



## Employment Growth in Tikrit City: A Shift-Share Analysis (1987-2011)

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### Abstract:

In order to make economic development policy recommendations, it is important to understand the regional economy, its markets and who the essential actors are. Describe the working mechanism of a local/regional economy. While shift-share analysis is a relative straight forward method of analyzing changes in economic performance by comparing economic change in a study city to that of a larger reference region.

The aim of this paper is to examine the changes in employment with the help of the shift-share analysis. First part of the paper will present the literature background on the Shift-share method . Later on, we try to identify the driving forces of employment growth in the Tikrit city compared with Salah al-Din governorate. In addition, the last part of the paper will summarize the results obtained in our analysis. Data on employment from 1987-2011 across sectors were used in this study.

Between 1987 and 2011, formal employment grew by 27.8 % in Tikrit City. Hence, the main objective of this paper was to analyze which sector contributed the most to such growth through a shift-share analysis of employment.

**Key words:** Tikrit, shift-share analysis, Employment Growth , Salah al-Din Governorate .

## **1.Introduction:**

There are many questions that urban planners, regional analysts, and economic developers tackle day-to-day. among them: Is the local economy growing or declining? Is this the best use of public funds? What industries should be targeted? How does our community compare with other communities? To answer such questions, analysts rely on a standard toolkit: a set of quantitative methods that include population projection techniques, shift-share analysis, economic base analysis and location quotients, input-output analysis, optimization techniques, and benefit-cost analysis. (David Wadley, 2003).

This paper examines the dynamics of employment growth in Tikrit city 1987 and 2011 according to the data available in Central Bureau of Statistics. The employment growth of a country is brought about by the performance of its regions. In turn, the growth of the regions depends on their industrial makeup and comparative advantages and disadvantages. Employment, which chiefly determines the level of regional income, is a good indicator of determining regional welfare and development.

This study will contribute to the identification of economic sectors with higher employment growth, understanding how their productive structures and endogenous characteristics contribute to their performances in terms of job creation. The results yielded will give subsidies to the formulation public policies that encourage the creation of new opportunities in Tikrit city.

However, examining the changes in a region's employment over a period of time by merely investigating the trend is insufficient. Regional employment change differentials can be explained through an in-depth analysis by looking at the components of growth or decline. Understanding these components could also lead to identifying which industry or sector of a particular region has competitive and structural advantage/s (Prantilla, 2007).

### **1.1 Problem Statement:**

The decision maker requires to know the economic reality, specialization, diversity, consumer industries, and production industries, ..... Etc. Identify the best economic sectors in regions and cities whether it is an agricultural or industrial or tourist in order to develop these sectors, this prompted the researcher to choose this topic to address one of the important tools which analyze the economic structure of local and regional issues. In this paper we focus on the shift-share model as a useful tool in the definition of scenarios, based on the different components contributing to the change of a given economic variable (national, sectoral and competitive effects).

## **1.2 The Study Purpose:**

This study aimed to show the growth rates of the labor force in the economic sectors in Tikrit city between 1987 and 2011, the growth of each sector, and which of these sectors is the best to support it in the future while addressing the problems that are addressed by the rest of the sectors.

## **1.3 The Importance of Research:**

Shift-Share Analysis is necessary for policy-makers to assess regional (governmental) overall performance and given Sectoral efficiency relative to other industry Sectoral performance in the region to achieve regional(governmental) policy objectives.

## **2. Background and Framework:**

The shift share method of analyzing regional growth was originated in the 1940s by Daniel Creamer and was summarized by Dunn in 1960 (Shi, 2008b). According to Dunn (Knudsen, 2000), the main feature of shift share analysis is the computation of geographical shifts in economic activity. The analysis has been used heavily since its formal inception in the 1960s. It has been popular in the fields of regional economy, political economy, urban studies, geography and marketing in the last 40 years (Knudsen, 2000).

During the 1970s and 1980s, inherent shortcomings of the traditional formulation were criticized by a number of workers while others attempted to circumvent the problems by extending the model. In one notable sequence, to address links between regional economies and their global counterpart, (Markusen AR, 1991).

