation of the different ways large and small businesses attempt to capture local markets is structured along the same lines. Like emerging markets, local small businesses are better positioned to offer customizable goods and services at affordable prices (Bhattacharya and Michael 2008). We expect that local businesses will be more in tune with local culture and customs. In fact, related research argues that entrepreneurs are better able to use their social capital for commercial purposes when culture is an important component of their upbringing (Light and Dana 2013) and that culture plays a large role in assessing opportunities for commercial entrepreneurship (Dana 1995). This suggests that culture is a key component of the business enterprise.

2.2 Diversity benefits small businesses more than large businesses

Organizations, like individuals, are affected by preferences for diversity. To see this, we begin by examining the response of incumbent organizations to changes in diversity. Diversity signifies new goods and services from a variety of ethnic backgrounds. Incumbent organizations desire to capture these new preferences, but they may not have the organizational capabilities to permit this capture. Incumbent organizations either can expand their organization's duties to capture these diverse preferences or choose to ignore these preferences, which allows another organization to serve these preferences. An incumbent organization will opt to avoid expansion if these preferences move the firm's strategy away from its core competencies (Prahalad and Hamel 1990; 2006) and there are no economies of scope to be captured in this new market (Teece 1980; Panzar and Willig 1981). Furthermore, this heterogeneity of preferences increases

the demand for culture-specific goods and services, i.e. those goods and services that are unique to one culture but may be novel to another. Because it is difficult to capture these heterogeneous preferences within one firm's organizational boundaries, ethnic diversity may facilitate the expansion of new firm-organizations designed to capture these new market segments. Therefore, ethnic diversity is expected to be associated with a larger number of market segments, where new organizations may arise in order to serve the diverse preferences. While we describe the different capabilities of different sized firms to capture local preferences in our study of U.S. regions, there is a relevant analog in emerging markets.

Ethnic diversity increases the array of tastes and preferences of consumers. As a result, producers must respond by serving this diversity. If not, they risk losing this market segment to new entrants. Thus, while we have argued that diversity of preferences increases the diversity of market segments, it is still plausible that the incumbents may respond by capturing this diversity and expanding operations. However, we argue that this will often not be the case, and we elaborate on these conditions below.

Often, incumbents may neglect a new market segment purposely, because serving this variety may be outside of its normal scope of operations. Hamilton et al. (2008) find that immigrant entrepreneurs are more likely to serve others whom originate from a similar culture and background—not due to discrimination but due to superior knowledge of that customer base. “They operate in an alien culture but survive by attracting for the most part customers for whom the UK culture is also alien” (p. 96). Moreover, this new variety may detract from the organization's core competencies, since organizations will want to primarily emphasize its competitive advantages over all other activities (Prahalad and Hamel 1990, 2006; Coombs 1996). If the new market segments are related in any way, then it might be a profitable decision for the firm to expand its operations into the new segment to capture this value. In economics, this is known as economies of scope, which occurs when the costs of producing two products jointly is cheaper than producing them separately (Teece 1980; Panzar and Willig 1981). However, we expect diversity to increase variety, and much of this will not fall under economies of scope. When the costs of producing two products jointly is more expensive than producing them separately, organizations will not want to expand operations into the new market segments.

Another consideration is that non-whites are often locked out of the labor market. In response, they sometimes start a business out of necessity. Many minority groups receive less education, training, and have less overall upwards mobility, which ultimately stems from a lack of opportunity (Fairlie and Robb 2007). Given these labor market barriers, non-whites might be more inclined to start a business. In fact, studies suggest that African Americans have a much greater desire to become a business owner when compared to other races and ethnicities (Koellinger and Minniti 2006). If non-whites typically have less upwards mobility, greater ethnic diversity could be associated with more small business venturing (Portes and Zhou 1992).

2.3 Knowledge Spillover Theory of Entrepreneurship (KSTE), Diversity, and SMEs

Several studies in the extant literature examine the value of a region's diversity for entrepreneurship. Audretsch et al (2010) study Germany, Cheng and Li (2012) study the United States, and Rodríguez-Pose and Hardy (2015) study the United Kingdom. These studies begin with the KSTE framework (Audretsch 1995a; Audretsch and Lehmann 2005; Acs et al. 2009) and augment urban economic diversity to create a more generalized KSTE model. However, there are several reasons to believe that ethnic diversity might allow SMEs to benefit more from these knowledge spillovers.

According to predictions by the KSTE, "The more efficiently incumbents exploit knowledge flows, the smaller the effect of new knowledge on entrepreneurship" (Acs et al. 2009, p. 17), which also predicts that when the larger incumbent firms are less able to exploit new knowledge flows, small start-ups are better able to exploit the stock of new knowledge. This is supported by evidence that high growth industries are comprised of high degrees of innovation—particularly when small firms engage in most of the innovation (Audretsch 1995b). Furthermore, because diversity has been shown to facilitate innovation for firms that possess open and diverse cultures (Østergaard, Timmermans, and Kristinsson 2011) and because large firms are less willing or able to act on local customs (Bhattacharya and Michael 2008), we argue that small businesses are in the best position to benefit from new knowledge spillovers.

