An analysis of the economic growth of population mobility and rent-seeking behavior

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Abstract: *Since the 1990s, China's massive wave of population shift has become a unique landscape in the reform of China's social and economic structure. As a reallocation of labor and human capital, this shift of population has on one hand emerged with the great transformation of social and economic structure. In the meantime, over the past 30 years, rent-seeking activities were rampant and in the traditional theory of rent-seeking, it is believed that rent-seeking will reduce the growth of economic. In this case, it is as if rent-seeking activities is going hand in hand with the economic growth. This article aims at studying from the angle of rent-seeking and the flow of talents, hence building an endogenous career choice model for trade-offs between producers and rent-seekers. Meanwhile assuming talent flows only emerge in economically developed regions and economically less developed regions, then bind them together to study the growth of economic.*

Keywords: economic growth, rent-seeking activities, Corruption, GDP

1. Introduction

Rent-seeking is a common phenomenal in developing countries. The typical forms of rent-seeking are corruption, bribery, serious bureaucracy and crimes and so on. Although the phenomenon of rent-seeking and corruption exist in every country throughout the world, yet it is most severe in the developing countries. In developing countries, not only is rent-seeking rampant, but also does it has a very severe phenomenal of the brain drain. In the meantime, since the 1990s, China's massive wave of population shift has become a unique landscape in the reform of China's social and economic structure. As a reallocation of labor and human capital, this shift of population has on one hand emerged with the great transformation of social and economic structure. On the other hand, it has also had an effect on the economy. It has a great and significant impact on the China's overall economic growth as well as the regional economic structure changes.[1]

In the traditional theory of rent-seeking, it is believed that rent-seeking will reduce the growth of economic. In this case, it is as if rent-seeking activities is going hand in hand with the economic growth, it stimulates the growth of China's economic and it brings about the rent-seeking paradox when the traditional theory of rent-seeking is being applied to China's society. Meanwhile, in recent years, China has stepped up its crackdown on corruption and put more effort into elimination rent-seeking activities.

2. Literature review

The traditional theory of rent-seeking believes that rent-seeking activities usually transfer productive resources to unproductive uses, and it causes inefficient allocation of resources which hinder the development of economic. Laband and Sophocleus takes the number of registered persons as the quantitative index of rent-seeking activities.[2] Based on America's time series data research during 1947 to 1983, we find out that there is a negative relationship between rent-seeking and per capital income growth. Other than that, during the empirical research, Murphy came to a conclusion that rent-seeking activities suppress innovation, and thus hinder economic growth. Through building mathematical model and analyzing rent-seeking activities in countries in economic transition such as Romania, Tache finds out that rent-seeking seriously impair economic efficiency and we should put

more effort into suppressing rent-seeking activities during the transformation of economic. Li fu you and Sun chen hui study enterprises' rent-seeking activities through including government departments into Romer's endogenous growth model .And the study shows that rent-seeking activities bring negative impact on the economic. In order to boost economic growth, we must punish rent-seeking activities harshly. Based on the analysis of mineral resources mining enterprise's production behavior, mining companies' rent seeking behavior will cause the factor input of enterprises and its scale inefficient.[3]

Certainly, parts of the documents have also proved that rent-seeking activities have certain stimulative effect to economic growth. And Rama uses the endogenous growth model to study the relationship between rent-seeking activities and the growth of economic and finds out that in the model. Accordingly, the increase of capital will bring a rise in the production too, however the increase of control activities will reduce competition. Aidt's researches show that, in the case of weakened institutions, corruption is surprisingly harmless to economic efficiency and economic growth. Ratbek Dzhumashev's studies show that with the growth of economic, rise of salaries and the rise of the cost of rent-seeking activities, corruption will fade, meaning that the growth of economic and rent-seeking activities has a two-way influence.[4] Huang shao an and Zhao jian created a rent-seeking model under unbalanced transition and found out that in the short term, rent-seeking and the fast growth of economic coexist. However, if the transition of the political system is long delayed, and the system is imbalanced for a long time, rent-seeking will cause the economic to not be able to achieve long-term stable and fast growth.[5]

As compared to studying the immigration between two countries, the flow between provinces has nearly no obstacles. The case of political game affecting immigration ultimately affecting data acquisition will not occur. This article will study from the angle of rent-seeking and the flow of talents and build an endogenous career choice model that balance between producers and rent-seekers, meanwhile assuming the flow of talent would only occur between economically developed region and sub developed areas. Binding these two factors together to study the growth of economics. This article will also make use of the data of the provinces from the past ten years to conduct the empirical analysis so as to prove my point of view.

