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Batabyal, Amitrajeet and Yoo, Seung Jick

Department of Economics, Rochester Institute of Technology, Sookmyung Women's University

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by

AMITRAJEET A. BATABYAL,[2]

and

SEUNG JICK YOO[3]

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[2] Department of Economics, Rochester Institute of Technology, 92 Lomb Memorial Drive, Rochester, NY 14623-5604, USA. E-mail: aabgsh@rit.edu

[3] Corresponding Author. Graduate School of International Service, Sookmyung Women's University, 100 Cheongpa-ro 47-gil, Yongsan-gu, Seoul, Republic of Korea. E-mail: sjyoo@sookmyung.ac.kr

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Abstract

Consider an aggregate economy of two cities. We study the impact that the use of utilitarian and Rawlsian policies by these two cities has on their ability to attract members of the so called creative class. We first focus on the case in which both cities adopt utilitarian policies. Second, we analyze the case where both cities implement Rawlsian policies. Third, we study the case where one city uses a Rawlsian policy but the other city pursues a utilitarian policy. Fourth, we compare the policy outcomes in the first and the third cases above and show that if one city switches to a Rawlsian or more egalitarian objective when the other city remains utilitarian, the aggregate economy becomes less egalitarian. Finally, we compare the second and the third cases above and demonstrate that if one city switches to a Rawlsian or more egalitarian objective when the other city remains Rawlsian, the aggregate economy becomes more egalitarian.

Keywords: City, Creative Class, Egalitarian, Rawlsian, Utilitarian

JEL Codes: R11, D63

1. Introduction

The two concepts of the *creative class* and *creative capital* are now a standard part of the literatures in regional science and urban economics. This state of affairs is largely the result of the dramatic success that the urbanist Richard Florida has had in popularizing these two concepts. As pointed out by Florida (2002, p. 68), the creative class "consists of people who add economic value through their creativity." This class consists of professionals such as doctors, engineers, lawyers, scientists, university professors, and, notably, bohemians such as artists, musicians, and sculptors. The distinguishing feature of these people is that they possess creative capital which is defined to be the "intrinsically human ability to create new ideas, new technologies, new business models, new cultural forms, and whole new industries that really [matter]" (Florida, 2005, p. 32).

Regional scientists and urban economists ought to pay attention to the activities of the creative capital possessing creative class because, according to Florida (2002, 2003, 2014), this class gives rise to ideas, information, and technology, outputs that are significant for the economic growth of cities and regions. Therefore, cities and regions that want to flourish in this age of globalization need to do all they can to attract and retain members of this creative class who are, for all intents and purposes, the basic drivers of economic growth and development.

Once one accepts Florida's (2002) assertion that cities seeking to prosper economically need to attract members of the creative class, the next logical question is the following: "How are cities to do this?" Florida (2002, 2008), Buettner and Janeba (2016) and Batabyal *et al.* (2019) have answered this question by pointing out that cities can utilize local public goods such as cultural amenities, quality schools, and public transit to effectively carry out the "attract" function.[4]

[4] See Audretsch and Belitski (2013) and Batabyal and Beladi (2018) for a discussion of related issues.

Three points are now worth emphasizing. First, as pointed out by Florida and King (2016), in addition to local public goods, cities can use a variety of other policies to attract the creative class. Second, as noted by Peck (2005), Donegan and Lowe (2008), Reese and Sands (2008), and Batabyal and Nijkamp (2016), cities---and more generally regions---in which the creative class is a dominant part of the overall labor force have often been impacted by inequalities of one sort or another. Finally, the preceding two points notwithstanding, to the best of our knowledge, there are *no* theoretical studies of the ways in which alternate policies implemented by cities to attract the creative class impact inequality in the combined economy in which these cities are located.[5] Given this lacuna in the literature, we focus on an aggregate economy consisting of two cities in this paper. Next, we provide the *first theoretical* analysis of the impact of *utilitarian* and *Rawlsian* policies by these two cities on their ability to attract the creative class and on inequality in the aggregate economy.[6]