A development of the technique by Nojonen et al (1997) (Nojonen H, 1997) into an import/export disaggregated dynamic shift share model was found deficient in a number of aspects (Dinc M, 1998). Nojonen et al. (1998) re-evaluated and corrected their 1997 work. They contrasted their approach with that of Dinc and Haynes, who concluded the debate positively with a rejoinder.

The technique is generally applied to describe historical growth trends, forecast regional growth, analyze the effects of policy initiatives, or develop strategic planning for communities. However, the analysis has generally been used for describing regional and industrial growth and examining the competitiveness of regional and industrial growth in a particular time period (Sirakaya, 1999).

Shift share analysis has been used significantly to study trade issues with the effect of globalization, especially in Europe. Markusen, Nojonen, and Driessen used dynamic shift share analysis in tracking the sensitivity of regional growth to international flows, decomposing shift-share components into import,

export, and domestic market segments and a productivity component. They merged data on regional employment, national employment and output, and international trade, to compare the experience of U.S. regions for the period from 1978 to 1986.(Markusen, 1991)

Esteban used shift share analysis to elucidate the existing interregional inequality in aggregate productivities per worker within the European Union instead of productivity gaps which are uniform across sectors. Result showed that interregional variation can be explained only by uniform productivity gaps and the role of regional specialization is a minor one. The findings became important in regional development policies focusing on actions producing uniform increases in regional productivities like infrastructures and human capital.(Esteban, 2000).

Melachroinos 2002 examined the dynamics of manufacturing-employment change in thirteen European Union countries between 1978 and 1996, using shift-share techniques. Results revealed the gains of European integration over this period and they found that the geography of manufacturing employment has remained almost unharmed too. The processes operating at European scale also seemed to have the biggest impact on labor increment in each member state.(Melachroinos, 2002)

Wilson et. al. used dynamic shift share analysis to examine the export performances of China in electronics compared to the East Asian Newly Industrialized Economies exporting to the U.S, European Union and Japan from 1988 to 2001. They found that China emerged as a serious competitor in the export market for electronic goods, but this position in the market has not been a dominant one. China's main gains have been in consumer electronics and telecommunication equipment (Robinson, 2005) .

Shi et. al. 2007 , applied the technique of shift share analysis to tourism in China, based on international tourism receipts from 1995 to 2004. The study examined the spatial competitiveness of international tourism in Jiangsu Province in comparison with its neighbors by applying a spatially extended shift-share model and a modified dynamic shift-share model.(Shi, 2007).

Shift share analysis, in particular, compared to the other methods, is widely used by regional development practitioners, where data limitations are minimal (Knudsen, 2000). Furthermore, shift share analysis is important in selecting and understanding the key leading sectors in a region, which needs developing local industry partnership.

A survey of the literature indicates that shift-share analysis continues to be popular among planners, geographers and regional scientists (Knudsen, 2000). Shift-share analysis is a tool that partitions the growth in an economic variable in a particular area (i.e., state, region, and city) into various components. It has been popular in the fields of regional economic, political economy, marketing, geography, and urban studies for about four decades (Shi, 2008a).

The technique is generally applied to describe historical growth trends, forecast regional growth, analyze the effects of policy initiatives, or develop strategic planning for communities. However, the analysis has generally been used for describing regional and industrial growth and examining the competitiveness of regional and industrial growth in a particular time period (Janaranjana Herath, 2010).

### **3. Advantages of shift-share analysis:**

A major benefit of the shift-share technique is its simplicity that its use does not require primary data collection which eliminates the need for primary data collection, a costly and time-consuming activity. Shift-share analysis requires only relatively modest amounts of data that are generally accessible, making the resulting analysis fast and reasonably accurate.

Despite of its simplicity, it does well in capturing the underlining changes in the variables under consideration and it can well reflect regional or industrial changes over time. It has been used to measure differential economic growths by analysis on both the absolute and relative dimensions. shift-share analysis is one of the simplest and least expensive techniques for investigating differential growth rates and, though subject to limitations, will continue to be widely used (Shi, 2008b).

