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A Comparative Study of the Development Process and the Inequality of Provinces of the Country in the Periods of 1380, 1390, and 1395: The core-periphery Approach

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Abstract

Development is not just an economic phenomenon but includes economic, social, political and cultural aspects. Therefore, to study the development of each sector, it is necessary to consider its various dimensions. On the other hand, in order to accurately plan and effectively implement policies, it is necessary to pay attention to its evaluation at the partial and provincial levels, instead of examining the extent of development in general and at the national level. Therefore, the present study used numerical taxonomy and SPSS and Excel software to evaluate the degree of development of the provinces of Iran. It also examined the existence of a core-periphery model to determine the process of inequality changes between central and border provinces based on 25 indexes for the years 2006, 2011 and 2016. The results confirmed the model of core-periphery; central provinces such as Tehran, Isfahan, Yazd were found to have the highest level of development and border provinces such as Sistan Baluchestan, Hormozgan, and Kurdistan were at a low level of development. Also, considering the inequality index, inequality between central provinces was more than the inequality between border provinces. In addition, during the years 2006 to 2016, the level of development and inequality in the provinces of the country was found to have decreased.

Keywords: Core-periphery model, Development level, Inequality

JEL Classification: D63, O21, O10

1. Introduction

Todaro refers to development as a multi-dimensional process involving the reorganization and reorientation of the entire economic and social systems. He continues to argue that development is a physical reality and a state of mind in which society has, through some combinations of social, economic and political process, secured the way of obtaining better life (Todaro and Smith, 2011). Today, achieving growth and development is one of the main goals of countries, especially developing countries. Most developing countries are dissatisfied with the development of their settlements and the distribution of their population and economic resources. These inequalities between regions and the unbalanced distribution of resources and capital have created problems for the development of countries (Ela & Schwartzb, 2004). Regional inequalities are a serious

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concern in the world. For policymakers, therefore, reducing regional inequality is part of the social goals (Shankar & Shah, 2003). Iran is no exception. Although various programs and policies have been implemented to reduce poverty and inequality in different parts of the country, some provinces in the country, which are generally located in border regions, still suffer from underdevelopment. According to evidence, the central regions of Iran have better conditions for development than the border regions, which reflects the centre–periphery model (Ebrahimzadeh et al., 2012). The existence of such a pattern in the country and the difference in the level of development of the provinces will have disastrous consequences. Because, economic growth and development will not only be possible through the development of one province or several provinces, but all provinces of all dimensions must be developed to advance the country's goals and move towards development. Therefore, for planning and policy making purposes, the government identifies different areas in terms of development and access to resources, and, then, sets a specific program for each province. For this purpose, it is necessary to examine the level of development of different provinces in various aspects. Therefore, this study tries to analyze and evaluate the level of development and ranking of different provinces of the country according to 25 indices for 1385, 1390 and 1395. In addition, according to the results, the existence of centre–periphery model was evaluated and inequalities between different regions of the country were investigated.

2. Method

In the related literature, two methods have been used to measure the extent of development. The first method used by the UNDP is the Human Development Index. The second method, measuring the level of development, is carried out by means of several alternative indicators that are considered as multidimensional. Adelman and Morris (1973) are the pioneers of these studies in the development literature; they introduced 48 indicators in three groups (economic, socio-cultural and political) to measure the extent of countries' development and examined the level of development through these indicators (Sneath & Sokal, 1975; Felsenstein 1985). In the present study, we also tried to study development in this multidimensional framework for all provinces. Provincial data for 1385, 1390 and 1395 were obtained from Statistical Centre of Iran, Yearbook of Provinces and the Central Bank. Also, in the discussion of the model and method used, using the numerical taxonomy model and Excel and SPSS software, different provinces were ranked in terms of development and, finally, the existence of centre–periphery model in the provinces was examined. The taxonomy method is one of the multi attribute decision methods (MADM) that aims to select the best *m* option based on the *n* index. In the next step, after normalization operations, and calculating and compounding distances and data homogenization, different points were ranked (Hekmatnia and Mousavi, 2011).

The statistical population of the study included all the provinces of Iran consisting of 30 provinces based on political and administrative divisions. The periphery provinces were considered as border provinces, which include 16 provinces, namely North Khorasan, South Khorasan, Khorasan Razavi, Sistan and Baluchestan, Hormozgan, Bushehr, Khuzestan, Ilam Kermanshah, Kurdistan, West Azerbaijan, East Azerbaijan, Ardabil, Gilan And it's Golestan. The variables of this study included 25 indicators from different aspects of development ,which are as follows:

