USING ENTERPRISE ZONES TO ATTRACT THE CREATIVE CLASS: SOME THEORETICAL ISSUES

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Abstract

We study decision-making by a regional authority (RA) that uses enterprise zones to attract members of the creative class---referred to as entrepreneurs---to its region. The enterprise zones provide a local public good (LPG) L to entrepreneurs who become members. First, we compute the utility maximizing number of entrepreneurs N to attract and the optimal provision level of the LPG. Second, if the LPG L is chosen optimally, then, given N, we determine an expression for the utility of an entrepreneur. Third, we calculate how much an entrepreneur would be willing to pay to become a member of an enterprise zone and then discuss the potential existence of an efficient and revenue-neutral equilibrium. Finally, we comment on some theoretical difficulties stemming from the twin facts that the number of enterprise zones created and the number of entrepreneurs attracted to these zones have to be integers.

Keywords: Creative Class, Enterprise Zone, Entrepreneur, Local Public Good, Membership

JEL classification: R11, R58

1. Introduction

The prominent American poet and writer Maya Angelou once said that "You can't use up creativity. The more you use, the more you have." The urbanist Richard Florida would probably agree with this assertion. We say this because in his numerous writings about creative individuals and creativity---see Florida (2002, 2003, 2005, 2008, 2014)---Florida has pointed out to students of regional economic growth and development the importance of first comprehending the "more you use, the more you have" effects of creativity and then putting in place policies that will attract different kinds of creative individuals who, we are told, frequently like to live and work together.

Put differently, cities and regions need to do all they can to attract and retain members of what Florida calls the *creative class*. The creative class "consists of people who add economic value through their creativity" (Florida, 2002, p. 68). Specifically, this class is made up of specialists such as attorneys, information technology professionals, medical doctors, scientists, university professors, and, noticeably, bohemians such as artists, musicians, and sculptors.

We do not disagree with Florida's key policy prescription stated above. That said, we focus on two questions that follow naturally once one acknowledges Florida's point about the primacy of the creative class for the economic vibrancy of regions. The first question is: "What specifically might a regional authority (RA) do to attract the creative class to its region?" Since attracting the creative class is generally a costly undertaking for cities, the second question is: "How many members of the creative class should a RA seek to attract?

As far as the first question is concerned, research by Buettner and Janeba (2016), Batabyal and Beladi (2019), Batabyal *et al.* (2019), and Batabyal and Yoo (2020a, 2020b) shows that

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Batabyal acknowledges financial support from the Gosnell endowment at RIT. The usual disclaimer applies.

local public goods (LPGs)[2] such as museums, educational institutions, theatres, and high-quality local infrastructure can be used by a RA to carry out the "attract" task.[3] With regard to the second question, under the assumption that a city authority acts like a "monopolist" interested in maximizing the total benefit to its city, Batabyal (2020) has determined the number of creative class members to attract to its city and the amount of a LPG to provide so that this total benefit is maximized.

These findings notwithstanding, regional authorities (RAs) are also able to use place-based policies[4] such as enterprise zones[5] to attract members of the creative class to their regions. For instance, Kolko and Neumark (2010) study enterprise zones in California and report that although these zones have not increased overall employment, they have had a positive impact on employment in those zones where managers conducted a lot of marketing and outreach activities. Zhang (2015) uses shift-share analysis and shows that the Louisville, Kentucky enterprise zone program greatly expanded the growth of manufacturing and service activities. Briant *et al*. (2015) focus on the French enterprise zone program and contend that even though this program created more jobs in spatially integrated neighborhoods, its impact on local wages was only visible in the more isolated neighborhoods. Finally, Walsh (2018) points out that the St. Paul, Minnesota Creative Enterprise Zone has been very successful in drawing in and retaining potters, playwrights, builders, and brewpubs.

The four studies discussed above are representative of the existing literature on enterprise zones in the sense that virtually all such studies about the efficacy of enterprise zones as an economic development policy are either based on case studies or on empirical analysis. To the best of our knowledge, there are *no* theoretical studies about the effectiveness of enterprise zones in attracting the creative class to a particular region. Therefore, our objective in this paper is to use a simple model and shed light on some theoretical difficulties that arise when studying the usefulness of enterprise zones in attracting the creative class to a specific region.