Furthermore, small organizations may better serve the local preferences in a community than a larger franchise or national corporation. Hayek (1945) explained how idiosyncratic information held by locals is often not known to the broader population. Following from this, ethnic diversity should be easier to capture by small businesses that are familiar with the region. Larger businesses, on the other hand, will have a more difficult time understanding ethnic nuances in specific regions. Suppose, however, that large businesses can efficiently adjust to serve local cultures. Large businesses might still choose not to offer products specific to the local region because these offerings might lead to diseconomies of scale or scope (Prahalad and Hamel 1990; 2006). Therefore, we expect that larger organizations will be less attentive to the demands of the local community. Conversely, small businesses, many of which often support the notion of 'buying local', consider the local community their customer base[2]. For these reasons, we propose our hypothesis:

Hypothesis 1: *The positive association of ethnic diversity and business venturing is stronger for small and small-to-medium size businesses (SMEs) and decreases with firm size.*

3. DATA AND METHODS

3.1 Dependent variables – number of business establishments

In our study, we examine the effect of ethnic diversity on the number of firm establishments. *Establishments* is our dependent variable. It is measured as the number of firm-establishments with paid employees, and it is provided by the U.S. County Business Patterns database (CBP)[3]. These data cover 3,143 counties for the years 2003-2009, which yields 22,001 observations. However, because we include several control variables, our sample size decreases to slightly more than 18,000 observations. We examine the relationship between diversity and the total number of firm-establishments at the county level and then proceed to distinguish between different size firm-establishments based on employment.

Our dependent variable is measured as the number of firm-establishments. For these reasons, we estimate the relationship between diversity and organization activity using a log-linear regression model with county and year fixed effects. These models follow the form,

$$ln\, Establishments_{it} = \alpha + \beta_{it} Diversity_{it} + \delta_{it} X_{it} + \lambda_t Year_t + \rho_i County_i + \varepsilon_{it} \qquad (1)$$

where $Establishments_{it}$ is the outcome variable measured as the logarithm of the number of organization establishments in a given county *i* and year *t*; Diversity is a vector of our two diversity measures; X_{it} is a vector of control variables; β_{it} is the estimated coefficient for our diversity measures for each variable *i* in a given time period *t*; δ_{it} is the estimated coefficient for each control variable *i* in a given time period *t*. We also include county year and fixed effects where λ_t is the parameter for the year fixed effects and ρ_t is the parameter for the county fixed effects. The log-linear regression model is equivalent to a semi-log elasticity, and to avoid losing observations (i.e. log(0)=undefined), we take ln(establishments + 1). Therefore, β and δ denote the effect of a one-unit change in the predictor as a percentage change in our outcome variable, *establishments*.[4] Now that our outcome variable, firm establishments, has been introduced, we turn our attention to our measures of the independent variable of interest, ethnic diversity.

3.2 Independent variables – measures of ethnic diversity

We employ two measures of ethnic diversity in this study. *Shannon* refers to the Shannon index of diversity which takes the form, $S = -\sum_{i=1}^{N} p_i \ln p_i$, where p_i is the proportion of individuals belonging to the *i*th race or ethnicity. This includes the following categories: white, black, Asian, Native American, Hispanic, and other. A higher value of S denotes more diversity, or more generally, it is the "probability that randomly paired members of a population will be different on a specified characteristic" (Lieberson, 1969). Alternatively, we may also measure diversity using Simpson's measure. *Simpson* is an index of diversity which takes the form, $\lambda = \sum_{i=1}^{N} {p_{ij}}^2$, where p_i retains its definition as the proportion of individuals belonging to the *i*th race or ethnicity in county *j* (Simpson, 1949). However, because higher values in the Simpson index indicate less diversity and higher concentrations of one race or ethnicity, we transform this

measure as 1-λ thereby retaining a consistent interpretation with *Shannon*. For the remainder of the study, any time we refer to *Simpson*, we refer to the transformed measure, 1-λ, which is identical to the popular measure of fractionalization[5]. Thus, higher values in both indices indicate more diversity. Both measures were calculated using demographic data taken from the U.S. Census Bureau's USA Counties database.[6]

3.3 Controls

We include several control variables since other factors may exert an influence on the number of firm establishments, our outcome measure of interest. *Population* is included as an overall measure of the population in the county. Intuitively, more populated counties will have a larger total number of businesses. To some extent, our model controls for this factor by incorporating county fixed effects into our model. This allows us to examine the variation in diversity within each county, rather than between counties. Nevertheless, we include this measure in order to avoid omitted variable bias. *Density* is a measure of population density, which may help explain additional variation in the number of businesses. Rather than measuring overall population, it captures the population per square mile, which is a better indicator of urban regions. In addition, diversity may be highly correlated with geographically dense urban regions. Therefore, it is important to include density as a control variable. These population measures are also taken from the U.S. Census Bureau's USA Counties database. In addition to demographic information, it is also important to include for economic measures at the county-level.