1. Economic indicators: (1) Reverse unemployment rate, (2) Economic participation rate , (3) Budget approved for each province.
2. Financial indicators: (1) Number of banking units per thousand persons (2) Number of facilities to non-governmental sector in terms of major economic sectors.
3. Industrial Indicators: (1) Number of established licenses issued by the General Directorate of Industry, Mine and Trade to establish an industrial workshop (2) Investment of industrial workshops based on business licenses issued by the Organization of Industry, Mine and Trade by activity.
4. Service Indicators: (1) Number of welfare centers per thousand persons, (2) Government postal services per thousand persons, (3) Amount of health insurance of insured persons per thousand persons, (4) Number of people supported by the Pension Fund per thousand persons.
5- Health sector indicators: (1) Number of active hospitals per thousand persons, (2) Number of hospital beds per thousand persons, (3) Emergency base number 115 per thousand persons.
6. Education Index: (1) The ratio of educated people to the population of each province, (2) Number of cities connected to the gas network per thousand people in each province.
7. Infrastructure Indicators: (1) The number of fuel stations in each province per thousand persons, (2) Number of cities connected to the gas network per thousand people in each province, (3) The number of branches of water pipe per thousand persons, (4) Number of electricity subscribers per thousand persons, (5) Number of urban vehicles per thousand persons, (6) Number of landlines per thousand persons.
8. Cultural indicators: (1) Number of libraries per thousand persons, (2) Number of cinemas per thousand persons, (3) Number of drug detainees, (4) Number of foreign tourists visiting the province.

3. Results and Discussion

3-1. Ranking the provinces of Iran according to the level of development

The results of numerical taxonomy for 1385, 1390 and 1395 are shown in Table 1.

Table (1): Ranking of Iranian Provinces by Degree of development

Province name	Year 1385		Year 1390		Year 1395		province name	Year 1385		Year 1390		Year 1395	
	rank	F_i	rank	F_i	rank	F_i		rank	F_i	rank	F_i	rank	F_i
East Azarbaijan	4	0.74	4	0.741	3	0.734	Fars	8	0.753	5	0.792	5	0.762
Western Azerbaijan	18	0.84	19	0.885	24	0.9	Qazvin	20	0.852	18	0.873	14	0.869
Ardebil	13	0.823	16	0.866	17	0.874	Qom	16	0.836	15	0.865	20	0.888
Esfahan	3	0.636	3	0.705	2	0.704	Kurdistan	26	0.901	27	0.917	29	0.924
Ilam	19	0.846	13	0.854	13	0.866	Kerman	15	0.833	17	0.868	25	0.902
Bushehr	11	0.808	21	0.895	16	0.873	Kermanshah	22	0.86	22	0.896	19	0.884
Tehran	1	0.521	1	0.683	1	0.674	Kohgiloyeh and Boyrahmad	28	0.909	28	0.934	27	0.919
Chahar Mahal Bakhtiari	23	0.863	25	0.905	26	0.918	Golestan	25	0.88	24	0.899	18	0.884
Southern Khorasan	24	0.868	9	0.809	9	0.826	Gilan	9	0.775	14	0.858	11	0.835
Khorasan Razavi	6	0.747	6	0.792	6	0.798	Lorestan	17	0.837	26	0.906	23	0.898
North Khorasan	29	0.944	29	0.935	21	0.89	Mazandaran	5	0.742	8	0.797	8	0.807
Khuzestan	10	0.793	12	0.843	10	0.833	Central	12	0.819	11	0.842	15	0.873
Zanjan	14	0.831	10	0.84	12	0.864	Hormozgan	27	0.903	23	0.897	28	0.92
Semnan	7	0.751	7	0.794	7	0.801	Hamedan	21	0.857	20	0.894	22	0.891
Sistan and Baluchestan	30	0.976	30	0.967	30	0.933	Yazd	2	0.572	2	0.704	4	0.737

*Source: Research findings

The closer F_i is to zero, the more developed the province is, and the closer to one it is, the less developed the province is. Tehran is the most developed province and Sistan and Baluchistan is the most deprived province in all three years studied. Provinces of Isfahan, Yazd and East Azarbaijan are the most developed after Tehran in the three years studied, and after Sistan and Baluchistan, North Khorasan and Kohgiluyeh and Boyer Ahmad and Hormozgan provinces in 2006, North Khorasan and Kohgiluyeh and Boyer Ahmad and Kurdistan provinces in 2011, and the provinces of Kurdistan, Hormozgan, Kohgiluyeh and Boyer Ahmad in 2016 are the most deprived provinces.

Now, since F_i indicates the extent of underdevelopment, if this value is subtracted from one, the result will show the extent of development of each province. Therefore, the higher its value and the closer to the one, the more developed the province will be.

Therefore, if we assume that the degree of development of provinces in the country is normally standard (95% of the area below the normally standard curve is equal to the mean plus twice the standard deviation), provinces whose degree of development is above average plus one standard deviation are called advanced provinces and the provinces with a degree of development less than the average minus one standard deviation are called underdeveloped. Finally, we consider the rest of the provinces as developing provinces.

