



Munich Personal RePEc Archive

Political Power Shifts, Varying Tax Policy, and Economic Outcomes in a Creative Region

Batabyal, Amitrajeet and Beladi, Hamid

Rochester Institute of Technology, University of Texas at San Antonio

8 June 2024

Online at <https://mpra.ub.uni-muenchen.de/122595/>
MPRA Paper No. 122595, posted 14 Nov 2024 07:38 UTC

Political Power Shifts, Varying Tax Policy, and Economic Outcomes in a Creative Region ¹

by

AMITRAJEET A. BATABYAL,²

and

HAMID BELADI³

1

We thank the Editor Rosella Nicolini and two anonymous reviewers for their helpful comments on a previous version of this paper. Batabyal acknowledges financial support from the Gosnell endowment at RIT. The usual disclaimer applies.

2

Departments of Economics and Sustainability, Rochester Institute of Technology, 92 Lomb Memorial Drive, Rochester, NY 14623-5604, USA. E-mail: aabgsh@rit.edu

3

Department of Economics, University of Texas at San Antonio, One UTSA Circle, San Antonio, TX 78249-0631. E-mail: Hamid.Beladi@utsa.edu

Political Power Shifts, Varying Tax Policy, and Economic Outcomes in a Creative Region

Abstract

We analyze how a permanent shift in political power in a region that is creative *a la* Richard Florida affects tax policy and economic outcomes. There are three groups of individuals in our region: laborers or workers, creative class members or entrepreneurs, and the elites. The elites initially hold political power but then they lose it to the creative class. We describe the Markov perfect equilibrium of the political game between the above three groups. Specifically, we first derive the optimal taxes that are levied on the elites and on the creative class, by the creative class. Next, we compute the discounted utility of the elites when the creative class holds political power and compare this to their utility when they are in control of politics.

Keywords: Creative Class, Elite, Entrepreneur, Political Game, Tax Policy

JEL Codes: R11; H21

1. Introduction

Political competition in creative regions, as conceptualized by Richard Florida (2002a, 2005, 2006, 2009), is often shaped by the unique social and economic dynamics associated with high levels of innovation, diversity, and openness. In his research, Florida argues that regions with a strong presence of the creative class⁴ tend to foster environments that support progressive policies and economic growth. The political landscape in these regions often becomes more competitive, as leaders and parties seek to appeal to a well-informed, highly educated electorate that values inclusivity, sustainability, and cultural vibrancy (Florida 2002b). This leads to a strong emphasis on policies, including tax policies, which address issues such as affordable housing, public transportation, and climate change, all of which directly impact the quality of life and productivity in these creative hubs.

Moreover, the diversity within creative regions often promotes a culture of tolerance and social liberalism, which can shape political competition in favor of candidates or parties that champion inclusive and progressive causes. However, this does not mean that political alignment is homogenous. The dynamic and sometimes transient nature of the creative

4

The creative class “consists of people who add economic value through their creativity” (Florida, 2002a, p. 68). This class is composed of professionals such as doctors, lawyers, scientists, engineers, university professors, and, notably, bohemians such as artists, musicians, and sculptors.

workforce can bring a broad spectrum of political views. This diversity forces political competitors to adopt nuanced positions and strategies to capture the attention and support of varied sub-groups within the creative class (Buettner and Janeba 2016). Political competition in these regions, therefore, becomes a balancing act, as candidates strive to uphold the region’s innovative and open character while also addressing the economic disparities and cultural clashes that can arise in rapidly developing, high-density urban centers.

This said, we would now like to emphasize three points. First, there is a substantial literature in regional science and economic geography that has studied the creative class in great detail.⁵ Second, there is also a large literature that has focused on the political economy of growth and development.⁶ Finally, there are *no* theoretical studies that have merged these two hitherto distinct literatures to analyze political economy issues in regions where the creative capital⁷ possessing members of the creative class are a dominant part of the overall regional economy.

5

See Atkinson and Easthope (2009), Comunian *et al.* (2010), Guimaraes *et al.* (2015), Bode and Villar (2017), Buckman *et al.* (2019), Batabyal and Nijkamp (2022a, 2022b, 2023), Batabyal and Yoo (2022), Velez-Ospina *et al.* (2023), Goya (2024), and the many references in these sources for more on this literature.

6

See Groenewold *et al.* (2003), Zhang *et al.* (2003), Acemoglu (2009), Yu *et al.* (2022), Abbas *et al.* (2023), Bai and Wu (2023), Bisin *et al.* (2024), Cheremukhin *et al.* (2024), Morlin *et al.* (2024), and the many references in these sources for additional details on this literature.

7

Creative capital, is 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).

Given this lacuna in the literature, our general objective in this paper is to provide the *first* theoretical analysis of how the nexuses between the trinity of political competition, tax policy, and economic outcomes play out in a region that is creative in the sense of Richard Florida and where the entrepreneurial creative class members are a central part of the underlying economy.