Unemployment is the unemployment rate at the county. We gather this statistic from the Bureau of Labor Statistics in the Local Area Unemployment Statistics program. Unemployment refers to the number of individuals 16 to 64 who do not have a job but are currently looking. This statistic is then divided by the labor force participation rate and multiplied by 100. Unemployment is expected to be highly but negatively correlated with business activity. These cyclical macro-economic shocks hurt business activity during economic downturns and help businesses to grow during economic booms. Finally, in addition to these demographic and economic controls, we also include measures of human and social capital.

Bachelors refers to the percentage of the population with a minimum of a bachelor's degree at the university level. This measure is taken from the U.S. Census Bureau, and it is included in our study since research illustrates that human capital is associated with better overall business activity (Cooper, Gimeno-Gascon, and Woo 1994; Acs and Armington 2004; Rauch, Frese, and Utsch 2005; Coleman 2007; Unger et al. 2011). *Social Capital* denotes the county-level variation in social capital. This variable is taken from the county-level dataset prepared by Rupasingha, Goetz, and Freshwater (2006). It includes measures of trust, norms, reciprocity, and networking in the dataset, but we use their overall measure of social capital, which is found by undertaking a principal-component analysis. Like human capital, social capital is also included because of its prominence in the business venturing literature (Chung and Gibbons 1997; Pennings et al. 1998; Adler and Kwon 2002; Batjargal 2003; Bosma et al 2004).

The summary statistics and correlation matrix are presented in Table 1. According to the table, diversity is positively correlated with the number of firm organizations. While the correlation is higher using the Shannon index of diversity (0.34), it is also high when using our alternative, the Simpson measure of diversity (0.23). In addition, these measures are highly correlated (0.88), which provides confidence that the findings of each variable serve as robustness checks for each other. We also note the variation in the firm size distribution. In the average U.S. county, there are roughly 1,800 organizations with fewer than 10 employees. In contrast, there is only an average of 7 organizations with more than 500 employees. Although the correlations between the two diversity measures and the controls are correlated, there should be little concern of multicollinearity. Finally, we draw attention to the size of the standard deviation of *Shannon* (0.05) and *Simpson* (0.03). The size of these standard deviations will be important in the results section where we interpret the magnitude of our findings. We will return to this note shortly.

INSERT TABLE 1 ABOUT HERE

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4. RESULTS

4.1 Examination of ethnic diversity and establishments

The results from our empirical analysis are reported in Table 2. This table reports six specifications of equation (1). We begin with our first diversity variable of interest, *Shannon*, and build on this base model by augmenting additional controls. These results are reported in Models 1-3. We then repeat this process with our alternative diversity measure, *Simpson*. The estimations from the *Simpson* measure are reported in Models 4-6. Overall, the results in all models suggest that ethnic diversity is positively associated with a greater number of firm establishments within the community.

INSERT TABLE 2 ABOUT HERE

Our findings suggest a positive and statistically significant effect of diversity on entrepreneurial activity, as measured by the number of firm-establishments, in five of the six models ($p<0.05$). The only exception is Model 4, which reports the univariate result of the relationship between *Simpson* and the number of firms. While this result is not statistically significant, it just misses our 5% criterion ($p=0.07$). Even so, adding additional control variables increases the statistical significance of the *Simpson* measure, and in contrast, the *Shannon* measure of diversity is always statistically significant. Therefore, we conclude that diversity is associated with more business venturing. Although we uncover a statistically significant relationship between ethnic diversity and the number of firm establishments, it is equally important to discuss the magnitude of our findings.

Coefficients are interpreted as semi-elasticities (Cameron and Trivedi 1998, 2010), i.e., a 1 unit change in diversity is associated with a percentage change in establishments. However, note that a one unit change in diversity is an enormous effect. For instance, the effect of a one unit increase in the *Shannon* measure results in a 207.3% increase in the number of firm establishments (Model 1). Referencing the summary statistics helps to explain this seemingly large effect; a one unit change in diversity is roughly a 20-fold increase in its standard deviation (0.05). Therefore, when interpreting our results, it is more useful

to describe the effect of a normalized, one standard deviation increase, rather than a one unit increase in diversity. Thus, our findings indicate that a one standard deviation increase in diversity, as measured by the Shannon index of diversity, is associated with a 9.42% increase in the number of firm-establishments. Likewise, a one standard deviation increase in the Simpson index of diversity is associated with a 4.91% increase in the number of firm-establishments.[7]

4.2 Estimations of diversity and entrepreneurial activity by establishment size

To provide further insight, and since we theorize that ethnic diversity may primarily affect small organizations, we distinguish between four classifications of organizations based on firm size. Our results from this analysis are reported in Table 3, and our findings suggest a similar conclusion with one exception; we find that ethnic diversity affects the development of firms within the community, but this effect only occurs within small (<10 employees) and small-to-medium sized enterprises (10 ≤ employees < 50). We find, in contrast, that more ethnic diversity is not associated with the number of firm establishments when examining medium sized establishments (≥100 employees) while ethnic diversity is associated with a decrease in the number of large firm-establishments (≥500 employees).