### **3.Methodology:**

The relationship between industrial structure and regional economic growth is often analyzed and decomposed into various effects by means of a shift-share analysis. Shift share analysis is a method to provide calculations of regional economic activity with a minimum of available data. The method is a useful tool for analyzing growth patterns and provides a decomposition of the difference between the growth rate in a particular region and the growth rate in a standard region, usually the nation (Heide, 1998).

Shift share analysis decomposes total regional growth into three distinct effects for better analyses of employment growth (Richardson, 1978). Moreover, it focuses on comparing the regional employment growth to the national employment growth. The three distinct effects are: Reference area growth, industrial max (IM), and regional share (RS).the three components must sum to the actual change (AC) ( $AC=RG+IM +RS$ ).

RG implies that the study areas economy is compared to the performance of another areas economy, usually the nation. If ,overall, the reference area grew

during the analysis period , RG is positive and equal to the reference area growth rate times in the base year income or employment of the particular economic sector or region being studied.

The deference between RG and actual change must be allocated to IM and RS. For a sector which grew less (more) rapidly in the reference area than the reference area grew as a whole , IM is negative (positive ).IM is then summed across all sectors to determine whether or not the study area is dominated by nationally fast- growing(+IM) or slow -growing (-IM) sectors. RS completes the shift-share accounting identity .

RS is the deference between the rate of change observed in a sector in the reference area and in the study area . sectors which grew more slowly in the study area than in the reference area will have a negative RS , while sectors which promoted more favorably in the study area than in the reference area will have a positive RS (Merrifield, 1983).

National share indicates the employment change that would have occurred if a region's employment growth rate had equaled the national growth rate over the study period . Industry mix shows the amount of regional employment growth attributable to the region's initial industry mix; that is, it reflects a region's mix of fast- and slow growth industries . Finally, regional share indicates whether a region's industries performed better or worse than the national average for each industry .<sup>4</sup> This last component is essentially a measure of competitive advantage-the end result of the many varied factors which can cause uneven regional growth . For analytical purposes, the industry mix and regional share statistics are the more interesting, because they relate regional changes to developments at the national level (RONES, 1986).

Like other analytical economic tools, the shift-share technique is only a descriptive tool that should be used in combination with other analysis to provide a summary of a region's key employment potential industries. Once completed, the analysis provides a representation of changes in employment growth or decline, and it is useful for targeting industries that might offer significant future employment opportunities. By interpreting data provided by shift-share, you can explore the advantages your local area may enjoy, as well as identify growth, or potential growth industries that are worthy of further investigation.

#### **4.Components of Regional Industry Employment Change:**

In order to understand and predict future growth patterns, shift share analysis examines how recent regional economic trends relate to national level trends across a time period. So, shift share analysis involves a form of regional sensitivity analysis to trends in the broader economy based on specific industrial or occupation components. Shift share analysis can consider growth effects based off percentage change in production dollars or in individual job creation.

Here are the specific components in the shift share analysis.(Swaminathan, 2017).

The variable decomposed using this method could be, for example, income, employment, value added and number of establishments (Haynes, 1997). Thus, the shift-share model decomposes, for example, regional growth/decline of GDP, investment, and employment into three components while measuring them. The shift-share analysis divides the change in local industry employment into three components:(Swaminathan, 2017).

**4.1 National share:** by national share, the measure tries to explain that portion of the employment, change attributable to national trends, This factor describes the change that would be expected simply by virtue of the fact that the local area is part of a changing national economy. In the analysis, we first examine the *national growth share*, or the number of jobs lost or gained in a region if total employment in the region had changed at the same rate as overall total national employment.

$$NS_{ir}^t = E_{ir}^{t-1} \times \left( \frac{E_{US}^t}{E_{US}^{t-1}} - 1 \right)$$

Where:

t = current time period t-1 = one year ago  
 i = specific industry r = specific region

**4.2 Industry mix:** by industry share, the measure tries to explain that portion of the employment, change attributable to industrial composition or mix of the region, This second factor is the change in a local industry that would be attributable to the growth or decline of the industry nationally. This component isolates the fact that nationwide, some industries have grown faster or slower than others. It represents the contribution that a specific industry nationally has made to the change in the number of jobs in the region.

$$IM_{ir}^t = E_{ir}^{t-1} \times \left[ \left( \frac{E_{iUS}^t}{E_{iUS}^{t-1}} \right) - \left( \frac{E_{US}^t}{E_{US}^{t-1}} \right) \right]$$

Where:

t = current time period t-1 = one year ago  
 i = specific industry r = specific region

**4.3 Local share (Regional shift) (RS):** that portion of the employment, change that is related to the regional advantage or competitiveness in the region is considered as the regional shift component, This share of local job growth describes the extent to which factors unique to the local area have caused growth or decline in regional employment of an industrial group. We observe that even during periods of general prosperity, some regions and still some industries grow faster than others do.

