Geography, Creative Workforce and Access to Private Equity

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February, 2022

Abstract: This paper examines how being geographically close to a metropolitan area and/or a creative workforce affects companies' accessibility to private equity (PE) capital. Access to metro area amenities and creative workforce are two resources that are highly effective at improving a company's chances of survival and growth. We argue that these two resources are partial substitutes, and companies do not necessarily need to be located within a metro area to increase their access to private equity. Instead, they might benefit from locating in a non-metro region where the creative workforce is abundant, relatively cheaper and more accessible. Our results suggest that as the creative workforce increases in a particular region, the amount of PE capital received by companies in that region increases, and the marginal benefit of locating in a metro area decreases. This study contributes to our understanding of the optimal choice of geographic location to access the PE industry.

Introduction

How do urbanization and local creative culture affect the flow of private equity (PE) to a certain geographical area? If a company is located in a non-metropolitan area that has an artistic, creative, and open-minded workforce, would such a setting suffice to attract private equity investments, or is being located in a metropolitan area a must for companies to be seen and recognized? We endeavor to answer this question by exploring the effect of creative culture on the distribution of private equity in US counties and how creative culture interacts with metropolitan locations.

This topic is timely and is becoming important for discussion. First, metro areas are becoming increasingly expensive due to rising costs of land and labor in these regions. Second, in the post COVID era, the creative workforce shows a tendency to move out of metro areas. This new trend might create new opportunities for entrepreneurship to thrive in non-metro locations across the US. For example, as Silicon Valley and the San Francisco Bay Area in general becomes increasingly expensive for both companies and talented people, some argue that small businesses are spreading to outside metro areas, many of which are in the industrial heartland. The emergence of startup hubs outside of cities that are already well known for entrepreneurship even has a catch-phrase—the "rise of the rest." (Florida, 2018)

In this paper, we examine whether creative workforce locations that exist in non-metro areas (CSA[1] and rural areas[2]) can partially offset the negative impact of being away from metro

[1] CSA region is defined as a greater metropolitan area around the Mertropolitan Division Area (MD) region where the distance to the actual MD is within commute distance.
https://www2.census.gov/geo/maps/metroarea/us_wall/Mar2020/CSA_WallMap_Mar2020.pdf

[2] Rural is defined as counties outside CSA regions

area amenities. This research question is economically important because if there is a partial offset, high creative culture locations that are not particularly located within metro areas can be pivotal to attract private equity to those regions and help develop new business opportunities in these areas. Liberalizing private equity outside the metro areas is beneficial for the economy for a multitude of reasons. Private equity can help transform economically stagnant industrial towns that have creative workforce and create new business opportunities in new industries. In addition, there are many college towns across the nation that have highly educated and creative workforce and private equity can play a pivotal role in creating new entrepreneurial hubs in such non-metro regions.

Socially responsible investors and government agencies are also joining the movement to invest more private capital in non-metro areas. CalPERS, one of the largest pension funds in the nation has significantly increased its private equity investments in recent years and their private equity investment philosophy includes divesting a portion of PE investments away from well-known metro regions and more into less developed and rural regions to spur developments (CalPERS, 2019).

The PE capital industry, venture capital in particular, is known to thrive in certain geographic clusters rather than being dispersed across the US (Chen, 2010). The fact that PE firms provide extensive monitoring and supervising services through their periodic dialogue as well as their role on the board of directors (Timmons and Bygrave [1986], MacMillan, et al. [1989], Fried and Hisrich [1995]) along with financing makes geographical clustering an important factor in the PE industry. According to Pitchbook, as of 2014, within the last 4 years, out of 3,1040 counties in the US, only 435 (13.9%) is home to a county that received VC capital. This number is 1102 (35.1%) for Private Equity. This speaks to PE industries' maturity and its

wide -ranging industry focus compared to venture capital. For that reason, in this study we focus on private equity rather than only venture capital investments since private equity firms are more likely to invest in different industries (such as real estate and healthcare) across a broader range of counties outside the metro areas across the nation.

Even though PE industry is more likely to invest in non-metro locations compared to venture capital, it should not be a surprise to realize that the geographical clusters of PE capital in the US also happen to be large metropolitan areas. Metropolitan areas provide the PE industry with greater access to human and financial capital, distribution channels, networking opportunities, and visibility. Among these different potential benefits of being located in a metropolitan area, one might include abundant creative talent as one of the most important factors. It is not a coincidence that the PE investment clusters in the US are originated within close proximity to the most successful universities in the country, such as Harvard, MIT, and Stanford that supply a highly creative workforce to their region.

The importance of creative workforce within metropolitan areas for private equity investment is relatively easy to identify. Companies thrive more in areas where the creative class choose to live. Creative class not only has a role in the development of these metro areas, but creative people also choose to live in areas where social and economic opportunities exist, and these opportunities happen to be abound within metro areas. Thus, the creative class mainly chooses to stay within these metropolitan areas. Companies, on the other hand, also choose to locate themselves within the metro areas to be able to benefit from the networking effect and the know-how that the creative class is able to provide to the region (Chen, 2010).