INSERT TABLE 3 ABOUT HERE

In addition, the results in Table 3 indicate that diversity's effect on the number of firm-establishments decreases as firm size increases. The coefficient for *Shannon* is 2.052 in Model 7, and it decreases to 1.336 in Model 9. Thus, a one standard deviation increase in diversity is associated with a 10.3% increase in the number of firm-establishments with fewer than 10 employees and a 7% increase in the number of firm-establishments having between 10 and 50 employees. The results for the Simpson measure of diversity are comparable.

It is important to note that these effects capture diversity in ethnicity and not just the presence of minority or non-white populations. In order to test the effect of non-white populations on firm

establishments within the region, we also included a measure of the non-white population alongside our ethnic diversity measures and substituted the measures (not reported but available upon request). These results indicate that the non-white population could be considered a determinant of business venturing for small firms within the region, but the results seem to suggest that diversity is driving the effect, and not just the non-white populations.

While the results in Table 3 indicate that ethnic diversity has a larger effect on the number of small sized establishments than the number of medium or large sized establishments, we need to more formally compare the coefficients between models to test for statistical significance. Table 4 reports the findings from this statistical test using the following Z-statistic:

$$Z=\frac{\beta_1-\beta_2}{\sqrt{SE\beta_1^2+SE\beta_2^2}}$$

where β_1 is the coefficient from the first model, β_2 is the coefficient from the second model, SE$\beta_1$is the standard error associated with β_1, and $SE\beta_2$ is the standard error associated with β_2. This formula is provided by Clogg, Petkova, and Haritou (1995). Using this test in addition to the results in Table 3, we observe a positive association between ethnic diversity and the number of small firm-establishments (with fewer than 10 employees), and we observe a negative relationship between ethnic diversity and the number of large firm-establishments (with more than 500 employees), and this difference is statistically significant. However, we do not have enough evidence to suggest that ethnic diversity has a larger effect on the number of small-firm establishments (with fewer than 10 employees) than on the number of small-to-medium sized firm establishments (with between 10 and 50 employees). The difference is not statistically significant.

INSERT TABLE 4 ABOUT HERE

Our results also support *ex-ante* priors for most control variables. For example, the coefficient on the unemployment rate is negative and statistically significant in all models, indicating that increases in

unemployment are associated with less business venturing. This is unsurprising since business activity is highly cyclical. Likewise, increases in population are associated with more establishments. There is some evidence that possessing a bachelor's degree, our measure of human capital, is associated with more establishments, but this relationship is quite fragile.

4.3 Robustness tests for entry

Our results indicate that ethnic diversity affects the number of firm establishments more for small firms than for large firms, but it is possible that our measures do not adequately measure new business formation or entry. Because our dependent variable measures the number of firm establishments in a region, and we use the "within-estimator" (fixed effects) in a panel of counties and years, our results can be interpreted as more ethnic diversity is associated with more firm establishments within that same region. While we believe this is an important finding, especially given that this relationship depends on firm size, we recognize that this measure does not explicitly measure new firm entry.

To better ensure that ethnic diversity does affect firm entry—and not just firm size distributions—we use an alternative dependent variable from the Kauffman Index of Entrepreneurial Activity (KIEA)[8] that measures start-up density, which is measured as the number of new employer businesses normalized by total business population. We find that both measures of ethnic diversity are positively related to start-up density, which is consistent with our previous findings. These results are presented in Table 5 below.

INSERT TABLE 5 ABOUT HERE

4.4 Robustness tests for Endogeneity

It is also important to examine the robustness of these relationships. For example, while we argue that ethnic diversity might affect the number of firm establishments, it might also be possible that communities with more business venturing naturally attract more ethnic diversity (Rodríguez-Pose and Von Berlepsch 2014). Thus, the direction of causation might run in the opposite direction. To move beyond correlation and control for this source of endogeneity, we employ the use of an instrumental variable (IV)

in a two-stage least squares regression model (2SLS) with county and year fixed effects. A plausible instrument should not affect the dependent variable except through the endogenous variables, and not be correlated with omitted variables in the model (Jha and Cox 2015, p.260). Therefore, we propose the use of a shift-share analysis of the diversity measures as an IV in our 2SLS analysis.

INSERT TABLES 6 and 7 ABOUT HERE

We propose two instruments—one for *Shannon* and one for *Simpson*—that take advantage of a shift-share analysis. Following similar work by Jha and Cox (2015), each instrument is created to take advantage of the neighboring region's level of diversity, rather than the county-level diversity. For a given county, we take the average level of diversity within the state, and then we subtract the county's level of diversity from this state average. We then repeated this step for every year in the sample. Thus, these instruments consist of the average level of diversity for all counties in the state minus the observation's county. This variable is highly correlated with the county's level of diversity and should only affect business venturing through our endogenous ethnic diversity measure.

In the first stage of the regression analysis, we examine the relationship between this instrument and diversity. For our instrument to be valid at this stage, its coefficient should be statistically significant. Moreover, the most well-known rule of thumb is that the first stage F-statistic should exceed 10 (Stock and Saigler, 1997). In the second stage, our main variable of interest, diversity, should be highly correlated with the number of firm establishments. Not only would this determine that our instrument is valid, but it would also provide some evidence in favor of a causal relationship. In other words, we provide evidence that

ethnic diversity might lead to an increase in the number of small firm establishments within the region. Our first stage and second stage results are presented in Tables 6 and 7.

