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The performance of Masiri City in spatial equalization for surrounding villages, case: Central district of Rostam County, Iran

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Each geographical region as a system is a space of rural and urban settlements which is proportional to the structure, degree of accessibility, economics and environmental conditions have a special function inside the region. The city in the center and the villages in its peripheral areas play different roles. The local and small towns that have close ties with the villages, corresponding to their degree of accessibility, settlement attraction and also the increase of reciprocal rural-urban flows, make equilibrium and spatial transformation in population, social, economic and development dimensions. The research has a descriptive and analytical approach that its objective is to address the performance of the Masiri Rurban in providing the equalization and spatial regularization for the surrounding rural areas. The data were acquired from literature and field survey. The statistical population of the study is Masiri City and 91 villages located in the central district of Rostam County. To investigate the performance of Masiri in evolution of the villages we analyzed population, job creation, and accessibility of the district villages using numerical models. The results indicate that the Masiri City since the establishment in spite of an increase in its influence and spatial performance was not able to be recognized in the stature of a dynamic city. Despite an increase in population of the city through immigration, it was not able to maintain and stabilize the rural population of the region. The city also has a poor performance both in distribution of services and facilities to the surrounding areas and in job creation in the region. Finally, it can be concluded that the city could not provide the surrounding villages with a balance and spatial regularization.

Key words: Village, spatial equilibrium, rural and urban relations, rural development, Masiri.

INTRODUCTION

A set of human settlements either the rural or the urban within a region represent cultural landscapes that result from the interaction between humans and the environment. In a spatial frame, these human centers in addition to a place for accumulation of people, capital, economy, and culture based on internal dynamics, they perform as an organic system that reciprocally have ties, relationships, and interactions with other near and distant human centers. The city in the center of a region and the villages around it, as a whole, play different roles for survival and development of the region. In accordance with the structure condition and also the development level, the functions and the performance of cities and villages are different throughout different countries of the world. The task of villages in the third world, while they are "dependent", is to generate raw materials and agricultural products and the task of urban communities on the stature of a dominant center, while maintaining "sovereignty", is to provide services for surrounding regions. What is important in such a spatial explanation as an obvious principle is that cities, in one hand, play a role to make balance and spatial arrangements in rural settlements and, on the other hand, to decrease inequalities and improve their socio-economic conditions.

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Table 1. The population and the growth rate of the study area.

Settlement	Population 1986	Population 1996	Population 2006	Increase Rate 1986-1996	Increase Rate 1996-2006
Rostam Regional	55625	47355	45377	-1/5	-.4
Central District	26018	27884	21525	./6	-2/56
Masiri Town	2560	3101	5365	1/9	5/63

From Iran statistical center.

The small local cities that have close relations with villages, proportional to their enjoyment level, living attraction, and also to an increase in the reciprocal urban-rural flows, in addition to attracting the emigrants from surrounding villages and accumulating the necessary services for development in themselves and assigning to the surrounding regions, can provide rural areas in their extent of influence with equilibrium, interaction, and spatial evolution in population, economic and social dimensions, and development (ZiaTavana et al., 2010). In the study, Rostam County was considered as the poorest in the Fars Province, with many indigent villages. It has an urban center named Masiri of 5365 residents, two districts, 4 vills, and 173 villages of 45377 residents in 2006. The study using a descriptive and analytical method attempts to examine the role that Masiri City plays in the stature of rural-urban to provide the near villages around the central district of this county with bases for equilibrium and spatial regularization. The study collects data from literature and field survey and analyzes statistics in quantitative methods in the last decade, in order to investigate the performance of the Masiri City in creation of the preparations for population stabilization, spatial regularization in the region, job creation, providing services and development for rural areas in the central district of Rostam County.

