
Investigation of the Effect of Economic Specialisation on Industrial Employment in Golestan Province of Iran

Hamed Abbassi Aghamaleki, Ramezan Hosseinzadeh, Oktay Yamrali*

Department of Management, Economics and Accounting, Payame Noor University, I.R. of Iran

*Corresponding Author E-mail: oktayamralii@gmail.com

Received: 13 May 2016, Revised: 26 June 2016, Accepted: 10 July 2016

ABSTRACT

One of the important issues in regional economic literature is external economies resulting from economic specialization. Regional economists consider economic specialization as an effective factor of regional development. Therefore, the present study analyzes the effect of the industry economic specialization on industrial employment in Golestan Province. To do this, Statistical data of the 12 industrial sub-sectors during 2001 - 2010 applied and investigated the effect of factors affecting the industrial employment including the level of economic specialization of industries using panel data econometrics model. The findings of the model showed the positive effect of economic specialization on the industrial employment.

Keywords: Economic Specialization, Industrial Employment, Golestan Province. JEL Classification, J21 ·L25 ·R11.

Introduction

An important aspect in regional economic planning is the relative advantage, the ability and specialization of economic activities in that region. Ignoring the region capabilities leads to improper conducting of region growth and development proportionate to facilities and capacities of that region. Regional economists divide the development factors of a region into two endogenous and exogenous factors. Exogenous factors referred to those factors such as increasing service and good demand in a region which stimulate the early economic activities. In contrast, endogenous factors are those factors like numbers and forms

of region economic activities have been caused by economic early stimulation, consequences and positive foreign advantages in the production, growth and more development of a region. Economic specialization of region economic activities is one of the effective endogenous factors on the region development. Economic specialization is referred to a production style; a business or a region focus on a limited domain production of goods and services to achieve a higher efficacy among industries or regions. According to regional economic theories, followed by more specialized activities in a region, industries production costs may decrease

consequently will increase the region income. Higher production and income of the region would lead to attract more working forces (Izraeli and Murphy, 2003). More attention to the effect of industries economic specialization on the region's growth can lead to a better explanation of regional growth and development which made the new regional theories focused on the advantages of their productive specialization. Hence, the present study investigates the effective factors of industrial employment in Golestan province, emphasizing the effect of industries economic specialization during 2001-2010. Different studies have been conducted on factors influencing on regional employment; however, the effect of outer consequences of economic units' specialization on the employment rate has been ignored in these studies. Therefore, this study important property is considering the effects of various units' specialization on the region employment rate. The next chapter provides the studies conducted related to the effects of economic specialization on the regions' growth and development. Methodology and introducing statistical resources are presented in chapter 3. Chapter 4 analyzes the result of model. And the final chapter is summary and conclusion.

Review of Literatures and Empirical Research

The hypothesis of advantages of agglomeration of economic activities was offered by Marshal (1920) and followed by Arrow (1962) who stated in his growth theory that increasing firms' knowledge capital may influence on the knowledge level of the whole industries. Then, Romer (1986) claimed in his endogenous growth model that external advantages are recognized as the driving force of technological innovations which lead to

economic prosperity. For this reason, advantages of economic specialization were named Marshal-Arrow-Romer external effects or external effects (MAR), in the following related studies. There are two hypotheses in terms of various studies relevant to the influence of economic specialization on the regions' employment rate. Some economists believed that specialization external effects would increase the employment in the region. The more enterprises in the regions working next to each other, based upon mentioned hypothesis, the more knowledge overflows and technological changes as well as skilled and specialization production industries. Production costs will be decreased as the consequence of more specialized activities, the domain of the production will be expanded, and as a result the real income in the region will increase. Real income increase in the region would absorb and attract new labors and enterprises to that region (Baldwin and Martin, 2003). In contrast, the second hypothesis states that although the specialization of economic activities influences positively on the regions' growth, but still may have negative effects. Despite validating the positive effects of economic specialization on the regions' growth, Marshal (1920) believed that those regions with less industries, may own less flexibility against changing the external variables. For instance, if the region production demands reduce, the region labor will lose their jobs. On the other hand, the entrance of new technologies and knowledge would be closed and no modern production methods are allowed to flow in the enterprises. However, economic specialization in one or more industries of the region may lead to region progression, but these regions are still exposed to higher risk of unemployment (Diamond and Simon,

