AGGLOMERATION ECONOMICS AND ASYMMETRIC INFORMATION: ROLE OF INSTITUTIONS[1]

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Abstract

This paper constructs the model that links agglomeration economics with information asymmetries. It extends the literature by launching the concept that explains influence of the asymmetric information on agglomeration economies by emphasizing the role of the transaction cost under institutional framework. Consequently, the predictions of the model suggesting that impact of agglomeration economies depends on stages of development highlight the importance of different approach to the agglomeration economies phenomena in developing and developed countries.

Keywords: agglomeration economics, asymmetric information, transaction costs, institutions

JEL classification: R1, O4, D8

1. Introduction

Over the past 30 years, economists have been fairly successful at documenting and quantifying agglomeration phenomena. Yet, understanding the causes of agglomeration economies is still open process without clear results (Puga, 2010).

Stories about the causes of agglomeration economies are as old as the realization that such advantages exist. The literature has offered three broad classes of mechanism explaining the existence of agglomeration economics (e.g. Duranton and Puga, 2004; Puga, 2010).

First, a larger market allows for a more efficient sharing of local infrastructure and facilities, a variety of intermediate input suppliers, or a pool of workers with similar skills. Second, a larger market also allows for a better matching between employers and employees, buyers and suppliers, or business partners. This better matching can take the form of improved chances of finding a suitable match, a higher quality of matches, or a combination of both. Finally, a larger market can also facilitate learning, for instance by promoting the development and widespread adoption of new technologies and business practices (Puga, 2010).

This paper chooses different approach. It follows literature that recognize that the asymmetric information in the economy deeply affects some of the basic characterization of a market economy and could provide explanations of economic and social phenomena that otherwise would be hard to understand (p. 1441, Stiglitz, 2000). Additionally, despite being focused on the investigating the sources of the agglomeration economics in last decays, the literature provide much less attention on the asymmetric information as a source of agglomeration economics. As a result, among notable exceptions (e.g. Tropeano, 2001; Berliant and Kung, 2008; Berliant and Ming Yu, 2010, Venables, 2011) there is no theoretical model that is going deep enough understanding influence of information asymmetry on agglomeration economies and fits empirical evidence.

Therefore this paper extends the literature by developing the basic model that emphasizes the role of the transaction cost under institutional framework.

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The basic motivation for the model is huge difference in institutional environment among developing and developed countries and the fact that imperfect information environment leads to Pareto inefficient competitive markets (Greenwald and Stiglitz, 1986). More precisely, actions by which individuals reveal information about themselves or others can improve market efficiency and stimulate growth rates of the economy if the value of the information is greater than expenditure involving in acquiring that information. Therefore, if the spatial concentration of individuals can reveal information which value is higher than expenditure of the action, the agglomeration could enhance market efficiency and growth rates. In case that the presence of imperfect information is high, the impact is bigger. Therefore the quality of the institutional environment as a determinant of imperfect information is critical for defining the level of the final impact.

2. Literature review

The literature introduces information asymmetries as source of agglomeration in paper by Tropeano (2001) where has been argued that firms use a location as a quality signal. Higher innovation size and competition are centripetal forces in this model. The article also shows that a decrease in transportation costs can encourage spatial concentration. Berliant and Kung (2008) using screening model demonstrate that increased mobility of the low skill labor and skill biased technological change increase the geographical sorting of workers by skills. Berliant and Yu (2010) offer signaling model claiming that the function of location is a limited in that there is no complete sorting of the high and low-skill workers like in screening model. They indicate that link between workers' price elasticity and their productivity determines existence and stability of the core-periphery equilibrium. Moreover, they suggest that when location signals workers' productivity and the signaling cost is determined by the housing market at a location, location can be at best a reference for, rather than a guarantee of, workers high productivity. Last but not the least, Venables (2011) offers two concepts based on the ability of cities to reduce market failures associated with information asymmetries in the workforce. The author outlines a models in which expensive locations will attract a higher proportion of high ability workers than a locations with a low cost of living. The benefit of forming a partnership with someone of high ability is greater for those with high ability and therefore high cost locations will have higher productivity both because of direct effect of the ability mix of the population and also because of the better matches.