The remainder of this paper is organized as follows. Section 2 delineates our model of an aggregate economy consisting of two cities that is adapted from Caplin and Nalebuff (1992). The creative class of interest to us is made up of a *heterogeneous* group of individuals possessing creative capital. Section 3 analyzes the case in which both cities adopt utilitarian policies. Section 4 analyzes the case where both cities implement Rawlsian policies. Section 5 studies the case where one city uses a Rawlsian policy but the other city pursues a utilitarian policy. Section 6 compares the policy outcomes in sections 3 and 5 and shows that if one city switches to a Rawlsian

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In terms of the subject matter being studied, Batabyal *et al.* (2019) is the paper that is most closely related to our paper. That said, the reader should note that there is *no* overlap between the specific questions we study and the way in which we study them in the present paper and the questions analyzed in Batabyal *et al.* (2019).

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We recognize that policymakers and humans more generally do not always make decisions following utilitarian criteria. In this regard, in an early contribution, Firey (1945) contended that sentiment and symbolism sometimes outweigh rational utilitarian principles. More recently, Frey and Gachter (2000) have pointed out that the notion of reciprocity and perceptions of fairness can also affect both decision-making and outcomes.

or more egalitarian objective when the other city remains utilitarian, the aggregate economy becomes *less* egalitarian. Section 7 compares the policy consequences in sections 4 and 5 and establishes that if one city switches to a Rawlsian or more egalitarian objective when the other city remains Rawlsian, the aggregate economy becomes *more* egalitarian. Finally, section 8 concludes and then suggests two ways in which the research described in this paper might be extended.

2. The Theoretical Framework

Consider an aggregate economy of two cities denoted by $j = A, B$. Each of these two cities competes for members of the creative class with its choice of a particular policy. Consistent with the discussion in section 1, we are using the word "policy" in a general way. As such, one such policy could be how much to provide of a local public good as in Batabyal *et al.* (2019) and a second policy might be how much funding to make available to creative class members wishing to undertake one or more entrepreneurial ventures. The policy choice of city j is denoted by a point z_j on the closed interval $[0, 1]$.

Creative class members *differ* in their preference for alternate policies implemented by cities A and B. Specifically, a creative class member of type ζ who chooses to live in city j with policy z_j obtains utility given by the quadratic function[7]

$$\widehat{U}(z_j, \zeta) = -(\zeta - z_j)^2. \qquad (1)$$

Clearly, equation (1) tells us that a type ζ creative class member's preferred policy is $z = \zeta$. We assume that the distribution of the creative class population can be described by a symmetric triangular probability distribution function on the closed interval $[0, 1]$.[8] Given the policy choice

[7] The utility function in equation (1) has some similarities with the utility function in Hotelling (1929). In the Hotelling model, utility is linear in consumer surplus, the price, and quadratic in the distance to either firm on the line [0, 1]. In our paper, utility is quadratic in the gap between a creative class member's type and the relevant policy.

[8] See Forbes *et al.* (2011) for a textbook exposition of the triangular probability distribution function.

of each city, every creative class member chooses the city with the policy that is closer to his most preferred policy. Finally, the equilibrium of interest to us has two parts to it. First, no city wishes to alter its policy given the policy of the other city. Second, no creative class member wishes to move given the policy choices of the two cities. With this description of our aggregate economy of two cities out of the way, our next task is to analyze the case in which the two cities adopt utilitarian policies.

3. Utilitarian Policies

We begin by letting ζ^i denote the creative class member who is indifferent between living in the two cities given that each city is choosing its policy in accordance with a utilitarian criterion. Specifically, this means that city A (B) maximizes the *sum* of the utilities of the creative class members who live in city A (B). Now, using the symmetry of the distribution of the preferences of the creative class members and the symmetry of the city objective function, we infer that in the equilibrium, the creative class population will be equally divided between cities A and B. This means that $\zeta^i = 1/2$.