These endogenous set of choices result in the clustering of both the creative class and the companies within the cluster of metro regions. The result of this clustering is economically

significant. The productivity in these metro areas is drastically higher as the supply of a creative workforce is met with the demand for innovative companies that drive the growth in the economy (Glaeser and Mare, 2001).

Even though there are clear benefits to geographic clustering, there are also significant costs. We believe that past literature has paid less attention to the costs of locating in these urban areas, and that is what we want to point to in this paper. Considering the costs associated with running a business in a metro area, a company might consider forgoing some of the metro-area amenities and benefits. In a non-metro area, creative talent can be relatively cheaper and more accessible. According to Glaeser and Mare (2001) wages are 32% higher in metropolitan areas. Even though creative talent is more abundant in metro areas, competition to access the creative workforce is fierce since companies not only compete amongst each other but also with other large public corporations located in the same metro areas. Thus, if creative talent is crucially important for a company, it might actually benefit from less competitive locations in the US where creative culture is abundant and competition to access the creative workforce is not as fierce. Excess spending for resources in the metro area can significantly shorten the runway for a successful takeoff of private businesses. The costs of being in a metro area can outweigh its known potential benefits, and growing a business and attracting capital can be more difficult at the margin.

Our paper aims to analyze the economic significance of these interlinkages in "creative clusters" and "urban areas" to see how they impact the distribution of PE capital geographically. We investigate whether creative workforce locations from non-metro areas can partially offset the negative effect of being away from metro area amenities. Our empirical results are as follows. Companies located in counties in metro areas have significantly more access to private

equity. Companies that are in counties where there is a more creative workforce also receive significantly more private equity. However, companies that are located in metro areas receive marginally less private equity capital as the ratio of creative class increases in these locations. On the other hand, companies that are outside of the metro areas receive significantly more private equity at the margin as the creative class ratio in these areas increases. Competing for creative talent in a metro area can be detrimental to a company's chances of having greater access to private equity capital compared to being located in a non-metro area where the creative class is more accessible. Our results are robust under various endogeneity tests.

This study contributes to the literature in several ways. First, to the best of our knowledge, this is the first paper in the literature that explores the link between local creative culture, metro areas, and private equity distribution. Second, our paper contributes to the recent literature that proposes culture as an important determinant of corporate social performance by showing the effect of a new risk-taking measure—creative culture. Third, although past studies explored the effect of firm-specific factors on private equity concentration, little is known about the effect of external factors such as local creative culture. This paper, therefore, contributes to this literature by underlining creative culture as a new factor that sheds additional light on the role of geography in organizational decisions.

Literature Review and Hypothesis

Geographic clustering in metro areas

The geographical clusters of the PE industry happen to be the largest metropolitan areas in the US, such as San Francisco, New York, Boston, Seattle, etc. There has been a lot of interest

in the geographies of PE investment in literature (Florida and Kenny, 1988; Martin, 1989; 1992; Martin et al., 2002; Mason, 1987; Mason and Harrison, 1991; 1999; 2002; 2003; Thompson, 1989). In the US, the development of a large and successful private equity market has been driven by the emergence and rapid growth of distinct spatial clusters of high-technology firms such as those in Silicon Valley. These geographical concentrations of innovative enterprises and their supportive PE capital organizations and institutions existing together in the same vicinity are argued to be the key to its success (Norton, 2001). PE firms depend crucially on access to personal networks and face-to-face contacts in finding, evaluating, and monitoring investment opportunities. Private equity investment typically involves a `hands-on' approach with regular visits to meet with management of their portfolio companies to oversee their performance. Some observers believe the effective geographical radius within which venture capital firms prefer to make investments may be restricted to one to two hours' travel time from their office (Mason and Harrison, 1992). Thus, because of the `distance-decay effect' of information flow about investment opportunities and the desire to minimize risk by close involvement with client firms so as to secure the expected return from investments, as well as to be close to other, related, financial institutions and specialist services, we would expect the geography of investment to be closely correlated with the location of PE firms themselves. According to Goktan and Butler (2013) approximately 25% of VC backed-companies are located within 25-mile radius of their VC firms and this number climbs to around 40% for companies located in CA, NY or NJ where metro areas are larger. Thus, a significant portion of private equity backed companies are likely to be located within metro-area locations to be close to the private equity industry.

Given the well-documented importance of geographical clustering on the functioning of the PE market, The European Commission sees the absence of large, well-developed regional

high-tech clusters in Europe as a key constraint on both the demand for and supply of venture capital in Europe (European Commission, 1998; see also Gill et al., 2000). The low rates of innovative business creation is attributed to a lack of readily available risk capital, and that such regions may therefore face an `equity capital gap' because there is an overconcentration of venture capital funds in more prosperous regions. Thus, to create new hubs of innovation, the commission points to the importance of PE industry to be distributed to regions where entrepreneurial activity exists.

As a result of the benefits of clustering, human capital has become more unevenly distributed and concentrated over time. Berry and Glaeser (2005) have shown how human capital levels have become more and more concentrated over the last century and how this is an endogenous process where places with initially high values have increased their human capital levels more over time than other places that started off a lower position. Ullman (1958) was one of the first to note the role of human capital in regional development. Ever since considerable research has found significant relations between education levels and wages in cities and metropolitan areas. Rauch (1993) found that human capital intense cities are more productive and that an increase by one year in education increases productivity by three percent. Glaeser (2000) provides empirical evidence on the correlation between human capital and regional economic growth. Firms locate in areas of high human capital concentration to gain competitive advantages, rather than letting suppliers' and customers' geography alone dictate their location. Glaeser and Saiz (2003) find that skilled cities grow relative to less skilled cities through increases in productivity.