1990). Moreover, difference of wage in the regions indicated that residents of more specialization regions request higher real (actual) wage which may cause the reduction of work force request (demand) and employment in these regions. Previous studies related to economic specialization can be divided in to two groups. Some studies investigated the effect of economic specialization in various parts of region on the economic performance. Studies carried out by Dekle (2002) about the effect of economic specialization on the growth of efficiency of main regions of the United states of America, Marelli (2004)'s study about the role of being specialization in three agriculture, industry and service parts of different regions of European Unions in employment rate during 1997-1983, Vor and Groot (2008) about the specialization of industries in Amsterdam, Holland, during 1998-2006, Robson (2009) about the effect of specialization structure in industry on England economy, Dout (2010) about the effect of industrial agglomeration on the employment rate in west Germany within 1989-2006, and finally, Manolis and Anderias (2013) study about the relation between regions' specialization and agricultural efficacy in Greece regions during 2000-2006 are counted in this type of studies. Findings obtained from these studies indicated the positive effect of the regions' economic specialization on their economic performance, except Marelli study (2004). Farahmand (2011) also studied the cities specialization in economic sectors and its influence on civic growth (progression) in Iran's economy within 1986-2006. It concluded that the effect of specialization in the information-oriented service sector was much higher than other sectors on civic growth. In contrast, the other categories of studies investigate the effect

of economic specialization of a region on economic performance. This category is divided in to two more categories. The first one are those studies analyzed the region economic specialisation influence on the economic performance, which some of them are mentioned as follows: Traistaru and et.al (2002) research about the specialized effect of European Union regions on their employment during 1990-1999, Belke and Heine (2006) study about the relation between changing the pattern of being specialized and employment change in European Union regions as well as Farhauer and Kröll (2010) research about the role of this factor in the growth of West Germany regions during the periods of 1998-2008. The results of these studies indicated the positive relation between region specialization and their economic performance. The study of Farahmand and Abootalebi (2012) about the effect of economic specialization in Iran provinces on the regional employment during the period of 1996-2006 is also included in this category. Their finding showed that the effect of economic specialization on employment was in a u like indicating the positive effect of specialization at the higher levels on the provincial employment. The second studies are those investigating the effect of region economic specialization and diversity on their performance as well as comparing the influence of these two factors. For instance, Blein and et al, (2005) investigated the effective factors on the regional employment in Germany, applying Data panel econometrics technique, during 1980-2001. Their results demonstrated that the economic diversity has positively influenced the regional employment, whereas the effect of economic specialization was trivial. Mason (2009) studied the impact of specialization and diversity of economic sectors in

Australia using panel data gathered in 2006, and compared the effect of these two factors on the employment and value added. The result showed that economic specialization generated more employments than economic diversity.

$$E_{it} = \beta_1 + \beta_2 VA_{it} + \beta_3 I_{it} + \beta_4 WA_{it} + \beta_5 SI_{it} + \varepsilon_{it}$$

$$i = 1, 2, \dots, n$$

$$t = 1, 2, \dots, T$$
(1)

Where:

E_{it} : Employment rate in industry i at period t in Golestan province

VA_{it} : Value added of industry i at the period t in Golestan province

I_{it} : The volume of investment in the industry i at the period t in Golestan province

WA_{it} : Capitation wage compensation of industry i at the period t in Golestan province

SI_{it} : Economic specialization index in industry i at period t in Golestan province

Data of work force employment, value added, investment, as well as capitation wage compensation in 12 industrial sub sectors of Golestan province were gathered from Golestan province statistic annals of various years by Iran Statistics center.

The present study applied the Location Quotient (LQ) index to measure the economic specialization of each industry. Aforementioned index is regarded as the most common index to measure the economic specialization of each industry in regions. The larger the coefficient is, the more specificity in that industry (Illy and *et al*, 2009).

$$LQ_i = \frac{L_{ir} / L_r}{L_{ni} / L} \quad)2($$

Where LQ_i is the economic specialization index of industry i in the region; L_{ir} employment in industry i in the region; L_r

Data and Methodology

The applied model to investigate the influence of industry specialization on the industrial employment is as follows

employment of all region industries; L_{ni} employment in the industry i in the country and L is the total employment of country industry. Industry specialization index was computed using employment statistics in the industrial sectors of Golestan province as well as the industry of the whole country.