Theoretical base

The inequity and the socio-economic gap between rural and urban settlement that was formed based on the growth pole and center-periphery approaches in 1950s and 1960s in developing countries, prepared a ground for theories about unequal spatial development (Noori et al., 2009). The failure in execution of growth pole policies, urbanization and industrialization of communities for regional equilibrium, caused these approaches to change. Therefore, more attention was paid to the systematic views and an integrated urban-rural approach in regional development studies. Therefore, an attempt for progress and development for the region and its internal elements as a place for action and a space for shaping the socio-economic and physical-political processes between urban and rural areas was made by planners and geographers since the 1970s. The main idea for emphasis on the system approach in planning was first outlined by Johnson (1970), Fael (1976) and Fanni (2003). According to Johnson, the present gap in settlements of third world countries result in both lower productivity in agriculture and failure in rural development. He also found that there is an amazing difference between the developed and underdeveloped countries in terms of the relative number of central places and the distribution of towns and cities (Roknodin et al., 2001). Thus, establishment, reinforcement and enhancement of local small towns with a special hierarchical order in the region were proposed in planning, because the cities as the centers of regions play a role in unity and stabilization. Indeed, the development and innovation initiate in a matrix of urban areas and develop to the rural periphery (Bromley, 1984).

Therefore, to small cities (Bajrachary, 1995), especially the cities that have a location in the network of settlement as a mediator between the urban and rural areas, much attention was paid by scientists in order to achieve a rational spatial equilibrium in the region's settlements (Egziabhar, 2004). Also, in many developing countries there was an orientation toward small cities and rural-urban areas, as major features of regional planning and reclamation policies, to improve the welfare and quality of life of people in nearby cities and villages, decrease the inequalities among settlements, improve the hierarchical system amongst settlements, decrease the migration from rural areas to cities and the decentralization in decision making system, and create a spatial equilibrium in the region (Hekmatnia and Mousavi,2006, Rezvani et al., 2010).

Study area

The geographical extent of the study area is located in Rostam County, a region out of 27 in Fars Province in Iran. The district was separated as an independent county since 2008; Masiri is its center and has 2 district and 4 vills (Pars Arayeh Consultant Engineers, 2010). According to the census in year 2006, the population of the county was 45377 people of which 5365 live in Masiri and 40014 live in 173 villages (Table 1). As it can be seen from Table 1, the total population has been decreasing during the last two decades. The villages of the central district from 1996 to 2001, after its conversion into a city, 1986 to 1996, before being city, had a growth rate of -2.56; thus, it experienced a decrease in

Table 2. Number of villages in central district of Rostam County based on population classification in 1976 to 2006.

Legend	Frequency settlement							
	1976 **Year**		1986 **Year**		1996 **Year**		2006 **Year**	
Category population	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
1-99	13	17.80	26	27	41	39.42	38	41.75
100-249	35	47.94	38	39.58	28	26.92	28	30.76
250-499	16	21.91	22	22.91	20	19.23	10	10.90
500-999	8	10.95	8	8.3	11	10.57	12	13.18
+1000	1	1.36	2	2	4	3.8	3	3.2
Total	73	100	96	100	104	100	91	100

Based on data from villages encyclopedia of Mammasani County, 1976-2006.

Table 3. The elasticity coefficient of Masiri City and the study area in 1976-2006.

Year Settlement	1976-86	1986-96	1996-2006
Masiri Town	8	1.9	5.63
Central District Rostam	3.65	./6	-2.56
Elasticity Index	2.19	3.16	-2.19

Calculations based on the field surveys.

population and an increase in emigration. The city of Masiri had an increase in population growth rate about 5.63 that it indicates its ability to attract population. The state of settlements in rural region including some small and large villages and their changes were addressed from 1976 to 2006 as presented in Table 2.

The number of people in the district had an increasing trend from 1976 to 1996 and from 1997 when Masiri turned into a city to 2006, it experienced a decrease in the number of villages along the rise of emigration rate and evacuation of 13 villages. From decades 1976 to 1996, the most part of all the villages belonged to the second population class (100 to 249 people), with 48 to 40%. In the following decades, the most part was for small villages with lower than 100 people. In the decade 1996 to 2006, in addition to the evacuation of the 13 villages of population, the number of inhabitants in the villages of the study area reduced and had negative growth rate of -2.5. The main reason of the reduction is due to the migration of people to the cities of Masiri, Noor Abad, Yasooj etc. (Shamsoddini et al., 2010).

MATERIALS AND METHODS

This research is an applied study that uses a descriptive-analytical approach to reach its goals. The literature information and field survey were used to collect data and recognize the present state. Hence, the performance of Masiri city was analyzed in two periods before and after its conversion into a city in the central district of Rostam County. The population of the study includes all the villages in the Rostam Vill I and Vill II, that are under the jurisdiction of the central district of Rostam County. The information about them was acquired from the population and housing census and the province

statistic book.