More than half the world's population lives in cities and urban areas, the highest at any point in history (UNFPA 2007). The economic activity produced by the biggest metro areas

accounts for a substantially greater economic value than their population size. The top ten metros, which house approximately 2.6 percent of the world's population, account for more than 20 percent of global economic activity (Florida et al., 2010). Glaser (2011) identifies cities as the world's key economic actors, indicating a triumph of the city. While firms deepen and specialize the division of labor, cities, with their clustering force and combination and recombination of skilled individuals, give rise to new innovations and economic development.

Creative workforce in geographic clusters

Companies and industries located in areas with a strong creative culture have higher levels of risk exposure, investment, and growth. Since creativity requires searching for the unknown and deviating from norms, it inherently embodies a high risk-taking propensity (Adams, 1986). In the PE capital setting, where risk-taking and creative abilities are crucial, we can expect a positive relationship between the flow of private equity and creative workforce clusters. It has been argued that creative industry clusters work as cultural production centers providing cultural environments for better economic achievement (Fleming, 2004; Scott, 2004). Creative industry quarters provide cultural production in culturally significant surroundings with recreation, creativity, innovation, knowledge transfer and synergies, and spatial identity (Andersson, 1985; Flew, 2002). They foster entrepreneurship with three competitive advantages: increasing productivity through access to specialist input, labor, knowledge, and technology; promoting innovation through networked information exchanges; and, providing new business formation (Flew, 2002; Fleming, 2004).

Creative industries might have played a significant role in the development of the metropolitan areas in the first place. Scott (2008) points out that creative industries influence the direction of urban development. They function as key catalysts for urban renewal and

development, thereby shaping the urban landscape and re-imaging inner-city areas (Hanningan, 2003; Hutton, 2006, 2009; Gospodini, 2006). Creative industries transform communities through the gentrification of old neighborhoods (i.e., displacing incumbent residents and artists), redefine attributes of consumption and lifestyle, regenerate urban imagery, provide distinctive environmental amenities and alter local identities (Scott, 2006; Gospodini, 2009)

Culture is one of the most important determinants of how a firm treats its stakeholders and the level of social responsibility it demonstrates through its organizational practices and actions (Campbell, 2007; Galbreath, 2010; Wood, 1991). There are several different definitions of culture from different disciplines; however, most researchers agree that culture refers to patterns of beliefs and values manifested in practices, behaviors, and various artifacts shared by members of an organization or a nation (Trice and Beyer, 1993; Pothukuchi et al., 2002). For example, one of the motivations behind adopting socially responsible practices is to conform to stakeholder norms that define appropriate behavior (Swanson, 1995), which is partly shaped by the culture.

Creative workers and entrepreneurs share many characteristics, including work independence, the capability of producing high-value work, a sense of personal achievement, and high risk-taking tendencies (Menger 1999). We believe that locations with a creative class create norms and belief systems that would lead to more entrepreneurial activity and would attract more private equity. Studies from other disciplines have investigated and highlighted the relationship between creativity and risk-taking (e.g., Fidler and Johnson, 1984; Jalan and Kleiner, 1995; Shalley, 1995; Tesluk et al., 1997; Zhou and George, 2001; Dewett, 2004; and Dewett, 2006). Another stream of research explores the effect of creativity on innovation (Vakili and Zhang, 2018, Ucar, 2018). Vakili and Zhang (2018) find that the enactment of liberal social policies such as same-sex marriage and the legalization of marijuana increased state-level patents significantly.

Thus, an important implication of this study is that since creative individuals value meritocracy, diversity, and openness, states and cities that try to attract these individuals need to devise social liberal policies that promote diversity, openness to different lifestyles and ideas.

It is hard to define the boundaries of local culture and therefore hard to compare different local cultures. In this paper, we draw from Florida's (2002) work on the creative class theory, which examines how clusters of a highly educated and well-paid segment of the society that work in a wide range of industries from high tech to entertainment, journalism to finance, high-end manufacturing to the arts found in some areas lead to greater economic growth. Cities that can attract these individuals create an ethos that values creativity, diversity, difference, and tolerance (Florida, 2002; pp. 17).

Even though the link between creative culture, risk-taking, and entrepreneurial activity engagement activity is established in prior literature (Zhou and George, 2001; Dewett, 2004; and Dewett, 2006), the effect of creative culture on geographical clustering of private equity has not been examined. It is plausible that the geographical clustering of private equity can partially be driven by the concentrated existence of the creative workforce in certain areas of the population. Since venture capital investments require creative thinking and risk-taking, it is plausible to expect that there will be a positive correlation between the density of creative class and venture capital investments at the county level, independent from the metro area effect.

