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Economic Development Strategy:
The Creative Capital Theory

Zach Fairlie

ABSTRACT. This paper aims to identify the relationship between the Creative Capital theory and the unemployment rate. Using panel data from 370 Metropolitan Statistical Areas over a 12-year period, this study finds that talent, technology, and tolerance are not statistically significant determinants of the unemployment rate. The result is contrary to what Creative Capital theory suggests.

I. Introduction

Economic development groups are responsible for promoting economic growth and bringing jobs to their area. To do this, the groups adopt a variety of strategies based on conventional and non-conventional theories of economic development. Some non-conventional theories lack substantial academic verification (Hoyman 2009). The Creative Capital theory is an example. Richard Florida, founder of the Creative Capital theory, is a relatively new authority in the realm of economic development. Florida currently operates an economic development advisory firm called the "Creative Class Group." Despite the lack of outside academic verification, Florida's theory is taken very seriously. The advisory group works with all levels of economic development, from universities to the highest levels of government all around the world.

The unemployment rate has been, and likely always will be, a hot-button issue for policy leaders. One of the main goals of economic development strategists is to foster employment growth and reduce the unemployment rate. To accomplish this goal, economic development groups are blindly directing resources to whichever direction the creative capital theory suggests. This study will test the relationship between the creative capital theory and the unemployment rate. A reduction in the unemployment rate will indicate a successful strategy.

II. Background

The theory of human capital and urban-regional growth postulates that people, not businesses, are the engine of economic growth (Florida 2003).

Nearly three decades ago Jane Jacobs highlighted the mistake of advocating the universal prescription of "attract industry" (Jacobs, 1984). Instead, Jacobs acknowledged that cities should also seek to attract creative talent to spur economic growth. Human capital, as measured by education levels, has been shown to correlate with urban economic growth (Glaeser 2005).

From the human capital theory, Richard Florida developed his own theory, the Creative Capital theory. The creative capital theory differs from the human capital theory in that it recognizes a specific type of human capital, creative people, as being a key factor in economic growth. Additionally, Florida's theory identifies the underlying components that factor into the location decisions of this group of people (Florida 2003).

Florida argues that by attracting the creative class, new businesses will follow in order to use its human capital. Furthermore, Florida says that in the knowledge-based economy, regions gain an advantage by mobilizing the best talent and resources available. These people will turn innovations into concrete business ideas and commercial products (Clifton 2008).

Just as businesses respond to lucrative financial incentives when choosing where to locate, talented individuals also respond to incentives. These incentives, however, are a bit more complex. Florida argues that as an entire group, the creative class is so similar in their tastes and ways of life that they respond to the same set of incentives when deciding where to live. To Florida, these incentives are things that provide life style options: the availability of cultural diversity, a tolerant attitude, outdoor recreation, etc. (Florida 2002).

Florida defines the creative class as scientists, engineers, architects, designers, writers, artists, musicians, lawyers, and people in specific jobs in education, healthcare, or business (Florida 2002). To Florida, these professions employ individuals who are uniquely creative. The creativity of these individuals is expressed in the form of inventions and innovations within their line of work, which thereby promotes economic growth.

The occupations within the Creative Class group are divided into two major categories: the Super-Creative Core and Creative Professionals. The sub-categories include the following occupations from the Occupational Employment Survey (OES):

Super-Creative Core

- Computer and Mathematical Occupations
- Architecture and Engineering Occupations
- Life, Physical, and Social Science Occupations
- Education, Training, and Library Occupations
- Arts, Design, Entertainment, Sports, and Media Occupations

Creative Professionals

- Management Occupations
- Business and Financial Occupations
- Legal Occupations
- Healthcare Practitioners and Technical Occupations
- High-end Sales and Sales Management

Florida's theory has been received with both admiration and criticism. Regardless, Florida's claims have registered with city planners, politicians, and economic development groups across the board (Martin-Brelot et al 2010). As a result, these people are scrambling to get a piece of the action.

III. Literature Review

Few critics question the existence or contribution of the creative class or the applicability of Florida's theory to regions within and outside of North America (Martin-Brelot *et al*. 2010). There is skepticism, however, about the breadth and depth of Florida's theory. Michele Hoyman and Christopher Faricy attempt to answer what many have asked–does the creative class generate economic growth? Using bivariate and ordinary least squares (OLS) regression analyses, Hoyman and Faricy test the creative capital, social capital, and human capital theories based on their ability to predict economic growth and development. Using wage change and job growth as proxies for economic growth, Hoyman and Faricy find that there is no statistical correlation between the creative class and economic growth (Hoyman and Faricy 2008). Hoyman and Faricy also find that the share of technological industry is not correlated with job growth. Overall, Hoyman and Faricy find that there is no correlation between economic growth and talent, technology, and tolerance.