Keeping the above general objective in mind, we shed light on three specific questions. First, what happens to tax policy when the elites in a region, who are used to holding political power, lose this power to the entrepreneurial members of the creative class? Second, what impact will the use of tax policy by the creative class have on economic outcomes? Finally, how does the utility of the elites when they hold political power compare with their utility when the creative class holds political power?⁸

Our dynamic model is adapted from Acemoglu (2007) and Batabyal *et al.* (2024) and section 2 below delineates this model. There are three groups of individuals in the creative region we study--laborers or workers, creative class members or entrepreneurs, and the elites who make the political decisions initially before power shifts permanently to

8

Batabyal *et al.* (2024) have recently analyzed questions like the ones we study in the present paper. That said, there are two key differences in these two papers. First, in Batabyal *et al.* (2024), the political competition studied is stochastic and hence the likelihood of power shifting from the elites to the creative class lies between zero and one. In contrast, we study deterministic political competition meaning that there is a permanent shift in political power from the elites to the creative class. Second and unlike Batabyal *et al.* (2024), a key focus of ours is on computing and comparing the discounted utility of the elites when the creative class holds political power with their utility when they (the elites) are in control of politics.

the creative class. We use this modeling framework because of three reasons. First, it allows us to model and analyze the distributional conflict between the elites and the entrepreneurs in an easily comprehensible manner. Second, the framework allows us to explain why those with political power choose distortionary economic policies. Finally, the Cobb-Douglas structure of the production side of our regional economy---on which more below---means that we are able to obtain closed-form solutions to the three specific questions of interest. That said, we note that although our modeling framework sheds useful light on inter-group distributional conflict (between the elites and the entrepreneurs), it is not able to shed light on intra-group conflict (among the elites or the entrepreneurs) because individuals are allocated to groups permanently and there is no possibility of moving from one group to another.

Section 3 characterizes the Markov perfect equilibrium of the political game between the elites and the creative class. When using game-theoretic methods to conduct the underlying analysis, researchers sometimes focus their attention on equilibria in a class of so-called “Markov” strategies where the past affects current play only through its impact on a state variable that captures the direct impact of the past on the current environment. A Markov perfect equilibrium “is a profile of Markov strategies that yields a Nash

equilibrium in every proper subgame” (Fudenberg and Tirole, 1991, p. 501).⁹ With this definition out of the way, in this section, we first derive the optimal taxes levied by the creative class on the elites and on themselves. Next, we compute the discounted utility of the elites when the creative class holds political power and compare this to their utility when they are in control of politics. Section 4 concludes and then discusses two ways in which the research delineated in this paper might be extended.

Interpreted loosely, our model can be thought of as describing a number of real world scenarios because there are several sub-national regions globally where political dynamics involve competition between traditional elites (such as political families, landowners, or those with historical authority) and rising entrepreneurial classes. This tension often arises as economic power shifts, challenging long-standing political structures and leading to conflicts over governance, policy direction, and access to resources. Here are three examples.

First, consider the city of Mumbai in the state of Maharashtra in India. Mumbai has a long-standing political establishment, including influential families in the Maharashtra state government and historical industrial powerhouses. Mumbai is also India’s financial capital and home to numerous new-age entrepreneurs in technology,

9

Readers wishing to learn more about this equilibrium concept ought to consult standard textbooks such as Fudenberg and Tirole (1991) or Acemoglu (2009).

finance, and entertainment. The rise of the startup ecosystem has brought new interests into play, often clashing with traditional powerholders over urban planning, regulatory matters, and land use (Banerjee-Guha 2009; Weinstein 2014a, 2014b). The conflict between the elites and the entrepreneurs manifests itself in debates over real estate policy, with entrepreneurs pushing for more liberalized business environments and elite interests often prioritizing policies that maintain the *status quo*.

Second, consider Silicon Valley in the state of California in the USA. California has a deeply rooted political establishment, especially in the San Francisco Bay Area, where wealthy families and political dynasties have traditionally wielded power. That said, Silicon Valley is synonymous with the rise of tech entrepreneurs who now hold substantial influence (Saxenian 1996). Many tech leaders advocate for more disruptive, rapid policy changes, often clashing with political elites on issues like housing, regulation, and taxes. This tension---see Trounstine (2008)---often appears in debates over the regulation of tech companies, affordable housing, and labor laws, with entrepreneurs advocating for deregulation, while political elites often emphasize consumer protections, union rights, and tax policies.