This is usually attributed to some local comparative advantage such as natural resources, linked industries, or favorable local labor situations. The local component aids in identifying a local area's economic strengths. This element of the analysis is a representation of how a region's competitive position can contribute to regional job growth. Shift-share, and the local share component in particular, can point to industries that enjoy local comparative advantage. It cannot, however identify what the actual comparative advantage is. It is important to identify what factors have contributed to the local area in outperforming the nationwide growth (Merrifield, 1983).

$$RS_{ir}^t = E_{ir}^{t-1} \times \left[ \left( \frac{E_{ir}^t}{E_{ir}^{t-1}} \right) - \left( \frac{E_{iUS}^t}{E_{iUS}^{t-1}} \right) \right]$$

Where:

t = current time period    t-1 = one year ago  
i = specific industry        r = specific region

The shift share model assumes that employment growth over a specific period of time for a specific community can be explained by three things:

- The national growth over the same time
- The community's industry mix
- Employment shifts into or out of the community

This is summarized by the shift share formula:

**Actual Growth = National Growth + Industry Mix + Regional Shift**

### **5. Using the Shift-Share method:**

There are a few options, or rather required inputs that are necessary for actually executing the analysis. Obviously:

- 1- first select the workforce region that you wish to examine.
- 2- The second step is to enter the base time period, or starting year and quarter to set the required initial time frame for examination.
- 3- select the terminal time period, or the ending year and quarter, for your examination.
- 4- It is very important to keep in mind that shift-share analysis is highly sensitive to the stretch of time being examined, and that the results of an analysis on a particular region can vary greatly depending upon the health of the economic environment at the particular time period.

As a general rule of thumb it is useful to select the same quarter for both the base and terminal year (BEND, 2002).

## **6. Salah al-Din Governorate, Location, and population:**

Salah al-Din governorate, located in the north of the capital Baghdad and away from Up to 165 km and is bordered by the provinces of Nineveh and Erbil from North Sulaimaniya, Kirkuk and Diyala and from the east and south of Baghdad and Anbar From the West. Enjoy Salah al-Din province, an important geographical location being Node transportation between northern and southern provinces (Iraq, 2012).

The Population of Salah al-Din governorate: 1.740 Million, Labor Force: 618,000, Area : 24,363 sq. km., Capital: Tikrit , One of the main roads leading north from Baghdad heads to Samarra and Tikrit, also passing Bayji on its way to Mosul. From Tikrit, a primary road heads northeast to Kirkuk.

A main road also crosses the province at Bayji, running northeast to Kirkuk and southwest to Haditha in Al Anbar province and on the Al-Qaim border crossing with Syria. Iraq's major north-south rail line passes through Salah al-Din, with service from Baghdad to Mosul via Tikrit (Iraq, 2012).55% of the governorate's workforce is employed in the agricultural sector, the highest percentage among all 18 governorates. The governorate has a huge number of grape vines, apple trees and citrus trees under cultivation.

## **7.The location of Tikrit City:**

Tikrit city is the capital of Salah Al-Din governorate. It lies on the west bank of the Tigris, about 100 miles (160 km) northwest of Baghdad. Tikrit is a modern city with population of (190, 220) , (1011184) urban , represent 17% of the urban population ,and ( 88979) rural , represent 12% of rural population in Salah al-Din governorate ( Planning, 1992).

The city of Tikrit is famous for its various economic activities, most notably trade, agriculture, and public jobs, and Tikrit University is one of the most prominent cultural monuments in it (Mahmud, 2020).



