Trends Analyzing of Economic Structure in Iran

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Abstract

Reviewing economic capabilities and potentials of various regions and their changes in the course of time is an effective step in regional planning and optimal allocation of facilities and sources. Without reviewing the trend of past changes, planning for the future is impossible. In this regards, this paper tries to analyze the trends and the changes of economic structure of East Azarbaijan province and the whole country. In this research, it shares shift model and structural shifts index have been used for measuring economic structure changes in agriculture, industry & mines, services, building, water, electricity and gas supplying sectors and changes trend of the province have been reviewed in 4, 15 & 72 sector patterns from 2000 to 2006. Results show that the most structural changes in economy of the province and the country have occurred in building, water, electricity & gas supplying sectors in 2000-2006 and during the time value added creation power of this sector has increased. Also, agricultural sector has faced reduction of value added power both in the province and country and in comparison with other economic activities had not been able to keep its economic power. Structural changes direction of industry, mines and services sectors have been decreasing in the province, but their changes are not so noticeable in comparison with the base year.

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Results of shares shift model and structural shifts index of the province in various activity fields have been presented in the frame of economic winner, mixed economic winner, economic loser and mixed economic loser.

Palavras-chave: East Azarbaijan; structure shift; share shift; regional development

Análise das tendências da estrutura econômica no Irã

Resumo

Rever capacidades econômicas e potencialidades das diversas regiões e suas mudanças no decorrer do tempo é um passo efetivo no planejamento regional e alocação assertiva de recursos e fontes. Sem analisar a tendência de mudanças passadas, o planejamento para o futuro é impossível. Neste âmbito, o presente artigo procura analisar as tendências e as mudanças da estrutura econômica da província de Azerbaijão Oriental no país . A pesquisa faz uso de *shares shift model* e *structural shifts index* para medir mudanças na estrutura econômica da agricultura, indústria e mineração, serviços, construção, água , eletricidade e gás, que abastecem setores e impactam nas tendências da província. Foram revistos em 4 , 15 e 72 padrões do setor 2000-2006. Os resultados mostram que as mudanças mais estruturais na economia da província e do país ocorreram nos setores de construção, água, eletricidade e gás, que abasteceram setores em 2000-2006 e durante o período o valor adicionado desses setores aumentou. Além disso, o setor agrícola tem enfrentado redução do valor adicionado, tanto na província e do país e, em comparação com outras atividades econômicas não tinha sido capaz de manter o seu poder econômico. Mudanças estruturais dos setores da indústria, mineração e serviços têm vindo a diminuir na província, mas as alterações não são tão visíveis em comparação com o ano base. Resultados de *shares shift model* da província em vários setores foram apresentados.

Introduction

Structural changes and the amount of these changes can be affected by some factors such as access to base sources, demand for products of that economic activity (export and domestic consumption), use of technology, increasing labor force efficiency through training, creating changes in the combination of labor force due to having access to skilled and professional labor force, using foreign investment, changing economic policies of the country in line with world developments and government support.

Effect of each of these factors over economic activities results in competitiveness of that activity and leads to strengthening of that activity's economic power, thus changing share of that activity in comparison with other activities and as a result in the course of time, the degree of structural changes of those economic activities will change. If the amount of structural changes of some activities results in reinforcing other economic activities or improving pro and later links, then we will witness growth of economic activities of various regions and economic activities of whole of the country.

It seems that changeability of factors influencing the amount of structural shifts shall not be monotonous and in a fixed rate during time. Therefore searching for reasons and factors affecting the degree of structural changes during time and the rules governing them can make the rout of reaching growth and development in economic activities clear for planning authorities and economic policy makers.

In this regards, this paper has tried to recognize structure of the economy and examine structural changes of major economic activities of East Azarbaijan province.

Literature Review

Models and methods of analyzing structural changes of the province.

In order to analyze changes in economic structure in every economic sectors of the province, the index of economic changes trend and share shift model have been used which are explained below.