The optimal policy choice of the utilitarian city A is given by solving

$$max_{z_A} \int_0^{1/2} -(\zeta - z_A)^2 f(\zeta) d\zeta, \tag{2}$$

where $f(\cdot)$ is the density function. From Forbes *et al.* (2011, pp. 189-191), the triangular probability distribution function is given by

$$f(\zeta) = \begin{cases} 4\zeta, & 0 \leq \zeta \leq 1/2 \\ 4(1-\zeta), & 1/2 < \zeta \leq 1 \end{cases}. \tag{3}$$

Using equation (3) we can simplify city $A's$ objective function given in equation (2). This gives us

$$U(z_A) = 4\int_0^{1/2} -(\zeta - z_A)^2\,\zeta d\zeta. \tag{4}$$

Integrating the right-hand-side (RHS) of equation (4), we can rewrite city $A's$ objective function as

$$U(z_A) = \frac{z_A}{3} - \frac{z_A^2}{2} - \frac{1}{16}. \tag{5}$$

Differentiating equation (5) with respect to z_A and then simplifying the resulting expression gives us the utilitarian solution for city A. We get

$$\frac{dU(z_A)}{dz_A} = \frac{1}{3} - z_A = 0 \Rightarrow z_A = \frac{1}{3}. \tag{6}$$

Now, by symmetry, the utilitarian solution for city B is

$$z_B = \frac{2}{3}. \tag{7}$$

Our analysis thus far tells us that the creative class member of type $\zeta^i = 1/2$ is indeed indifferent between residing in city A and city B. In addition, three points are now worth emphasizing. First, creative class members with type $\zeta < 1/2$ will strictly prefer the policy choice of city A ($z_A = 1/3$) and therefore will want to live in city A. Second, creative class members with

type $\zeta > 1/2$ will strictly prefer the policy choice of city B $(z_B = 2/3)$ and hence will want to live in city B. Finally, the creative class population divides equally between the two cities A and B. We now proceed to analyze the case in which the two cities adopt Rawlsian policies.

4. Rawlsian Policies

In contrast to the utilitarian policies studied in section 3, when city A (B) adopts a Rawlsian policy, it maximizes the *minimum* utility of the creative class members who are resident in city A (B). Let z denote the creative class member who is indifferent between living in the two cities. Then, we claim that city A will choose a policy that is at the midpoint of the closed interval $[0, z]$ which gives us $z/2$.

To establish the claim in the preceding paragraph, we proceed with a proof by contradiction. To this end, suppose that the above claim is false. Then if city $A's$ policy is to the left of the midpoint then the creative class member of type z will be the worst-off individual in city A and it will be possible to raise his utility by moving city $A's$ policy to the right, that is, closer to the midpoint. Considering the other possibility, if city $A's$ policy is to the right of the midpoint then the creative class member of type $\zeta = 0$ will be the worst-off individual in this city. In this last case, it will be possible to raise this "worst-off" creative class member's utility by moving city $A's$ policy to the left, that is, closer to the midpoint. By an analogous line of reasoning, it follows that the Rawlsian city B will choose a policy that is at the midpoint of the closed interval $[z, 1]$ which gives us $(1 + z)/2$.

As a result of the policy choices by cities A and B described in the preceding paragraph, the creative class member who is indifferent between living in cities A and B is given by $z = 1/2$. We are now in a position to use $z = 1/2$ to draw two conclusions. First, the actual policy choice

of city A is $z_A = 1/4$ and that of city B is $z_B = 3/4$. Second, the creative class population is equally divided between the two cities.

It is useful to point out exactly how the adoption of Rawlsian or egalitarian policies by the two cities differs from the case in which they pursue utilitarian policies. In the Rawlsian case, the two cities choose policies that are at the *midpoint* of the preferences of the creative class members who choose to live in these two cities. As shown in figure 1, this gives us the numerical policy

Figure 1 about here

choices of $z_A = 1/4$, $z_B = 3/4$, and the letter "R" denotes Rawlsian. In contrast, when the two cities pursue utilitarian policies, they choose policies that are at the *center of gravity* of the preferences of the creative class members who live in these same two cities. Figure 1 shows that this gives us the numerical policy choices of $z_A = 1/3$, $z_B = 2/3$, and the letter "U" denotes utilitarian. Note that because we have chosen to delineate the distribution of the creative class population with the triangular probability distribution function, the distance between the optimal policy choices in the utilitarian case $(2/3 - 1/3 = 1/3)$ is *smaller* than the corresponding distance in the Rawlsian case $(3/4 - 1/4 = 1/2)$. Let us now proceed to analyze the case where one city uses a Rawlsian policy but the other city pursues a utilitarian policy.

