

WELLSO 2017
**IV International Scientific Symposium Lifelong Wellbeing in
the World**

**COMPANY TOWN DIVERSIFICATION AND DESIGNING ITS
FUTURE**

Irina S. Antonova (a)*, Ekaterina S. Solomahina (b)

*Corresponding author

(a) National Research Tomsk Polytechnic University, Tomsk, Russian Federation, antonovais@tpu.ru

(b) Saint-Petersburg State University of Economics, Saint-Petersburg, Russian Federation, katrinakop@yandex.ru

Abstract

The urban development of a company town in Russia currently depends on the opportunity to diversify the core industry attracting investments into developed projects that offers the variety of directions of future designing. Although the great majority of company towns prepared Complex investment plans of monotown modernization stated the goal and the directions of diversification, the appropriate financing of the created projects is hardly exist. The authors argue that the basic measures that identify the diversification efficiency are the variety of concentration indexes, dynamics indicators and shift-shares; nevertheless, the possibility to evaluate how the new economic activity changes the structure in dynamics is rather low. This article offers the way to estimate the diversification in dynamics caused by the emerging economic activity using the diversification in dexon the basis of dynamic approach for evaluation of company town diversification efficiency. The authors suggest the diversification index that shows both the dynamics of structural change and the new economic activity emerging in company town. The index allows measuring the diversification shift in company town implementing the diversification strategy. The article conducts the case study of Kaltansky urban district located in Kemerovskaya oblast and makes conclusions that higher diversification in investments does not relates with the appropriate dynamics in dispatched goods. This fact allows low efficiency of the diversification and creates the negative image of the town in future designing.

© 2018 Published by Future Academy www.FutureAcademy.org.UK

Keywords: Company town, diversification, interests harmonizing.



This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Introduction

The contemporary economic situation in Russia is featured by the inertia in the economy development hindered the economic growth all over the country (Afonasova, Ryzhkova, 2017). The economic platform of urban future designing is the possibility to develop modern cities. The variety of cities becomes the reasonable obstacle to offer the universal urban development strategy. The unique example of urban community is company town that was named in Russian theory and practice “monotown”. Company towns are widely spread all over the world and its problems are in focus of different researchers since the middle of the previous century. Nevertheless, the changing forces that make company towns convert its economies from depressed into thriving conditions are constantly in focus.

The traditional issue of the research devoted to the company towns is its socio-economic wellbeing (Bebbington et al., 2008; Tonts et al., 2012; Shann, 2012; Littlewood, 2014; Chapman et al, 2014) and the “paradox of poverty in the midst of resource abundance” (Bebbington et al., 2008). The authors define the similar problems of company towns, such as unemployment, low corporate social responsibility, ecology and unsustainable development (Lai & Lorne, 2006; Yuan & Xue, 2009). Little wood (2012) researches the problem of urban development and future designing through Corporate Social Responsibility (CSR), paying attention to the government role in company towns financing and the community viability after mining industry closure. Wlasiuk (2014) points out that mono towns should pay special attention to environmental engineering and ecosystem. Moreover, some authors consider an urban sustainable development as the comprehensive system that encompasses natural, economic and social sectors (Li & Liub, 2008; Jin & Wang, 2011; Zinatizadeh & Azmi, 2017).

The traditional methodological base of socio-economic empirical evaluation is the dynamics and concentration indexes. They are implemented to the average employed number dispatched goods, investments, financial results in the industry or in the specific company or by economic activities and in total. The most widespread concentration indexes are Concentration Ratio or *CR* (Bikker & Haaf, 2002; Meilak, 2008), Herfindal-Hirshman Index or *HHI* (Calkins, 1983; Roberts, 2014; Antonova & Pchelintsev, 2016), Rosenbluth Index and Hall-Tideman Index of *HT* (Hall & Tideman, 1967), Linda Index or *L* (Linda, 1976), Multigroup Entropy Index or Theil Index or *E* (Reardon & Firebaugh, 2002; Murdoch, 2016), Hannah and Kay Index or *HKI* (Hannah & Kay, 1977; Bikker & Haaf, 2002). Nevertheless, the attempts to propose an integrated approach to evaluation are still under way. One of the most widely used methods of integration is the factor score that has high level of subjectivity and the essential limitations in the scope (Antonova et al., 2016). Li et al. (2009), Jin & Wang (2011), Zinatizadeh & Azmi (2017) developed and vastly implemented to evaluate the capacity for urban sustainable development and future designing the Full Permutation Polygon Synthetic Indicator (FPPSI). Meanwhile, the considered methods and approaches hardly allow urban future designing and focus generally on the current situation.