The results from this analysis are presented in Tables 6 and 7, where Table 6 reports the second stage of the 2SLS model and Table 7 reports the first stage. Our results are robust to the usage of these instruments and continue to suggest that more ethnic diversity leads to a larger number of small firm establishments within the region for small businesses with fewer than 10 employees and for and small-to-medium enterprises with between 10 and 50 employees. The results in the first stage in Table 7 indicate that this shift-share analysis provides useful instruments with a statistically significant first stage F-statistic and coefficient in the first stage of the 2SLS analysis.

Additionally, our results suggest that the relationship is quantitatively important. We find that a one standard deviation increase in the Simpson measure of diversity (0.02)—using the shift-share instrument—leads to an 8% increase in the number of small businesses (<10 employees) and a 6% increase in the number of small-to-medium sized businesses (10 ≤ employees < 50). We find a similar sized effect when using the Shannon measure. In contrast, however, we find that ethnic diversity has a negative effect on the number of large firm establishments within the region.

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5. DISCUSSION AND CONCLUDING REMARKS

5.1 Summary

Our study proposed that greater diversity might lead to more business venturing for small and small-to-medium sized firms (SMEs) rather than for large firms. We theorize small businesses are in better positions to benefit from the diversity due to a better understanding of local knowledge and because larger firms might refrain from diversifying their portfolio of goods and services (Bhattacharya and Michael 2008). We also expand upon the Knowledge Spillover Theory of Entrepreneurship (KSTE) to examine how

diversity specifically affects small business entrepreneurship. The KSTE predicts that when the larger incumbent firms are less able to exploit new knowledge flows, small start-ups are better able to exploit the stock of new knowledge (Acs et al. 2009). For these reasons, we hypothesize that if regional diversity affects business venturing, it is more likely to affect small and small-to-medium sized enterprises (SMEs).

We empirically tested this hypothesis, and found support for this relationship. Using two measures of ethnic diversity, and controlling for other important predictors as well as concerns about endogeneity, we found that more ethnic diversity is associated with a higher number of small organizations and SMEs. However, we found that ethnic diversity has no effect or even a negative effect on the number of large firm establishments. We modeled our relationship using a log-linear regression model, and we found that our results are robust to the inclusion of county and year fixed effects, which allowed us to compare outcomes over time but within each community. More specifically, the findings revealed that ethnic diversity affects the number of firm establishments, but these effects are more pronounced with small firms (<10 employees) and small-to-medium enterprises (10 to 50 employees). In contrast, we found no effect of ethnic diversity on the number of medium-sized (≥100 employees) establishments and a negative effect on the number of large firm establishments (≥500 employees). Therefore, our conclusion is that, ethnic diversity affects the number of establishments but primarily through the development of small businesses and SMEs. Finally, we also considered the possibility that our relationship might suffer from reverse causality. To control for this possibility, we used several instruments in an instrumental variable analysis (two-stage least squares) to examine the direction of causation that runs from ethnic diversity to the number of firm establishments. We use the neighboring region's ethnic diversity (minus the county's level of ethnic diversity) as instrumental variables in the two-stage least squares regression. Our findings from this analysis suggest that more ethnic diversity might cause communities to increase the number of small firm establishments and possibly decrease the number of large firm establishments (≥500 employees). Our results indicate that a one standard deviation increase in diversity is associated with a six to eight percent increase in the number of small firm establishments and SMEs.

5.2 Implications

Our findings may be important for public policy considerations. Consider, for example, the role that immigration may play in fostering diversity (Alesina and La Ferrera 2005). Following our logic and the evidence presented in this study, immigration may also lead to more business activity, if immigrants relocate in a community that is dissimilar to their own background. This is because immigrants are from other countries and usually other cultures. An inflow of immigrants from outside country borders will often lead to a greater diversity of ideas and culture, though this often depends on the assimilation of the host country's customs and traditions (Hamilton et al 2008). In the case that immigrants choose to locate in a clustered geographic region, e.g. China town in large U.S. cities, we would not expect immigration to lead to diversity. In addition, important research by Dana (1995) and Light and Dana (2013) conclude that the underlying culture is immensely important to commercialize entrepreneurship.

Whether immigration affects diversity, and business activity in the process, is outside the purview of our study, but we offer our findings and allow for policy makers to debate the relative costs and benefits of any public policy decision. Certainly, if diversity affects the regional economy, and immigration affects diversity (Acs et al., 2016), then policy makers may want to discuss how immigration affects business venturing.

Despite these policy implications, readers should be aware that many small businesses—although not all—are less concerned with innovation and job creation than larger more established firms (Shane, 2008). Small business owners who are more interested in entrepreneurship for its lifestyle benefits like autonomy and flexibility (Shane, 2008) are known as "lifestyle" entrepreneurs (Sobel, 2008). This is important because it suggests that our finding that ethnic diversity is associated with a larger number of small firm establishments might not translate to increased economic growth. In sum, our findings indicate that ethnic diversity is beneficial for increasing regional entrepreneurship but not necessarily economic growth.