3. Theoretical part

To start with the basic model, if we assume that rent-seekers' rate of corruption charged for each project is fixed(0<b<1). There will only be rent-seekers and producers in every economy.

3.1. When the population are not able to move

When the traffic between each province is blocked, it becomes a closed economy. Assuming that in underdeveloped areas, every producer oversees a production project, and the ability requirement for each project is identical, in this case, we set it as 'a'. Every producer's ability varies, but they are all greater than a, which means that every producer can complete the production of the project very well. Assuming that every individual in the economy needs to choose between rent-seeking and producing. If one chooses to be a rent-seeker, every rent-seeker can only charge 'b' percent of the money of a project. We see the total number of rent-seekers and producers as '1'.And make the portion of the rent-seekers in the economy as 'p', and make the portion of producers in the economy as '1-p'.The previous assumption is that every producer only takes charge of one production project ,and every rent-seeker can only corrupt a certain amount of money, In other words, if the number of rent-seekers is greater than that of producers, there will be a situation where a part of rent-seekers will have no money to corrupt. On the contrary, if they number of producers is greater than that of rent-seekers, there will be a situation where the exceeding number of producers can attain all the output of their own production. Under the condition of equilibrium, the expected revenue of the rent-seekers and producers is the same, we can attain the endogenous consequences of career choice and in this case, we make it 'p*'. Under this assumption, producers' expected revenue is:

$$\pi_s(p) = \begin{cases} (1-b) * a & \text{,if } p > 1-p \\ a * \dfrac{1-p}{1-p} - b * \dfrac{p}{1-p} & \text{,if } p < 1-p \end{cases}$$

From the perspective of the producer, when p=0, the producer obtains all output a, when the number of rent-seekers is greater than the producer, that is, there must be a proportion b of the output for

bribery, when the number of producers is greater than the seeker Renters, that is, those with (p/1-p) have to pay bribes.[6]

The rent-seeker's expected return is:

$$\pi_x(p) = \begin{cases} \dfrac{1-p}{p} * ab & \text{,if } p > 1-p \\ a * b & \text{,if } p < 1-p \end{cases}$$

From producers' viewpoint, when p is equal to 1. There will be no producers in the economy, therefore there is no way of corrupting, the expected revenue will then be zero. When the amounts of rent-seekers are greater than producers, only (1-p/p) of rent-seekers can receive bribes. When the amounts of producers are greater than rent-seekers, every rent-seeker can receive bribes.[7]

When we combine the producer expected return curve and the rent-seeking expected return curve, we can find out that when b is smaller than 1/2. whatever the ratio of producers to rent-seekers, the earnings of the producers will always be greater than rent-seekers. Because of that, no one chooses to be a rent-seeker. When b is larger than 1/2, there will be two equilibrium points. In the range of p>1-p, there is a equilibrium point E1 in the part of high rate of rent-seeking. In the range of p<1-p,which is the low rate of rent-seeking part, there is an equilibrium point E2.At equilibrium point E2, with every increase $\Delta p(p^*+\Delta p<1/2)$, the expected revenue of rent-seekers stay the same but the earnings of producers will decrease. Hence, when it is at equilibrium point E2, producers are motivated to become rent-seekers, therefore equilibrium point E2 is not stable. Similarly, equilibrium point E1 is stable. At equilibrium point E1, p* equals to b.

3.2. When population are free to move around

Now we bring in another advanced economy, similar to the assumption made when the economy is closed. Assuming that in a economically well-developed region, and every producer is in charge of only one production project, and the ability requirement of the production project is still the same, in this case, we make it 2a. Every producer's ability varies, but they are all greater or equal to 2a,which means that every producer can well accomplish the production of their project. High wages and benefits in economically developed areas will attract talents in economically less developed regions. Assuming only m portion of people from the economically less developed regions is competitive, which means that only a rate of m people's ability is greater or equal to 2a.and (1-m) portion of people cannot go to economically developed areas because their ability is less than 2a.Rent-seekers do not flow to other regions due to their position, we first assume that rent-seeker can only work in one place, and we do not consider the circumstances of rent-seekers working in developing areas. Similarly, we assume that every rent-seeker can only corrupt b percent of the money from a project, but with a stricter supervision in economically developed countries, every rent-seeker faces ε(0<ε<1) percent of risk of being caught. Once caught, their earnings will become zero undoubtedly. Since every rent-seeker face the risk of getting caught, and according to the expected revenue of a rent-seeker in a closed economy, we can simply see ε as the money less earned in corruption, which is (1-ε)b. After the population starts to flow, the economically less developed countries will be at equilibrium point E1, and the number of rent-seekers are still greater than that of producers. The function of producer's expected revenue will be:

$$\pi_s(p, m) = (1-m)(1-b) * a + m * 2a * (1-(1-\varepsilon)b)$$

And the function of rent-seekers' expected revenue will be:

$$\pi_x(p, m) = (1-m)\frac{1-p}{p} * ab$$

In comparison with closed economy, the flow of population brings a increase in producer's expected revenue in economically less developed regions and a decline in the rent-seeker's expected revenue, which will make more people to refocus on producing and innovating, instead of rent-seeking the reallocation of wealth, and it has a positive impact on the economic growth. Now we continue to make $\pi_s(p, m) = \pi_x(p, m)$ and we can get this:

$$p(m) = \frac{(1-m)b}{1+m-2mb+2m\varepsilon b};$$

At equilibrium point E1, p* equals to b, then we compare the changes in the ratio of rent-seekers: p(m)- p* <0,we can see that after the population flow, the ratio of rent-seekers is lower. And the ratio

of rent-seekers to producers in economically developed countries is: p(m)/(1-p(m))=γ(m):

$$\gamma(m) = \frac{(1-m)b}{1-b+m(1-b+2\varepsilon b)}$$

As seen from above,1-b+2εb)>0,when m increases, denominator increases and numerator (b-mb) decreases, therefore we can conclude that γ(m)decreases as m increases, which fulfill the requirement of flowing. The larger the proportion of people who are competitive in economically developed areas, the lower the percentage of rent-seekers in economically less developed countries, which improve the allocation of talents, as a result it is beneficial to the economic growth in the economically less developed areas. In fact, government can take a series of measures to readjust the size of m: such as increasing the investments in education which can enhance the ability of the local producers, and as a result making more people in the economically developed country competitive; or we can offer subsidies, and increase the income of those capable, such as raising their salaries or giving out subsidies, increasing income can make economically developed are not so attractive and hence reducing m.

4. The empirical part

In this part, we are going to study and analyze in the viewpoint of rent-seekers and talent flow, using data of each province from 2003 to 2012 to conduct our empirical analysis.

4.1. Date

The data used in this study are from the National Statistical Data Collection of Temporary Residents, China Statistical Yearbook, China Inspection Yearbook and China Statistical Data Collection of 60 Years of New China from the years of 2003 to 2012.

GDP per capital: take the GDP of each province divided by the total population and we can see that the data from 2003 to 2008 comes from China Statistical Data Collection of 60 Years of New China, and the data from 2009 to 2012 comes from   China Statistical Yearbook, the data of total population comes from China Statistical Yearbook .[8]

Net inflow of population: the data of the inflow of population is originated from National Statistical Data Collection of Temporary Residents from 2003 to 2012. These sponsored populations are a comprehensive reflection of the inflow of people whose household registration has not changed. In this research, I use the data of one to twelve month and over a year of the inflow of population, with the purpose of ruling out the factors of short-term traveling and so on which is not an act of output. Suppose that migrants who have been sponsored for more than a month bring production to the destination, but the official data does not include the inflow of population of each province, here i use migration data to make approximate estimates. Migration data are based on household changes. Suppose that migration and the flow of population is related to the economic development of each province, the place of inflow and the place of flow exert a push a pull on the population, the pull and push exerted on the migrants and floating population by each province should be similar.[9]

Rent-seeking activities: there are many types of rent-seeking, therefore we do an assessment from different standpoint. Thus, I believe we should use the degree of corruption of the government and the size of the government to determine the degree of rent-seeking, and we use the number of corruption and bribery cases registered per ten thousand civil servants as an indicator. The number of civil servants comes from the statistical yearbook, and we can obtain the number of corruption and bribery cases from the China Inspection Yearbook from 2003-2012.

4.2. Correlation statistic of major values

Figure 1 gives out the statistical data of the total numbers of corruption and bribery cases of government officials all over the country, based on the diagram we can clearly see that the number of government officials is on a rise every year, and it is growing in a linear fashion. Therefore, we can conclude that our country will provide another fixed number of positions in the government every single year. The red line indicates that the cases of corruption and bribes every year is overall a decreasing trend for the past ten years. In recent years, China has been stressing strengthening Party self-discipline. From 2003 to 2005,we can see that the number of corruption and bribery cases is dropping down significantly, and from 2006 to 2010 we can see the slowdown of this drop-down, while

there is a sign of rising up again in 2011 and 2012,but overall the degree of corruption in government is showing a tendency of decline.
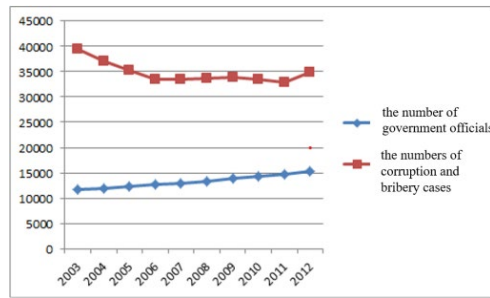