We already know that private equity-backed companies and PE firms perform better when they have access to networking, R&D, and financial institutions within proximity, such as in Silicon Valley (Deeds [1997], Lerner [1995], Jeng and Wells [1997]). Thus, we would like to determine if the existence of creative culture within a region can also significantly play a role in the distribution and concentration of private equity. Are private equity-backed companies

benefiting from the concentration of the creative class within their region and able to attract more private equity as a result? This question is important to answer for policy reasons. Government programs such as the Small Business Innovation Research Program is also aiming to increase funding to small businesses in non-metro regions to spur economic growth but Liu (2021) finds that this program's success is more pronounced when the program finances companies within metro regions. If this pronounced "metro effect" is to a large extent due to "creative class" living within those regions, there might be an opportunity for non-metro areas in US that have abundant creative workforce. If the existence of creative culture is one of the main drivers of private equity activity within a region, the local governments can focus their efforts on creating creative clusters to promote new entrepreneurial activity within a region.

In this paper, we hypothesize that aside from the benefit of locating in a metro area, locations that have a dense population of the creative class would also create an environment where entrepreneurship activity can thrive. In addition, as better risk-takers, financiers who are creative and diverse can contribute to the liberalization of PE capital to remote locations where investors might typically overlook.

Hypothesis 1: As stand-alone factors, being located in a metro area and having a highly creative culture environment are factors that positively affect the amount of private equity a company can attract.

Even though the direct effect of creative culture and locating in a metro area is expected to be positive on the ability of a company to receive private equity, whether these two factors are competing with or complementary to one another is not straightforward and might depend on how these two factors interact.

The distinction between knowledge-based production and more standardized goods production has several implications for regional development. First, standardized production can take place almost anywhere, where labor and land rent are cheap, and the final product can thereafter be sent to the marketplace for consumption. In other words, production and consumption do not need to take place in the same location. On the other hand, knowledge production, as in the case of the PE industry, is most often related to service goods, where there is a need for producers and consumers to meet contemporaneously in the marketplace. Knowledge products are, therefore, in general, more distance sensitive and more attached to the region where the economic activity is located (Quigley and Johansson 2004). According to this argument, metro areas naturally possess a greater amount of creative workforce within close proximity to satisfy the needs of the PE industry. On the other hand, in non-metro locations, the existence of a creative class population can act as a substitute to metro locations to meet the demands of the private equity industry in terms of knowledge production, and we hypothesize that the marginal effect of one of these factors should increase in the absence of the other. Thus, when the creative class is separated from the metro area, its marginal effectiveness should increase. We argue that in the absence of metro area amenities, creative culture can partially compensate for the lack of certain resources that the metro area automatically brings to the table, such as the existence of a creative and talented workforce. If that is the case, we would expect the marginal impact of creative culture on attracting private equity to the region to be positive. For example, if a company is located in Santa Rosa, CA, or Chico, CA, these counties would not be part of the greater metropolitan areas even though there might still be significant entrepreneurial activity due to creative workforce density that exists in that region. In such locations, we expect the abundance of creative class to improve the amount of private equity funding that these non-metro areas can attract.

Hypothesis 2: When located outside the metro area, the marginal benefit of being in a highly creative culture environment increases the chances of raising PE capital.

However, creative workers not only function as producers of high-value goods and knowledge, but they are also consumers. Glaeser et al. (2001) describe how increased average incomes based on the re-allocation of labor into more productive sectors have changed the role of the regions. As incomes rise, people demand more normal, and luxury goods, rather than necessity goods, and those will mainly be provided in bigger cities in metro areas.

The metro area is likely to have a significant concentration of creative workforce in addition to other resources such as access to capital, technology, culture, and education. When these resources are already available in a location such as a metro area, access to creative class becomes more expensive in the region, and this can be detrimental to attract more private equity at the margin. The COVID era has provided us a natural experiment to see the extent of urban salary premiums. Employees of companies such as Google and Facebook were asked to take a cut somewhere between 10-25% based on where they choose to relocate to work from home in the past COVID era. An employee who was based in the San Francisco Bay area, CA but who chose to relocate to Lake Tahoe, CA after COVID era was asked to take a pay cut of approximately 25% (Kaye, 2021). When we consider the fact that the person working for the company still has the same skill sets in the pre and post COVID era, the pre COVID salary premium can directly be tied to the competitiveness of the workforce in metro areas. The magnitude of the premium can be expected since these two important factors (metro location and creative talent) start to compete with one another as they rely on the same resources for consumption and survival. For example, when a company is located in a metro area such as the Silicon Valley, which also happens to be a

region with a huge creative class population since it is part of the greater Bay Area, including San Francisco, the region starts to compete for the same resources such as housing, labor, etc. with other metro area participants, creating a shortage of resources, which creates an environment that might become detrimental to attracting capital at the margin since acquiring resources for survival becomes more difficult.

These factors again suggest that locating in a metro area and having access to a more creative class at the same time can be viewed as partial substitutes for the PE industry, and the marginal return on investment for each of these resources might be decreasing when they co-exist. The company might choose to access one of these resources if the marginal benefit of the second one is decreasing at the margin. For example, if creative talent and physical workspace are the most important factors for a company's survival, the company may benefit from seeking those resources outside the metro area, forgoing some of the benefits of the metro area location. On the other hand, if the company does not require much external talent or physical workspace, locating in the metro area might be a wiser decision.