The total population of the study is up to 26880 people living in one city and 91 populated centers. In order to analyze the performance of Masiri City, we examine the function of the city in providing spatial equilibrium and population stabilization in the region using entropy and elasticity coefficient. The model of centrality index was employed for a ranking of the degree of accessibility and for specifying the development level over the villages during two decades. The location coefficient analysis method was used to evaluate the function of the city in macro structure of employment.

RESULTS

Stabilization of population in the region

The elasticity index coefficient was used to measure the capability of Masiri City in attracting migration and stabilizing the population in the city and the rural area (Table 3). To do so, we first obtain the population growth rate both in the city and in the study area during some decades. As the quotient turn out to be more than one, it indicates the capability of the city in attracting the population; less than one indicate the lack of this capability (Rezaei et al., 2008). As it can be detected from Table 3, the elasticity coefficient of Masiri City in pre urban (before turning into city), in 1976 to 1986 and 1986 to 1996, obtained up to 2.19 and 3.16, respectively; this value is positive and more than one that represent a decentralization trend in the region and a gradual urban growth as well as has implications in the role which the settlement, weakly, had played in stabilization of rural population and slow rate of population attraction. The value for post urban (after turning into city) reduced to -2.19; the value account for the increase in migration and less entrance of rural peoples to Masiri City, as well as fast movement of rural people to the populated centers out of this province.

Spatial equilibrium in the region

Using the entropy index, we are to compare spatial equilibrium of population settlement over the rural

Table 4. Relative entropy in the central district of Rostam County.

Year	Year 1996			Year 2006		
Class rural	Pi	Lnpi	Pi.Lnpi	Pi	Lnpi	Pi.Lnpi
1-99	40%	-0/91	-/364	42%	-/86	-/361
100-249	26%	-1/34	-/348	31%	-1/17	-/362
250-499	20%	-1/60	-/32	10%	-2/30	-/23
500-999	10%	-2/30	-/23	13%	-2/04	-/265
+1000	04%	-3/32	-/132	03%	-3/50	-/105
Total	1	-9/47	-1/394	1	-9/87	-1/323

Calculations based on the field surveys.

Table 5. A comparison of changes in L.Q of Masiri in pre-urban and post-urban period.

Settlement	Activity / location quotient	L.Q 1996	L.Q 2006
	Agricultural sector	0.5495	0.6204
Masiri Town	Industry sector	2.609	2.622
	Sector service	3.119	1.929

network of the region before and after Masiri became a city (Table 4). In the model, frequency distribution, percentage of frequency distribution and natural logarithm of the percentage were calculated and the percentage of distribution for each point was multiplied by their corresponding logarithm values. Finally, the sum of them was computed with their sign changes. According to the index, after calculation of absolute entropy, the relative entropy, as shown can be used to analyze the centralistic characteristic of points in the region.

$$G=H/ln.k$$

Where G is entropy index or relative entropy, and k is the number of classes or points. According to the calculations, in 1996 G=868% while in 2006 the value declined to 825%. Based on the model, if the quotient value tends toward zero, it will indicate more centralization and disequilibrium in distribution of population in the region and more than zero correspondingly indicate more equal distribution in the region (Sudhira, 2003). From the results of the index for two statistical periods, it can be inferred that the conversion of Masiri into a city had not had any desired impact on the equal spatial distribution of population and rural settlement position over the central district of Rostam so that the establishment of Masiri City caused the attraction of population from surrounding rural areas and consequently the reduction in population and the evacuation of settlements during ten years. As the relative entropy is lower than 1, it can be said that the distribution of population is not in equilibrium.

Economic performance of the city

Location quotient model (economic based) in pre-urban

and post-urban periods was used to investigate the occupational function of the city in the region. L.Q includes activities that examine the export of goods and services out of the city and region (Sarafi, 2000). According to the quotient, the Q.L equal to one indicate that the city or region is self-sufficient and in a Q.L greater than one, it is exporting goods and services and less than one represent that the city or region is importing those goods and services (Blair, 1991). Therefore, the quotient for Masiri City relative to Rostam Region in 1996 to 2006 was calculated on three sectors of economics. According to Table 5, Masiri City in agriculture sector shows the quotient value less than one for two periods.