Finally, consider the case of Shenzhen in China. In this city, the political competition between elites and entrepreneurs has become a defining characteristic of the city's rapid development and innovation ecosystem. As a Special Economic Zone, Shenzhen

has attracted a diverse array of entrepreneurs, particularly in technology and manufacturing, who challenge traditional elite structures by leveraging their business acumen and agility to drive economic growth (Cheng and Li 2023). This dynamic often creates tension, as political elites seek to maintain control over resources and regulatory frameworks, while entrepreneurs push for policies that foster a more favorable business environment. The interaction between these two groups influences policy decisions, shapes the local economy, and contributes to Shenzhen's reputation as a vibrant hub for entrepreneurship, exemplifying the ongoing negotiation between state authority and market forces in contemporary China (Hong 2015).

2. The Theoretical Framework

Consider a stylized creative region in which time is discrete and which is populated by a continuum of $1 + \alpha^e + \alpha^n$ of risk-neutral individuals¹⁰ with discount factor $\theta \in (0,1)$. In the preceding notation, the 1 denotes the total number of laborers or workers whose measure is normalized to unity. The only role the workers in our model play is to supply their labor inelastically. The α^e (α^n) denotes the total number of elites (entrepreneurs) in our region. In other words, the three groups of individuals in our creative region are made

¹⁰

This assumption of risk-neutrality means that the preferences of the different sets of individuals in our model can be written in linear form. In addition, having linear preferences means that we do not have to worry about transitional dynamics and we can analytically describe the political economy equilibria of interest to us in section 3 below.

up of laborers or workers, creative class members or entrepreneurs, and the elites. Let us denote these three groups by G^l , G^n , and G^e respectively.¹¹

When our analysis begins, the elites have just lost political power permanently to the entrepreneurial members of the creative class. At any time t , the i th entrepreneur in the group G^n of all entrepreneurs in our region produces a knowledge good such as a laptop computer, a camera, or a cellphone denoted by $Q_i(t)$, using a production function that is, written generally, given by $H\{K_i(t), L_i(t)\}$. As noted in section 1, in order to obtain closed-form results, in the remainder of this paper, we suppose that $H\{\cdot, \cdot\}$ is a constant-returns-to-scale Cobb-Douglas production technology which can be expressed as

$$Q_i(t) = H\{K_i(t), L_i(t)\} = \beta^{-1}\{K_i(t)\}^\beta \{D_i(t)L_i(t)\}^{1-\beta}. \quad (1)$$

In equation (1), $K_i(t)$ denotes physical capital which depreciates (for simplification) at rate $\delta = 1$, and $L_i(t)$ denotes labor. We assume that the productivity boost to labor is identical for all entrepreneurs and hence we can dispense with the subscript i in $D_i(t)$ and write this common productivity term as $D_i(t) = D^n, \forall i \in G^n$. Finally, the parameter $\beta \in (0, 1)$. The per-capita or intensive production function stemming from equation (1) is

$$h(k_i) = H(K_i/L_i, 1) = h(k_i) = \beta^{-1}(D^n)^{1-\beta}k_i^\beta, \quad (2)$$

¹¹

In what follows, we use the words “laborer” and “worker” and “creative class member” and “entrepreneur” interchangeably. Second, a superscript on a variable refers to a group (worker, entrepreneur, elite) and a subscript on a variable refers to an individual within a particular group. Finally, an individual’s group affiliation never changes over time in the analysis we undertake in this paper.

where $k_i = K_i/L_i$ is the physical capital-labor ratio.

Since we are thinking of $Q_i(t)$ as a knowledge good, the reader may want to think of the productivity boost to labor denoted by the term $D_i(t)$ as the embodiment of the creative capital that all members of the creative class in our region are supposed to possess but this is not the only possible interpretation. Let $\tau^n(t)$ denote the tax rate applied to the output of the knowledge good produced by the creative class. Like the entrepreneurs, in principle, the elites are also able to produce the knowledge good. If they do, then let $\tau^e(t)$ denote the tax rate applied to the output of the knowledge good produced by them.

Observe that even though the elites may produce the knowledge good, there are three clear differences between them and the entrepreneurs. First, as far as the output of the knowledge good is concerned, the productivity of a member of the elite will typically differ from the productivity of a member of the creative class because the creative class member possesses creative capital and the elite member does not. Second, when our analysis begins, the elites are the group holding political power---before they lose it---and only the group holding political power can set tax policy in the model. Finally, as described later in this section, there are three possible inefficiencies in our creative region. Only the elites or more generally the group holding political power utilizes tax policy to respond to these three inefficiencies in a way that enhances its welfare.