Empirical Results

Nonstationarity of some variables in econometrics may lead to spurious regression. For this reason, before estimating the econometric model, must be ensured that the model is not spurious regression. For this purpose, the stationarity of the variables should be tested. There are different methods to test stationarity in the panel data model. The present study has applied the Im, Shin and Pesaran (IPS) test to investigate the stationarity of the variables which are presented in table1. The result of stationarity test indicates that per capita wage compensation, value Added and the Investment are I(1) and the Employment and the specialization index are I(0).

Nonstationarity may cause a spurious regression. Indeed, nonstationary variables do not lead to spurious regression in models with cointegrated variables. Therefore, the stationarity of variables is studied. This study used the Kao test to examine the cointegration

among variables. The results are presented in table2.

Table 1. The results of unit root test

Variables	Rank	Test statistics	Significance level (p-value)	Test result
Employment(E)	Level	-13.39	0.00	I(0)
value Added (VA)	Level	82/0	079	I(1)
wage compensation(WA)	First difference	71/2-	0034/0	
	Level	22/3	99/0	I(1)
Investment(I)	First difference	-2.36	0.0089	
	Level	11/0	54/0	I(1)
Industry specialisation index(SI)	First difference	52/3-	0002/0	
	Level	20/6-	000/0	I(0)

Table 2. The result of cointegration test

Kao statistics	Significance level	Result
-3.82	0.00001	Cointegrated

Test result indicates that there is cointegration between the applied variables. Hence, the model is estimated without being concerned about the spurious regression.

In a panel data method, followed by being assured of no spurious regression, is the F Limer test stage that tries to investigate whether the statistical data are panel or pooling. If null hypothesis of Limer test based upon data pooling is rejected, the contrast hypothesis will be accepted, i.e. panel data. Hausman test tries to

demonstrate that the panel data are fixed or random effect. Hausman test null hypothesis is based on the random statistical data in the model. If the null hypothesis is not rejected, then the effects are random; if it is rejected, the fix effects will be accepted. Limer and Hausman test results are shown in Table 3. The obtained results confirmed the random effects model. Hence, the model must be estimated based upon random effects model.

Table 3. Tests of effects recognition

Test type	Test statistics	Significance level	Result
Limer F Test	4.44	0.000	Confirming fixed effect model against pooling model
Hausman Test	0.2176	0.1902	Confirming random effects model against fixed effect

Once the random effects method is considered as the suitable way to estimate the model based upon Hausman test, the model will be estimated. Table 4 presents

these results. The significance level of all variables, except investment, according to model estimation is 1% with anticipated sign. The model adjusted determination coefficient is 0.69 which demonstrated

that applied explanatory variables explain about 69% of the dependent variable changes. The coefficient of value added presented that per one billion Rials increase in the value added of industrial sectors, the rate of employment in the province industry will enhance up to 7 individuals. The coefficient of capitation wage compensation variable was negative and significant. The quantity of the variable showed that per one million Rials enhancement in the wages of industry labors, the rate of employment would decrease to approximately 35 people. Industry specialization variable coefficient

indicated the positive and significant effect of this variable on the industrial employment in the region. The quantity of the variable showed that per 0.1 unit increase in the industry economic specialization index, on average the amount (rate) of industrial employment in the region would increase about 3.5 individuals. This result demonstrated that specialization industries take the advantages of overflow and knowledge transmission among industries which consequently lead to more production and employment in the region.

Table 4. The results of model

Regressors	Coefficient	t- statistics	Significance level
Interception(C)	815.57	3.05	0.002
Value added(VA)	0.007	2.55	0.012
Investment(K)	-0.001	-0.24	0.81
wage compensation (WA)	-18.92	-2.14	0.034
Industrial specialized index (SI)	35.43	2.56	0.011
F- statistics	54.096		
p-value	0.000		
R2	0.703		
Adjusted R2	0.690		

Summary and conclusion

The purpose of this study is to investigate the effect of economic specialization on the industrial employment in Golestan province. To do this, the data of 12 industrial sub-sectors in Golestan provinces during the periods of 2001-2010 is used. The model results demonstrated that the value added of the industrial sector has had a positive and significant effect on industrial employment in Golestan province. In addition, per capita wage compensation and investment negatively influenced the employment. Of course, the effect of investment was not significant. The findings of the model about the effect of economic specialization

showed the positive and significant impact of above mentioned specialization on the industrial employment in Golestan province which can lead to industrial progression of the province. Therefore, it is suggested to provide the required basis of knowledge flow as well as its overflow among the industries to create more specialization in various industrial sectors. One of the effective policies to enhance the industry economic specialization is to generate and develop the industrial clusters. Hence, accumulating the activities and generating industrial clusters can provide the required basis and contexts to more growth and development in Golestan province.

