



Human capital, higher education institutions, and quality of life[☆]

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ABSTRACT

This paper considers the effects of the local human capital level and the presence of higher education institutions on the quality of life in U.S. metropolitan areas. The local human capital level is measured by the share of adults with a college degree, and the relative importance of higher education institutions is measured by the share of the population enrolled in college. This paper finds that quality of life is positively affected by both the local human capital level and the relative importance of higher education institutions. Furthermore, these effects persist when these two measures are considered simultaneously, even though the two are highly correlated. That is the human capital stock and higher education institutions have a shared effect and also separate effects on quality of life.

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1. Introduction

A number of researchers have suggested that the local human capital level has external effects on others nearby, with much of this literature focusing on the external effects of average education levels on productivity and wages.¹ Rauch (1993), Moretti (2004b), Dalmazzo and de Blasio (2007a,b) and others offer support for the existence of human capital externalities by showing that the local level of human capital is positively correlated with wages even after controlling for individual worker characteristics.² However, because workers are mobile, the external effects of human capital on wages will not be the end of the story. Higher productivity in an area will attract new workers and cause the area to grow in population (Glaeser et al., 1995; Simon, 1998, 2004; Simon and Nardinelli, 2002; Glaeser and Saiz, 2004).³ Berry and Glaeser (2005) and Waldorf (2009) also suggest that the existing stock of human capital is especially important in attracting educated in-migrants. Furthermore, as new

workers move in, they compete with existing residents for housing and bid up housing prices (Rauch, 1993; Shapiro, 2006; Dalmazzo and de Blasio, 2007a). Shapiro (2006) suggests that the local human capital level increases the implicit value of an area's consumption amenities; i.e., the stock of human capital makes an area a more desirable place to live and increases the quality of life. Shapiro (2006) estimates that 40% of the growth effects of human capital are due to increased quality of life.

Because the local human capital stock appears to make an area better in so many ways, it is important to understand why areas differ in aggregate human capital levels. One of the most important determinants of the local human capital level is the presence of colleges and universities in the area, and many of the most highly educated areas are home to major state universities (Winters, 2011). Higher education institutions increase the local human capital stock in at least two ways: 1) they increase access to higher education for local residents and make it more likely that local high school graduates will pursue post-secondary education (Card, 1995; Alm and Winters, 2009); and 2) they bring in students from outside the area seeking an education and some of these student in-migrants end up staying in the area after their education is complete (Blackwell et al., 2002; Huffman and Quigley, 2002; Groen, 2004; Groen and White, 2004; Hickman, 2009).⁴ Winters (2011) suggests that most of the

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¹ Critical reviews of the literature on human capital externalities are provided by Moretti (2004a), Lange and Topel (2006), and Henderson (2007).

² Alternatively, Florida et al. (2008) argue for the primary importance of a "creative class" of artists and workers employed in creative occupations.

³ Elvrey (2010) also suggests that skill intensity is greater in large cities.

⁴ Drucker and Goldstein (2007) survey the literature on the impacts of universities on their surrounding areas including student migration.

differential in-migration to high human capital cities is due to students moving to pursue higher education and that most of the growth of so-called “smart cities” is due to recent student in-migrants staying in an area after finishing their education. These students stay in the area because it gives them greater utility than other areas. Importantly, some students might stay in the area where they moved for higher education because it offers a high quality of life.⁵ Colleges and universities, therefore, affect their surrounding areas in several important ways.

This paper considers the separate effects of the local human capital level and the relative importance of higher education institutions on the quality of life in U.S. metropolitan areas. Building on Rosen (1979) and Roback (1982) this paper measures quality of life by differences in “real wages” across areas, i.e., wages adjusted for differences in cost of living and worker characteristics (Winters, 2009, 2010). A brief discussion of the theoretical model is presented in Appendix A. Following previous literature, we measure the local human capital level by the share of adults (age 25 and older) with at least a four-year college degree. Notable examples of high human capital stock cities include San Francisco, CA, Portland, OR, Boston, MA and Washington, DC. We measure the relative importance of higher education institutions by the share of an area’s population enrolled in higher education. While there are other criteria by which we could measure the relative importance of higher education (see for example, Gumprecht, 2003), this measure is quite intuitive. Areas for which colleges and universities are relatively important will have a large share of their population enrolled in higher education. It is worth emphasizing that this is a relative measure. Most large metropolitan areas have at least one college or university, but a single higher education institution in a highly populated area may not have much of a relative effect. Quite often the areas in which higher education has the greatest relative importance are small to mid-size metropolitan areas home to large flagship state universities, i.e., what we sometimes think of as “college towns.” Examples include State College, PA, College Station, TX, Madison, WI and Athens, GA.⁶