Although above mentioned papers tackle the relationship between the imperfect information environment and agglomeration economies from different perspectives, there is no theoretical concept which is in line with the empirical evidence suggesting that agglomeration matters most at early stages of development (e.g. Brulhart and Sbergami, 2009). This non-linear relation between the agglomeration and growth introduced by Williamson (1965) and known as "Williamson hypothesis" underlines the huge difference between the economic environment in developing and developed countries that has to be included in theoretical model.

The theoretical model presented herein utilizes widely accepted notion that institutions are important for economic development (e.g. North, 1990, 1995; Rodrik, Subramanian and Trebbi 2004, Acemoglu, Johnson and Robinson, 2005). Following this, the paper introduces a concept in which the institutions are introduced as a mechanism that explains the difference between the economic environment in developing and developed countries.

The idea behind this model is motivated by three widely accepted notions: (i) asymmetric information is a part of the transaction cost (Coase, 1960, Nolan and Trew, 2011), (ii) transaction costs are linked with institutional quality (Coase, 1960; North, 1993 and 1994; Nolan and Trew, 2011) and (iii) institutional quality differ regarding the level of development (North, 1994; Williamson, 2009).

Transaction costs is defined as a costs of collecting information, bargaining, communicating, decision making, and enforcing contracts between individuals, firms and the state (Coase, 1960). Thus, information asymmetry can be easily recognized as a missing part of the complete information puzzle and linked with the higher transaction cost.

Although the literature has highlighted the various favorable effects of institutions on economics (e.g. North, 1995; Jutting, 2003; Stimson, Stough Salazar, 2005; Andriesse, 2008; Rodriguez – Pose 2010, Furceri & Mourougane, 2012, Stein, 2012, O'Hara, 2013) the paper

focuses on one particularly mechanism: the cost of information is the key to the costs of transacting, which represents sources of social, political, and economic institutions (North, 1990). On this basis almost all approaches on institutional economics use transaction costs as criteria for efficiency of institutions (Marinescu, 2010).

Finally it is easily to recognize that the institutions has become the focus of recent development and growth literature (e.g. North, 1990; Rodrik, Subramanian and Trebbi 2004, Acemoglu, Johnoson and Robinson, 2005, O'Hara, 2013). The researches indicate that institutions defined "as a humanly devised constraints that shape human interaction" (North, 1990, p. 3.) affect the path of its economic development by structuring political, economic and social interactions among members. The importance of the institutional framework for the growth has also empirical confirmation implying that countries that have strongest institutions achieve higher level of development (e.g. Williamson, 2009).

Although a consensus that institutions "matter" has now emerged, the discussion on the causality of the various links and channels of influence between the institutional set-up and development outcomes is still open. Therefore, this paper focuses on the establishing mechanism under institutional framework that will be in line with the empirical evidence suggesting that agglomeration economies have greater positive impact at early stages of development (e.g. Henderson, 2003; Brulhart and Sbergami, 2009).

3. Model, results and discussion

The three widely accepted and previously explained notions has been foundation for our model founded on the basic model of Venables (2011). The basic model describes how the spatial concentration has ability to reduce market failures, and shows that this is associated with information asymmetries in the workforce. Following notions (i)-(iii) described earlier, we take into account the role of institutions, and extend basic model with Institution quality variable. The rest of the section describes the main settings inherited from the basic model and introduces novel variable incorporated in the model.