Niclas Berggren and Mikael Elinder (2010) cast doubt on the claim that tolerance is necessary for fostering economic growth. Using GDP per capita as a measure of economic growth, Berggren and Elinder found that in a sample of 54 countries, tolerance toward homosexuals was negatively related to economic growth. They also found that there was no statistically significant relationship between racial tolerance and economic growth. Overall, Berggren and Elinder argue that the relationship between tolerance and economic growth may not be as significant as Florida claims.

Stefan Kratke claims that Florida is mistaken in how he defines the creative class. Kratke believes that the creative class must be disaggregated from the current grouping of occupations because the grouping encompasses occupations that serve economic functions that are too diverse to be regarded as similar (Kratke 2010). In addition, Kratke argues that some members of Florida's creative class do not contribute to economic growth, and sometimes stifle growth. These people, who Kratke renames the "Dealer Class," are the creative professionals in finance and real estate. These members engage in "casino capitalism" and caused the recent financial market meltdown. Kratke believes that in the current capitalist economy, these professions are not contributing much, if anything, to economic growth (Kratke, 2010).

Kratke conducted an empirical analysis of Germany's regional growth and concentration of occupations. As a proxy for regional economic growth, Kratke used regions' share of knowledge-intensive industrial activities. Kratke used this measure because he believes regional economic success has become more and more dependent on the capacity to innovate (Kratke 2010). Knowledge-intensive industrial activities include sectors from manufacturing to scientific research.

Kratke finds that the share of scientifically and technologically creative occupations accounts for 44 percent of the variance in regional cases and is significant at the one percent significance level. Kratke also finds that there is no significant relationship between the share of knowledge-intensive industrial activities and the share of skilled professionals in finance and real estate (Kratke, 2010). Overall, Kratke demonstrates that in Germany, a regional concentration of scientifically and technologically creative occupational groups has a positive and significant impact on regional economic development, while the regional concentration of skilled professionals in finance and real estate do not (Kratke, 2010).

Mobility is a key characteristic of the creative class. If mobility is low, then cities should not focus resources on attracting a segment of the population that is not willing or able to relocate to the region. Some argue that pouring resources into creating a vibrant cultural, social, diverse, and tolerant atmosphere will attract economic prospects beyond that brought by the creative class (Kratke, 2010). If, however, attracting the creative class is the key to generating jobs and creating economic growth, then the creative class must be mobile and willing to move based on the factors the Florida explains. The evidence suggests otherwise. Martin-Brelot *et al*. (2010) find that the European creative class is not as mobile as Florida suggests. A case study from Dublin showed that members of the creative class were drawn to the city by "hard" factors (employment availability, family, and birthplace) rather than "soft" factors (cultural diversity, tolerance, and openness) (Murphy 2009).

Using a three-stage least-squares model of change in the creative class, employment change, and net migration in metropolitan and non-metropolitan areas, McGranahan and Wojan (2007) found that employment in creative occupations was positively associated with employment growth in both metropolitan and non-metropolitan areas. They also discovered evidence that calls into question the validity of Florida's theory of 'softs' in attracting members of the Creative Class. McGranahan and Wojan found that the Creative Class is growing most rapidly in areas that are mountainous, forested, and wide open areas lacking culturally diverse amenities. The analysis suggests that the quality of life provided by rural living, rather than vibrant urban amenities, are more important factors in attracting some members of the Creative Class.

Fallah *et al.* (2011) find that for metropolitan and nonmetropolitan areas, the availability of amenities is positively related to employment growth. Access to high human capital entrepreneurs (with at least a bachelor's degree) is more important to faster employment growth than proximity to urban areas and amenities (Fallah et al. 2011). Furthermore, for high-technology employment growth, the amenity index used by Fallah et al. was statistically insignificant. In other words, the availability of amenities did not increase growth in high-technology employment; in other words, it did not attract members of the Creative Class.

IV. Data and Methodology

Data were collected from 1999-2010 for 370 U.S. Metropolitan Statistical Areas (MSA). The data were used to estimate the following model:

UNEMPLOYMENT RATE $= \beta_0 + \beta_1$ (CREA) $+ \beta_2$ (TECH) $+ \beta_3$ (PAT) $+ \beta_4$ (BOH) β_5 (INC) $+ \beta_6$ (POP) $+ \beta_7$ (POPCH) $+ \beta_8$ (STUN) e

CREA is the percent of the population employed in occupations within the creative class. The creative class includes 10 of the 22 summary occupations classified by the Occupational Employment Survey (OES), which is administered by the Bureau of Labor Statistics (BLS). CREA is a measure of talent, which is the creative capital theory's first of three Ts necessary for attracting members of the creative class and generating economic growth.   According to creative capital theory, attracting members of the creative class will create innovation, generate business formation, increase economic growth, increase job growth and, all else equal, reduce the unemployment rate. Therefore, CREA is expected to have a negative coefficient.