5. Rawlsian and Utilitarian Policies

Without loss of generality, suppose that city A uses a Rawlsian policy and that city B pursues a utilitarian policy. We claim that $z = 2/5$ represents the creative class member who is now indifferent between living in the two cities under study. From the analysis in section 4, we know that city A chooses a policy that is at the midpoint of the closed interval $[0, 2/5]$. Similarly, the section 3 analysis tells us that city B chooses a policy that is at the center of gravity of the

closed interval $[2/5\,,1]$. With this information, we infer that the Rawlsian city A chooses a policy at $1/5$.

To ascertain the center of gravity of the preferences of the creative class members in city B, we solve

$$max_{z_B} U(z_B) = \int_{2/5}^{1} -(\zeta - z_B)^2 f(\zeta) d\zeta, \tag{8}$$

subject to the creative class population distribution function given by equation (3). Using equation (3), city $B's$ objective function given in equation (8) can be rewritten as

$$U(z_B) = 4\int_{2/5}^{1/2} -(\zeta - z_B)^2 \zeta d\zeta + 4\int_{1/2}^{1} -(\zeta - z_B)^2 (1-\zeta) d\zeta. \tag{9}$$

Integrating and then simplifying the two expressions on the RHS of equation (9), we get

$$U(z_B) = 0.8288 z_B - 0.68 z_B^2 - 0.2656. \tag{10}$$

Differentiating equation (10) with respect to z_B and then simplifying the resulting expression gives us the utilitarian solution for city B. We get

$$\frac{dU(z_B)}{dz_B} = 0.8288 - 1.36 z_B = 0 \Rightarrow z_B \cong 0.6. \tag{11}$$

We now need to confirm that our initial claim that $z = 2/5$ represents the creative class member who is indifferent between living in cities A and B is valid. To do so, we need to show

that the creative class member of type $z = 2/5$ is indifferent between city $A's$ policy $z_A = 0.2$ and city $B's$ policy $z_B = 0.6$. Using the utility function given in equation (1), we get

$$\widehat{U}(z_A, \zeta) = \widehat{U}(z_B, \zeta) \Leftrightarrow (\zeta - z_A)^2 = (\zeta - z_B)^2 \Leftrightarrow$$

$$(\zeta - 0.2)^2 = (\zeta - 0.6)^2 \Leftrightarrow \zeta = 0.4. \qquad (12)$$

Equation (12) tells us that the Rawlsian city $A's$ policy and the utilitarian city $B's$ policy are both equally close to the preferred policy of the creative class member of type $\zeta = 0.4$ who is indifferent between living in these two cities. In addition, all creative class members with type $\zeta < 0.4$ will absolutely prefer to live in city A and all those members with type $\zeta > 0.4$ will absolutely prefer to live in city B. We now compare the policy outcomes in sections 3 and 5 and demonstrate that if one city switches to a more Rawlsian or egalitarian objective when the other city remains utilitarian, the aggregate economy of the two cities becomes *less* egalitarian.

6. Less Egalitarian Aggregate Economy

Suppose city A switches from a utilitarian to a Rawlsian objective and city B remains utilitarian. Then, from the analysis in sections 3 and 5 we know that the optimal policy choice of city A will change from $z_A = 1/3$ to $z_A = 0.2$. Similarly, the optimal policy choice of city B will change from $z_B = 2/3$ to $z_B = 0.6$. In addition, the utilitarian city B will attract a larger share of the total population of creative class members. These points are illustrated in figure 2.

Figure 2 about here

Note that the worst-off creative class member in our aggregate economy is the individual with type $\zeta = 1$. This individual is now confronted with a policy choice that is $(1 - 0.6 = 0.40)$ units away from his preferred policy. In contrast, in the pure utilitarian case, this same worst-off individual is $(1 - 2/3 = 0.33)$ units away from his preferred policy. Clearly, since $0.4 > 0.33$ our aggregate economy becomes *less* egalitarian when city A switches from a utilitarian to a

Rawlsian objective and city B remains utilitarian. On the basis of our analysis thus far in this section we conclude that the ability of one city to achieve a more egalitarian policy outcome can be *thwarted* if the other city is not also pursuing the same egalitarian goal. Our final task in this paper is to compare the policy consequences in sections 4 and 5 and show that if one city switches to a more egalitarian objective when the other city remains Rawlsian, the aggregate economy becomes *more* egalitarian.