The local human capital level and the relative importance of higher education institutions are expected to improve the quality of life in an area for a number of reasons. First, highly educated residents may be more likely to support local public goods such as museums, parks, symphonies, and theaters. Similarly, educated residents might facilitate the density and diversity of consumer services such as restaurants, coffee shops, and bars that consumers find desirable (Glaeser et al., 2001; Waldfogel, 2008). Educated persons are also more likely to be politically active (Milligan et al., 2004) and may elect better government officials and help build clean cities with low pollution and low crime. They are also less likely to commit crimes (Lochner and Moretti, 2004), and more likely to be tolerant of others different from themselves (Florida, 2002).

A strong relative importance of one or more higher education institutions in an area may also be an important amenity. First, the presence of higher education institutions increases the local human capital level, which increases quality of life as discussed above. However, the effects of colleges and universities on quality of life go beyond the effect of increasing the local human capital level. Many college towns provide consumption opportunities not readily available elsewhere. One of the most obvious examples is live collegiate sports. Many diehard fans want to watch their teams in person and living near their schools makes this more convenient. Other examples of college town amenities include college bars and local music scenes, which are often considerably more abundant in areas with a strong

college or university presence. A number of other consumer services are also likely to be more abundant in college towns including bookstores, record stores, bicycle shops, health food stores, pizzerias, and ethnic restaurants (Gumprecht, 2003). The local human capital level and the relative importance of higher education institutions, therefore, are both likely to affect quality of life in important ways.

In this paper we find that the quality of life in an area is positively affected by both the local human capital level and the relative importance of higher education institutions. Furthermore, these effects persist when these two measures are considered simultaneously, even though these two variables are highly correlated. That is, the human capital stock and the relative importance of higher education institutions have a shared effect and also separate effects on quality of life. Controlling for the share of the population enrolled in college, a 0.10 increase in the share of adults with a college degree increases the quality of life in an area and causes workers to accept roughly 0.9% lower real wages. Controlling for the share of adults with a college degree, a 0.10 increase in the share of the population enrolled in college increases quality of life sufficiently so that workers are willing to accept 2.9% lower real wages.

2. Empirical approach and data

The geographical unit of analysis in this study is the Combined Statistical Area (CSA) where one exists and the Core Based Statistical Area (CBSA) for metropolitan areas not part of a CSA. For ease of discussion, we usually just refer to CSA/CBSAs as metropolitan areas. This paper measures differences in the quality of life across 289 metropolitan areas by logarithmic differences in real wages similarly to Winters (2010).⁷ Logarithmic differences in nominal wages and housing prices (measured by rental payments) across metropolitan areas are computed using microdata from the 2007 American Community Survey (ACS) available from the IPUMS (Ruggles et al., 2008). Housing prices from the ACS are combined with non-housing prices from the ACCRA *Cost of Living Index* to measure logarithmic differences in the cost of living across areas. See the data appendix for further details.

After using logarithmic differences in real wages to construct quality of life estimates for metropolitan areas, we next wish to estimate the consumption value of several important amenities including the local human capital level and the relative importance of higher education institutions. We do so by regressing the metropolitan area quality of life estimates on these and a number of additional amenities via Ordinary Least Squares (OLS). Regressions are weighted by metro area population, but the main results are qualitatively robust to unweighted regression. We measure the local human capital level by the share of adults (age 25 and older) with at least a four-year college degree, a common measure used in previous literature. We measure the relative importance of higher education institutions by the share of an area’s population that is enrolled in college.⁸ Areas in which a large percentage of the population is enrolled in college are likely to be heavily affected by one or more local colleges and universities. We also explore the robustness of the results to measuring the relative importance of higher education institutions by three alternative measures: 1) the share of an area’s in-migrants ages 18–24; 2) the share of an area’s in-migrants enrolled in college; and 3) the presence of a land-grant higher education institution in the metropolitan area. All except the land-grant variable are constructed from the 2007 ACS.

⁵ Rappaport (2007, 2009) and others show that population growth and migration flows are strongly affected by amenities and quality of life.

⁶ Examples of cities with both average human capital levels and average higher education importance include Cleveland, OH, Memphis, TN, San Antonio, TX and Jacksonville, FL.

⁷ See Stover and Leven (1992), Gyourko et al. (1999) and Winters (2009, 2010) for more detailed discussions of several issues with estimating quality of life differences.

⁸ Note that the ACS instructs respondents that students away at college are to be counted as residents of the place where they attend college and not their parents’ residence. However, there may still be some misreporting of student residences that leads to noise in our measure.

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