TECH is a high technology location quotient (LQ). The LQ is a concentration measure of high-tech employment as a percentage of an MSA's total employment relative to high-tech employment in the United States. An LQ of 1.0, for example, would indicate that the level of high-tech employment in the MSA was equal to the United States' average.

The high-tech LQ was developed by the Milken Institute to help measure performance in the high technology economy among MSAs. Employment data for nineteen industries, as defined by the North American Industry Classification System (NAICS), are used to compute the high-tech LQ. The industries are broken down into two categories: high-tech manufacturing and high-tech services.

The creative capital theory argues that as one of the three major Ts, technology helps attract members of the creative class and assists the creative class in generating economic growth. For this reason, TECH is expected to have a negative coefficient.

BOH is the Bohemian Index. The Bohemian Index is a measure of the over- or under-representation of artistically creative people.   It includes artists, designers, musicians, composers, actors, directors, painters, dancers, sculptors, and performers. The index is intended to capture the level of tolerance and overall lifestyle amenities available.

The index is calculated as the fraction of artistically creative people living in an MSA, divided by the total fraction of artistically creative people in the United States.

The creative capital theory says that places with flourishing artistic and cultural environments are ones that successfully generate economic growth (Florida 2002). Furthermore, the creative capital theory argues that the BOH is a strong predictor of overall employment growth (Florida 2002). The coefficient for BOH is therefore expected to be negative.

PAT is patents per capita. Data on patents issued per MSA are available at the U.S. Patents and Trademarks Office (USPTO) but only for 2006-2010. PAT is intended to capture the level of innovation occurring within the MSA. A high level of innovation, according to the creative capital theory, indicates a free flow of ideas and some level of tolerance for new ideas- each of which helps attract members of the creative class and advance economic growth. Given the relationship between innovation and economic growth as described by the creative capital theory, PAT is expected to have a negative coefficient.

STUN is the state unemployment rate. This variable is included to account for variations in the unemployment rate due to state-specific factors, such as minimum wage laws. Since some of the MSAs cross state lines, the state unemployment rate was assigned according to the primary state definition, which is designated by the Census Bureau. The coefficient for STUN is expected to be positive.

INC is income per capita, which was obtained from the U.S. Census Bureau. POP is the population of the MSA. POPCH is the percent change in population from the previous year for the MSA. Data on POP and POPCH were gathered from the Bureau of Economic Analysis. Consistent with the findings of Izraeli and Murphy (2003), the coefficients for INC, POP, and POPCH are expected to be negative.

V. Results

The summary statistics for the variables included in the final regression are in Table I. The MSA unemployment rate minimum (1.2) and maximum (30.1) values are interesting. An unemployment rate of 1.2 is extremely low. This value belongs to Columbia, Missouri in 1999. Given the fundamental relationship between frictional, structural and the overall unemployment rate, the value is suspiciously low. The value was double checked and confirmed with the Bureau of Labor Statistics.

An unemployment rate of 30.1 is very large. The value belongs to Yuma, Arizona in 1999. Yuma averaged 18.5% unemployment rate over the 12 year period. Again, the maximum value was double checked and confirmed with the Bureau of Labor Statistics.

On average, the creative class held about 35 percent of employment in MSAs. The variation between the minimum and maximum values for CREA is significant. Las Vegas employs about 14 percent of its workforce in the creative class, whereas San Jose and Chapel Hill employ over 50 percent of their workforce in the creative class.

TABLE I–Summary Statistics

Summary Statistics, using observations 1:01- 370:12
(Missing values were skipped)
Number of observations: 1605

Variable	Mean	Std. Dev.	Minimum	Maximum
UNEM	5.754	2.597	1.200	30.100
STUN	5.692	2.040	2.266	13.733
CREA	0.356	0.046	0.141	0.536
TECH	0.941	1.273	0.000	14.500
PAT	0.0002	0.0006	5.8487e-008	0.012
BOH	1.375	2.133	0.006	15.352
INC	31609	7022.1	13058	80139
POP	1.3354e+006	1.2839e+007	48324	2.5890e+008
POPCH	1.038	1.211	-25.410	10.980

San Jose, California, located in the heart of Silicon Valley, had the maximum value for the technology location quotient at 14.5. Because this area is widely known as the home to many software development companies and other high-tech firms, it is not surprising that the employment percentage of high-tech employment is over fourteen times greater than the average for the United States. Many other areas tied for

the minimum value of 0.