Past research has not paid much attention to the cost of locating companies in metro areas. Even though metro areas provide essential tools for rapid growth or early maturity stage companies by providing them with a skilled and creative workforce, network possibilities to key distribution channels, access to the latest technology, and access to capital, these benefits may not all be as useful to other companies who might have different priorities. When companies are located in metro areas, both human and fixed costs would be significantly higher, which might hinder their chances of survival. Thus, the optimal choice of location for a company should be a tradeoff between these costs and benefits.

Hypothesis 3: When located inside the metro area, having greater creative workforce concentration decreases the chances of raising PE capital at the margin.

Methodology

Data, Sample Selection, and Summary Statistics

We get our private equity backed companies for the period 1997-2011 from the Thomson Reuters Eikon database. This paper follows a sample selection and variable construction method consistent with prior literature (e.g., Jha and Cox (2015), Ucar (2018)).

Richard Florida's creative class theory suggests that knowledge and ideas that are produced by some specific occupations that specialize in creating innovative ideas and processes are crucial points in urban development. Florida calls these occupations the elements of the creative class and uses the occupations that include thinking creatively in defining the creative class. (Florida, 2002a, b; Florida, 2005; McGranahan and Wojan, 2007). The ERS dataset refines and revises the original Florida creative class measure to define the creative class in a better and updated way. ERS provides this revised "creative class measure, which excludes from the original Florida measure many occupations with low creativity requirements and those involved primarily in services to the residential community (i.e., with numbers roughly proportional to population.)" ERS uses O*NET, a BLS dataset, that defines the skill set used in occupations to classify occupations with a high level of "thinking creatively." The key skill used in the identification reflects "developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions."

The main variable of interest for all tests is local creative culture as measured by *Company CreativeShare* for a given year. *Company CreativeShare* measures the fraction of the creative class

within a given company's county. To construct the *Company CreativeShare* variable, we use the creative class information from the US Department of Agriculture Economic Research Service (USDA ERS) website, which provides county-level data sets for the years 1990, 2000, and 2007.[3] We use data interpolation to construct the variable for years without available data, and our sample accordingly includes the *Company CreativeShare* variable for the years between 1997 and 2011. Therefore, our final sample includes the years between 1997-2011. The ERS website provides detailed information on the construction of county-level creative share information as well as the creative class occupations used in the dataset. The ERS website reports that they use occupations "that involve a high level of creative thinking" such as architecture, engineering, arts, design, entertainment, sports, media, computer and mathematical, etc. [4]

To create the percent of private equity that flows into a certain county in the US, for each year in our sample, we cumulate the dollar private equity investment that companies in a given county receives that year and then we normalize this number by the overall aggregate investment in the private equity industry (calculated by aggregating all reported dollar investment in that year in SDC database) in the same calendar year. This variable is labeled "*Percent of PE capital companies in a county receive in a year*".

The other local control variables are from the US Censuses and the US Census website. These variables are the local income, population, age, education, metro and CSA designations. *Population* is the population for a given county. *Age* is the age of population in a given county. *Local Education* is the fraction of individuals 25 years and over having a bachelor's, graduate, professional, or some college degree. *Local Income* is the median household income for a given county. Metro is a dummy variable equal to 1 if the county is within the Metropolitan Division

[3] http://www.ers.usda.gov/data-products/creative-class-county-codes/.
[4] http://www.ers.usda.gov/data-products/creative-class-county-codes/documentation/.

Area (MD)[5]. Non-metro area is defined as all areas outside the Metropolitan Division Area. CSA is a dummy variable equal to 1 if the county is not in metro area but is included in the Combined Statistical Area (CSA) designation. We would like to note that CSA region is defined as a greater statistical area compared to the MD region that has less social and economic ties among its counties which have an employment interchange of at least 15%. If the company does not fall within MD or CSA locations, we categorize that county as "rural". We use interpolations of both the Census and ARDA datasets to construct local variables for years without available data. Similar interpolations are done for *CreativeShare.*

Table 1 reports summary statistics for the main variables in the empirical tests. Panel A presents the summary statistics for variables used in the capital flow tests along with local creative culture as measured by *CreativeShare*. Panel B presents the breakdown of *CreativeShare* and "*% PE capital received by county of company"* variables by location. According to the results, both of these variables take the highest value in metro areas, followed by CSA areas, followed by rural areas (non-metro or non-CSA). This is expected since the greatest concentration of talent and capital is concentrated in the metro areas. As a company moves outside the metro areas into CSA and rural areas, the concentration of these factors is decreasing.

[Insert Table 1 here]

Empirical Results

Main Corporate Risk-taking and Policy Tests

[5] Metropolitan Division is a county or group of counties (or equivalent entities) delineated within a larger metropolitan statistical area, provided that the larger metropolitan statistical area contains a single core with a population of at least 2.5 million and other criteria are met. A Metropolitan Division consists of one or more main/secondary counties that represent an employment center or centers, plus adjacent counties associated with the main/secondary county or counties through commuting ties. Not all metropolitan statistical areas will contain metropolitan divisions.

We use multivariate regression analysis for our empirical tests. The empirical tests control for the socio-economic factors of the county that the company is located in, as well as the PE-backed company characteristics and their geographical locations. We adjust standard errors for heteroskedasticity and cluster them at the county level in all empirical tests. The main variable of interest in Table 2 is "*% PE capital received by county of company,*" which measures the local amount of private equity drawn into the county in a given year.