Trend of structural (shifts) changes index:

The index of structural changes majorly shows economic power (ability) and focus of value added of an economic activity in comparison with the base year, thus the more this index increases

compared to the base year, the more growth and development in that particular economic activity is seen compared to other activities.

Those activities which have enjoyed higher value added growth in comparison to other activities and at least, they have been able to maintain their economic capability or add to those activities which were affected by economic policies or structural changes more than the others.

Also those economic sub-sectors towards which more structural changes tend to indicate that there is suitable situation in production and strong basis for more growth and development in that activity. In such sub–sectors pro links (connections) are stronger and that activity has more readiness in development of its later activities. Totally, those economic sub–sectors which have higher value added and strong and consistent economic structure enjoy higher competitive power and can be placed among export economic activities.

The index of structural changes (shifts) occurring in a period in comparison to the base year which is calculated by means of the following formula which is based on a geometrical average growth rate in a specific period.

$$IV_i = \left| \frac{\left[\left(\frac{V_i}{V_t} \right)_t \right]^{\frac{1}{n}}}{\left(\frac{V_i}{V_t} \right)_0} \right| \times 100$$

In this formula IVi stands for average rate of structural shift index of the sector or the activity i; Vi indicates value added rate of the sector or activity i, Vt indicates total value added of the sector and n indicates the number of years of the desired period. Another factor which is important in creating economic changes is the role of big economic enterprises in strengthening economic structure. The numerator of this fraction associates to the value added share of the sector or economic activity from the total value added of the sector or economic activity in the year or period t and its denominator indicates the same share in the base year or period.

The index of structural shift in the base year equals 100 for all sectors and any accretion more than 100 shows positive structural shifts in the later coming years or periods. If the numerical worth of IVi is less than 100, it means that the economic activities done under control of desired activity have not be able to focus on its former economic activity and its ability for creating value added has

decreased in comparison to other activities. On the contrary, any increase in numerical worth of IVi in comparison to the base index (100) indicates that structural shifts have resulted in the improvement of power of desired economic activity (Hashemian & Hassanpour 1378, p.22)

Shift –share analysis (model)

Shift–share model is a statistical model for determining relative growth of the region. This theory is based on the fact that, growth rate of the region is affected by three factors: industrial structure, productivity of the sector and demand dynamism and consumers preferences.

Assuming that similar sectors have similar productivity without any attention to their location and with this assumption that combination of economic structures of the region are similar to the whole country, the growth rate of the region is often different from the growth rate of the country. In formal words, it can be said:

$$y_r = y* + s$$

In this equation, "y" stands for growth rate of income, "r" stands for the region and "s" stands for the difference between growth rate of the region and country and "*" indicates the growth rate the region can gain if and only its growth rate were like growth rate of country.

The difference between growth rate of the region and country – shift share – is dependent on two effects: Firstly, composition effect (relative effect) which originates from sectoral structure of the region and the second is mixed effect which originates from prominent (distinguished) presence of various sectors of the region in national level due to increasing demand for these sectors.

Composition effect is calculated through the following formula

$$MIX = \sum_{i=1}^{n} \frac{E_{ir}^0}{E_r^0} \left(\frac{E_{in}^1}{E_{in}^0} - \frac{E_n^1}{E_n^0} \right)$$

in which E indicates intended sectoral variant (employment or added value), i indicates the economic sector and n & r stand for country and region respectively.

The phrase in the brackets measures the difference between employment of sector, I, in national level and average increase of employment rate in country at zero and one times. This phrase is multiplied by relative weight of the sector in economy of the region.

DIF effect is, in fact, composition effect (relative shift) of sectoral structure of the region which is calculated from regional economic capacity for development of each of its sectors in higher (more)growth rates from national level.

$$DIF = \sum_{i=1}^{n} \frac{E_{ir}^{0}}{E_{r}^{0}} \left(\frac{E_{ir}^{1}}{E_{ir}^{0}} - \frac{E_{in}^{1}}{E_{in}^{0}} \right)$$

The phrase in the brackets measures increase of I sector in the region level in comparison to increase of the same sector in the national level. In case of MIX effect, the increase rate is multiplied by relative weight in the regional level (Capello,2007, pp.96-96).