Because the production function in equation (1) exhibits constant returns to scale, in principle, it would be possible for a single entrepreneur to use up the entire labor force and the physical capital stock to produce output $Q_i(t)$. To preclude this unrealistic possibility and to ensure that entrepreneurial activity in our creative region is dispersed and not concentrated in a single location in our creative region, we assume that there exists a ceiling on how much labor any one entrepreneur can hire. This means that $L_i(t) \in (0, \hat{L}]$ for some ceiling $\hat{L} > 0$. Also, since the size of the total work force equals unity, for the labor market to clear at any time t , we must have

$$\int_{G^n} L_i(t) di \leq 1. \quad (3)$$

Because the principal focus of our paper is on the effect that a permanent shift in political power has on tax policy and economic outcomes in our creative region, it will be convenient to assume that all entrepreneurs hire the same number of workers. This means that we can dispense with the subscript i in $L_i(t)$ and write

$$L_i(t) = L^* = \min\left(\hat{L}, \frac{1}{\alpha^n}\right), \forall i \in G^n, \forall t. \quad (4)$$

Finally, consistent with the assumptions made by Acemoglu (2007, p. 347; 2009, p. 793), we assume that there is a *shortage* of labor demand in our creative region or, equivalently,

that there is an *excess* supply of workers. This means that the equilibrium wage paid to workers in our creative region or $w = 0$.

Once political power has shifted permanently from the elites to the entrepreneurs in our creative region, in principle, there are four potential policy instruments available to the entrepreneurs. Most importantly, there is a linear tax rate on the output of the knowledge good that we denote by $\tau_i(t) \in [0, 1]$. In addition, there are non-negative lump-sum transfers for the three groups that we denote by $T^l(t) \geq 0$, $T^n(t) \geq 0$, and $T^e(t) \geq 0$. Observe that because the lump-sum transfers are non-negative, they cannot be utilized to undertake non-distortionary, lump-sum taxation. The salient practical repercussion of this point is that the taxing group in our creative region can only use the linear tax rate to raise revenue.

Let us now highlight the three kinds of inefficiencies that might arise in our political economy setting with political competition between the elites and the creative class members. Following Acemoglu (2007, pp. 342-343),¹² the first inefficiency concerns *revenue extraction*. The idea here is that the group holding political power will set high and distortionary taxes on the other groups to extract resources from them. The second inefficiency is related to *factor price manipulation*. The idea here is that the group holding

12

See Acemoglu (2009, chapter 22) for a textbook discussion of these sources of inefficiency and related matters.

political power will have an incentive to tax the other group to reduce the prices of the factors they use to produce the knowledge good. This incentive arises because when the elites and the entrepreneurs are both interested in producing knowledge goods, they will necessarily compete among themselves for the available factors of production. So, by taxing the elites, the creative class makes them worse off and maintains its hold on political power. The third and final inefficiency pertains to *political consolidation*. To understand this inefficiency, suppose temporarily that the elites have not yet lost political power to the entrepreneurs and that they still hold power. Now, because the political power of the entrepreneurs depends on their economic resources, higher entrepreneurial profits reduce both the elite's political power and its future rents. Therefore, the elites will have a justification for taxing the entrepreneurs at a high rate to keep their profits low and thereby consolidate their own political power.

We now specify the timing of events at any date t . When our analysis begins, there is a predetermined tax $\tau(t)$ on the output of the knowledge good. The physical capital stocks of the entrepreneurs are given by $\{K_i(t)\}_{i \in G^n}$. Second, these entrepreneurs decide how much labor to hire $\{L_i(t)\}_{i \in G^n}$. Third, the knowledge good is then produced and a fraction $\tau(t)$ of the output is collected as tax revenue. Fourth, the politically powerful group then determines the transfers $T^l \geq 0, T^n \geq 0$, and $T^e \geq 0$. These transfers satisfy or,

put differently, the budget constraint confronting the group holding political power is given by

$$T^l(t) + \alpha^n T^n(t) + \alpha^e T^e(t) \leq \tau(t) \int_{G^n} \beta^{-1} \{K_i(t)\}^\beta \{D_i(t)L_i(t)\}^{1-\beta} di, \quad (5)$$

where the left-hand-side (LHS) indicates the government's expenditure, and the right-hand-side (RHS) denotes the tax revenues which are the product of the predetermined tax rate and the output of the knowledge good. Fifth, the politically powerful group announces the tax rate that will prevail in date $t + 1$ or $\tau(t + 1)$. Sixth, after specifying this tax rate, the entrepreneurs choose their capital stocks $\{K_i(t + 1)\}_{i \in G^n}$. With this background in place, we are now in a position to begin our analysis of tax policy and economic outcomes when there is a permanent shift in political power from the elites to the entrepreneurs in our creative region.

3. Permanent Shift in Political Power

3.1. *The optimal taxes*

Let the utility of the elites when they hold political power and when the entrepreneurs hold political power be denoted by $U^e(E)$ and $U^e(N)$ respectively. Political power in our creative region has just shifted permanently from the elites to the creative class. A variety of internal and external factors can give rise to political power shifts. Focusing on internal factors first, in democratic societies, the most common factor causing a shift is the outcome of elections. In a monarchy, this shift can arise from both the death

or the abdication of the monarch. Moving on to external factors, the loss of a war---such as Georgia's loss to Russia in 2008---can give rise to a political shift in the losing nation. Finally, when a nation decides to split into two smaller nations---the Czech Republic and Slovakia in 1992---or when two nations with distinct governance structures unite to form a single nation---Germany from East and West Germany in 1990---political shifts can occur.