The example of forecast method is the test on Zipf law (Nitsch, 2005) that makes it possible to conclude the growth potential of some towns in population or production. However, the test of Russian company towns on Zipf law fails (Rastvortseva, Manaeva, 2016) and it invites new methods and approaches for urban economic future designing. The other example is the shift-structure indexes (Herzog

& Olsen, 1977; Esteban, 2000; Elkhina, 2014). These indexes compare the concentration of one or more types of economic activities considering the proportions of considering industries in town, region and country. We are offering to modify these indexes to evaluate the new economic activity.

Thus, the authors are working within the dynamic approach for company town diversification evaluation offered previously by Antonova et al (2016) developing its methodological base. This approach supposes to evaluate how far the company town diversification level from the stated goals. This issue is common for company process approach for companies with defining strategic objectives and measurable indicators (Ryzhakina, Koroleva & Makasheva, 2016) and is caused by the high influence of the town-forming enterprise on the town economy.

2. Problem Statement

The process of future designing considers different aspects of the town development. It directly depends on the stage of town economic lifecycle. The development of company towns in Russia is far behind from the company towns in Europe and Northern America, the basic strategies of which have been elaborating since the middle of the previous century (Allen, 1966, Hansen 1978, Lucas, 2008, Garner 1992). The scope of the economic problems in Russia includes 319 company towns with 100 settlements in the most disastrous socio-economic conditions. Although all of the listed company towns are developed the Complex investment plan of monotown modernization (CIPMM) nevertheless only the small number of them have got the governmental and private financing for the program implementing. Monotown Development Fund being the key actor of the diversification infrastructure has established 289 project offices, has concluded a general agreement on cooperation with 87 company towns, has entered into an agreement with the regions to finance the costs for the construction or reconstruction of the infrastructure with 17 company towns, although only three of them have received state funding for investment projects in the territory – Kemertau, Naberezhniye Chelny, and Kaspiysk. Thus, the state investments concentrate in the infrastructural objects that are not guarantee the diversification efficiency. These 17 pilot company towns show the first results of the governmental investments. Meanwhile the lack of the statistical data and the absence of special indicators to evaluate the input of the new emerging industry into the economic structure of the company town make the efficiency of the diversification processes hardly evaluated. Taking all these issues into consideration, the development of evaluating methods of company town diversification at the beginning stage of the diversification process will assist monitoring the structural changes and contribute the future designing of company towns.

3. Research Questions

The research is devoted to the methods of controlling and monitoring of company town diversification efficiency that is of high importance since 2010 when first pilot company towns had got state funding for the developed Complex investment plans of company town modernization. Currently Kemerovskaya oblast comprises three company towns that implement the developed programs with appropriate state financing on the basis of private public partnerships – Yurginsky, Kaltansky, and

AnzheroSudzhensky urban districts. The article focuses on the index that shows the emergence of new economic activities in town and offer monitoring its dynamics.

The analysis of the economic activity structure of the listed company towns shows that the only municipal district that has emerging activity is Kaltansky (or Kaltan). Kaltan urban district is located in the southern part of Kemerovskaya oblast and within 250 km from the regional center - Kemerovo. Traditional town-forming industry in the town was the production and distribution of electricity, gas and water since the founding of the city and until 2010. Kaltan town-forming industry had changed into mining operations in 2010 due to the joining of the new settlements into the urban district. Currently the mining operations engage about 12,8% of total number occupied in town economy. The basic town development factors are the considerable reserves of coal, the efficiency increase of operations, and developed transportation infrastructure close to large industrial centers of the region.