The regression results are presented in Table II. As expected, the coefficient on the state unemployment rate is positive and statistically significant at the one percent level. The coefficient for CREA is positive as expected, but it is statistically insignificant. Perhaps, as Kratke (2010) demonstrated in Germany, the creative class is too broadly defined. Holding 35 percent of employment in MSAs, the creative class is defined quite broadly. There are simply not that many occupations that are, as Florida claims, truly creative in nature. Therefore, it is possible that there are occupations included in CREA that do not contribute to economic growth and actually produce the opposite result.

The coefficient and statistical insignificance of CREA may also suggest that the economic growth-promoting byproducts of the creative class are not tied to location. For example, an innovation in computer software in Silicon Valley will not necessarily create jobs in Silicon Valley. Instead, it is likely that as a result of increased demand, employment will increase in the labor market in which the computers are produced, typically Asia. Whatever the case may be, there is no statistically significant relationship between percent of the workforce in the creative class and the unemployment rate.

The coefficient for TECH is positive and statistically significant at the 5 percent significance level. That is inconsistent with the creative capital theory. A High concentration of high-tech employment relative to the U.S. average contributes to an increased unemployment rate. The results do not necessarily poke a hole in Florida's argument that high levels of technology are necessary for stimulating economic and employment growth, but an explanation is warranted nonetheless. Any explanations offered at this time, based on the current model, would be purely speculative, and further research should be conducted before ruling on the relationship between technology and the unemployment rate. But it is important to note that like the byproducts of the creative class, technology is not tied to location. An increased level of technology, as measured by the concentration of high-tech employment, does not necessarily promote employment and economic growth in the local area. Just like with CREA, the effects of improved technology are likely to be felt elsewhere.

TABLE II–Fixed-Effects Model, using 1605 observations
Dependent variable: Unemployment Rate
Robust (HAC) standard errors

	Coefficient	*Std. Error*	*t-ratio*	*p-value*
Const***	2.559	0.553	4.622	<0.00001
STUN***	0.990	0.015	65.420	<0.00001
CREA	0.625	1.111	0.563	0.573
TECH**	0.064	0.031	2.055	0.040
PAT*	159.278	84.161	1.893	0.058
BOH	0.009	0.009	1.078	0.280
INC***	-7.20508e-05	1.72502e-05	-4.176	0.000
POP***	-5.76007e-08	1.10806e-08	-5.198	<0.00001
POPCH*	-0.148	0.078	-1.893	0.058

*** 99% Confidence Level   Adj R^2: 0.96
** 95% Confidence Level
* 90% Confidence Level

The coefficient for BOH is positive, but it is statistically insignificant. This is consistent with Berggren and Elinder (2010) that the relationship between tolerance and economic growth is not as significant as Florida claims. This also indicates that, consistent with Fallah *et al.* (2011), perhaps culturally diverse amenities are not as important in attracting members of the creative class and promoting economic growth as Florida says. While culturally diverse amenities are certainly important to some, it does not seem to be a necessary condition for those responsible for creating economic growth. BOH, therefore, does not turn out to be a strong predictor of the unemployment rate.

PAT, the last of the four creative capital theory variables, also did not produce the expected result. The coefficient is positive and statistically significant at the 10 percent significance level. This means that high levels of innovation are related to increased unemployment rates.

The creative capital theory assumes that high levels of innovation are necessarily related to increased levels of employment and economic growth, and intuitively, this makes sense. Unfortunately, this does not seem to be the case. It is possible that patents per capita is a poor measure of innovation and that a more accurate measure of innovation may produce a different result. And once again, more patents may not bring new jobs to the local area. Based on Richard Florida's definitions, however, the relationship between innovation and economic growth is inconsistent with the creative capital theory.

VI. Conclusion

This study finds that technology, talent, tolerance and innovation, as measured by the creative capital theory, are not negatively related to the unemployment rate. Technology, measured by a high-tech location quotient, has a statistically significant and positive relationship with the unemployment rate. Innovation, measured by patents per capita, showed a positive and statistically significant relationship with the unemployment rate. It should be noted, however, that patents per capita may be a poor measure of innovation and further research is required.

Talent, measured by the percent of the workforce in the creative class, did not have a statistically significant relationship with the unemployment rate. Tolerance, measured by a location quotient of artistically creative people, also did not have a statistically significant relationship with the unemployment rate.

The findings of this study have significant policy implications for economic development groups. Development groups are focusing their resources on constructing Florida's creative class haven, despite the fact that his entire theory may be "bankrupt". Technology and byproducts of the creative class are not tied to location. A tolerant atmosphere does not seem essential. The cliché, "if you build it, they will come" may not be true as evidence suggests that members of the creative class are not universally attracted to urban amenities.

Overall, the results suggest that creating an environment that harbors high levels of talent, technology, and tolerance in order to promote employment and economic growth is not as important as Richard Florida claims. Accepting the prescription of the creative capital theory does not seem to align with the goal-oriented interests of economic development groups. The results may help some groups decide whether the creative

capital theory strategy is right for their area.

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