The remainder of this paper is arranged as follows: Section 2.1 describes our stylized model that is adapted from Scotchmer (1985) and that focuses on the interaction between an enterprise zone creating regional authority (RA) and members of the creative class who we refer to as entrepreneurs. Section 2.2 computes the utility maximizing number of entrepreneurs N to attract and the optimal provision level of the LPG L. If L is chosen optimally, then, given N, section 2.3 determines an expression for the utility of an entrepreneur. Given the section 2.3 utility for an entrepreneur, section 2.4 calculates how much an entrepreneur would be willing to pay to become a member of an enterprise zone and then discusses the potential existence of an efficient and revenue-neutral equilibrium. Section 2.5 comments on some theoretical difficulties that arise from the twin facts that the number of enterprise zones created and the number of entrepreneurs attracted to these zones have to be integers. Finally, section 3 concludes and then suggests two ways in which the research delineated in this paper might be extended.

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2 See Hindriks and Myles (2013, chapter 7) for a textbook exposition of LPGs.

3 For a discussion of related matters, see Hansen and Niedomysl (2009), Richardson (2009), and Audretsch and Belitski (2013).

4 Place-based policies refer to governmental efforts to enhance the economic performance of particular areas within their jurisdiction. Go to https://www.brookings.edu/multi-chapter-report/place-based-policies-for-shared-economic-growth/ for additional details. Accessed on 11 January 2021.

5 An enterprise zone is a geographic area that has been granted special tax breaks, regulatory exemptions, or other public assistance in order to promote economic development. Go to https://www.investopedia.com/terms/e/enterprise-zone.asp for more details. Accessed on 11 January 2021.

2. The Theoretical Framework

2.1. Preliminaries

Batabyal and Yoo (2020b) rightly point out that the creative class, in general, is composed of an assortment of specialists such as attorneys, bankers, medical doctors, sculptors, university professors, and is therefore heterogeneous. That said, a RA that is looking to bring members of the creative class together is generally *not* looking to bring together every possible type of member. In other words, a region like the greater New York City area is more likely to be interested in attracting bankers and, in contrast, a region like the greater Los Angeles area is probably more interested in drawing in film industry professionals. Therefore, to focus the subsequent discussion, we suppose that a RA is looking to attract a particular *subset* of members of the creative class such as bankers or information technology professionals. Because these members are either all bankers or all information technology professionals, and so and so forth, we can think of this subset as a *homogeneous* set of individuals. In the remainder of this paper and as noted in section 1, we refer to this homogeneous set of individuals as entrepreneurs.

Now, consider a region with a suitable RA. There are two goods in this region's economy; a private good X and a LPG L. There are a total of N possible entrepreneurs that the RA is interested in attracting to its region and each of these N possible entrepreneurs has income I. To perform this "attract" function, the RA creates enterprise zones that provide the LPG L. The cost of providing this LPG is given by $C(L) = L$. The Creative Enterprise Zone in St. Paul, Minnesota---see Walsh (2018)---is an example of the kind of enterprise zone we have in mind.[6]

The preferences of an entrepreneur are given by the utility function $U(\cdot)$ where

$$U = X + 5\log(L) - N. \tag{1}$$

Equation (1) tells us that an entrepreneur's utility is increasing in both his private good and LPG consumption and decreasing in the number of other entrepreneurs that are attracted by our RA to set up shop in one or more of the enterprise zones in the region under study. With this description of the theoretical framework out of the way, our next task is to compute the utility maximizing number of entrepreneurs N to attract and the optimal provision level of the LPG L.

2.2. Utility maximizing number of entrepreneurs and LPG provision

We know that each of the entrepreneurs that the RA is interested in attracting to its region has income I. Therefore, it is reasonable to suppose that each entrepreneur contributes L/N towards the provision of the LPG and that he spends the remaining amount $I - L/N$ on the consumption of the private good X. As such, our RA knows that every entrepreneur's optimization problem is to solve

$$max_{\{L,N\}} U = I - \frac{L}{N} + 5\log(L) - N. \tag{2}$$

The first-order necessary conditions for the above maximization problem are

$$\frac{\partial U}{\partial L} = \frac{5}{L} - \frac{1}{N} = 0 \tag{3}$$

and

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Similar enterprise zones designed to attract the creative class have also been used in Staunton, Virginia. Go to https://www.stauntonbusiness.com/home/showdocument?id=2169 for more details. Accessed on 8 January 2021.