This index is used for analyzing economic structure of a country's regions and the variants such as added value, income and export can be used in analyzing economic structure. In this method, reference scale is called scale of pull and geography levels under study are assessed with that. In fact, share-shift index studies growth difference of various economic sectors of a city or a region in comparison with growth of sectors in reference economic level. These differences, which may be positive or negative, indicate shift or movement of the share of the province economy in the reference economy. All movements resulted from composition and mix effects and total economy can be expressed through the following elements:

Element of Reference Economic Growth

This element shows the whole shifts (changes) of under-study variant of the reference economy during two periods and is comparable through the following formula:

$$A = \frac{ER^{s}}{ER^{t}} - 1$$

In this formula ER shows total employment in the reference economy; s shows the start year of the period and, t shows the final year of the period.

Relative growth element of economic sectors in the total of reference economy

This element measures relative growth or decrease of each economic sector in total reference economy. This measurement being positive or negative means increase or decrease of that sector in total reference economy and is shown by means of the following formula:

$$B = \frac{E_i^{\,s}}{E_i^{\,t}} - \frac{ER^{\,s}}{ER^{\,t}}$$

In this formula Ei stands for employment in sector i of the reference economy.

Element of function of every sector in the region in comparison to the function of the same at reference level

This measurement measures competitive situation of every economic sector of the region in comparison to the reference economy.

It is being positive indicates its higher growth speed in comparison to the total economy and being negative means its underdevelopment and is comparable by means of the below mentioned formula :

$$C = \frac{EL_i^{\,s}}{EL_i^{\,t}} - \frac{ER_i^{\,s}}{ER_i^{\,t}}$$

In this formula ELi stands for employment in sector i at the level of the region and ERi stands for employment in sector i at reference level.

The sum of results gained from three above mentioned formulas indicates change in employment or any other variant in the economic sector of under-study region (Beheshti, 2006, pp.66-67).

A review of previous studies

In 2008, Masoud Hashemian tried to identify priorities of industrial investment in order to reinforce relative advantages of industrial export for a period from 1998-2003. This study has been done in three sections and eleven chapters whose major aim focuses on achievement of planning for industrial development in selected industries to boost export. In the third part of this study, the researcher, after studying patterns and methods of analyzing industrial structure and efficiency of industries in Iran, has tried to research shift of industrial structure of Iran and its comparative survey with industrial structure of world in order to identify priorities of industrial investment through ranking of decision –making indices.

To examine shifts of production, export & import structure of plant industries of country, the researcher has taken assistance from diagrams of shifts in share of value added and concluded that production structure of country's plant industries has shifted towards miscellaneous industries, basic metal industries and chemical industries, and export structure of plant industries of country has shifted towards miscellaneous industries, machinery, basic metals, non–metallic mineral product, chemical and paper industrial in two periods of study. Considering import structure of country except miscellaneous industries and machinery industries whose value added has increased in two periods of study, the share of other industries has decreased.

Additionally, in this study in which structure shifts of start, medium and final industries in the country have been examined, the results indicate that whole attention of the state authorities has been on enforcement of industrial infrastructure in final industries and therefore start and medium industries have been neglected to some degree. Also, in this period two final and medium industries had better export function in comparison to start industries.

In 2007, Masoud Hashemian and Yousef Hassanpour in an article attempted to identify industrial investment priorities on the basis of structural analysis and relative advantage in Kermanshah province. This study has been done with the aim of identifying industrial investment priorities and also surveying structural shift direction of industry in Kermanshah province and the pattern of structural shift degree UNIDO has been used to survey structural shift and identify industrial trends of the province and its comparison with the whole country.

After calculating this index for the years of the first economic development plan (1989-1993) and also for each industry and identifying shift degree of each of them, the tendency of relative advantages in industries of the province has been identified using numerical taxonomy of investment priorities of different sectors of the province's industry. The final results indicate that structural shifts in industries of East Azarbaijan province were toward labor industries with high degree of dependency on domestic raw materials and investment priority to strengthen production and export ability in industries of Kermanshah province were towards non-metallic minerals, vehicles and machinery industries.

