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**THE ROLE AND FUNCTION OF MEDIUM-SIZED CITIES IN TERMS OF
DEVELOPMENT AND REGIONAL BALANCE (CASE STUDY: MARAGHEH CITY)**

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ABSTRACT

The strategy of intermediate cities and its role in development and regional balance is among paradigms affecting spatial and regional development having been presented in the economy of the third world since 1970. Neglecting the role of intermediate cities and tending to centralization in one or several limited regions have resulted in engendering challenges such as polar spatial structures and the severe imbalances in the regional system of developing countries and consequently Iran. The objective of the present study is to investigate the effect of the Intermediate City of Maragheh in the economic structure of East Azerbaijan Province and evaluating the performance of this city in the surrounding region and its own influencing area. The research method was a descriptive-analytical one and for evaluating and analyzing the role and function of this city, statistical models and economic analyses of the region such as Shift-Share Model, Spatial coefficient, etc. were used. The results obtained for the population model indicate that this city, due to having positive and high elasticity in attracting the population of the region, has a significant effect on balancing and distributing population equally in East Azerbaijan Province. In addition, the results obtained from Shift-Share models and the spatial coefficient indicate the powerful and effective role of this city in eliminating the economic imbalance of the region and indicate that the high degree of average development of the three

sections of economy in this city has resulted in the increase in the degree of regional development and growth; therefore, this city has been able to have effective role in integrating spatial development of the regional system and in development of economic conditions of whole East Azerbaijan Province by taking the ultra-regional role and presenting favorable performance in the field of industry, service, and agricultural sections.

Key words: intermediate cities, regional balance, regional development, entropy coefficient, spatial coefficient

INTRODUCTION

In the final decades of the 20th century, the crisis of urban planning has been expanded in most areas of the world. The Shared Capitalism as well as different schools such as Modernism, Post-modernism, Technicalism, and etc. could not provide humanitarian logistics, but they have resulted in severe destruction in the urban environment, imbalance, extreme centralization, uncontrolled urban development, lack of shelter, deep gaps in all levels (Ziari, 2009: 418). In the third world countries, the powerful influence or polarization of capitals and their polarization have caused chain area networks. In these countries, regarding the problems resulting from centralization and increasing population in big cities particularly capitals, different policies should be made in creating balance in the urban system. One of these policies is to create possibilities of development for intermediate cities within the system and urban hierarchy (Nazarian, 2004: 167).

In most of developing countries in recent years, they have observed the advent of metropolises, discontinuities and disconnection in urban networks at the general level of lands, unequal distribution of facilities and opportunities in regions, imbalance in the settlement system and etc. the attention of urban planners to the created challenges resulted in the adoption of different strategies regarding the distribution of population in urbanization. One of the most important strategies of creating an organized network of intermediate cities, a network which with having specific capabilities and definite limits of population, services and equipment, can be effective in developing and distributing development coordinately (Rondinelli, 1983: 144). In most of the developing countries, planners' tendency to spatial de-centralization, the reduction of regional inequalities, and urban-rural dichotomy in recent decades have resulted in the adoption of different

urbanization strategies, and one of the most important strategies is to reinforce intermediate cities and supporting them (HosseinzadehDalir, 2014).

Intermediate cities in the settlement system enjoy the most appropriate situation for giving the role of anchor points and interfaces. These cities, with accepting the central role in a regional scale, in addition to growing themselves, result in the reinforcement of required foundations of development in the region and development of their the scope of influence (Prakash and Mathur,1982:17).

The development of cities, undoubtedly, has a close relationship with their roles, for example, industrial, productive, and political roles of cities are highly effective on the development of cities and regions and in fact they are vital factors of cities. But the most important role of cities, in addition to political factors, is the industrial role of cities and the expansion of plants and the acceptance of the role of industry which is the biggest factor of the urban and regional advent and development (BeigBabaei, 2010).

In Iran and in continuing the evolutionary process and social upheavals of the recent 100 years, and consequently, the acceleration of capitalism in the framework of a single-product economy, we have observed the

creation of auneven urban network in which big cities, with complete discontinuities with medium-sized and small cities, have assigned to themselves economic, social, industrial, and service supreme levels, and small and medium-sized cities have the potential of less growth levels and are changed into peripheral spaces. In Iran, the attitude towards regional development is based on the creation of growth poles particularly after the third and fourth constructive programs before the Islamic Revolution (ZangiAbadi et al. 2007: 50).

In the regional system of East Azerbaijan Province, the rapid growth of urbanization and the increase of cities and its urban population have been accelerated and requires the creation of a hierarchy of intermediate cities in order that these cities can cope with the challenges by appropriate performance in proper equal distribution of population, facilities, and services because these cities, due to their location in the urban hierarchy as the link between big cities, small towns and villages can reinforce the economic and social balance in regional and national scales via creating vital relations. Accordingly, the creation of a group of intermediate cities which attract a significant proportion of factors of production, investment, human forces, and population of

the province and act as sinkers far from the attracting field of the first city (Tabriz), will results in de-centralization and the creation of a more balanced urban system and finally the development of the province. In line with the present study, this question can be raised that regarding the role of intermediate cities, can Maragheh City be considered as an intermediate city covering the province in the urban system of the province? Does this city enjoy features and situations required for taking the role of an intermediate city?