Similar to the basic model the model presented herein observes one sector or profession that has fixed number of workers of whom L are low ability (type L) and H high ability (type H). There are two locations, 1 and 2, and workers decide to locate in one or the other. The proportions of type H and type L workers who choose location 1 are θ_H and respectively θ_L, so the total numbers of workers in each location are:

$$N^1 = H\theta_H + L\theta_L \qquad \textit{location 1} \qquad (1)$$

$$N^2 = H(1-\theta_H) + L(1-\theta_L) \qquad \textit{location 2} \qquad (2)$$

Pairs of workers who form a partnership are producing the output. If two high ability workers form a partnership the value of their output is $2^{q_{HH}}$, two low-ability $2^{q_{LL}}$ and one of each ability level $2^{q_{HL}}$. Considering their ability the following relation is valid:

$$q_{HH} > q_{HL} > q_{LL} \qquad (3)$$

The model also incorporates the super modularity condition that Venables (2011) explains by introducing the examples from other economic areas (e.g. Paul Milgrom and John Roberts, 1990). It means that the benefit of forming a partnership with someone of high ability is greater for those with high ability than for those with low ability:

$$q_{HH} - q_{HL} > q_{HL} - q_{LL} \qquad (4)$$

Asymmetric information is incorporated in the model by assuming that individuals know their own type but cannot directly observe that of the partner with whom they undertake the project. Since ability is unobserved before partnerships are formed matches take place randomly, and within each location (This could be explained by observing the location as a broader area which makes daily commuting impossible, e.g. –NUTS II or III regions in EU). Therefore, the probability of matching with a high-ability worker depends on location and it is denoted:

$$\mu^1 = \frac{H\theta_H}{H\theta_H + L\theta_L} \qquad (5)$$

$$\mu^2 = \frac{H(1-\theta_H)}{H(1-\theta_H)+L(1-\theta_L)} \quad (6)$$

The total output of a partnership is divided equally between the two partners. The expected returns to a match made by type-H and type-L individuals in each location is defined:

$$v_H^i = q_{HH}\mu^i + q_{HL}(1-\mu^i) \text{ for H type and location i} \quad (7)$$

$$v_L^i = q_{HL}\mu^i + q_{LL}(1-\mu^i) \text{ for L type and location I} \quad (8)$$

Locating in location 1 implies an additional cost attached to it, denoted c. It includes (the rent or commuting) cost differential of location 1 compared to location 2 and in the basic model by Venables (2011) is treated as exogenous. Therefore, the location 1 is chosen by H-type workers if:

$$v_H^1 - v_H^2 \geq c \quad (9)$$

and L type if:

$$v_L^1 - v_L^2 \geq c \quad (10)$$

Using the conditions (7) and (8) with conditions (9) and (10) it follows:

$$v_H^1 - v_H^2 = (q_{HH} - q_{HL})(\mu^1 - \mu^2) \geq c \quad (11)$$

$$v_L^1 - v_L^2 = (q_{HL} - q_{LL})(\mu^1 - \mu^2) \geq c \quad (12)$$

The equilibrium location of workers is where values of θ_H and θ_L have adjusted to make workers indifferent between locations (in the relations (11) and (12) left and right side should be equal), or at a corner solution where all workers of a particular type are in their preferred location.

The presented specification indicate the crucial role of the cost c. If the cost c is zero, then two locations should be identical. In case when c > 0 and super-modularity condition holds separating equilibrium is possible. What level of costs supports the separating equilibrium? The level that ensures that the costs are higher than a benefits of locating in location 1 for L type, and lower for the H type workers:

$$c > v_L^1 - v_L^2 \quad (13)$$

$$c < v_H^1 - v_H^2 \quad (14)$$

Relations (13) and (14) imply:

$$c > q_{HL} - q_{LL} \quad (15)$$

$$c < q_{HH} - q_{HL} \quad (16)$$

Defining $\Delta q_H = q_{HH} - q_{HL}$, and $\Delta q_L = q_{HL} - q_{LL}$ indicates that separating equilibrium exists if following condition is fulfilled:

$$c \in \left[\frac{\Delta q_L H}{H+L}, \Delta q_H\right] \quad (17)$$

Social efficiency of separating equilibrium requires comparing values of the separating and the pooling equilibrium for both types of workers. The real incomes (values) of workers in the pooling equilibrium are:

$$v_H^p = \frac{q_{HH}H + q_{HL}L}{H+L} \quad (18)$$

$$v_L^p = \frac{q_{HL}H + q_{LL}L}{H+L} \quad (19)$$

In the separating equilibrium, when θ_H = 1, type L workers get:

$$v_L^2 = q_{LL} \quad (20)$$

and H-type workers get:

$$v_H^1 - c = c\left(\frac{q_{HH}}{\Delta q_L} - 1\right) \quad (21)$$

Comparison of these values indicates that type L workers are certainly worse off with separating equilibrium than with pooling equilibrium. Type H workers are in same position if the value c takes the lowest value that supports separation $\frac{\Delta q_L H}{H+L}$)