In the plan of determining a strategy for Industrial Development of East Azrbaijan, Mohammad Bagher Beheshti has surveyed industrial structural shifts of East Azarbaijan province during 1994-2002.

The results of share shift model show that activities of industries producing chemical substances and products, other non-metallic mineral goods, original metal goods except machinery, medical and optical equipments, manufacturing other vehicles, furniture industries and other goods and products not classified in other categories are economic winner sectors, activities related to food and drinking industries, textiles production, clothes, skin processing and coloring, leather tanning and processing, producing wood and wood products, producing paper and paper goods, producing rubber and plastic goods, basic metal, machinery and equipments not classified in other categories are mixed winner economic sectors and activities such as publication, print and copying recorded medias, producing power generation and transmission machinery, producing engine vehicles, trailers and semitrailers are classified as mixed loser economic sectors.

Statistical population and method of analyzing information

Statistical population of the plan includes all active people in agriculture, industry and mines, services, building, supplying water, electricity and gas sector in East Azarbaijan province and the whole country. In this paper, statistic of value added of regional accounts from 2000 to 2006 has been used and economic structure shifts in various activity fields of the province and country during above mentioned years and in three 4, 15 & 72 sectoral levels have been analyzed.

In analyzing information, economic shift index and share-shift model, which were explained in the literature review, have been used.

Findings of the research

Index of structural shifts

In this section, in order to analyze and to study economic structure of East Azarbaijan province and country and its shift methods in 2000-2006, we have used production statistics of the provinces published by Iran statistic center.

The degree to which the value of this index compared to the base year has increased, indicates the desired economic activity's development and growth rate in comparison to other activities. Those activities which have enjoyed higher value added and been able to maintain their economic power or add to it, indeed, they were activities which had been affected by economic policies or structural shifts more than others.

Regarding index of structural shifts of the province in the four-section pattern it is seen that the most structural shifts in the economy of the province are in building, water, and gas and electricity sectors (107.1). This index is higher than 1(101.8) in whole country, and also, it indicates higher encouragement of economy toward above mentioned activities. The value of the shift index in industry & mine (99.9) and services (99.7) were less than 100 and at the same time their changes to the base year had not been so remarkable. The value of this index in agriculture and fishing (96.6) sectors indicated decrease of their share from total value added of the province during the year under study. Through a comparison of structural shifts of various activities between the province and country we can assume that both in the province and the country, the tendency towards agricultural, industry and mines has to some degree decreased and on the contrary, it has increased towards activities in services, buildings, and supplying water, gas and electricity sectors. (Table1)

Table 1: Index of economic structure shifts of East Azarbaijan province and country in the four – section pattern during 2000-2006

Description	Index of structural shift of the province	Index of structural shift of country
Agriculture, hunting, foresting and fishing	96.9	96.6
Industry & mine (with ought oil and gas	99.9	99.2
Service	99.7	100.7
Building, and supplying water, electricity and gas	107.1	101.8

Results of shift of economic structure of the province in economic sub-sectors

Sub-sector of agriculture, hunting, foresting and fishing

A survey of agricultural sub-sectors shows that activities such as livestock breeding, sericulture, honey bee farming, hunting, foresting and fishing have their index of structural shifts bigger than one and their shares in agriculture activities of the province have increased during time. The highest amount of this index belonged to fishing with 127.80.

The values of the index in all three mentioned activities at country level are lower than 100 which indicate decrease of importance of these activities in the whole country. On the contrary, farming and gardening have faced decrease at the province level in comparison to the base year and have experienced increase at country level which indicates more tendency of agricultural sector of the province towards livestock breeding, fishing and foresting in comparison to farming and gardening.