Accordingly, by utilizing quantitative and statistical population and economic models, the present study tries to investigate the role and significance of the intermediate City of Maragheh in the balance of the urban system and regional development of East Azerbaijan Province.

RESEARCH METHODOLOGY

The method employed in the present study is a descriptive-analytical one. The type of the research is theoretical-applied and the data collection method is library research. In this research, firstly primary data was extracted from information resources such as Statistical Centre of Iran, statistical CDs (statistical yearbooks, detailed results of General Population and Housing Census, etc.), theses,

scientific articles, etc. and then evaluated. The data analysis method is quantitative and statistical and econometric methods and patterns such as spatial coefficient, entropy coefficient, and elasticity coefficients were used. The studied scope of the present study is East Azerbaijan Province as a regional system.

RESEARCH FINDINGS

To evaluate the role of the Intermediate City of

$$E_{(t,t+10)} = \frac{r_v(t, t + 10)}{r(t, t + 10)}$$

Maragheh in attracting the regional system of elasticity coefficient was used. The formula is as follows:

E= the elasticity coefficient in interval t and t+10

Rv=the urban population annual growth rate

r= the annual growth rate of the population

Regarding the conducted calculations, the elasticity coefficient of Maragheh is equal 0.56 and its development rate is equal 1.68 from 1986 to 2011. Therefore, the Intermediate City of Maragheh enjoys more appropriate population elasticity coefficient than Tabriz Metropolis and the province as a whole do.

Table 1: urban population growth rate and elasticity coefficient of Maragheh in East Azerbaijan Province during 1986 to 2011

Year and growth rate of the city	Urban population growth rate	Elasticity coefficients
	65-90	65-90
Maragheh	1.68	0.56
Tabriz	1.73	1

Analysing entropy coefficient in the regional system and the role of Maragheh in it

This model was used for evaluating the evenness of desired variables such as population distribution or public services of the city (Fanni, 2003: 79). Its formula is presented as follow (HekmatNia and Mousavi, 2011: 190).

$$H = -\sum P_i \ln P_i$$

$$G = H / \ln K$$

H=the sum of frequency in the natural frequency logarithm

Pi=frequency

LnPi=natural frequency logarithm

K=the number of categories

G=entropy coefficient

According to this model, if a value is towards 1 and higher, it indicates the equality of population in the region, and if this figure is lower than 1, it indicates its inequality.

Accordingly, Tabriz suffers from unfavorable inequality in this regard. This inequality resulting from the macrocephaly in the regional system of the cities of the province has had relatively less favorable state. This issue got more unfavorable in 2011 and the unequal conditions grew in the system. Because this city due to having a lot of great plants and factories, is considered the second great industrial city (after Tehran) in Iran, this factor can deteriorate the imbalance of the city. In other words, although the governance of the growth pole at national level can result in a relative balance in urban systems and the development of potential regions, in a smaller scale, this issue has been able to result in the imbalance in the urban-regional system of East Azerbaijan Province and the results of entropy indicates that overtime, this imbalance got more.

Table 2: calculations of the entropy coefficient with considering and without considering the intermediate city of Maragheh

2011		2006		1996		1986		Year
Without considering the medium-sized City of Maragheh	With considering the medium-sized City of Maragheh	Without considering the medium-sized City of Maragheh	With considering the medium-sized City of Maragheh	Without considering the medium-sized City of Maragheh	With considering the medium-sized City of Maragheh	Without considering the medium-sized City of Maragheh	With considering the medium-sized City of Maragheh	Explanation
0.45	0.50	0.46	0.51	0.43	0.52	0.45	0.53	Entropy coefficient

Resource: calculations conducted by researchers based on Statistical Center of Iran

Analysing rank-size in the regional system of East Azerbaijan Province

This method was applied by Felix Auerbach for the first time. Its formula is as follows:

$$p_n = p_1 \cdot (n)^{-1} \text{ or } p_n = p_1 \frac{1}{n}$$

p_1 = the population of the first city

p_2 = the population of the second city

p_n = the population of the last city

Figure 1, 2, ... n = rows or ranks of investigated cities; therefore, according to theoretical law of this model, if the slope coefficient of rank-size is towards 1 or -1, it indicates balance in the urban system of the region.

Investigating data of table 5 reflects this issue that the medium-sized City of Maragheh does not have a great role in spatial balance and systematic hierarchical urban distribution in such a way that the slope increases from 65 to -1.40 and from 90 to -1.47. This increase indicates imbalance during recent years. Therefore, the stages of calculated equations during four stages are relatively equal and indicate incoordination and imbalance in the urban hierarchy of East Azerbaijan Province during investigated years.