References

- Beaudry, C., and Schiffauerova, A., (2009). Who's right, Marshall or Jacobs? The localization versus urbanization debate, *Research Policy*, 38, pp 318-337.
- Belke, A and Heine, J., (2006). Specialisation patterns and the synchronicity of regional employment cycles in Europe, *International Economics and Economic Policy*, 3, pp, 91-103.
- Blein, U, Suedekum, J, and Wolf, K, (2005). Local Employment Growth in West Germany: A Dynamic Panel Approach, *Institute for the Study of Labor*, 1723, pp 1-18.
- Chiang, S, (2009). Location quotient and trade, *The Annals of Regional Science*, 43, pp 399-414.
- Dekle, R, (2002). Industrial Concentration and Regional Growth: Evidence from the Prefectures, *Review of Economics and Statistics*, 84, pp 310-315.
- Diamond, C, and Simon, C, (1990). Industrial Specialization and the Returns to Labor, *Journal of Labor Economics*, 8, pp 175- 201.
- Farhauer, O., and Kröll, A., (2012). Diversified specialisation- going one step beyond regional economics' specialisation-diversification concept, *Jahrbuch für Regional wissenschaft*, 32, pp 63-84.
- Farahmand, Sh, (2012). the Effect of Cities' Specialisation on Economic Sectors and Urban Growth in Iran, *Journal of Economic Research*, 4, pp 117-136.
- Farahmand, Sh., and Abootalebi, M., (2012). the Effect of Economic Specialisation and Diversity on the provincial employment rate in Iran, *Journal of Economic Research*, 3, pp 45-63.
- Illy, A., Hornych, C., Schwartz, M. and Rosenfeld, M. (2009). Urban growth in Germany –The impact of localization and urbanization economies, *Halle Institute for Economic Research –IWH*, 19.
- Manolis, C., and Andreas, G., (2013). Regional specialization and efficiency of the agriculture sector in Greece: The relationship with funding allocation. *Regional and Sectoral Economic Studies*, 13, pp 119-130.
- Marelli, E, (2004). Evolution of employment structures and regional specialisation in the EU. *Economic Systems* 28, pp, 35-59.
- Mason, S, (2009). Regional industry specialization or regional industry diversification: is one better than the other?, 11th annual conference of the Centre of Full Employment and Equity (CofFEE), Newcastle, NSW, 4-5 December, Centre of Full Employment and Equity (Cof FEE), pp. 181-195.
- Robson, M, (2009). Structural change, specialization and regional labor market performance: evidence for the UK, *Applied Economics*, 41, pp, 275-293.
- Traistaru, I, Nijkamp, P, and Longhi, S, (2002). Regional Specialisation and Location of Industrial Activity in Accession Countries, 42nd Congress of the European Regional Science Association, Dortmund, 27th -31st August 2002.
- Arrow, KJ, (1962). The economic implications of learning by doing, *The review of economic studies*, 29.
- Romer, P.M. (1986). Increasing returns and long run growth, *Journal of Political Economy*, 94.
- Vor, F. and Groot, H. (2008). Agglomeration Externalities and Localized

Employment Growth, Tinbergen Institute
Discussion Paper, 033(3).

Baldwin, R. E. and Martin, P., (2003).
“Agglomeration and regional Growth”,
CEPR Discussion Paper, No.3960.

How to cite this article: Hamed Abbassi Aghamaleki, Ramezan Hosseinzadeh, Oktay Yamrali, Investigation of the Effect of Economic Specialisation on Industrial Employment in Golestan Province of Iran. *International Journal of Advanced Studies in Humanities and Social Science*, 2016, 5(3), 206-213.
http://www.ijashssjournal.com/article_83819.html