That said, we would like to point out that the expression for $U^e(E)$ is virtually identical to that given in equation (11) in Batabyal *et al.* (2024). Our task now is to derive an expression for $U^e(N)$, the utility to the elites when the creative class holds political power. Clearly, this latter utility will depend on the tax policy chosen by the creative class. Therefore, we first need to state and solve the tax policy choice problem faced by the entrepreneurial members of the creative class.

Per the discussion in section 2, the wage paid to workers or $w = 0$ because there is a shortage of labor demand or an excess supply of labor in our creative region. As such, for a given tax policy sequence $\{\tau^e(t), \tau^n(t)\}_{t=0}^{\infty}$, the maximizing physical capital-labor ratio as a function of the tax rate can be determined by using equation 22.20 in Acemoglu (2009, p. 794) or equation (14) in Batabyal *et al.* (2024). Doing this, we get

$$k(\tau^n) = \{\theta(1 - \tau^n)\}^{1/(1-\beta)} D_i. \tag{6}$$

Next, we need to specify the political power wielding group's budget constraint. Modifying the inequality in (5) in two ways (on which more below), the budget constraint we seek is given by

$$T^l(t) + \alpha^n T^n(t) + \alpha^e T^e(t) \leq \rho \int_{G^n \cup G^e} \tau^i(t) H\{K_i(t), L_i(t)\} di + R^n, \quad (7)$$

and it is understood that the production function $H\{K_i(t), L_i(t)\} = \beta^{-1}\{K_i(t)\}^\beta \{D_i(t)L_i(t)\}^{1-\beta}$.

The LHS of the inequality in (7) denotes total government expenditures on transfers. The RHS is the product of the tax rate and the total output of the knowledge good plus the rent from natural resources or R^n . These rents add to the tax revenues and thereby expand the total revenue available to the group holding political power with which it can, in principle, provide larger transfers to one or more sets of individuals operating in our creative region. The inclusion of the rents from natural resources is the first modification to (5). The second modification to (5) is the introduction of the parameter $\rho \in (0, 1)$ on the RHS of (7). This parameter captures the ability of the creative class government to redistribute tax revenues. So, when ρ is high (low) this means that the government can raise and redistribute a significant (relatively insignificant) amount of tax revenues.

We can now solve for the consumption $C^n(t)$ of the representative creative class member. Observe that this consumption also equals this member's net income. Since this

net income is the value of the output, less the relevant costs, plus the non-negative transfer, we can write

$$C^n(t) = \hat{L}[h\{k(\tau^n(t))\} + (1 - \delta)k(\tau^n(t)) - k(\tau^n(t+1))] + T^n(t). \quad (8)$$

It should be clear to the reader that when determining the optimal tax policy, the representative creative class member is not going to award lump-sum transfers either to the elites or to the workers. This means that $T^e(t) = T^l(t) = 0$. Therefore, we can use the budget constraint in (7) to rewrite the equation for consumption in (8). After some algebra, we get

$$C^n(t) = \hat{L} \left[h\{k(\tau^n(t))\} \left\{ 1 + \frac{\rho}{\alpha^n} \tau^n(t) \right\} + (1 - \delta)k(\tau^n(t)) - k(\tau^n(t+1)) \right] + \frac{\rho}{\alpha^n} \hat{L} \tau^e(t) h\{k(\tau^e(t))\} + \frac{R^n}{\alpha^n}. \quad (9)$$

The goal of the creative class is to set the sequence of taxes $\{\tau^e(t)\}_{t=0}^{\infty}$ on the elites to maximize their overall lifetime utility. Now, given that the shift in political power from the elites to the creative class is permanent, the maximization problem to be solved by the creative class is a static and not a dynamic optimization problem. To see this in another way, notice from equation (9) that the tax on elites or $\tau^e(t)$ enters this equation for consumption $C^n(t)$ at date t but *not* at date $t+1$. The upshot of this discussion is that the political power wielding creative class will tax the elites so that

$$\tau^e(t) = \operatorname{argmax}_\tau[\tau h\{k(\tau)\}]. \quad (10)$$

Observe that as posed, the optimization problem in equation (10) makes sense because it requires that the creative class maximize the tax revenues it obtains from the elites.