The vice version of this analysis can be presented regarding agricultural sub-sectors of country. (Table 2)

Table 2: Index of economic structure shifts of East Azarbaijan province and country in agriculture sector in 2000-2006

Row	Kind of sub-sector	Description of the activity	Index of structural shift of the province	Index of structural shift of country
1-0	Major	Agriculture ,hunting ,foresting	99.9	100.6
1-1	Minor	Farming and gardening	99.4	100.6
1-2	Minor	Livestock breeding, poultry, farming ,Sericulture, honey bee breeding, hunting	101.4	98.6
1-3	Minor	Foresting	101.8	99.6
2-0	Major	Fishing	127.8	97.3

Sub-sector of industry & mine

Reviewing sub-sectors of industry & mines shows that activities including production of wood and wooden products, paper & paper

products, products processed from oil refining and nuclear fuels, rubber & plastic products, other non–metallic mineral goods, basic metals, original metal products except machinery & equipment, office, accounting and calculating equipment, radio & television, communication equipment , engine vehicles, trailers and semi trailers, furniture and goods not mentioned in other categories, recycling and mines (without oil & gas) had the index of structural shifts more than one and in the course of time their shares of activities in industry & mine sector of the province have increased. The highest value of this index belonged to recycling with 122.8. On the other hand, the activities including production of food products & drinks, textiles, clothing, processing and coloring of furs, tanning and finishing leather and other leather goods, publishing, printing and copying recorded medias, chemical substances and products, manufacturing machinery & equipment not mentioned in other categories, medical and optical equipment, precision tools and types of watches, manufacturing other means of transportation have had activity decrease in comparison to the base year. The lowest amount of this index is 83.3 which belonged to manufacturing means of transportation. As seen in table 3, structural shifts in most industrial & mineral sub-sectors of the province & country are in the same line. However, regarding activities including production of paper and paper products, non-metallic mineral products, office, accounting and calculating equipment, radio & television, communication equipment and tools the index of structural shifts of the province is higher than 100 and that of the country is lower than 100.

On the other hand, the value of the index of structural shifts in activities including manufacture of machinery and electric equipment non-classified in other categories and other means of transportation has been lower than 100 in the province and higher than 100 in the country.

Table 3: Index of economic structure shifts of East Azarbaijan province and country in industry & mines sector in 2000-2006

Type of Sub-sector	Explanation	Index of Structural Shits of the Province	Index of Structural Shits of Country
Major	Industry	99.9	99.7
Minor	Producing kinds of food		

	staffs and drinks	93.8	95.7
Minor	Producing kinds of products from tobacco	*	89.8
Minor	Producing Textile	96.3	96.2
Minor	Producing clothes, Fur processing and dyeing	95.2	92.1
Minor	Tannery and leather processing and other leather goods	99.8	94.9
Minor	Producing wood and wooden products	107.1	107
Minor	Producing paper and paper products	104.3	94.3
Minor	Publishing, printing and copying recorded medias	98.8	97.3
Minor	Producing coal, processing products from oil refining and nuclear fuels	101.1	102.9
Minor	Producing chemical material and products	96	97
Minor	Processing products from rubber and plastic	115.1	100.7
Minor	Producing non-metallic mineral products	104.1	99.6
Minor	Producing fundamental metals	118.1	103.0
Minor	Producing fabric metal goods except machinery & equipment	104.4	101.9
Minor	Producing machinery and equipment not classified in other places	98.1	98.1
Minor	Producing stationary, accounting and calculating machinery	118.1	94.3
Minor	Producing electrical machinery and equipment not classified in other places	96.5	100.9
Minor	Producing radio & television, media	113.4	87.1

	machinery and equipment		
Minor	Producing medical, optical and precise equipment and kinds of clocks	96.8	99.3
Minor	Producing motor vehicles, lorry and semi-lorry	104.7	103.4
Minor	Producing other equipment of transportation	83.3	113.4
Minor	Producing furniture and other products not classified in other places	108.2	109.6
Minor	Recycling	122.8	121.9
Major	Mine (Without oil & gas)	104.4	106.6

Services sub-sector

Examining sub-sectors related to services sector reveals that the index of structural changes of the activities of post and telecom, financial intermediations, rental and business services, elementary education, general, technical and vocational high school education, higher education, adults education, health and treatment, social aid, other public, social, personal and home services is higher than one and their shares of activities of industry and mine sector of the province have increased in the course of time.