Figure 1: The numbers of corruption and bribery cases of country's government officials from 2003-2012
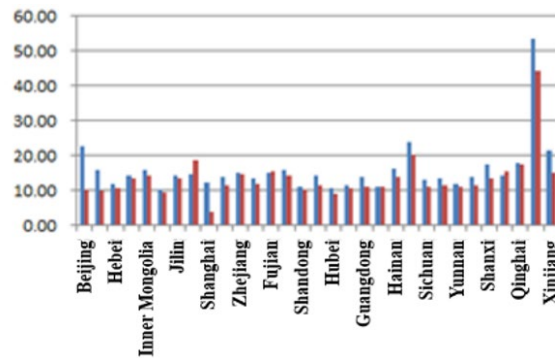

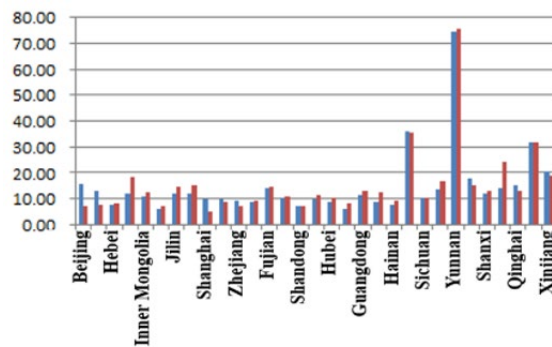*Figure 2: The household rate of emigration and immigration of each provinces in 2003*

Figure 3: The household rate of emigration and immigration of each provinces in 2012

Figure 2 and 3 represents the household rate of emigration and immigration of each provinces in 2003 and 2012 respectively, blue represents rate of immigration and red stands for rate of emigration, other than the policy-oriented autonomous region showing over 50 percent of rate of emigration and immigration, other provinces are having this situation as well, and there is a pattern that in economically developed regions, the rate of immigration is greater than that of emigration. Overall, as compared to the high rate of emigration and immigration in 2003,2012 was a lot better, this shows that when the economics of each province is thriving, the flow thrust and the attraction of the economically developed regions will reduce, and not only is emigration and immigration affected by how well the economic is developed, but also is affected by the degree of environmental protection and many other factors.
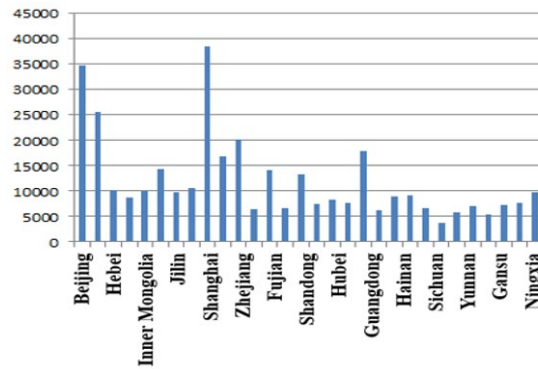
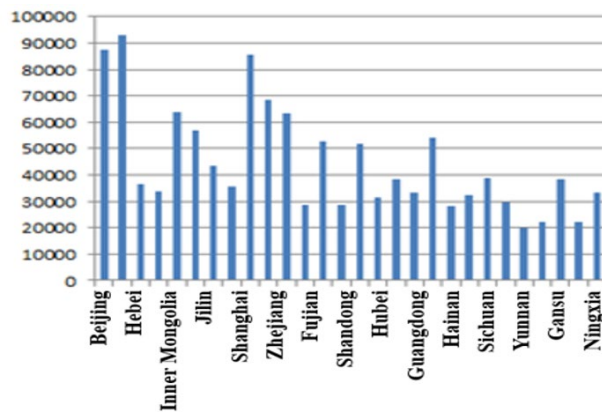*Figure 4: The GDP per capita in each provinces in 2003*

Figure 5: The GDP per capita in each province in 2012

Figure 4 and 5 is respectively the GDP per capita of provinces in 2003 and 2012.Based on the diagram, we can see that economically developed regions such as Beijing, Shanghai, Guangzhou and so on has a GDP per capita way above the average level. And from 2012 onward, the GDP capita of economically developed countries are still on a lead. However, this situation is improved after ten years of developments of other regions, and the gap between these provinces are gradually narrowed.