Source: www. Maps of cities in Iraq

## 8. Data Analysis:

To analyze the dynamics of the total and sectoral employment in the Tikrit city during the period 1987–2011, we used the the shift-share analysis. The data employed are obtained from the Central Bureau of Statistics in the Ministry of Planning in Iraq. The shift-share analysis enables to identify the driving forces of employment growth.

From our analysis of Salah al-Din Governorate and Tikrit city , we can observe that certain sectors display the greatest employment potential. Other sectors display positive growth and may exhibit some local potential comparative advantage, but not quite as high as industries in the first group. Still other sectors are less promising in terms of employment growth, they display negative employment growth, or they display no definite growth pattern at all.

The first step is to identify those sectors with very large positive or negative absolute changes. It is important to remember that if any sector is declining nationally, the local sector could still show a positive local share effect if it was declining at a slower rate than the sector nationally. Ideally, we should identify those sectors with both a positive industry mix effect and a positive local share. These will be our sectors with the greatest likelihood for potential job opportunities.

Secondly, we should look at the local share column. This column will give the first indication as to whether the local area is performing well or poorly and will help identify sectors in which the local area may have comparative advantage. Where the local share is larger than the industrial mix, and both

figures are positive, this is an indication that the local area may have some comparative advantage.

As mentioned previously, it is necessary to research the actual cause of the local comparative advantage. we will also want to identify what factors the local area may not be taking advantage of that allow an industry nationwide to outperform the local area.

Similarly, where the local area shows a positive local share and a negative industry mix, we would want to identify why the local area industry was able to prosper despite poor national industry performance.

The shift-share analysis results compiled in this study are for evaluating employment change in Tikrit employment growth over 1987-2011. They pinpoint important differences between the sectors compositions of employment growth locally versus growth in the Salah al-Din Governorate at large. The results shown in the tables below are explained in the brief discussion that follows.

The change in the employment is the result of comparing the total Employment or a specific activity between two time periods to learn about the growth or decline of this activity, to show the strengths and to diagnose weaknesses to address them, find the size of the change in the employment for economic activities that occurs between the years 1987-2011.

The rate of change in the total Employment between 1987 and 2011 was (-18931) and this change indicates a loss of (18931) jobs at the governorate level. As for the size of the change in the labor force for economic activities in the governorate, it is an increase in the Employment in industrial activity at a rate of (11919) jobs. decreased in the agricultural employment by losing (-24912) jobs. As for the rest of the economic activities, we find that the volume of change in the employment is an increase (wholesale trade 38380, financing and insurance 617, electricity and gas 2881) jobs , while other economic activities decreased by losing (services -32331, transportation and communication -6962, construction and building -14953, all other -8327) jobs. as Table 1 and 2 indicate.

Table 1. Employment growth in Salah al-Din Governorate ,1987 to 2011

| Salah al-Din Governorate  | Employment 1987 | Employment 2011 | Change in jobs |
|---------------------------|-----------------|-----------------|----------------|
| The total Employment      | 177191          | 158260          | -18931         |
| Industry                  | 6664            | 18583           | 11919          |
| Agriculture               | 43745           | 18833           | -24912         |
| Services                  | 76008           | 43677           | -32331         |
| Wholesale trade           | 5856            | 44236           | 38380          |
| Transportation            | 8296            | 1334            | -6962          |
| Financing and insurance   | 329             | 946             | 617            |
| Construction and building | 16075           | 1122            | -14953         |
| Electricity and gas       | 1424            | 4305            | 2881           |
| All other                 | 8406            | 79              | -8327          |

(Central Bureau of Statistics 2011)

Table 2. Percentage change of employment in each sector from 1987 to 2011 in Salah al-Din Governorate

| Salah al-Din Governorate  | Employment 1987 | Employment 2011 | Change in jobs | percentage change |
|---------------------------|-----------------|-----------------|----------------|-------------------|
| The total Employment      | 177191          | 158260          | -18931         | -10.6%            |
| Industry                  | 6664            | 18583           | 11919          | 178.85%           |
| Agriculture               | 43745           | 18833           | -24912         | -56.94%           |
| Services                  | 76008           | 43677           | -32331         | -42.53%           |
| Wholesale trade           | 5856            | 44236           | 38380          | 655.39%           |
| Transportation            | 8296            | 1334            | -6962          | -83.91%           |
| Financing and insurance   | 329             | 946             | 617            | 187.53%           |
| Construction and building | 16075           | 1122            | -14953         | -93.02%           |
| Electricity and gas       | 1424            | 4305            | 2881           | 202.31%           |
| All other                 | 8406            | 79              | -8327          | -99.06%           |