Table (2): Mean and standard deviation of F_i

	Standard deviation	**Mean**	**Standard - Mean deviation**	**Standard + Mean deviation**
Year 1385	0.099	0.189	0.09	0.288
Year 1390	0.071	0.151	0.079	0.223
Year 1395	0.068	0.15	0.081	0.219

*Source: Research findings

Therefore, in 1385, the provinces of Tehran, Yazd and Isfahan were developed. Findings show that in addition to these provinces in 1390 and 1395, East Azarbaijan province in 2011 and Fars and East Azarbaijan provinces in 2016 are also among the developed provinces. Therefore, in 1385, the provinces of Tehran, Yazd and Isfahan were developed. Findings show that in addition to these provinces in 2011 and 2016, East Azarbaijan province in 2011 and Fars and East Azarbaijan provinces in 2016 are also among the developed provinces. Also, Kohgiluyeh and Boyer Ahmad and North Khorasan, Sistan and Baluchestan provinces in 2006 and 2011 and Hormozgan, Kurdistan and Sistan and Baluchestan provinces in 2016 were underdeveloped provinces. The rest of the provinces were developing.

3-2. Comparison of central and border provinces and examination of the centre–periphery model

We need to run Levene's test on the SPSS software to see if it is possible to divide the provinces into two center-periphery groups.

Table (3): Test of Homogeneity of Variances

Prob	df2	df1	Levene Statistic	Year
0.085	28	1	3.197	1385
0.157	28	1	2.113	1390
0.071	28	1	5.501	1395

*Source: Research findings

The results of this test show that according to the division of central and periphery provinces described, the probability value of ANOVA test for Levene's test for 2006, 2011 and 2016 is greater than 0.05, indicating a significant variance between center and periphery. Accordingly, the homogeneity of the variances is confirmed by the Levene's test, and we can follow the analysis in the centre–periphery model. In order to study the centre–periphery model (based on the results of Tables 1 for 2006, 2011 and 2016), the mean, standard deviation and range of changes are calculated for the degree of development of the central and border provinces and the whole country.

Table (4): Mean, standard deviation and range of changes F_i

Year	Sample	Mean F_i	Standard deviation F_i	Range of changes F_i
2006	Country	0.8105	0.0994	**0.455**
	Central Provinces	0.7764	0.1178	**0.388**
	Border(periphery) provinces	0.8403	0.0710	**0.236**
2011	Country	0.8484	0.715	**0.284**
	Central Provinces	0.8287	0.0817	**0.251**
	Border(periphery) provinces	0.8656	0.0586	**0.226**
2016	Country	0.8493	0.0689	**0.259**
	Central Provinces	0.8357	0.0836	**0.245**
	Border(periphery) provinces	0.8613	0.0529	**0.199**

*Source: Research findings

The mean F_i or development index in the central provinces is lower than the border provinces in all the three years. Given that, as F_i approaches zero, more development is indicated; the central provinces have a higher level of development than the border provinces. This result holds true for all years studied. On the other hand, it is worth noting that the mean F_i value for central

provinces and border provinces has gradually increased in 2016 compared to 2011 and then 2006, which shows that development in these provinces has not been enough. F_i indicates that the level of development in the border and central provinces has deteriorated in 2016 compared to 2006. Perhaps the reason for the decline in the level of development was due to the shocks and fluctuations of economic variables following international sanctions in 2010. Also, domestically, government spending on the public sector declined for a variety of reasons, such as rising inflation and exchange rate fluctuations, leading to a slowdown in development over the years. Furthermore, the trend of increasing F_i in the central provinces is higher than the border provinces, suggesting that although the situation in the central provinces is better than the border provinces, in recent years the level of development has declined in these provinces as well and we have seen a declining trend in the development of these provinces.

The standard deviation and range of the changes indicate that there is some kind of dispersion in the studied indices; the higher their value is, the more dispersion and unbalanced distribution of resources there are. Accordingly, the standard deviation and range of changes in the central provinces are higher than the border provinces throughout the years indicating a high level of inequality between the central provinces. The values of these indicators are lower in the border provinces, showing that development inequality is lower among these provinces. However, inequality across the country has been declining in both the central and border provinces from 2006 to 2016.

3-3. Implications

- Paying special attention to the capacities of each province and providing the appropriate context for the realization of these capacities;
- Transferring light and heavy industries to less developed areas to create employment and to decentralize industrial integration in large cities;
- Improving the planning process across the country and guiding and managing it appropriately to reduce resource centralization in specific provinces.
- Examining the strengths and weaknesses of each province in terms of development and providing an appropriate framework for eliminating weaknesses and reinforcement of the strengths;
- Providing national development plans for each province commensurate with the features and capabilities of each province;
- Cross-border cooperation with neighbors and the creation of common markets with neighboring countries to develop these areas Considering the lower level of development of border provinces.

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