Thus, it can be found out that the city is weak in this sector of economics and importing products. In mining and industry sector while the L.Q is less than 1 for the city, yet it is further related to the building industry, it has both a trifle growth relative to the pre-urban period and lower job creation in the region. Although the obtained value in 2006 is greater than one, with the population increase in the city, it experienced severe decrease in economic performance of the region relative to the previous period. It is also indicative of the weak performance of the city in job creation of this sector of economy. As a result, the city was not much able to create job opportunities in the region.

Business relative Masiri with the surrounding villages

In the city Masiri after 14 years, the establishment of not relying on market mechanism to attract investment spread and provided changes of the city. More than 85% of villagers have acknowledged that the vast needs such as food, consumer goods, clothing, appliances home,

Table 6. Where to buy equipment and supplies, rurals inhabitants of the Region to order, see Rosram.

Service Cities	Home appliances	Food	Clothing	Cosmetic	Books and stationery	Building Materials	Agricultural varieties
Masiri	5	3	5	5	4	3	2
Nourabad	2	1	1	1	1	2	1
Yasouj	1	4	2	3	3	4	3
Kazeroon	3	2	3	4	5	5	4
Shiraz	4	5	4	2	2	1	5

Source: Based on the field surveys (2010).

Table 7. The number of villages that have services in central district of Rostam County in 1996-2006.

Service Rurals frequency	Super market	Cooperative Salesroom	Post	Bus exoteric	Telephone	Cooperative units	Leader Rural	Assistant Medic	Obstetrician	Polyclinic	Infirmary	gas	Levin	Water duct	Mosque	School girlie	School Boys	School Boys	School girlie	Prep School
Year 1996	20	14	3	18	15	17	54	30	2	21	2	3	60	60	22	6	8	21	17	79
Year 2006	34	12	-	9	57	1	64	19	3	16	2	23	83	64	23	6	6	14	12	75

Iran statistical center.

Table 8. The levels of services in central district of Rostam City based on centrality index in 1996.

Class	Functional Method	Rurals Frequency	Percent
1	185.96 and up	2	2
2	139.52-185.96	2	2
3	93-139.52	-	-
4	46.44-93	5	5.15
5	46.44 and low	88	90.8

health service and educational needs of its regional cities including Nourabad, Yasuj and even the offer and the city of Shiraz, have less to Masiri (Table 6).

The levels and degree of accessibility in villages

In the study the centrality index, a kind of classification based on the order of settlement and centrality value, was used to determine the levels and degree of accessibility. To evaluate the degree of development and the amount of accessibility, the number of welfare and infrastructural services were measured during 1996 to 2006. The scalogram from 1996 to 2006 indicates that the number of services available in the region such as drinking water, electricity, education and health care services, taking the population of the villages into account, is in a desired state but the region is not in a desired state in such services as administrative, commercial, and production facilities so that they cannot meet the people's needs (Table 7). Results from the classification based on the centrality index indicate that the settlements in the district have sporadic hierarchical arrangements, so that there are 4 accessible villages in the first and second levels and no villages in the third level, while in the next level, 5 villages can be found. In the last level, 88 villages were fount that it is typical of inaccessibility to the facilities and underdevelopment in about 90% of villages in the region (Table 8).

There was centralism in hierarchical regularity among the district villages in 1996 so that 1 and 2 villages were found in the first and second levels, respectively. Analogous to the previous decade, no village was found in the third level and 4 villages were in the fourth level. There were 83 villages in the last level that is about 92% of all villages in the study area (Table 9). In the decade that was examined after Masiri turned into a city, not only the previous ordering in terms of accessibility was repeated among the villages but the most of the villages have been in an inaccessible state. An analysis of the results of the indices reveals that in terms of accessibility and degree of development more than 90% of villages in the district were inaccessible and underdeveloped and that only villages with more population and in the vicinity of the city, particularly the towns, were to some extent accessible. The privation and inaccessibility of the

Table 9. The levels of services in central district of Rostam County based on centrality index in 2006.