7. More Egalitarian Aggregate Economy

Suppose city B switches from a utilitarian goal to a Rawlsian goal and city A remains Rawlsian. In this case, our analysis in sections 4 and 5 and in particular figures 1 and 2 tell us that the policy choice in city B will change from $z_B = 0.6$ to $z_B = 3/4$. Similarly, in city A the policy choice will change from $z_A = 0.2$ to $z_A = 0.25$. In addition, both cities now attract the same share of the creative class population. Therefore, the worst-off creative class member in our aggregate economy with type $\zeta = 1$ now observes a policy choice that is $(1 - 3/4 = 0.25)$ units away from his preferred policy choice. In contrast, in the mixed case analyzed in section 5, this same individual is $(1 - 0.6 = 0.4)$ units away from his preferred policy. Clearly, since $0.25 < 0.4$ our aggregate economy becomes *more* egalitarian when city B switches from a utilitarian goal to a Rawlsian goal and city A remains Rawlsian.

In contrast with the main result of section 6, we now see that the ability of one city to achieve a more egalitarian policy is definitely *enhanced* when the other city is also pursuing the same egalitarian goal. This completes our analysis of the use of utilitarian and Rawlsian policies by cities A and B and the impact that this use has on their ability to attract members of the creative class.

8. Conclusions

In this paper we studied the impact that the use of utilitarian and Rawlsian policies by two cities ($A\ and\ B$) had on their ability to attract the creative class. We first concentrated on the case in which both cities adopted utilitarian policies. Second, we examined the case where both cities implemented Rawlsian policies. Third, we studied the case where one city used a Rawlsian policy but the other city pursued a utilitarian policy. Fourth, we compared the policy outcomes in the first and the third cases and showed that if one city switched to a Rawlsian or more egalitarian objective when the other city remained utilitarian, the aggregate economy became *less* egalitarian. Fifth, we compared the second and the third cases and demonstrated that if one city switched to a more egalitarian objective when the other city remained Rawlsian, the aggregate economy became *more* egalitarian. Finally, we note that even though our analysis in this paper was concerned with choosing policies to attract members of the creative class, the model we employed is general in the sense that it can be used to analyze any distinguishable group of either individuals or businesses.

The analysis in this paper can be extended in a number of different directions. In what follows, we suggest two possible extensions. First, it would be useful to model the interaction between the creative class and the two cities as a repeated game in which the players interact with each other a finite number of times. Second, it would also be instructive to embed the aggregate economy of two cities analyzed here in a probabilistic environment and to then study the impact that uncertainty about the preferences of the creative class and/or their ability to migrate from one city to the other has on the ability of the two cities under study to attract members of the creative class. Studies that analyze these aspects of the underlying problem will provide additional insights

into the roles that members of the creative class can play in augmenting the economic well-being of cities.