(Central Bureau of Statistics 2011)

The size of the change in the employment of the city of Tikrit for the years 1987-2011 reached to (7237) jobs, and this indicates good and tangible progress if compared to the size of the change in the employment at the governorate level, as this indicator reflects the percentage of change and growth of the total employment in the city of Tikrit at a rate of (27.84%).

As for the size of the change in the employment of the industrial sector between these two periods, it increased by (1342) jobs, and by a change rate of (358). 82%). in the agricultural activity, it decreased by (-5450) jobs, and this decline in the volume of change was reflected in the rate of change at a low rate

of (-77.15%). in the services sector, the volume of change reached (1536) , while the percentage of change was (13.77%). as Table 3 and 4 indicate.

Table 3 .Employment growth in Tikrit city ,1987 to 2011

| Tikrit city          | Employment 1987 | Employment 2011 | Change in jobs |
|----------------------|-----------------|-----------------|----------------|
| The total employment | 25990           | 33227           | 7237           |
| Industry             | 374             | 1716            | 1342           |
| Agriculture          | 7064            | 1614            | -5450          |
| Services             | 11147           | 12683           | 1536           |

(Central Bureau of Statistics 2011)

Table 4 . Percentage change of employment in each sector from 1987 to 2011 in Tikrit City

| Tikrit city          | Employment 1987 | Employment 2011 | Change in jobs | percentage change |
|----------------------|-----------------|-----------------|----------------|-------------------|
| The total Employment | 25990           | 33227           | 7237           | 27.84%            |
| Industry             | 374             | 1716            | 1342           | 358.82%           |
| Agriculture          | 7064            | 1614            | 5450           | -77.15%           |
| Services             | 11147           | 12683           | 1536           | 13.77%            |

(Central Bureau of Statistics 2011)

### 8.1 National growth share :

This factor describes the change that would be expected simply by virtue of the fact that the local area is part of a changing national economy. In the analysis, we first examine the national growth share, or the number of jobs lost or gained in a region if total employment in the region had changed at the same rate as overall total national employment.

The total employment growth rate at the governorate level was (-10.6%) and according to the assumption of the shift share model, the same rate is at the local level in the city of Tikrit, so the total employment in Tikrit will be (-1983), this meaning that the city loses (- 1983) Jobs during the period 1987-2011, and this is called a **national share**.

That is, this indicator measures the decline in the employment for the economic activities of the city of Tikrit amounting to -1983 due to the decrease in the total employment of the governorate by (-10.6%) jobs. To calculate the national share and for each sector the following equation is used:

$$\text{Ex: } 374 * ((158260/177191) - 1) = -39$$

Table 5 . National share

| Industry                     | Tikrit Employment 1987 | Salah al-Din growth rate | National share |
|------------------------------|------------------------|--------------------------|----------------|
| Industry                     | 374                    | -10.6%                   | -39            |
| Agriculture                  | 7064                   | -10.6%                   | -754           |
| Services                     | 11147                  | -10.6%                   | -1190          |
| Tikrit national growth share |                        |                          | -1983          |

(Central Bureau of Statistics 2011)

## 8.2 Industry Mix:

The share of local job growth that can be attributed to the region's mix of industries being analyzed. This second factor is the change in a local industry that would be attributable to the growth or decline of the industry nationally. some sectors have grown faster or slower than others. It represents the contribution that a specific sector nationally has made to the change in the number of jobs in the city.