The highest amount of this index is related to the activities of general, technical and vocational high school education, with a figure of 110.4.

On the contrary, wholesaling, retailing, repairing of means of transportation and commodities, hotels and restaurants, transportation warehousing, real estate, general and urban services, defense and law enforcement operations in the province have faced a decreased level of activities compared to the base year.

The lowest level of this index is related to real estate with a figure of 97.3.

As observed in table 4, the structural changes in most of the service subsectors in the province are in line with the country, but the index of structural changes in rental activities and business services

and adults education has been higher than 100 in the province and lower than 100 in the county.

Table 4: The index of changes in economic structure of service sector in East Azarbaijan province and the country during 2000 - 2006

Sub-sector Type	Activity Description	Structural Changes Index of the Province	Structural Changes Index of the Country
Major	Wholesaling, Retailing, Repairing means of transportation and commodities	98.5	98.7
Major	Hotels, Restaurants	99.7	96.9
Major	Transportation, Warehousing, Communications	99.5	99.9
Minor	Transportation and Warehousing	99.2	99.4
Minor	Post and Telecom	101.7	102.6
Major	Financial intermediations	106.5	106.2
Major	Real Estate, Rental and business services	97.7	98.9
Minor	Real estate	97.3	99.2
Minor	Rental and business services	103.2	97.3
Minor	Public Administration and Urban Services	100.3	99.0
Minor	Public affairs and Urban services	99.7	99.8
Minor	Defense and law enforcement services	99.9	98.1
Major	Education	105.6	103.9
Minor	Elementary education	102.5	102.3
Minor	General high school and Technical and vocational training	110.4	105.6
Minor	Higher education	102.9	104.6
Minor	Adults' education	102.3	98.3
Major	Health and social aid	105.0	101.6

Minor	Health and treatment	104.6	101.1
Minor	Social aid	110.7	108.5
Major	Other public, social, personal and home services	102.8	103.0

The sub-sector of building, supply of water, electricity and natural gas

A study of sub-sectors of activities related to service sector indicates natural gas distribution works and residential buildings have a structural change index bigger than one and their share of this sector's activities in the province have increased. Having a figure of 115.1, the residential buildings in the province show a capacity to create high value added. This index in the same activities of the country has been 103/8. The activities related to electricity, water and other buildings in the province level have experienced decrease compared to the base year.

The lowest amount of this index with 82.0 is related to water activities.

As noticed in table 5, structural changes in most sub-sectors of this sector in province level are in accordance with country level.

Table 5: The index of changes in economic structure in East Azarbaijan province and country in agriculture sector during years 2000 - 2006

Sub-sector Type	Activity Description	Structural Changes Index of the Province	Structural Changes Index of the Country
Major	Supplying water, electricity and natural gas	98.3	100.1
Minor	Electricity	92.6	95.5
Minor	Distribution of natural gas	109.5	111.6
Minor	Water	82.0	90.7
Major	Building	101.1	99.9
Minor	Residential buildings	115.1	102.8
Minor	Other buildings	94.3	97.9

Shift-share model

To measure the changes of economic structure in sub-sectors of province economy the shift-share model is used. In this model, the

difference in growth between different economic sectors of the region compared to different economic sectors of the country is shown. These differences which may be positive or negative indicate how the share of province economy in the country economy is shifted. In this research, the difference between East Azarbaijan and the whole country in terms of growth in economic sub-sectors of different sectors from 2000 to 2006 have been examined. In order to analyzing changes in economic structure of the province, changes in the value added have been used.

Parameter **a** is the element of growth in the economy of the country in the concerned sector, parameter **b** is the element of relative growth in the economic sectors in the whole economy of the country and parameter **c** is the element of performance of each sector in the region over the same sector in country.