$$\frac{\partial U}{\partial N} = \frac{L}{N^2} - 1 = 0. \tag{4}$$

It is straightforward to confirm that the second-order sufficiency conditions are satisfied. Simplifying equations (3) and (4), we get

$$L = 5N = N^2 \Rightarrow N^* = 5 \; and \; L^* = 25. \tag{5}$$

In words, equation (5) tells us that when our RA seeks to attract entrepreneurs to its region by focusing on the maximization of their utility, it is optimal to attract 5 entrepreneurs and the optimal level at which the LPG ought to be provided is 25 units. Now suppose that the LPG provision level is selected optimally. Then, given N, we wish to determine an expression for the utility of an entrepreneur.

2.3. Entrepreneurial utility

We begin by substituting $L = N^2$ from equation (5) into the utility function in equation (2). This gives us the expression for the utility of an entrepreneur in terms of N or the total possible number of entrepreneurs that the RA is interested in attracting to its region. Making the above substitution, we get

$$U = I + 10\log(N) - 2N. \tag{6}$$

Equation (6) tell us two things. First and as expected, an individual entrepreneur's utility is increasing in his income. Second, this same individual entrepreneur's utility rises as more entrepreneurs are attracted to the region under study but too many entrepreneurs also give rise to disutility.

Now, to illustrate the working of our model as far as the creation of enterprise zones is concerned, suppose that the total number of potentially attractable entrepreneurs or $N = 18$. Then, some thought ought to convince the reader that there are three cases to analyze as far as the *number* of enterprise zones that ought to be created by our RA is concerned. Specifically, this RA can create (i) three enterprise zones with $N = 6$, or (ii) four enterprise zones with $N = 4.5$, or (iii) five enterprise zones with $N = 3.6$.

Using equation (6), the utility to an individual entrepreneur from the creation of three (U_3), four (U_4), and five (U_5) enterprise zones is given by

$$U_3 = I + 10\log(6) - 12 = I + 5.92, \tag{7}$$

$$U_4 = I + 10\log(4.5) - 9 = I + 6.04, \tag{8}$$

and

$$U_5 = I + 10\log(3.6) - 7.2 = I + 5.61. \tag{9}$$

Inspecting equations (7) through (9), it is clear that an entrepreneur's utility is highest when *four* enterprise zones are created and hence creating four enterprise zones is the *efficient* course of action for our RA. When this decision is made, the corresponding provision level of the LPG is given by $L = 5N = 22.5$.

Finally, when four enterprise zones are created and the optimal LPG provision level is $L = 22.5$, using $C(L) = L$, the net revenue R_n to an enterprise zone is given by

$$R_n = 4.5F - 22.5, \tag{10}$$

where F is the fee that an entrepreneur is willing to pay to join any one of the created enterprise zones. If we want the created enterprise zones to break even financially or, put differently, the decision to create four enterprise zones to be revenue-neutral then we set $R_n = 0$ in equation (10) and this tells us that

$$4.5F - 22.5 = 0 \Rightarrow F = 5. \quad (11)$$

In words, the revenue-neutral fee that ought to be charged to entrepreneurs equals $F = 5$. Next, given the maximal entrepreneurial utility in equation (8), we first calculate how much an entrepreneur would be willing to pay to obtain this level of utility and become a member of an enterprise zone and then discuss the potential existence of an efficient and revenue-neutral equilibrium.

2.4. Is an efficient and revenue-neutral equilibrium possible?

Rewriting the maximand in equation (2), we obtain

$$X = U - 5\log(L) + N. \quad (12)$$

We know from the analysis in section 2.3 that when our RA creates four enterprise zones, we have

$$N = 4.5, L = 22.5, and\ U = I + 5\log(22.5) - 9.5. \quad (13)$$

Therefore, using equation (12), the willingness to pay that we seek is given by

$$F = I - X = 9.5 - 5\log(22.5) + 5\log(L) - N. \quad (14)$$

Using equation (14), the net revenue function for an enterprise zone is

$$R_n = NF - L = N\{9.5 - 5\log(22.5) + 5\log(L) - N\} - L. \quad (15)$$

Maximizing the net revenue function in equation (15) with respect to the LPG L gives us $L = 5N$. Using this last expression, the first-order necessary condition for an optimum for N can be written as