5.3 Limitations and future research directions

Our findings indicate that ethnic diversity is associated with more small business venturing, but we do not examine how ethnic diversity affects the strategic orientation of the firm. Thus, one extension of this study is to examine how ethnic diversity affects the strategic orientation of the firm by analyzing, for example, how a diverse community informs sustainable competitive advantages (Barney, 1991). Building upon prior research on diversity and organizational performance (Becker, 1957; Cox, 1993; Richard, 2000; Richard et al., 2003; Richard et al., 2004; Herring, 2009; Ely, Padavic, and Thomas, 2012), future research could take a community approach to ethnic diversity and organizational outcomes, which might illuminate the role of ethnic diversity in the business community.

In addition, the strategic orientation likely requires a more detailed understanding of strategic decision making by the firm. Ethnic diversity may affect business opportunities for all, but it might affect incumbent and new entrants in opposing manners. This may also be an area of interest to direct future research, but it is merely one application of our results. Alternatively, and rather than examining applications of our research, interested scholars may wish to examine how ethnic diversity affects other key indicators such as firm exit or firm survival.

Additionally, our results on the number of firm establishments cannot differentiate between business exits and new firm start-ups. To take just two examples, suppose that we observe an increase of 100 firm establishments over a one year period. This could arise from either 100 new firms, but another possibility is that there are 200 new firms and 100 incumbent exits. To gain more insight, we examined firm entry using new start-up density from the Kauffman Index of Entrepreneurial Activity (KIEA). Using these data, our results indicate that ethnic diversity does affect new firm entry. However, we have not examined firm exit rates. Future research might wish to examine how ethnic diversity affects firm exits using data like the Kauffman Firm Survey.

We have purposely chosen to emphasize ethnic diversity as one source of diversity. However, some might argue that diversity should be measured in other ways, e.g. gender and economic diversity. While income might be a good avenue for future research, gender diversity has less promise as a research stream

at the regional level. Most communities have roughly 50% men and 50% women and because there is not much variation, we do not expect gender diversity to play an important role in business venturing—at least at the community level. This topic would be better suited for firm-level analysis, which offers the opportunity for researchers interested in this topic.

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Table 1 - Summary Statistics and Correlation Matrix

Variable[a]	Mean	Standard Deviation		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
Outcome																	
Establishments	2403	7925	**[1]**	1													
Establishments (<10)	1803	5948	**[2]**	1.00*	1												
Establishments (10≤x<50)	525	1694	**[3]**	1.00*	0.99*	1											
Establishments (≥100)	58	219	**[4]**	0.98*	0.97*	0.99*	1										
Establishments (≥500)	7	27	**[5]**	0.94*	0.93*	0.94*	0.97*	1									
Diversity																	
Simpson	0.87	0.03	**[6]**	0.22*	0.21*	0.23*	0.23*	0.22*	1								
Shannon	0.07	0.05	**[7]**	0.35*	0.34*	0.36*	0.34*	0.33*	0.86*	1							
Controls																	
Population[b]	98	311	**[8]**	0.97*	0.97*	0.97*	0.95*	0.90*	0.22*	0.36*	1						
Density	323	4859	**[9]**	0.15*	0.15*	0.13*	0.14*	0.18*	0.07*	0.11*	0.15*	1					
Unemployment	6	3	**[10]**	-0.03*	-0.03*	-0.03*	-0.03*	-0.03*	0.10*	0.08*	-0.01	0.00	1				
Bachelors (%)	18	8	**[11]**	0.37*	0.37*	0.38*	0.36*	0.33*	0.12*	0.24*	0.33*	0.13*	-0.28*	1			
Social Capital	-0.08	1.26	**[12]**	-0.11*	-0.11*	-0.11*	-0.09*	-0.09*	-0.30*	-0.42*	-0.14*	-0.00	-0.26*	0.20*	1		
Instrument																	
Regional diversity (Simpson)	0.00	0.02	**[13]**	0.13*	0.13*	0.15*	0.15*	0.15*	0.75*	0.61*	0.23*	0.07*	0.00	0.17*	-0.07*	-0.07*	1
Regional diversity (Shannon)	0.00	0.03	**[14]**	0.20*	0.19*	0.20*	0.20*	0.20*	0.63*	0.72*	0.36*	0.12*	0.00	0.28*	-0.18*	-0.19*	0.84* 1

Note - a = 18,028 observations. b = denoted in 1,000s. *p<0.05.