The total Employment at the governorate level is decreased (-10.6%), so the rate of total growth of sectors decreased by (-6110) jobs , while the total industrial Employment will increase (708) jobs , the agricultural sector will lose(-3268) jobs, the services sector will lose (-3550) jobs, , and this is called the industry mix. To calculate the industry mix for each sector, the following formula is used: to

$$\text{Ex: } 374 * ((18583/6664) - 1) - ((158260/177191) - 1) = 708$$

Table 6. Industry Mix

| Industry                  | Tikrit Employment 1987 | Salah al-Din sectoral growth rate | Salah al-Din growth rate | Industry mix share |
|---------------------------|------------------------|-----------------------------------|--------------------------|--------------------|
| Industry                  | 374                    | 178.85%                           | -10.6%                   | 708                |
| Agriculture               | 7064                   | -56.94%                           | -10.6%                   | -3268              |
| + Services                | 11147                  | -42.53%                           | -10.6%                   | -3550              |
| Tikrit Industry mix share |                        |                                   |                          | -6110              |

(Central Bureau of Statistics 2011)

### 8.3 The regional shift:

This share of local job growth describes the extent to which factors unique to the local area have caused growth or decline in regional employment of an industrial group or economic sectors.

The sectoral growth of industrial activity at the governorate level reached (178.85%) and at the city level it reached (358.82%), which resulted in a shift in employment opportunities at the city level by (673). This indicates a concentration of the employment in the industrial sector in favor of the city.

As for the agricultural sector, the rate of growth was negative by (-56.94%) at the governorate level and at the city level (-77.15%), which resulted in a decrease in employment opportunities at the city level by (-1427) jobs, while in the services sector the rate of growth decreased at the governorate level by (-42.53%), and at the city level it reached (13.77%). This indicates an increase in employment opportunities at a high rate at the city level by (6264) if compared to the governorate. The regional shift component shows that 5510 new jobs in Tikrit are attributable to its relative competitive position. This is primarily due to its high-growth of service employment.

To calculate the total share for each sector, the following equation is used:

$$\text{Ex: } 374 * ((1716/374) - 1) - ((18583/6664) - 1)) = 673$$

Table 7. The regional Shift

| Activities         | Tikrit Employment 1987 | Salah Sectorial rate | al-Din growth | Tikrit sectorial growth rate | Regional shift |
|--------------------|------------------------|----------------------|---------------|------------------------------|----------------|
| Industry           | 374                    | 178.85%              |               | 358.82%                      | 673            |
| Agriculture        | 7064                   | -56.94%              |               | -77.15%                      | -1427          |
| Services           | 11147                  | -42.53%              |               | % 1377,                      | 6264           |
| Tikrit local share |                        |                      |               |                              | 5510           |

(Central Bureau of Statistics 2011)

### 8.4 Total shift:

The total shift is extracted through the collection of the:  
national share + industry mix + regional share

$$-1983 + (6110-) + 5510 = - 2583$$

The sum of the three variables represents the actual change in employment for the region which called the total shift. The total shift indicates that the city lost -2583 jobs during the period from 1987-2011, as follows , lost -1983 jobs due to the national growth share , lost -6110 jobs due to the industry share, and the

regional share was 5510 jobs because of the region's advantages, this indicates its competitive strength.

On the other hand, we note that the Tikrit's growth level reached (27.84%), while the governorate level was (-10.6%), and there was a difference in the growth rates of the other sectors in the city than in the governorate, as some were higher than the sectorial level in the governorate.

## 9. Conclusions

Shift share analysis is a useful tool in a real estate market analysis because data is readily available and the technique is fairly simple. we can get a clear picture of overall national economic growth trends as well as the performance of individual industries at both the national and local level.

Shift-share analysis has been widely applied to the regional economic research and empirical studies have effectively confirmed it a useful tool to depict the regional change.

This study aimed to determine the dynamics of employment growth in Salah al-Din governorate and Tikrit City between 1987 and 2011. In that period most economic sectors presented a negative net component and some of them had positive share components. The shift -share analysis demonstrate that employment growth rates differ significantly within the salah al-Din governorate and Tikrit city.

- 1- **The national share** : If the Tikrit's sectors grew at the overall Governorate growth rate, new job growth would have been (-1983 ) jobs between 1987 and 2011.
- 2- **The industrial mix** : Tikrit has nearly 6100 fewer jobs than it would have had if its structure were identical to the Governorate's.
- 3- **The regional shift**: component shows that 5510 new jobs in Tikrit are attributable to its relative competitive position. This is primarily due to its high-growth of service employment.

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