$$9.5 - 5\log(22.5) + 5\log(5N) - 2N = 0. \quad (16)$$

Solving the above equation for N gives us $N^* = 5.026$. Therefore, it follows that $L^* = 5N^* = 25.13$, and that $F^* = 5.026$. Using these three values for N, F, and L, we can write an expression for the net revenue going to an enterprise zone. That expression is

$$R_n = N^*F^* - L^* = (5.026)^2 - 25.13 = 0.13 > 0. \quad (17)$$

Equation (17) shows that when we use an entrepreneur's willingness to pay that corresponds to the maximal utility delineated in section 2.3, the resulting optimal choices of N (5.026) and L (25.13) give rise to net revenue for an enterprise zone that is strictly *positive*. This finding leads to the following salient conclusion: Relative to the outcome in section 2.3 in which the decision to create four enterprise zones was revenue-neutral with each enterprise zone selecting $N = 4.5$, we now have a different strategy which involves choosing $N^* = 5.026$ and the enterprise zones make *positive* net revenue. Therefore, the outcome described in section 2.3 *cannot* be an equilibrium. How might we get around this negative conclusion? The final task in our paper is to address this question.

2.5. Integer issues

We now answer the above question by commenting on some theoretical difficulties that arise from the twin facts that the number of enterprise zones created and the number of entrepreneurs attracted to these zones have to be *integers* in practice.

In our modeling thus far in sections 2.1 through 2.4, we have implicitly treated the creative class subset of interest, i.e., the set we called entrepreneurs, as a very large set of individuals. Mathematically, this is tantamount to treating this set as a continuum and hence when working with a continuum, it is certainly possible to optimally select a non-integer number of entrepreneurs to set up shop in an enterprise zone. In contrast and consistent with actual practice, we treated the number of enterprise zones to be created by the RA as an integer. In other words, *de facto*, our model describes a setting in which there are *many* entrepreneurs but only a *small* number of dominant enterprise zones.

This also means that tacitly, when determining how many enterprise zones to create, the RA is behaving like a "utility taker." This means that the RA thinks its decision-making has *no* impact on the utility attained by the homogeneous entrepreneurs. Therefore, it evaluates alternate enterprise zone creation decisions on the assumption that these decisions must yield to the entrepreneurs (the members of the enterprise zones) the same utility achieved before any decision change on its part. Put differently, in its decision-making, the RA takes the utility achieved by the entrepreneurs as *fixed*. This "utility taking" behavior on the part of the RA is what causes a discrepancy and this discrepancy is the reason for there being no revenue-neutral equilibrium. To get around this problem, it will be necessary to model a scenario in which there are a large number of both entrepreneurs and enterprise zones. When this is done, the positive net revenue described in equation (17) can be eliminated and we would then be able to study a true revenue-neutral equilibrium. This completes our discussion of some theoretical issues that arise when a RA uses enterprise zones to attract the creative class to its region.

3. Conclusions

In this paper, we analyzed decision-making by a RA that used enterprise zones to attract members of the creative class---referred to as entrepreneurs---to its region. The enterprise zones provided a LPG L to entrepreneurs who agreed to become members. First, we computed the utility maximizing number of entrepreneurs N to attract and the optimal provision level of the LPG. Second, if the LPG L was chosen optimally, then, given N, we determined an expression for the utility of an entrepreneur. Third, we calculated how much an entrepreneur would be willing to pay to become a member of an enterprise zone and then discussed the possible existence of an efficient and revenue-neutral equilibrium. Finally, we commented on some theoretical difficulties stemming from the two facts that the number of enterprise zones created and the number of entrepreneurs attracted to these zones had to be integers.

The analysis in this paper can be extended in a number of different directions. Here are two potential extensions: First, it would be interesting to model the interaction between a RA and creative class members in an intertemporal setting and to then analyze the time-paths of the optimal number of enterprise zones created and the optimal number of members that are attracted to these enterprise zones. Second, it would also be informative to partition the creative class population into different clusters and to then examine how successful a RA is in attracting these different clusters of members to its region with enterprise zones and other fiscal and people-centered policies. Studies that analyze these aspects of the underlying problem will provide additional insights into how useful enterprise zones can be in attracting creative people in general to particular regions.

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