4.3. Models and regression

$$y_t = \beta_0 + \beta_1 r_t + \beta_2 m_t + \beta_3 m_{t-1} + \beta_4 m_t{}^{\wedge}r_t + u$$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
r_t	-723.186*** -5.81		-470.656*** -4.08	-480.566*** -4.07	-326.435** -2.46	-51.126 -0.45	4.264 -0.04
m_t		0.005*** -9.69	0.005*** -8.58	0.005*** -5.44	0.002*** -2.71		0.003*** -3.76
m_{t-1}					0.004*** -5.3	0.004*** -7.32	0.003*** -4.3
$m_t{}^{\wedge}r_t$				0 -0.42	0 -0.46	-0.0*** -5.92	0 -1.11
Constant	44,945.387*** -13.04	22,725.482*** -24	35,546.412*** -10.84	35,809.375*** -10.71	31,847.920*** -8.68	25,253.234*** -8.04	23,477.247*** -7.11
Observations	300	300	300	300	270	270	270
R-squared	0.102	0.24	0.28	0.28	0.341	0.542	0.563
Year FE	No	No	No	No	No	Yes	Yes

In the regression function, the dependent variable is y_t, representing GDP per capita; the independent variable m_t is the net inflow of population, m_{t-1} is the lag term, and the previous year's net inflow of population. Assuming the flow of population of previous year can possible affect the next year's data. $m_t{}^{\wedge}r_t$ is the interaction between the number of corruption and bribery cases initiated and the net population movement of the year, in the previous theoretical model, we discuss the situation of

how much can population movement affect the rent-seeking activities in destination. Interaction can help us verify the previous theoretical assumption made.

It can be seen from the regression results that the degree of corruption has a negative impact on GDP per capita, which is not significant after a fixed time effect. Net population inflow has a positive effect on per capita GDP, which is still significant after removing the time effect. The interaction between the degree of corruption and the net population inflow is small and basically insignificant.

5. Conclusion and some advice on policies

This article studies the interaction between population flow, rent-seeking and reallocation of talents, and analyze their comprehensive influences on the economic benefits. Through building theoretical model, we can conclude that population flow has a preaching effect on the moving out of population, which is improving the reallocation of talents of the destination and lowering the rate of rent-seekers in the labor force and increase the expected revenue of the local producers. Furthermore, m government can adjust to reach the value that is best for the local economic growth by increasing the investments in education and increasing subsidies for the labor forces. From an empirical angle, rent-seeking has a negative effect on the economic growth, positive net inflow of population has a positive impact on the region they flow into too. But the results of interaction in regression is not so significant between rent-seeking and net population inflow. This is possibly due to the lack of samples. The enlightenment of this article on the economically less developed areas is that: Overall, the flow of population in economically developed regions will not hinder the local economic growth. We should balance the monetary input in education and the welfare of those in the production line of work, so as to achieve the optimal value of m and control the optimal rate of population flow. Except for that, government should put more effort into strengthening the local's law system, and punish harsher on corruption and bribery, and fundamentally reduce rent-seekers expected revenue to achieve the goal of boosting the economic.

References

[1] Mohtadi H Toe T Growth, Lobbying and Public Goods [J]. European Journal of Political Economy, 1998, 14: 453-473.
[2] Laband D N, Sophocleus J P. The Social Cost of Rent Seeking: First Estimates [J]. Public Choice, 1988, 58: 269-275.
[3] Brumm H J. Rent Seeking and Economic Growth: Evidence from the States [J]. Cato Journal. 1999, 19(1) : 7-16.
[4] Cole I M, Chawdhry M A. Rent Seeking and Economic Growth: Evidence from panel of US States [J]. Cato Journal, 2002, 22(2) :211 - 228.
[5] Murphy K M, Shleifer A, Vishny R W. Why is Rent Seeking so Costly to Growth? [J]. American Economic Review, 1993, 83(2) : 409 - 414.
[6] Zou Wei. Rent seeking and corruption: theoretical analysis and countermeasures [J]. Journal of Wuhan University (PHILOSOPHY AND SOCIAL SCIENCES EDITION), 2007,60 (2): 201-209
[7] Huang Shaoan, Zhao Jian. Transition imbalance and short-term and long-term economic growth: a rent-seeking model [J]. Economic research, 2009 (12): 80-92
[8] Miao Wenlong. Rent-seeking behavior, incentives and constraints and economic growth in the period of economic transformation -- Also on the inflation effect of rent-seeking cost transfer [J]. Institutional economics research 2011(3):169 - 193.
[9] Liu Dexue, Fan Zhaobin. Transnational migration, human capital and knowledge trap [J]. China soft science, 2010. (5): 169-181