Kaltan has chosen the agriculture, hunting and forestry, and fishing as the target economic activity in 2015 and counts on the results of the integration between agricultural sector of economy and Kemerovo state agricultural institute fulfilling the scientific researched in this field. This integration is already effected the economic structure of the municipal district in 2015 after the appropriate investments into the small-sized agricultural projects that is offered to evaluate.

4. Purpose of the Study

The purpose of the study is to develop the methodological base for diversification strategic planning of company towns. This issue supposes the special measurement tool to identify the emergence of economic activity during the implementation of the diversification strategy by a company town. We offer to use the relative index of diversification evaluating the economic activity emerging in Kaltan case study to evaluate the impact of the activity to the economic concentration in the company town and make conclusions on the results.

5. Research Methods

The comparative analysis of the existing indexes that evaluate the concentration, diversification and structural shifts in economics has revealed that all indexes excepting shift-share do not permit to study the diversification in dynamics considering the past statistical data. The most applicable indexes for this object describe structural shifts between at least two years whereas the company town shifts at the very beginning of the diversification process asks for new economic activity identification. Moreover, considering all given indexes the authors find the only index that can define the emerging of new business activity in company town within one-year period - *HKI*. Nevertheless, the procedure of its measurement, ambiguity of parameter α and overall interpretation make this index hardly used for company town diversification assessment. Finally, only few indexes describes the vary diversification whereas the others show the concentration or structural shift.

Considering basic feature of company towns the authors suggest the relative index of diversification, which will identify and describe the emerging of new economic activity (or industry) in dynamics.

$$D = \left| 1 - \frac{C_n^{t+1}}{C_n^t} \right| * \left[1 - \frac{C_{n+i}^{t+1}}{C_{n+i}^t} \right],$$

where C_n^t – concentration index for n economic activities in company town in period t ; C_n^{t+1} – concentration index for n economic activities in company town in period $t+1$; C_{n+i}^t – concentration index for $n+i$ economic activities in company town in period t ; i – a new type (or types) of activity for the considered year; $\left| 1 - \frac{C_n^{t+1}}{C_n^t} \right|$ – stands for structural change in dynamics in general whereas $\left[1 - \frac{C_{n+i}^{t+1}}{C_{n+i}^t} \right]$ – defines the new economic activity contribution to the diversification.

We permit the option of C indicator that can be figured out as *CR*, *HHI*, *HT*, *E*, *HKI* or as *CV*. The choice of the method is due to the statistical data base, considering object or the purposes of the research. Meanwhile, we are arguing for the *HHI* considering the statistical data base of Kaltansky urban district and the possibility to evaluate the diversity as the opposite to the concentration.

The offered diversification index for emerging economic activity values between (-1; 1) where:

1. $D > 0$ – shows the diversification growth (decrease in concentration) as a result of a new type of economic activity in company town;

2. $D < 0$ – shows the diversification decline (increase in concentration) as a result of a new type of economic activity in company town;

$D = 0$ – reflects the situation when decrease concentration completely compensated by structural changes of former types of activity therefore a process diversification isn't observed.

6. Findings

The offered index applied to the case study of Kaltansky urban district, Kemerovo region reveals the diversification rise in investments caused by new economic activity - agriculture, hunting, forestry, and fishing (table 01) that indicates the diversification index (0,0647), never the less the relevant growth in dispatched goods or in the average number of occupied by A and B economic activities is not observed. It demonstrates low effect from the considered investments.

Table 01. Diversification index for investments by types of economic activities in company town Kaltan, Kemerovskayaoblast, Russia

Sector s	Economic Activities	2014, mil RUR	The share in total including A&B	2015 mln RUR	The share in total accepting A&B	The share in total including A&B
A&B	Agriculture, hunting and forestry, fishing	-	-	46,4	-	0,0875
C	Non-renewal exploitation	668,50	0,6819	187,4	0,3874	0,3535
D	Manufacturing activity	20,80	0,0212	20,9	0,0432	0,0394
E	Production and distribution of the electric power, gas and water	109,10	0,1113	188	0,3886	0,3546
F	Building trade	0,00	0,0000	0,5	0,0010	0,0009
G	Wholesale and retail trade; repair of motor vehicles, motorcycles, household goods and personal appliance	32,30	0,0329	35,4	0,0732	0,0668
H	Hotels and restaurants	0,00	0,0000	0	0	0
I	Transport and communications	1,70	0,0017	2	0,0041	0,0038
J	Financial activity	0,00	0,0000	0,3	0,0006	0,0006