Winner economic sectors

The sectors possessing positive **b** and positive **c** are considered as winner economic sectors. Because in these sectors, the pace of growth in sector's value added in the province is higher than that of the country and **also the sectors** value added growth in the country is higher compared to the growth in all sectors of the country. Calculations show that the following activities have been considered as winner economic sectors:

Agriculture sector: Without winner economic sub-sectors

Mine and Industry sector: manufacturing basic metals, original metal products except machinery and equipment, engine transportation vehicles, trailers, semitrailers and recycling

Services sector: General high school, technical and vocational education, health and treatment training.

Sector of building and supply of water, electricity and natural gas: Natural gas distribution and residential buildings

Mixed winner economic sector

The sectors which have negative **b** and positive **c** are considered as mixed winner economic sectors, as in these sectors the pace of sector's value added growth in the province is higher than that of the country but the growth of the sector's value added in the country is lower compared to the growth of total sectors of the country.

Calculations show the following activities have been considered as mixed winner economic sectors.

Agriculture sector: Livestock breeding, poultry farming, sericulture, bee culture, hunting, forestry and fishing.

Mines and Industry sector: Production of various food and drink products, clothes, processing and coloring furs, tanning and finishing leather and other leather products, making paper and paper products, publishing, print and recorded media, making products from rubber and plastic, other non-metal minerals, making office, accounting and calculation equipment, producing television, radio and telecommunication sets.

Services sector: hotels and restaurants, rental and business services and adults' education.

Sector of building and water, electricity and natural gas supply: Electricity and other buildings.

Loser economic sectors

The sectors having negative **b** and negative **c** are considered as loser economic sectors, because in these sectors, the pace of sector's value added growth in the province is lower than that of the country and also, the sector's value added growth in the country is lower compared to the growth of total sectors of the country. Calculations reveal that following activities have been considered as loser economic sectors:

Agriculture sector: without loser economic sub-sectors

Mines and industry sector: Manufacturing textiles, chemicals and chemical products, machinery and equipment not placed in other categories, making medical and optical equipment, precision tools and watches

Services sector: Wholesaling, retailing, repairing means of transportation and commodities, transportation and warehousing, real estate, public affairs and urban services, defense and law enforcement services

Sector of building and water, electricity and natural gas supply: Water

Mixed loser economic sectors

The sectors which have positive **b** and negative **c** are considered as mixed loser economic sectors, as in these sectors, the

pace of sector's value added growth in the province is lower than that of the country and also, the sector's value added growth in the country is higher compared to the growth of total sectors of the country. Calculations indicate that the following activities have been considered as mixed loser economic sectors:

Agriculture sector: Farming and gardening

Mines and industry sector: Manufacturing wood and wooden products, production of coal, products originating from oil refinery and nuclear fuels, producing machinery and equipment not placed in other categories, manufacturing other means of transportation, making furniture and other products not placed in other categories and mines (without oil and gas)

Services sector: post and telecom, financial intermediations, elementary and higher education, social aid works, and other public, social, personal and home services

Sector of building, water, electricity and natural gas supply: Without mixed loser economic sub-sectors

The results pertaining to this model have been shown in tables 6 to 9 breaking down the details to economic sectors.

Summary and conclusion

Most structural changes in the economy of the province are related to the sector of building and supply of water, electricity and gas. This index in the country is also higher than the one, which shows more tendency of the economy towards this activity. The amount of the index related to changes in mines and industry sectors of the province is lower than 100. However, in the meantime, its change proportionate to the base year is not noticeable. In agriculture and fishing sectors, the amount of this index shows a decrease of this activity's share out of total value added of the province during the years under study. Comparing structural changes of the activities in the province and the country, it can be said both in the province and the country, the tendency towards activities of agriculture and mines and industry has relatively decreased and the tendency towards services and building and supply of water, electricity and gas has increased.

On the basis of the calculations done in the shift-share model, the following have been recognized as winner economic sectors:

Manufacture of basic metals, original metal products except machinery and equipment, engine vehicles, trailers, semi-trailers and

recycling, general high school, technical, vocational, health and treatment education, distribution of natural gas and residential buildings.

Also, the winner mixed economic, loser economic and mixed loser economic sectors have been calculated and presented in this model.

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