Table 2 - Diversity and Entrepreneurship

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Diversity												
Shannon	2.073***	(0.00)	1.845***	(0.00)	1.849***	(0.00)						
Simpson							1.471^{+}	(0.07)	1.836*	(0.02)	1.604*	(0.05)
Controls												
Population[a]			0.0002*	(0.01)	0.0002*	(0.01)			0.0002**	(0.01)	0.0002**	(0.00)
Density[a]			-0.001*	(0.02)	-0.001*	(0.02)			-0.001*	(0.02)	-0.001*	(0.02)
					-0.006***	(0.00)					-0.006***	(0.00)
Unemployment												
Bachelors					0.005*	(0.03)					0.007**	(0.01)
Social capital					0.003	(0.56)					0.001	(0.89)
Wald χ^2	845***	(0.00)	803***	(0.00)	858***	(0.00)	851***	(0.00)	808***	(0.00)	868***	(0.00)
N	18028		18028		18028		18028		18028		18028	

Note - The dependent variable is the count of businesses with paid employees. Modeled using Poisson with county and year fixed effects for 3,143 counties over 7 years. Standard errors are robust clustered at the county-level. Coefficients are reported as semi-elasticities. a = denoted in 1,000's. p-values are in parentheses (two-tailed test.) + p<0.10 * p<0.05 ** p<0.01 *** p<0.001.

Table 3 - Diversity and Entrepreneurship, results by firm size.

	Number of Organizations (x < 10)		Number of Organizations (10 ≤ x < 50)		Number of Organizations (x ≥ 100)		Number of Organizations (x ≥ 500)	
Variables	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**	**Model 13**	**Model 14**
Diversity								
Shannon	2.185***		0.915		-0.189		-5.122***	
	(0.00)		(0.13)		(0.86)		(0.00)	
Simpson		2.258***		0.182		-3.258+		-7.688***
		(0.00)		(0.88)		(0.08)		(0.00)
Population	0.0005***	0.0005***	0.0004*	0.0004**	0.0002+	0.0003+	-0.0001	-0.0003
	(0.00)	(0.00)	(0.01)	(0.01)	(0.07)	(0.06)	(0.38)	(0.11)
density	-0.001***	-0.001***	-0.001***	-0.001***	-0.001**	-0.001**	-0.0003	-0.0001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.46)	(0.89)
Unemployment	-0.003***	-0.003***	-0.012***	-0.012***	-0.025***	-0.025***	-0.028***	-0.027***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Bachelors	0.008***	0.008***	0.003	0.004	0.003	0.004	-0.014*	-0.013*
	(0.00)	(0.00)	(0.33)	(0.24)	(0.56)	(0.47)	(0.01)	(0.01)
Social capital	0.014***	0.011**	-0.016*	-0.015*	-0.002	-0.007	0.024*	0.024*
	(0.00)	(0.00)	(0.02)	(0.04)	(0.90)	(0.58)	(0.04)	(0.03)
Constant	5.939***	4.118***	4.827***	4.709***	2.653***	5.441***	1.811***	8.102***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	18028	18136	18028	18136	18028	18136	18028	18136

Note - The dependent variable is the count of businesses with paid employees (x) in four categories based on employee-sized establishments. The numbers in parentheses indicate the number of firms with the number of employees falling within this range. Modeled using log-linear regression with county and year fixed effects for 3,143 counties over 7 years. Standard errors are robust-clustered at the county-level. Coefficients are reported as semi-elasticities. a= denoted in 1,000's. p-values are in parentheses (two-tailed test) +p<0.10 *p<0.05 **p<0.01 *** p<0.001

Table 4. Tests of statistical difference between models, based on firm size

	Shannon Measure of Diversity				
	Model 7 vs 9	Model 7 vs 11	Model 7 vs 13	Model 9 vs 11	Model 9 vs 13
Z-statistic	1.767	2.102	5.229	0.909	4.115
P-value	(0.077)	(0.036)	(0.000)	(0.364)	(0.000)
	Simpson Measure of Diversity				
	Model 8 vs 10	Model 8 vs 12	Model 8 vs 14	Model 10 vs 12	Model 10 vs 14
Z-statistic	1.487	2.795	4.950	1.538	3.470
P-value	(0.137)	(0.005)	(0.000)	(0.124)	(0.000)

Note. Z statistic = $\frac{\beta_1 - \beta_2}{\sqrt{SE\beta_1^2 + SE\beta_2^2}}$

Table 5. Ethnic diversity and start-up density using the Kauffman Index of Entrepreneurial Activity (KEIA).

	Start-up density	
	(Model 15)	(Model 16)
Shannon	135.8**	
	(0.008)	
Simpson		195.5^{+}
		(0.052)
Population	0.015*	0.018*
	(0.027)	(0.022)
Population density	-0.039**	-0.044**
	(0.009)	(0.006)
Unemployment	0.253***	0.271***
	(0.000)	(0.000)
Bachelors	2.920***	3.132***
	(0.000)	(0.000)
Social capital	2.104*	2.110*
	(0.024)	(0.021)
Constant	5.515	-159.3^{+}
	(0.300)	(0.061)
N	1962	1962

Note- Dependent variable is start-up density from the Kauffman Index of Entrepreneurial Activity at the MSA-level. Robust standard errors are included in all models and p-values are in parentheses.
* p<0.05
** p<0.01
*** p<0.001"