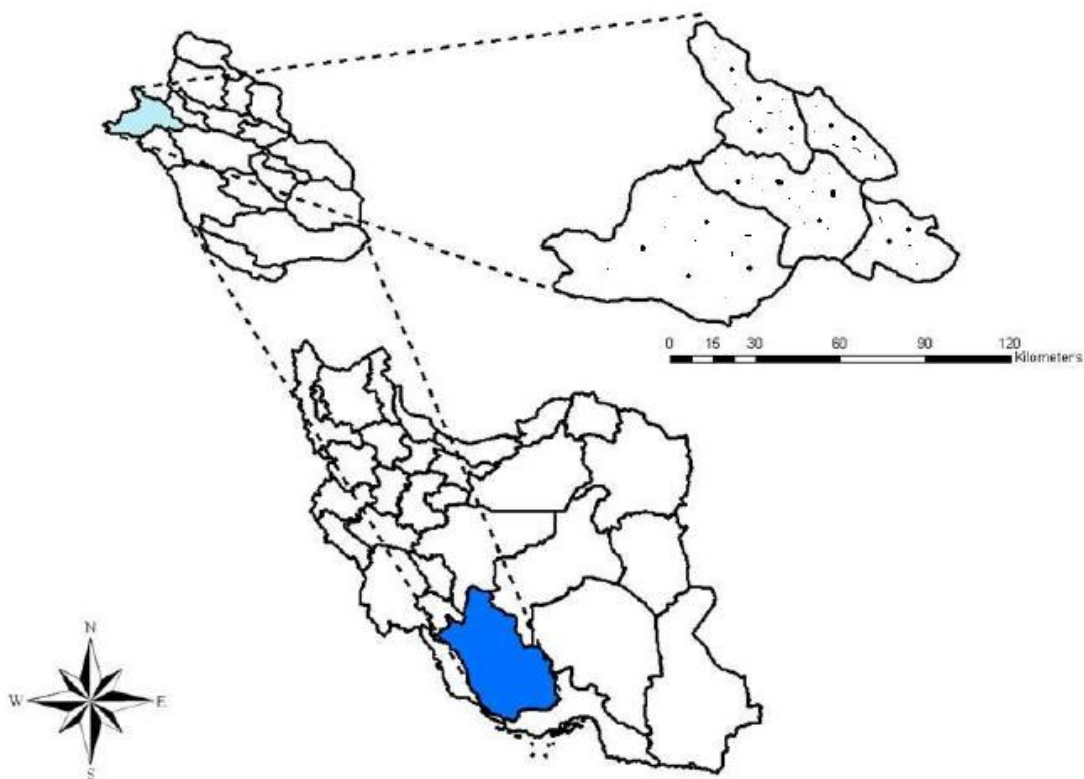| Class	Functional Method	Rurals Frequency	Percent
1	317.2 and up	1	1.1
2	237.9-317.2	2	2.2
3	158.6-237.2	-	-
4	79.3-158.6	4	4.4
5	79.3 et low	83	92.2

Figure 1. Position of Rostam Region in Iran.

villages in social and economic services give birth to the emigration of rural people to the near and distant cities as well as to the evacuation of 13 villages during 1996 to 2006. Therefore, Masiri Rurban has not provided an effective performance to enhance the circumstances of its peripheral regions.

Conclusion

The applied research was conducted to examine the role that Masiri Rurban plays in creating equilibrium and spatial regularization in the surrounding rural areas relying on the numerical models in Rostam Region. The results indicate that Masiri City since its establishment in

1997, despite an increase in its spatial influence and performance, could not show off as a dynamic and effective city in the region, so that the study area in 2006 had experienced 2.6% decrease in population and evacuation of 13 villages and there was emigration in most of the villages.

Turning Masiri into a city has not had any desired impact on the equal distribution and settlement of populated areas over the central district of Rostam County. The spatial structure of the region tended toward an inequilibrium and the city in spite of an increase in population was not able to maintain and stabilize the rural population. Furthermore, more than 90% of the villages in each period were inaccessible and underdeveloped. The city also had a weak performance in distribution of

services to the surrounding areas and in job creation. Finally, the rurban was not able to bring about equilibrium, spatial regularization, and consequently the development for surrounding villages.

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