At higher levels of the costs c, the results for H – type workers is ambiguous (depends on the size of the two groups in overall population).

In sum, if the costs c are low then both type of workers are in better position with pooling equilibrium and in the case of the high costs c than separating equilibrium is better solution for H type workers. Evidently, social efficiency is determined by value of the costs c and therefore it is quite restrictive to treat costs c as exogenous as in the basic model of the Venables (2011)[3].

Thus, this paper extends the literature by introducing the new model in which institutions is a mechanism that determines the value of c. Thus, better quality of the institutions implies lower cost differential (c) of location 1 compared to location 2. Briefly, higher quality of institutions allows lower transactions cost. Lower transaction costs permit better and easier flow of the information and all other inputs that stabilize the cost difference among locations. Consequently, cost differential of location 1 compared to location 2 becomes lower. Technically, this introduces the new relation in the model (I stands for Institutional quality)

$$c^* = \frac{c}{I} \quad (22)$$

New separating equilibrium exists if following condition is fulfilled:

$$c' \in \left[\frac{\Delta q_L H}{(H+L)\cdot I}, \frac{\Delta q_H}{I}\right] \quad (23)$$

The relations (22) and (23) indicate that higher quality institutional environment implies pooling equilibrium as a social efficient situation for both type of workers. However, in case of the lower institutional quality and higher costs c, the H type workers could be better off with separating equilibrium and it could also be social efficient equilibrium. The social efficient dimension of the separating equilibrium can be explained by higher probability for better quality matching (among H-type workers) and super modularity condition.

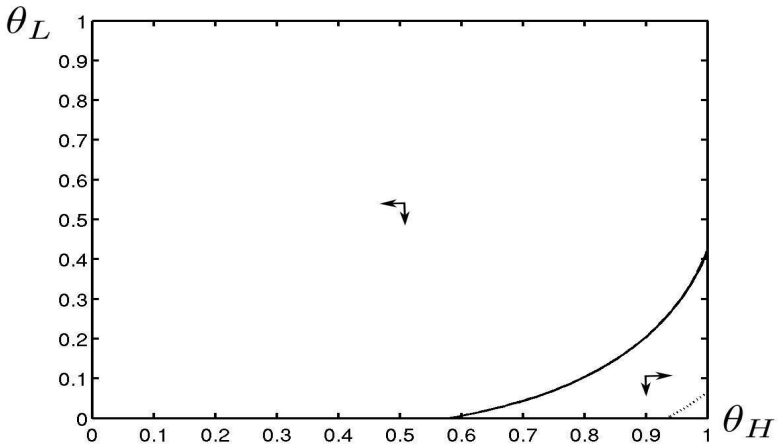
For more accurate presentation the role of institutional quality in our model we proceed with simulations. For easier comparison with the basic model by Venables (2011), the simulations are done with the same assumptions and parameters. To recall, we assume that the super modularity condition holds and observe the ratio of (H-type) and (L-type) ability workers that commute between location 1 and 2, with parameters H=L=1, $q_{HH} = 0.8$, $q_{HL} = 0.4$, $q_{LL} = 0.1$, c =0.225. Figures 1-5 show the simulation results for different Institutional quality parameter, namely: I = 0.8, 1, 1.2, 1.4 or 1.6. For I=1 our model correspondents to the basic model.

In each of the figures along the solid and dashed curves workers of types H and L respectively are indifferent between two locations. Above solid curve H-type workers prefer to be in location 2 and below in location 1. The identical interpretation stands for dashed curve and L-type workers. Thus, the area between solid and dashed curves represents the space for separating equilibrium. The bigger the area between the curves the higher is probability for establishing the separating equilibrium.