Table 3: linear equation of logarithmic distribution of rank-size of cities for the urban system of East Azerbaijan Province during 1986, 1996, 2006, and 2011

Without considering the medium-sized City of Maragheh	With considering the medium-sized City of Maragheh	Year
Y = -1.394x + 5.408	Y = -1.3685x + 4.801	1986
Y = -1.4698x + 4.7654	Y = -1.4423x + 4.6547	1996
Y = -1.4457x + 5.794	Y = -1.4356x + 4.6542	2006
Y = -1.4671x + 5.8452	Y = -1.4548x + 4.8965	90

Resource: calculations conducted by researchers based on Statistical Centre of Iran

This city suffers from the lack of adequate population as 12288 in 2011 in relation with the Rank-Size Rule.

Calculating the spatial coefficient and analyzing the role of the basic economy of Maragheh

One of the methods common in determining basic economy of each city is to use coefficient or spatial ratio (Ziari, 2002: 142). The general explanation of the spatial coefficient model is as follow:

$$LQ = \frac{\frac{\text{employment of section } a \text{ in region } j}{\text{all employment in the region}}}{\frac{\text{employment in section } a}{\text{all employment of the country}}}$$

If LQ=1, the city is economically self-sufficient. If LQ>1, the city is an exporter of goods and services, and if LQ<1, the city is an importer of goods and services.

Maragheh, in 2006, was an importer of services and industries, but in terms of agriculture, it was self-sufficient and an exporter of agriculture to its sphere of influence. In 2011, in two sections of

services and industry, the same situation was common and the only change which occurred in the agricultural section was that its role as

an exporter to near cities in the agriculture center reduced a little.

Table 4: variations of the spatial coefficient tin the cities of East Azerbaijan

City	Type of activity	LQ1385	LQ1390
Tabriz	Agriculture	0.12	0.05
	Industry	1.13	1.16
	Services	1.47	1.30
Maragheh	Agriculture	1.38	1.31
	Industry	0.83	0.89
	Services	0.98	0.96

Resource: calculations conducted by researchers based on Statistical Centre of Iran

CONCLUSION

Intermediate cities, due to their efficacy and creation of economic efficiency as well as their roles in distributing populations, justice, and equity evenly, and finally, due to the failure of gradual reduction of performance (growth pole) can be effective in regional development (MohammadzadehTitkanlou, 2002: 89). Intermediate cities, by accepting significant proportion of factors of production, investment, human forces, and population of the country in intervals appropriate to the vastness of the land, act as sinkers far from the attracting scope of the centre (capital) and are able to reinforce a group of factors necessary for the development of the regions of the land (Amkachi, 2004: 13).

The present study, in order to investigate the degree of balance in the regional system and the role of the medium-sized City of Maragheh in balancing and developing the regional system of East Azerbaijan Province

used quantitative models and conducted a population-economic analysis of the regional system. The results obtained from the elasticity coefficient indicated that this coefficient for Maragheh is 0.56 and its growth rate is 1.68 from 1986 to 2011. Therefore, it can be inferred that the medium-sized City of Maragheh enjoys more favourable population elasticity coefficient than Tabriz Metropolis do. In addition, the investigation of entropy coefficient regarding population upheavals of the regional system and explaining the role of Maragheh in it indicated that the population distribution has not been conducted in a balanced and equal way in the urban areas of the province. Investigating the effects of the medium-sized City of Maragheh in the urban-regional system of the province, without considering the medium-sized City of Maragheh, indicated that Maragheh has no significant role in spatial balance and regular hierarchical urban distribution, in such a way

that the slope increased from 65 to -1.40 and from 90 to -1.47. This increase indicates an imbalance during these years. Therefore, the stages of calculated equations during four stages are approximately consistent and indicate incoordination and imbalance in urban hierarchy in East Azerbaijan Province during investigated years. Investigating economic functions in this intermediate city based on spatial coefficient and basic economy indicated that, the regional system, in addition to self-sufficiency, is the importer to their spheres of influence in sections of industry and services. The spatial coefficients 0.12 and 0.05 for the agricultural section indicate this issue that East Azerbaijan Province is dependent on its own sphere of influence in the field of agriculture and is an importer in this field. On the contrary, regarding the services role, the province acts as basic economy and importer in Iran. In the section of industry, this province is self-sufficient and is an exporter in this regard. Maragheh was an importer regarding services and industry, but in agriculture, it was self-sufficient and an exporter to its sphere of influence. In 2011, it the same situation was common in the two section of services and industry, and the change which occurred in the agricultural section is that the exporting

role of this city to neighbouring cities in the agricultural section has reduced a little.

Maragheh, by relying on its relative advantages in services and industry domains, can result in attracting private investment or investment form outside the province. In addition, it can prevent the exit of intra-regional investment. This issue acts as a factor in reinforcing the economic function of the region. Furthermore, by relying on abilities in providing products and services of the agricultural section as a basic economic section for outside the region increases the income of the region. At last, by quantitative investigation in this study, it can be concluded that Maragheh City as an intermediate city, can be a factor of developmental flow from national and regional to local levels.

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