After making the appropriate substitutions, the first-order necessary condition to the optimization problem in equation (10) is

$$h\{k(\tau^e(t))\} + \tau h'\{k(\tau^e(t))\} \frac{\partial k(\tau^e(t))}{\partial \tau} = 0. \quad (11)$$

Because the production function for the knowledge good in our model is Cobb-Douglas---see equation (1)---equation (11) can be simplified to give

$$\frac{1}{\beta} (D^n)^{1-\beta} k^\beta - \tau (D^n)^{1-\beta} k^{\beta-1} \frac{1}{(1-\beta)(1-\tau)} = 0. \quad (12)$$

After some algebraic steps, equation (12) simplifies to $\beta\tau/\{(1-\beta)(1-\tau)\} = 1$ and so we infer that the expression for the optimal tax set by the governing creative class on the elites in the Markov perfect equilibrium is time-invariant and given by

$$\tau^e(t) = \tau^e = 1 - \beta. \quad (13)$$

Let us now compare this result in equation (13) with some results obtained by Batabyal *et al.* (2024). First, we see that the optimal tax set on the elites by the governing

creative class is *identical* to the optimal tax set by the elites on the creative class when they (the elites) hold political power. Second, of the three kinds of inefficiencies discussed in section 2, the optimal tax in equation (13) is also *equal* to the optimal tax set by the elites on the creative class when their only concern is to extract revenues from the creative class.

We can ask what the value of the optimal tax that the creative class sets on itself or $\tau^n(t)$ is in the Markov perfect equilibrium. To find out, observe first that the creative class will want to tax itself if, by doing so, it can reduce its costs by paying a lower wage to hire workers. However, recall from the section 2 discussion that there is an excess supply of workers in our model. Therefore, the equilibrium wage $w = 0$. This means that the wage is independent of the tax rate $\tau^n(t)$. As such, the creative class accomplishes nothing by setting a positive tax rate on itself and therefore it optimally sets $\tau^n(t) = 0$.

We emphasize that the optimal values of the two taxes $\tau^e(\cdot)$ and $\tau^n(\cdot)$ are the outcome of an optimization problem---see equation (10)---solved by the creative class and economic logic that accounts for the *interactions* between this outcome and the three inefficiencies in our creative region. Therefore, in our opinion, it is not obvious that the optimal tax the creative class sets on itself or $\tau^n(t) = 0$. This “zero tax” result arises because of our assumption that the economy of our creative region is characterized by an excess supply of labor and therefore the wage paid to labor or $w = 0$. If we were to change

this assumption and replace it with one which says that the economy of our creative region is marked by an excess demand for labor or by full employment of labor then this zero tax result would disappear and the optimal tax $\tau^n(t)$ would have to account for the point that the equilibrium wage paid to labor would now be equal to the net productivity of one of the two groups of producers (elites or the creative class) and therefore one or the other group would make zero economic profit in equilibrium.

Our next task is to derive the discounted utility of the elites when the creative class holds political power $\{U^e(N)\}$ and to compare this to their own utility when they are in control of politics $\{U^e(E)\}$.

3.2. The utilities of the elites and the creative class

Given the two optimal taxes in section 3.1, our immediate objective now is to mathematically describe the net income or consumption of the elites or $C^e(t)$. Using the logic employed in the derivation of equation (8), we obtain

$$C^e(t) = (1 - \tau^e)\hat{L}h\{k(\tau^e)\} + (1 - \delta)\hat{L}k(\tau^e) - \hat{L}k(\tau^e). \quad (14)$$

It is possible to simplify equation (14) further. To do so, we proceed in three steps. First, recall our assumption from section 2 that $\delta = 1$. This means that the stock of physical capital in our creative region depreciates fully. Using this assumption, equation (14) becomes

$$C^e(t) = (1 - \tau^e)\hat{L}h\{k(\tau^e)\} - \hat{L}k(\tau^e). \quad (15)$$

Second, we use equation (6) from section 3.1 to simplify equation (15). After some algebra, we get

$$C^e(t) = \hat{L} \left\{ \beta \frac{1}{\beta} (D^e)^{1-\beta} (\beta\theta)^{\beta/(1-\beta)} (D^e)^\beta - (\beta\theta)^{1/(1-\beta)} D^e \right\}, \quad (16)$$

where, analogous to D^n , D^e is the productivity boost to labor that is identical for all members of the elite when they decide to produce the knowledge good. Therefore, we can dispense with the subscript i and write $D_i(t) = D^e, \forall i \in G^e$. Finally, using the rules for exponents and some algebra, equation (16) simplifies to

$$C^e(t) = \hat{L} D^e (\beta\theta)^{\beta/(1-\beta)} (1 - \beta\theta). \quad (17)$$

Using equation (13) and modifying equation (6) to denote the elites, we get

$$k(\tau^e) = \{\theta(1 - \tau^e)\}^{1/(1-\beta)} D^e = (\beta\theta)^{1/(1-\beta)} D^e. \quad (18)$$

Let us now use equation (17) for consumption $C^e(t)$ and the logic leading to the expression of the analog of $U^e(E)$ in Acemoglu (2009, p. 797) to write an expression for the discounted utility of the elites when the creative class holds political power or $U^e(N)$. We get

$$U^e(N) = \hat{L} D^e (\beta\theta)^{\beta/(1-\beta)} (1 - \beta\theta) + \theta U^e(N) = \frac{1}{1-\theta} \hat{L} D^e (\beta\theta)^{\beta/(1-\beta)} (1 - \beta\theta). \quad (19)$$

Observe that the expression for $U^e(N)$ in equation (19) depends on our stipulation that political power in our creative region has shifted permanently from the elites to the creative class. If this were not the case, then we would *not* have been able to come up with an expression for $U^e(N)$ without knowing $U^e(E)$.