In line with our model predictions we expect that higher institutional quality will decrease the area between the curves and therefore the probability for separating equilibrium and direct our attention on the separating equilibrium area on the Figures 1 to 5.

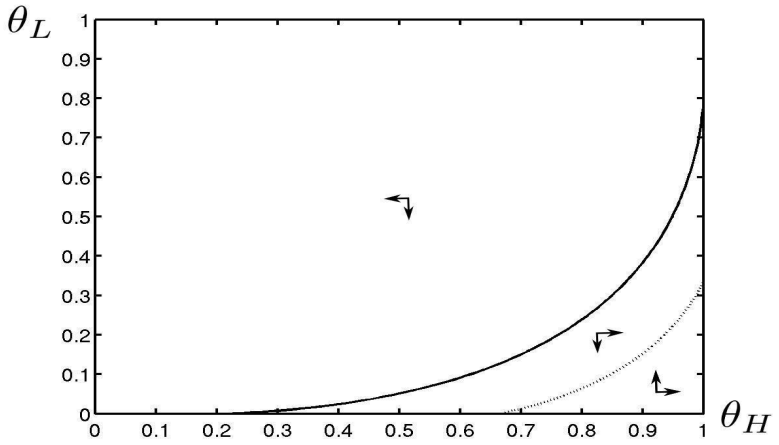
[3] Although Venables (2011) relates the costs c with the city size indicating that bigger city implies higher commuting costs and rent it does not incorporates the huge difference between the economic environment in developing and developed countries as empirical findings suggests (e.g. Brulhart and Sbergami, 2009).