K	Real estate operations, renting and service supply	107,70	0,1099	6,2	0,0128	0,0117
L	State management and defence, social security insurance	11,00	0,0112	35,4	0,0732	0,0668
M	Education	14,80	0,0151	5,4	0,0112	0,0102
N	Medical care and social service	6,70	0,0068	1,8	0,0037	0,0034
O	Provision of other municipal, social and personal services	7,70	0,0079	0,5	0,0010	0,0009
Total investments for all types of activities		980,3	1	530,2	1	1
The concentration of activities (<i>HHI</i>)			0,4915		0,3139	0,2691
Diversification Index						0,0647

Considering medium level statistics gap (for towns and company towns) the authors suggest the index of diversification that makes it possible to evaluate the diversification due to the new economic activity that is before all other can be identified by investments.

7. Conclusion

The diversification efficiency evaluation is the urgent issue for contemporary company towns. The development of the methodological base for dynamic approach of the efficiency evaluation of company town contributes to its future design. The traditional approach for diversity evaluation comprises concentration ratios in different variations, including *CR*, *HHI*, *HT*, *HKE*, *L* and others; nevertheless the considered indexes do not encourage the dynamics assessment of the economic statistic data. The complex approaches to the socio-economic well-being of the company towns are focused on the specific goals and are hardly useful for the structural changes in company towns. Although the existing shift-share indicators allow evaluating the dynamics of the economic structure between two years, at the same time the shift-share indexes do not identify the emerging economic activity features the beginning stage of the diversification process. As the result the article offers the diversification index that defines the emerging stage of economic activity caused by the investments. The case study of Kaltansky urban district shows that despite of the higher diversity of investments between 2016 and 2016 took place in the town, the effectiveness of the process is still low.

Acknowledgments

The reported study was supported by RFBR, research project No. 16-36-00294 mol_a “The dynamic approach to effectiveness evaluation of diversification of a company town economy”

References

- Allen, J. B. (1966). *The company town in the American West*. University of Oklahoma Press.
- Antonova, I. S., Pchelintsev, E. A., Vavilov, D. D. (2016). Dynamic Approach for Diversification Effectiveness Evaluation of Berezovsky Company Town. In III International Scientific Conference on Information Technologies in Science, Management, Social Sphere and Medicine (ITSMSSM 2016), May 2016, Tomsk Polytechnic University, Tomsk, Russian Federation (pp. 328-331). Atlantis Press.
- Antonova I.S., Koptelova K.S., Negodina O.A., Spitsina L.Y., Popova S.N., Vavilov D.D. (2016). Investment Attractiveness of Closed-end Real Estate Investment Funds in Russia: Factor Score