Having obtained the equation (19) expression for $U^e(N)$, we now want to prove that the discounted utility of the elites when the creative class holds political power is *less* than their utility when they (the elites) are in control of politics. In symbols, we want to prove that $U^e(E) > U^e(N)$. Our method will be to show that the per period consumption (which equals net income) of the elites when the elites hold political power is *greater* than their consumption when the creative class is in power.

Let us denote the consumption of the elites when they hold political power and when the creative class holds power by $C^e(E)$ and $C^e(N)$ respectively. Then, what we want to show is that $C^e(E) > C^e(N)$ for any time period. To do so. We proceed as in Acemoglu (2009, pp. 797-798). This gives us

$$C^e(E) = \theta^{\beta/(1-\beta)} D^e \frac{\hat{L}}{\beta} + \left[\rho \theta^{\beta/(1-\beta)} \tau^n (1 - \tau^n)^{\beta/(1-\beta)} D^n \alpha^n \frac{\hat{L}}{\beta} + R^n \right] \geq \theta^{\beta/(1-\beta)} D^e \frac{\hat{L}}{\beta}. \quad (20)$$

Observe that equation (17) gives us an expression for $C^e(N)$. Therefore, a sufficient condition for $C^e(E) > C^e(N)$ is that

$$C^e(E) \geq \theta^{\beta/(1-\beta)} D^e \frac{\hat{L}}{\beta} > \hat{L} D^e (\beta\theta)^{\beta/(1-\beta)} (1 - \beta\theta) = C^e(N). \quad (21)$$

Because $\beta \in (0, 1)$ and $\theta \in (0, 1)$, manipulating (21), we infer that $1 > \beta^{1/(1-\beta)}(1 - \beta\theta)$. This last inequality tells us that the strict inequality in (21) is satisfied. In other words, we have just proved that $C^e(E) > C^e(N) \Rightarrow U^e(E) > U^e(N)$. In words, the elites get to consume more in every time period when they themselves hold political power and hence they *strictly prefer* being in power as compared to the creative class being in power. This completes our discussion of political power shifts, varying tax policy, and economic outcomes in a creative region.

4. Conclusions

In this paper, we theoretically analyzed how a permanent shift in political power in a region that was creative in the sense of Richard Florida affected tax policy and economic outcomes. There were three groups of individuals in our region: laborers or workers, creative class members or entrepreneurs, and the elites. The elites initially held political power but then they lost it to the creative class. We delineated the Markov perfect equilibrium of the political game between the elites and the creative class. Specifically, we derived the optimal taxes levied on the elites and on the creative class, by the creative class. Next, we computed the discounted utility of the elites when the creative class held political power and compared this to their utility when they were in control of politics.

The analysis in this paper can be extended in several ways. Here are two examples. First, it would be interesting to compare the Markov perfect equilibrium results obtained in this paper with the results obtained when the solution concept is that of subgame perfect equilibrium. Second, it would be instructive to analyze the interaction between the elites and the entrepreneurs in our creative region when, instead of an excess supply of labor, we have full employment or excess demand for labor and therefore the equilibrium wage is not zero but positive. Studies that analyze these aspects of the underlying problem in creative regions will provide additional insights into how economic outcomes and welfare depend on the nature of the political competition between the elites and the creative class and on the taxes emanating from this competition.

References

- Abbas, H.S.M., Xu, X., and Sun, C. 2023. Dynamics of group grievances from a global cohesion perspective, *Socio-Economic Planning Sciences*, 87, 101606.
- Acemoglu, D. 2007. Modeling inefficient institutions, in R. Blundell, W. Newey, and T. Persson, Eds., *Advances in Economic Theory, Proceedings of the World Congress 2005*. Cambridge University Press, Cambridge, UK.
- Acemoglu, D. 2009. *Introduction to Modern Economic Growth*. MIT Press, Cambridge, MA.
- Atkinson, R., and Easthope, H. 2009. The consequences of the creative class: The pursuit of creativity strategies in Australia's cities, *International Journal of Urban and Regional Research*, 33, 64-79.
- Bai, L., and Wu, L. 2023. Political conflict and development dynamics: Economic legacies of the cultural revolution, *Journal of Economic History*, 83, 981-1017.
- Banerjee-Guha, S. 2009. Neoliberalizing the 'urban': New geographies of power and injustice in Indian cities, *Economic and Political Weekly*, 44, 95-107.
- Batabyal, A.A., Kourtit, K., and Nijkamp, P. 2024. Political competition, fiscal policy, and economic outcomes in a creative region, *Unpublished Manuscript*, Rochester Institute of Technology.