When we look at our main variable of interest amongst the independent variables, we see that *CreativeShare* is positive and statistically significant at 1% level. According to our results, as the CreativeShare of the company's county increases, so does the % share of PE capital in the county. This result is consistent with Hypothesis 1 and shows a positive relationship between the ability to attract capital and the density of the creative class in the same region. We also observe that when the company is located within a metro area, the % of PE capital in the portfolio company's county is increasing, and when the company is located in a non-metro area, the % of PE capital of the county is significantly lower. These results suggest that being in a metro area is a significant determinant of PE capital flowing to a particular region. Both of these results are consistent with Hypothesis 1, suggesting that as independent factors, creative culture concentration and being located in the metro area are both significantly positive factors that increase the flow of PE capital to a particular county in the US. Locating in a non-metro (CSA county) has a significantly negative effect on the flow of capital to the county.

[Insert Table 2 here]

In order to test Hypotheses 2 and 3, we would like to examine the effects of these two factors at the margin. In Table 2, column 1, we examine the interaction terms of creative workforce concentration and non-metro (CSA locations) areas. Our results suggest that in non-metro areas,

as *CreativeShare* increases, the % of PE capital flowing to that region increases. This suggests that at the margin, increasing creative class in non-metro areas is effective in drawing more PE capital to a particular county, supporting Hypothesis 2. The interaction of geographic location and creative class is also economically significant. A one-standard-deviation increase in the non-metro location dummy decreases our dependent variable (% of PE capital received by company's county) by 0.671 standard deviations. A one-standard-deviation increase in creative workforce concentration increases our dependent variable by 0.214 standard deviations. A one-standard-deviation increase in the creative workforce *within* the non-metro region (the interaction of the two factors) causes a marginal increase of 1.031 standard deviations in the dependent variable. This result suggests that the economic benefit of accessing a creative workforce in a non-metro location (CSA area) is significantly greater compared to the case where a company tries to access a creative workforce in a metro area.

In Table 2, column 2, we analyze the interaction of metro areas and creative class. In the metro area locations, increasing creative class concentration further has the opposite effect and significantly decreases the amount of PE capital received at the margin. This suggests that in metro areas, increasing creative class concentration is not productive in bringing more PE capital at the margin, supporting Hypothesis 3. These results are consistent with the fact that these two factors are substitutes for one another and the marginal benefit of one over the other is decreasing at the margin.

The interaction of geographic location and creative class is also economically significant for this model. A one-standard-deviation increase in metro location dummy increases our dependent variable by 0.594 standard deviations. A one-standard-deviation increase in creative workforce concentration increases our dependent variable by 0.599 standard deviations. A one-standard-

deviation increase in the creative workforce *within* the metro region (the interaction of the two factors) causes a marginal decrease of 0.960 standard deviations in the dependent variable. These results suggest that a company experiences an economic loss when they try to access a creative workforce in a metro location.

In Table 3, we analyze the same models in Table 2, this time using a 2SLS model to address possible endogeneity. The creative class might choose to locate in areas where entrepreneurial activity is already higher, so in order to address this possible endogeneity, we use "art share" as an instrument for the "creative share" in this model. We argue that the existence of artists in a given region will correlate with the creative workforce but not necessarily with the entrepreneurial activities in that given region. When we analyze the results, we see that our results are mostly consistent with Table 2. The metro areas are still drawing more capital, but the marginal effect of additional creativity is negative in metro areas. Non-metro areas (CSAs) are attracting less capital, but the marginal benefit of an additional creative workforce is positive.

[Insert Table 3 here]

In Table 4, we use a different instrument by following the prior literature (Ucar, 2019). We use the "amount of grants provided to the county" in a given year. We expect this variable to correlate with the "PE capital received by companies in the county" but not necessarily to the "percentage of the creative class in the county". As presented in Table 4, when this instrument is used in our 2SLS model, the results still hold and are very similar to the results in Table 3.

[Insert Table 4 here]

Finally, in Table 5, we take a different approach, and we analyze the effect of creative culture on the percentage of PE capital received in the county within the metro, CSA, and rural areas in

separate regressions. “Rural areas” are defined as areas located outside the metro and CSA designated areas. In all three regressions, the effect of creative culture is positive and statistically significant. When we analyze the economic impact of creative culture, we see that a one-standard-deviation increase in the creative culture variable causes a 0.42 standard deviation increase in our dependent variable in rural areas, 0.34 standard deviation in CSA areas, and 0.36 standard deviation in metro areas. This finding suggests that increasing creative culture is even more effective within the rural areas compared to metropolitan or CSA areas. Consistent with the previous results, this result supports Hypothesis 2 and 3 and suggests that creative class is more effective in the absence of being close to a metropolitan area location, and these two factors should be thought of as substitutes rather than complements.

[Insert Table 5 here]

Conclusion

Prior literature highlights the need for further research to identify various factors that would disseminate PE capital and entrepreneurial activities to different parts of the country rather than having it concentrated in specific geographical clusters for economic development. Although broader institutional and country-level factors were explored in the previous literature, local creative culture has not been considered in the context of its effect on geographical distribution. Our paper highlights a new local factor, creative culture, and sheds additional light on the extent to which local factors affect PE capital distribution among US counties.