Figure 1. Self-selection for locations 1 and 2 for I=0.8



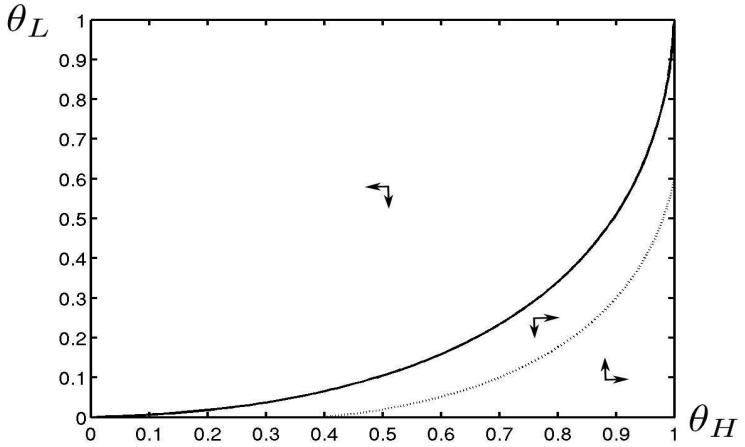
Source: Authors calculations

Figure 2. Self-selection for locations 1 and 2 for I=1



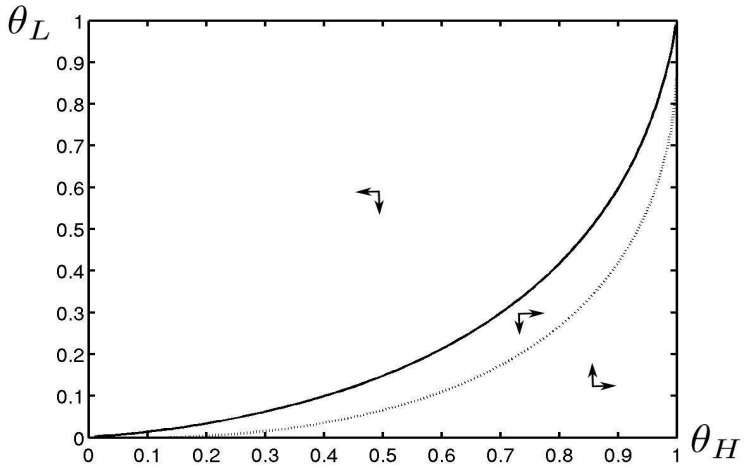
Source: Authors calculations

Figure 3. Self-selection for locations 1 and 2 for I=1.2



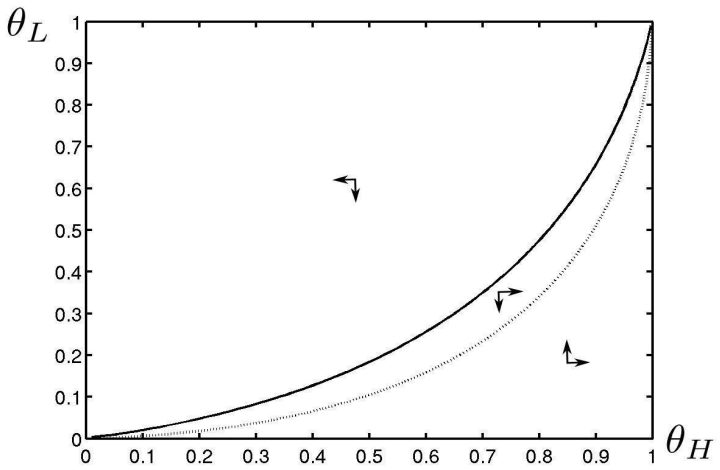
Source: Authors calculations

Figure 4. Self-selection for locations 1 and 2 for I=1.4



Source: Authors calculations

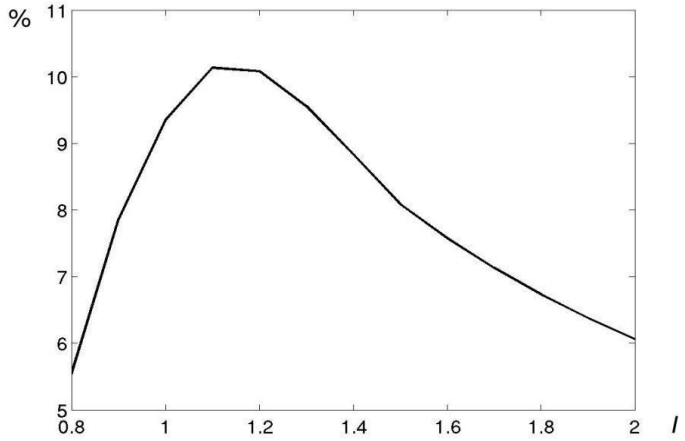
Figure 5. Self-selection for locations 1 and 2 for I=1.6



Source: Authors calculations

The figures 1 to 5 shows that higher quality of institutions result with bigger area between solid and dashed curve indicating easier establishing of separating equilibrium. To confirm the prediction we introduce the Figure 6. It more clearly represents the relation between the possibility of establishing the separating equilibrium and the institutional quality. It expose non-linear relation between mentioned variables by showing that curve that stands for separating equilibrium probability is downward sloping after Institutional quality reaches values bigger than 1. It also reveals than curve is upward sloping on the lower values of the Institutional quality.

Figure 6. Possibility for separating equilibrium and Institutional quality



Source: Authors calculations

Taking into consideration that the social efficient dimension of the separating equilibrium can be explained by higher probability for better quality matching (among H-type workers) and super modularity condition our model has strong predictions.

It indicates that at the early stages of the development when Institutional quality is low and costs c high separations and spatial concentration can be recognized as a efficient situation that encourages growth on the national level. In case of the higher quality of institutional environment, the model predicts negative influence of the spatial concentration on national growth.

This is not only in line with empirical findings (e.g. Henderson, 2003; Brulhart and Sbergami, 2009) but it could also be used as a micro foundation for the Williamson hypothesis (1965) underling the importance for carefully shaped policy that will include this difference among agglomeration economies phenomena in developing and developed countries.

Finally, our model extends the literature by presenting theoretical model that offers better explanation of the mechanism of the agglomeration economies influence on economy and crucial first step for empirical testing in future.