- Batabyal, A.A., and Nijkamp, P. 2022a. Interregional competition for mobile creative capital with and without physical capital mobility, *International Regional Science Review*, 45, 58-73.
- Batabyal, A.A., and Nijkamp, P. 2022b. Efficient regional taxes in the presence of mobile creative capital, *Review of Regional Studies*, 52, 198-209.
- Batabyal, A.A., and Nijkamp, P. Eds. 2023. *The Creative Class Revisited*. World Scientific Publishing, Singapore.
- Batabyal, A.A., and Yoo, S.J. 2022. Tax policy and interregional competition for mobile venture capital by the creative class, *North American Journal of Economics and Finance*, 61, 101690.
- Bisin, A., Rubin, J., Seror, A., and Verdier, T. 2024. Culture, institutions, and the long divergence, *Journal of Economic Growth*, 29, 1-40.
- Bode, E., and Villar, L.P. 2017. Creativity, education or what? On the measurement of regional human capital, *Papers in Regional Science*, 96, S51-S68.
- Buckman, S., Latorre, M., Bosman, M.M., Nawawy, N., and Koh, B. 2019. A qualitative exploration of arts-based neighborhood revitalization: The case of ‘The Space at 2106 Main’ in West Tampa, Florida, *Papers in Regional Science*, 98, 679-700.
- Buettner, T., and Janeba, E. 2016. City competition for the creative class, *Journal of Cultural Economics*, 40, 413–451.

- Cheng, L., and Li, Z. 2023. Political connections, competition, and innovation: Quasi-experimental evidence from Chinese firms, *Economic Development and Cultural Change*, 71, 819-862.
- Cheremukhin, A., Golosov, M., Guriev, S., and Tsyvinski, A. 2024. The political development cycle: The right and the left in People's Republic of China from 1953, *American Economic Review*, 114, 1107-1139.
- Comunian, R., Fagian, A., and Li, Q.C. 2010. Unrewarded careers in the creative class: The strange case of bohemian graduates, *Papers in Regional Science*, 89, 389-411.
- Florida, R. 2002a. *The Rise of the Creative Class*. Basic Books, New York, NY.
- Florida, R. 2002b. The economic geography of talent, *Annals of the Association of American Geographers*, 92, 743-755.
- Florida, R. 2005. *The Flight of the Creative Class*. Harper Business, New York, NY.
- Florida, R. 2006. The flight of the creative class: The new global competition for talent, *Liberal Education*, 92, 22-29.
- Florida, R. 2009. *Who's Your City?* Basic Books, New York, NY.
- Fudenberg, D., and Tirole, J. 1991. *Game Theory*. MIT Press, Cambridge, MA.
- Goya, D. 2024. Marshallian and Jacobian externalities in creative industries: Evidence from Chile, *Papers in Regional Science*, 103, 100028.

- Groenewold, N., Hagger, A.J., and Madden, J.R. 2003. Interregional transfers: A political economy CGE approach, *Papers in Regional Science*, 82, 535-554.
- Guimaraes, P., Munn, J., and Woodward, D. 2015. Creative clustering: The location of independent inventors, *Papers in Regional Science*, 94, 45-66.
- Hong, Z. 2015. Entrepreneurs: From “red capitalists” to intellectual elites, in Z. Hong, *The Price of China’s Economic Development*, 39-58. University Press of Kentucky, Lexington, KY.
- Morlin, G.S., Passos, N., and Pariboni, R. 2024. Growth theory and the growth model perspective: Insights from the supermultiplier, *Review of Political Economy*, 36, 1130-1155.
- Saxenian, A. 1996. *Regional Advantage*. Harvard University Press, Cambridge, MA.
- Trounstein, J. 2008. *Political Monopolies in American Cities*. University of Chicago Press, Chicago, IL.
- Velez-Ospina, J.A., Siepel, J., Hill, I., and Rowe, F. 2023. Determinants of rural creative microclustering: Evidence from web-scraped data for England, *Papers in Regional Science*, 102, 903-944.
- Weinstein, L. 2014a. ‘One-man handled’: Fragmented power and political entrepreneurship in globalizing Mumbai, *International Journal of Urban and Regional Research*, 38, 14-35.

Weinstein, L. 2014b. *The Durable Slum*. University of Minnesota Press, Minneapolis, MN.

Yu, C., Hou, L., Lyu, Y., and Zhang, Q. 2022. Political competition, spatial interactions, and default risk of local government debts in China, *Papers in Regional Science*, 101, 717-744.

Zhang, Z., Xu, X., and Zhang, W.B. 2003. The dynamics of political and economic interactions between Mainland China and Taiwan, *Papers in Regional Science*, 82, 373-388.