- Evaluation. In *International Conference on Education, Management, Computer and Society (EMCS)*, 37, 904-907.
- Antonova, I. S., Pchelintsev, E. A., & Vavilov, D. D. (2016, January). Company town socio-economic transformation: concentration and factors system. In *SHS Web of Conferences*, 28. Retrieved from: <http://dx.doi.org/10.1051/shsconf/20162801006>
- Afonasova, M.A., Ryzhkova, M.V. (2017). Economic Inertia and Economic Growth: Is There Any Contradiction? *The European Proceedings of Social & Behavioural Sciences (EpSBS)*. Retrieved from: <http://dx.doi.org/10.15405/epsbs.2017.07.02.3>
- Bebbington, A., Hinojosa, L., Bebbington, D. H., Burneo, M. L., & Warnaars, X. (2008). Contention and ambiguity: Mining and the possibilities of development. *Development and Change*, 39 (6), 887-914.
- Calkins, S. (1983). The new merger guidelines and the Herfindahl-Hirschman Index. *Cal. L. Rev.*, 71, 402.
- Chapman, R., Tonts, M., & Plummer, P. (2014). Resource development, local adjustment, and regional policy: Resolving the problem of rapid growth in the Pilbara, Western Australia. *Journal of Rural and Community Development*, 9(1), 72-86.
- Company town map. Monotown Development Fund. Official webpage. Retrieved from: http://www.fmrus.ru/?page_id=15
- Elkhina, I. A. (2014). Structural shifts and structural distinctions of economic systems in Russia. *Bulletin Saratov State Social and Economic University*, 4 (53).
- Esteban, J. (2000). Regional convergence in Europe and the industry mix: a shift-share analysis. *Regional science and urban economics*, 30(3), 353-364.
- Garner, J. (Ed.). (1992). *The Company town: architecture and society in the early industrial age*. Oxford University Press
- Hansen, J.C. (1978). The one-company town in Norway: Can we learn from the recent past in planning for the near future? *Norsk Geografisk Tidsskrift*, 32, 97-110
- Herzog, H. W., Olsen, R. J. (1977). Shift share analysis revisited: The allocation effect and the stability of regional structure. *Journal of Regional Science*, 17(3), 441-454.
- Jin, J., Wang, R., Li, F., Huang, J., Zhou, C., Zhang, H., & Yang, W. (2011). Conjugate ecological restoration approach with a case study in Mentougou district, Beijing. *Ecological complexity*, 8(2), 161-170.
- Lai, L. W. C., Lorne, F. (2006). The Coase Theorem and planning for sustainable development. *Town Planning Review*, 77 (1), 41-73.
- Li, F., Liu, X., Hu, D., Wang, R., Yang, W., Li, D., & Zhao, D. (2009). Measurement indicators and an evaluation approach for assessing urban sustainable development: A case study for China's Jining City. *Lands cape and Urban Planning*, 90(3), 134-142.
- Littlewood, D. (2014). 'Cursed' communities? Corporate Social Responsibility (CSR), company towns and the mining industry in Namibia. *Journal of business ethics*, 120 (1), 39-63.
- Lucas, R., Tepperman, L. (2008). *Mine town, mill town, rail town: Life in Canadian communities of single industry*. OUP Catalogue
- Monotown Development Fund. Official webpage. Retrieved from http://www.fmrus.ru/?page_id=15
- Murdoch, III, J., Specialized vs. diversified: The role of neighborhood economies in shrinking cities, *Cities* (2016), DOI: 10.1016/j.cities.2016.12.006
- Nitsch, V. (2005). Zipf zipped. *Journal of Urban Economics*, 57(1), 86-100.
- Rastvortseva, S. N. & Manaeva, I. V. (2016). Monotowns in the system for the deployment of the production forces of the Russian Federation regions. *Territorial Development issues*, 5 (35).
- Roberts, T. (2014). When bigger is better: A critique of the Herfindahl-Hirschman Index's use to evaluate mergers in network industries. *Pace L. Rev.*, 34, 894.
- Ryzhakina, T., Koroleva, N., Makasheva, N. (2016, January). A process-based approach to management of the enterprise. In *SHS Web of Conferences* (Vol. 28). EDP Sciences.
- Shann, E. W. (2012). Maximising growth in a mining boom. Minerals Council of Australia Chapman, R., Plummer, P., & Tonts, M. (2015). The resource boom and socio-economic well-being in Australian resource towns: a temporal and spatial analysis. *Urban Geography*, 36(5), 629-653

- Tonts, M., Plummer, P., & Lawrie, M. (2012). Socio-economic wellbeing in Australian mining towns: A comparative analysis. *Journal of Rural Studies*, 28 (3), 288-301.
- Wlasiuk, J. (2014). A Company Town on Common Waters: Standard Oil in the Calumet. *Environmental History*, 19(4), 687-713.
- Yuan, Q., Xue, X. (2009, October). The eco-industrial system study of circular small town. In *Industrial Engineering and Engineering Management*, 2009. IE&EM'09. 16th International Conference on (pp. 1636-1639). IEEE.
- Zinatizadeh, S., Azmi, A., Monavari, S. M., Sobhanardakani, S. (2017). Evaluation and prediction of sustainability of urban areas: A case study for Kermanshah city, Iran. *Cities*, 66, 1-9.