Previous studies from social science literature suggest that creativity is associated with higher degrees of risk-taking and that creative people are risk-takers. By using the fraction of the local creative class (the fraction of people employed in occupations that require creative thinking) as a

measure of local creative culture, we show that this factor is significant in increasing the flow of capital to a particular county. Metro area locations as hubs of economic and social activities are also a positive and significant factor in attracting more PE capital. However, the positive effect of these two factors are not uniformly distributed in every part of the country. Our results suggest that creative class concentration is marginally beneficial in non-metro areas and has a marginally negative impact within metro areas. When the company is located outside the metro area, the effect of a marginal increase in the creative workforce is different. Non-metro location is a negative factor for drawing PE capital, but the marginal benefit of the creative class in the non-metro region is positive and significant. This result is important since it suggests that creative culture is a substitute for the amenities that the metro area provides to companies rather than being a compliment.

This result has managerial implications. Some companies might find it beneficial to locate outside metro areas where creative workforce is abundant and more accessible. Recently, there has been a trend of new ventures moving out of Silicon Valley to areas where the cost of running a business is not as high. These companies move to areas where there is local creative talent, and salaries and housing expenses are lower. Our results support this trend by showing that companies need to consider the tradeoff between these two factors and consider the fact that being in major metro areas such as the Silicon Valley may not always be the optimal choice and that a tradeoff might exist between location and cost of accessing creative talent.

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Year	Mean	Median	N	p25	p75	Std. Dev.	max
1997	1.91%	0.64%	1086	0.13%	2.16%	2.75%	9.53%
1998	1.50%	0.80%	1440	0.10%	2.16%	2.01%	7.47%
1999	1.97%	1.05%	1391	0.21%	3.16%	2.28%	7.51%
2000	2.16%	1.06%	2429	0.17%	3.51%	2.54%	8.37%
2001	1.63%	0.78%	1855	0.13%	2.51%	2.10%	7.64%
2002	1.31%	0.67%	1004	0.10%	1.57%	1.74%	6.37%
2003	0.85%	0.42%	917	0.05%	1.42%	1.07%	4.48%
2004	1.25%	0.63%	1049	0.08%	2.19%	1.49%	5.09%
2005	1.12%	0.48%	1051	0.09%	1.95%	1.39%	4.62%
2006	1.14%	0.47%	1227	0.05%	1.59%	1.74%	9.43%
2007	0.74%	0.25%	1796	0.03%	1.28%	0.99%	6.69%
2008	1.32%	0.78%	905	0.11%	1.56%	1.76%	5.92%
2009	1.82%	0.76%	630	0.12%	2.98%	2.04%	6.22%
2010	1.78%	0.99%	865	0.16%	2.42%	2.02%	5.97%
2011	1.91%	1.46%	774	0.16%	2.88%	2.03%	6.43%
Total	1.52%	0.70%	18419	0.11%	2.19%	2.01%	9.53%

Table 1 – Summary Statistics

Panel A

This table presents the summary statistics of our main variables.

Variable	Mean	Median	p25	p75	Std. Dev
% PE capital received by county of company	0.02	0.01	0.00	0.02	0.02
Geographical distance between company and PE firm	820.27	409.70	26.10	1464.90	920.28
Company's county's creativeshare	0.32	0.33	0.27	0.38	0.08
Company's county's artshare	0.02	0.01	0.01	0.02	0.01
Company's county's median age	35.55	35.70	33.68	37.26	2.83

Company's household median income	55813.19	53909.00	43464.00	65889.00	14491.83

Panel B

Variable	Metro (Y/N)	Mean	Median	25th percentile	75th percentile	Std. Dev.	N
% PE capital received by company county	0	0.0009	0.0000	0.0000	0.0004	0.0046	1246
	1	0.0039	0.0010	0.0001	0.0033	0.0087	89
Company county creativeshare	0	0.1880	0.1782	0.1471	0.2198	0.0561	1077
	1	0.2924	0.2821	0.2418	0.3269	0.0801	82
	CSA (Y/N)						
% PE capital received by company county	0	0.0010	0.0000	0.0000	0.0003	0.0052	746
	1	0.0012	0.0001	0.0000	0.0006	0.0048	589
Company county creativeshare	0	0.1848	0.1684	0.1415	0.2111	0.0655	670
	1	0.2099	0.1994	0.1647	0.2477	0.0590	489

	Rural (Y/N)						
% PE capital received by company county	0	0.0012	0.0000	0.0000	0.0005	0.0053	1031
	1	0.0006	0.0001	0.0000	0.0004	0.0039	304
Company county creativeshare	0	0.1963	0.1802	0.1460	0.2358	0.0681	891
	1	0.1924	0.1848	0.1560	0.2169	0.0476	268

Table 2 – OLS Estimates with Local Controls

The dependent variable and all the control variables are defined in the paper. Year and state dummies are not reported for brevity. Standard errors are adjusted for heteroskedasticity and clustered at the company's county level. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively.