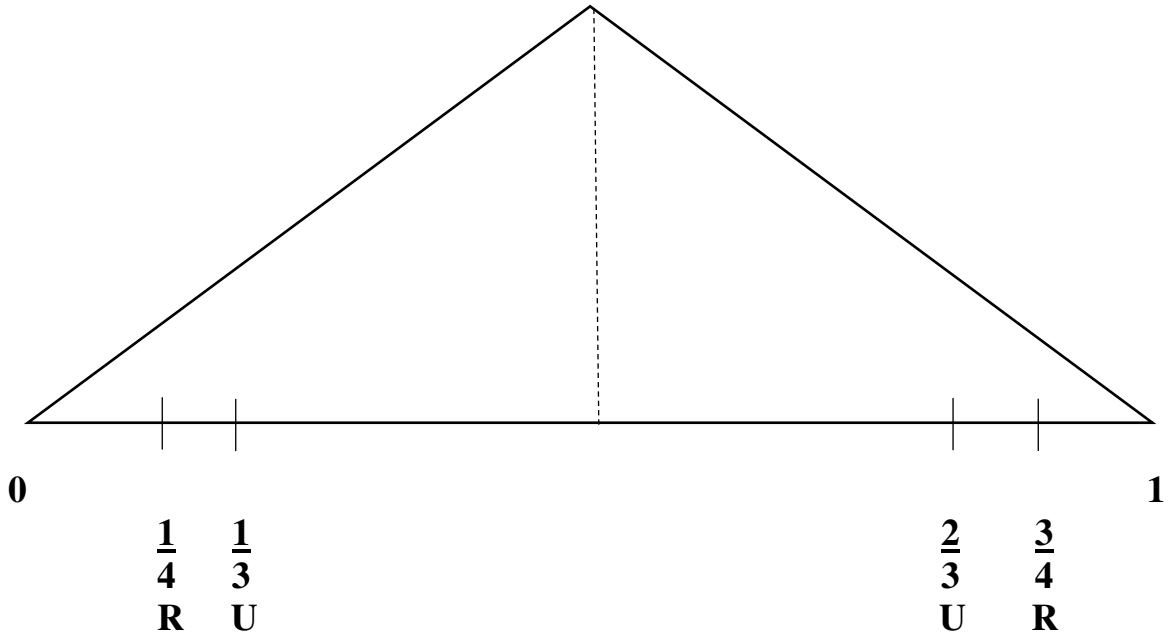

Figure 1: Utilitarian and Rawlsian policy choices

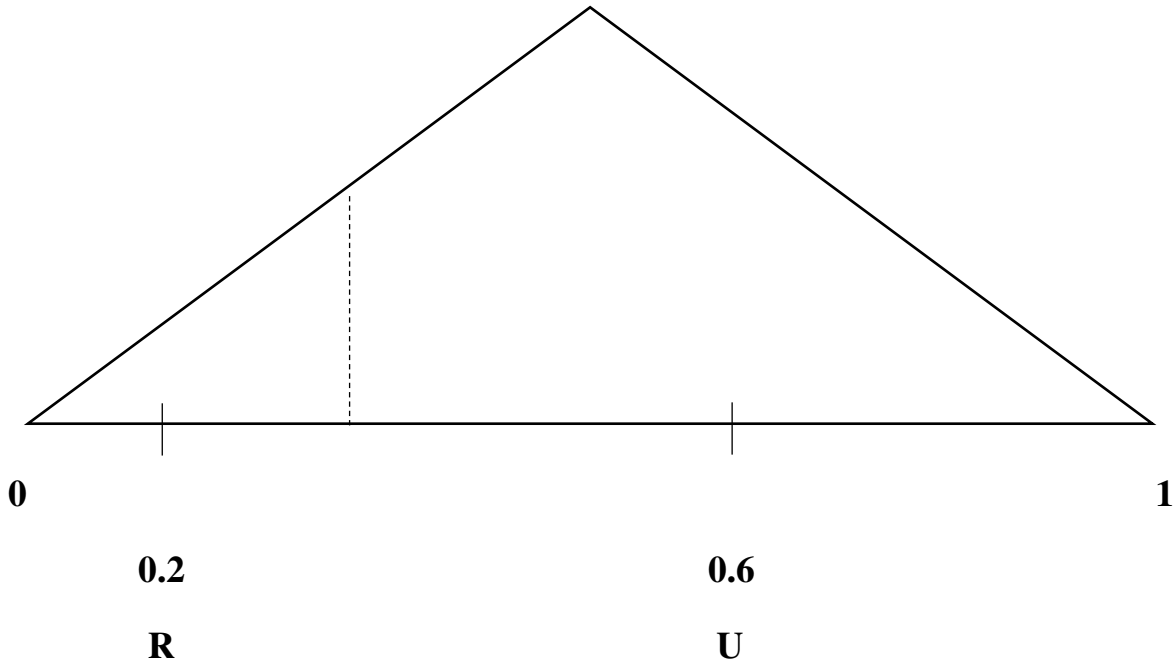

Figure 2: Policies leading to a less egalitarian aggregate economy

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