4. Conclusion

An extensive body of empirical research indicates that spatial concentration involves relatively high levels of earnings, high levels of productivity, a high cost of living, a high proportion of high skilled workers (e.g. Puga, 2010; Venables, 2011). Although these effects cover a wide range of explanations understanding the causes of agglomeration economies is still open process without clear results (Puga, 2010).

Therefore, this paper focuses on the link between asymmetric information and the agglomeration economics. The new model develops basic model presented by Venables (2011) which shows how the ability of spatial concentration to reduce market failures is associated with informational asymmetries in the workforce. The basic model by Venables (2011) indicates that social efficiency is determined by value of the cost differential of location 1 compared to location 2 (costs c) and therefore it is quite restrictive to treat costs c as exogenous as in the basic model. Although Venables (2011) in the next phase fragmentally relates the costs c with the city size it does not explain the huge difference between the economic environment in developing and developed countries.

Thus, the paper by introducing the transaction costs and institutions as a mechanisms that explain the relation between agglomeration economies and asymmetric information attacks disability of the above mentioned researchers to incorporate the stage of development as a key feature of the relation.

The idea behind this model is motivated by three widely accepted notions: (i) asymmetric information is a part of the transaction cost (Coase, 1960, Nolan and Trew, 2011), (ii) transaction costs are linked with institutional quality (Coase, 1960; North, 1993 and 1994;

Nolan and Trew, 2011) and (iii) institutional quality differ regarding the level of development (Williamson, 2009). Consequently, higher Institutional quality allows lower transactions cost. Lower transaction costs permit better and easier flow of the information and all other inputs that stabilize the cost difference among locations. As a result, cost differential of location 1 compared to location 2 becomes lower. This new relation indicates that at the early stages of the development when Institutional quality is low and costs c high separations and spatial concentration can be recognized as a social optimal (efficient) situation that encourages growth on the national level. In case of the higher quality of institutional environment, the effect fades away.

To sum it, the model is not only in line with empirical findings (e.g. Henderson, 2003; Brulhart and Sbergami, 2009) and can be used to open work on micro foundations of the Williamson hypothesis (1965), it also encourages the policy instruments that will consider the difference among agglomeration economies phenomena in developing and developed countries.

As we already indicated, our model extends the literature by presenting theoretical model that offers better explanation of the mechanism of the agglomeration economies influence on economy and crucial first step for empirical testing in future.

References

Acemoglu, D.- Johnson, S. - Robinson, J. A. 2002.: Reversal of fortune: geography and institutions in the making of the modern world income distribution. Quarterly Journal of Economics 117(4), 1231–94.

Acemoglu, D.- Johnson, S. - Robinson, J. A. 2004., "Institutions as the fundamental cause of long-run growth," NBER Working Paper No. W10481, Available at SSRN: http://ssrn.com/abstract=541706

Acemoglu, D.- Johnson, S. - Robinson, J. A. 2005. "Institutions as a Fundamental Cause of Long-Run Growth,"Handbook of Economic Growth, in: Philippe Aghion & Steven Durlauf (ed.), Handbook of Economic Growth, edition 1, volume 1, chapter 6, pages 385-472 Elsevier.

Berliant, M. -Kung, F. 2008.: "Can Information Asymmetry Cause Agglomeration?,"MPRA Paper 7414, University Library of Munich, Germany.

Berliant, M.- Yu, C. M. 2010.: "Locational signaling and agglomeration,"MPRA Paper 24155, University Library of Munich, Germany.

Brülhart, M. - Sbergami, F. 2009.: Agglomeration and Growth: Cross-Country Evidence, CEPR Discussion Papers 6941, C.E.P.R. Discussion Papers

Coase, R.. H. 1960.: The Problem of Social Cost., Journal of Law and Economics 3: 1.44.

Duranton, G.- Puga, D. 2004.: “Micro-Foundations of Urban Agglomeration Economies,” in V. Henderson and J.-F. Thisse (eds.), Handbook of Regional and Urban Economics, Vol. 4. Amsterdam: North-Holland, pp. 2063–2117.