Table 6 – Instrumental Variable Analysis, 2003-2009

Variables	Number of Organizations (x<10) Model 17	Model 18	Number of Organizations (10 ≤ x < 50) Model 19	Model 20	Number of Organizations (x ≥ 100) Model 21	Model 22	Number of Organizations (x ≥ 500) Model 23	Model 24
Panel A: Second Stage								
Diversity								
Shannon	2.498***		1.135**		0.296		-4.362***	
	(0.28)		(0.42)		(0.74)		(0.90)	
Simpson		3.574***		-0.314		-2.150		-8.784***
		(0.52)		(1.00)		(1.54)		(1.81)
Controls								
Population[a]	0.0005***	0.0005***	0.0004**	0.0004**	0.0002+	0.0003*	-0.0002	-0.0003+
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Density[a]	-0.001***	-0.001***	-0.001***	-0.001***	-0.001**	-0.001**	-0.0003	-0.0001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment	-0.003***	-0.003***	-0.012***	-0.012***	-0.025***	-0.025***	-0.028***	-0.027***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Bachelors	0.007***	0.007***	0.003	0.004+	0.003	0.003	-0.014***	-0.013***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Social capital	0.014***	0.012***	-0.016***	-0.016**	-0.001	-0.005	0.026**	0.023**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
N	18028	18136	18028	18136	18028	18136	18028	18136

Note - The dependent variable is the count of businesses with paid employees in four categories based on employee-sized establishments. The numbers in parentheses indicate the number of firms with the number of employees falling within this range. Modeled using a log-linear regression model with county and year fixed effects for 3,143 counties over 7 years. Standard errors are robust clustered at the county-level. Coefficients are reported as semi-elasticities. a= denoted in 1,000's. Standard errors are in parentheses (two-tailed test.) + p<0.10 * p<0.05 ** p<0.01 *** p<0.001.

Table 7 – First stage estimation results

Variables **Panel B: First Stage**	***DV = Shannon***	***DV = Simpson***
Instrument		
Shift Share	0.997***	0.767***
	(0.001)	(0.02)
Controls		
Population[a]	-0.000001	-0.00001***
	(0.000)	(0.000)
Density[a]	0.00001	0.00001***
	(0.000)	(0.000)
Unemployment	0.000004***	0.0001***
	(0.000)	(0.000)
Bachelors	0.0001***	0.0001***
	(0.000)	(0.000)
Social capital	-0.0002***	-0.001***
	(0.000)	(0.00)
First Stage F-Stat	6000***	1058***
	(0.00)	(0.00)
N	18028	18028

Note - The dependent variable in (1) is the Shannon index and in (2) is the Simpson index. Modeled using linear regression with county and year fixed effects for 3,143 counties over 7 years. Standard errors are robust-clustered at the county-level. a= denoted in 1,000's. Standard errors are in parentheses (two-tailed test) +p<0.10 *p<0.05 **p<0.01 *** p<0.001

Table 8. Tests of statistical difference between IV models, based on firm size

	Shannon Measure of Diversity				
	Model 17 vs 19	Model 17 vs 21	Model 17 vs 23	Model 19 vs 21	Model 19 vs 23
Z-statistic	2.700	2.783	7.278	0.986	5.535
P-value	(0.007)	(0.005)	(0.000)	(0.324)	(0.000)
	Simpson Measure of Diversity				
	Model 18 vs 20	Model 18 vs 22	Model 18 vs 24	Model 20 vs 22	Model 20 vs 24
Z-statistic	3.449	3.522	6.562	0.999	4.096
P-value	(0.001)	(0.000)	(0.000)	(0.317)	(0.000)

Note. Z statistic = $\frac{\beta_1-\beta_2}{\sqrt{SE\beta_1^2+SE\beta_2^2}}$

ENDNOTES

[1] In our study, business venturing is defined as the number of establishments at the regional-level. We use panel-data with county and year fixed effects to examine the relationship between ethnic diversity and the number of establishments at the regional-level while examining the number of establishments for different firm sizes.

[2] All of this is not to say that it is impossible for large corporations to serve local markets. For example, McDonald's is known to serve beer in South Korea and many European countries, offer teriyaki burgers and wasabi in several Asian countries, and many other different products around the world (TMD 2013; TMD 2015; NBC 2016a).

[3] The U.S. Census provides the county business patterns (CBP) database at: https://www.census.gov/programs-surveys/cbp.html

[4] It is important to clarify that we are not examining new firms only in the data. Within any given region, new firms enter and compete with the existing firms (incumbents). We are measuring the overall effect on business activity for a given county and given year.

[5] Note that 1-λ is identical to the commonly used measure of Fractionalization. For example, Alesina et al. (2003) provide the following formula: $\text{FRACT}_j = 1 - \sum_{i=1}^{n} S_{ij}^2$, where S_{ij} is the share of group i (i=1…N) in country j.

[6] The USA counties database is no longer maintained by the U.S. Census Bureau, but the U.S. Census maintains links to its source files.

[7] These two effects are found by multiplying the semi-elasticity from the regression by each measure's standard deviation. For *Shannon* this is found by multiplying the semi-elasticity (i.e., 188.4% increase in the number of establishments in Model 3) by the standard deviation (0.05). For *Simpson* this is found by multiplying the semi-elasticity (i.e. 163.6% increase in the number of establishments in Model 6) by the standard deviation (0.03).

[8] http://www.kauffman.org/kauffman-index/reporting/startup-activity