Dep. Variable:	% PE capital received by company county	% PE capital received by company county
Company in metro area dummy		0.026
		(0.024)**
Company in CSA area dummy	-0.030	
	(0.000)***	
Company county creativeshare	0.064	0.180
	(0003)***	(0.000)***
Company in metro area dummy* Company county creativeshare		-0.119
		(0.006)***
Company in CSA area dummy* Company county creativeshare	0.142	
	(0.000)***	
Number of rounds company received	-0.000	-0.000
	(0.000)***	(0.000)***
Number of firms invested in company	0.000	0.000
	(0.002)***	(0.000)***
Total known amount invested in company	0.000	0.000
	(0.000)***	(0.000)***
Geographical distance between company and PE firm	-0.000	0.000
	(0.072)*	(0.028)**
Company's county's median age	-0.000	-0.000
	(0.461)	(0.627)
Company counties household median income	-0.000	0.000
	(0.616)	(0.742)
Year and State Fixed Effects	Yes	Yes
Observations	19,099	19,099
R-squared	0.62	0.59

Table 3 - 2SLS Estimates with local controls

The dependent variable and all the control variables are defined in the paper. Year and state dummies are not reported for brevity. "Company County Art creative share" is used as an instrument for "Company county creative share" in the first stage. Standard errors are adjusted for heteroskedasticity and clustered at the company's county level. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively.

Dep. Variable:	% PE capital received by company county	% PE capital received by company county
Company in metro area dummy	0.080	
	(0.007)***	
Company in CSA area dummy		-0.097
		(0.003)***
Company county creativeshare	0.255	0.031
	(0.002)***	(0.451)
Company in metro area dummy* Company county creativeshare	-0.252	
	(0.020)**	
Company in CSA area dummy* Company county creativeshare		0.315
		(0.008)***
Number of rounds company received	-0.000	-0.000
	(0.001)***	(0.001)***
Number of firms invested in company	0.000	0.000
	(0.000)***	(0.002)***
Total known amount invested in company	0.000	0.000
	(0.000)***	(0.000)***
Geographical distance between company and PE firm	0.000	0.000
	(0.022)**	(0.084)*
Company's county's median age	-0.000	-0.002
	(0.776)	(0.927)*
Company counties household median income	0.000	0.000
	(0.826)	(0.828)
Year and State Fixed Effects	Yes	Yes
Observations	19,099	19,099
R-squared	0.59	0.59
Centered R-squared	0.35	0.33

Table 4 - 2SLS Estimates with local controls

The dependent variable and all the control variables are defined in the paper. Year and state dummies are not reported for brevity. "Company County Grant Amount" is used as an instrument for "Company county creative share" in the first stage. Standard errors are adjusted for heteroskedasticity and clustered at the company's county level Standard errors are adjusted for heteroskedasticity and clustered at the company's county level. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively.

Dep. Variable:	% PE capital received by company county	% PE capital received by company county
Company in metro area dummy	0.074	
	(0.003)***	
Company in CSA area dummy		-0.091
		(0.03)***
Company county creativeshare	0.197	0.013
	(0.010)**	(0.754)
Company in metro area dummy* Company county creativeshare	-0.202	
	(0.060)*	
Company in CSA area dummy* Company county creativeshare		0.257
		(0.031)**
Number of rounds company received	-0.001	-0.000
	(0.001)***	(0.004)***
Number of firms invested in company	0.000	0.000
	(0.000)***	(0.002)***
Total known amount invested in company	0.000	0.000
	(0.000)***	(0.000)***
Geographical distance between company and PE firm	0.000	0.000
	(0.027)**	(0.135)
Company's county's median age	-0.000	-0.000
	(0.615)	(0.522)
Company counties household median income	0.000	0.000
	(0.660)	(0.716)
Year and State Fixed Effects	Yes	Yes
Observations	14,579	14,579
R-squared	0.59	0.58
Centered R-squared	0.32	0.31

Table 5 – Effect of Creative Culture for the Metro, CSA, and Rural Areas Analyzed Separately

The dependent variable and all the control variables are defined in the paper. "Rural" is representing counties that are not in metro or CSA areas. Year and state dummies are not reported for brevity. Standard errors are adjusted for heteroskedasticity and clustered at the company's county level. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively.

Dep. Variable:	% PE capital received by company county	% PE capital received by company county	% PE capital received by company county
	Metro=1	CSA=1	Rural=1
Company county creativeshare	0.083	0.133	0.667
	(0.000)***	(0.000)***	(0.000)***
Number of rounds company received	-0.000	-0.000	0.000
	(0.057)*	(0.020)***	(0.906)
Number of firms invested in company	0.000	0.000	0.000
	(0.001)***	(0.000)***	(0.253)
Total known amount invested in company	0.000	0.000	0.000
	(0.000)***	(0.000)***	(0.000)***
Geographical distance between company and PE firm	0.000	-0.000	0.000
	(0.313)	(0.232)	(0.246)
Company's county's median age	-0.000	-0.000	0.000
	(0.600)	(0.770)	(0.324)
Company counties household median income	0.000	-0.000	-0.000
	(0.227)	(0.461)	(0.081)*
Year and State Fixed Effects	Yes	Yes	Yes
Observations	9,436	7,794	1,697
R-squared	0.37	0.80	0.70