Fukuyama, F. 2006.: "Development and the Limits of Institutional Design," paper presented to the annual conference of the Global Development Network, St. Petersburg, Jan. 20, 2006.

Furceri, D. and Mourougane, A. 2012. : How Do Institutions Affect Structural Unemployment in Times of Crises? Panoeconomicus 2012 Volume 59, Issue 4, Pages: 393-419 doi:10.2298/PAN1204393F

Glaeser, E. L. 1999. “Learning in Cities,” Journal of Urban Economics, 46(2), 254–277.

Greenwald, B. C., Stiglitz, J. E. .1986.: “Externalities in economies with imperfect information and incomplete markets”, Quarterly Journal of Economics 101(2):229–264.

Henderson, J. V. 2003: “The urbanization process and economic growth: The so-what question.” Journal of Economic Growth 8 (1), 47–71.

Jutting, J. 2003.: “Institutions and development: A critical review, OECD Development Centre”, Working paper 210

Marinescu, N. 2010.: “On significance of transaction cost in institutional economics”, available at :http://ideas.repec.org/a/rau/journl/v1y2006i1p75-84.html (accessed 17.06.2012)

Milgrom, P. - Roberts, J. 1990.: ‘The Economics of Modern Manufacturing: Technology, Strategy, and Organization.’ American Economic Review 80: 511–28

Nolan, C. - Trew, A. 2011.: " Transaction Costs and Institutions,"CDMA Working Paper Series 1103, Centre for Dynamic Macroeconomic Analysis

North, D. C. 1990.: “Institutions, Institutional Change and Economic Performance” Cambridge University Press, 1990.

North, D. C. 1993.: "Institutions, Transaction Costs and Productivity in the Long Run,"Economic History 9309004, EconWPA

North, D. C. 1994.: "Transaction Costs Through Time," Economic History 9411006, EconWPA

North, D. C. 1995.: “The New Institutional Economics and Third World Development”, London : Routledge.
O’Hara, P. A. 2013. : Policies and Institutions for Moderating Deep Recessions, Debt Crises and Financial Instabilities Panoeconomicus 2013 Volume 60, Issue 1, Pages: 19-49, doi: 10.2298/PAN1301019H
Puga, D. (2010.: "The Magnitude And Causes Of Agglomeration Economies,"Journal of Regional Science, Wiley Blackwell, vol. 50(1), pages 203-219.
Rodrik, D., Subramanian, A. - Trebbi, F. 2004.: “Institutions rule: the primacy of institutions over geography and integration in economic development” Journal of Economic Growth, 9, 131–165.
Rodríguez-Pose, A. 2010.: “Do Institutions Matter for Regional Development?,” [Online], [Retrieved January 20, 2012], http://ideas.repec.org/p/imd/wpaper/wp2010-02.html,
Stein, H. 2012.: The Neoliberal Policy Paradigm and the Great Recession, Panoeconomicus 2012 Volume 59, Issue 4, Pages: 421-440 doi:10.2298/PAN1204421S
Stiglitz, J. E. 2000.: The Contributions Of The Economics Of Information To Twentieth Century Economics,"The Quarterly Journal of Economics, MIT Press, vol. 115(4), pages 1441-1478, November.
Stimson, G. V., Stough R., R. - Salazar, M. 2005.: “Leadership and Institutional Factors in Endogenous Regional Economic Development,” Investigaciones regionales, no. 7, Asociacion Espanola de Ciencia Regional, pp.23-52.
Tropeano, J. P. 2001.: “Information Asymmetry as a Source of Spatial Agglomeration”, Economics Letters, 2001.
Venables, A. J. 2011.: “Productivity in cities: self-selection and sorting”, Journal of Economic Geography,11, (2011), 241-252
Williamson, C. R. 2009.: “Informal institutions rules: Institutional arrangements and economic performance”, Public Choice, 2009, Volume 139, Numbers 3-4, Pages 371-387
Williamson, J. G. 1965.: “Regional inequality and the process of national development” Economic Development and Cultural Change 13 (4), 3–45.