

The Employment Linkage Effect of Social Service Industry in South Korea

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Abstract: We must develop the social service industry in order to create employment through the social economy in the ongoing period of jobless growth. Organizations of social economy are active primarily in the social service industry to pursue a social objective on a priority basis. We examine the employment linkage effects focused on social service industry as potentially active in vitalizing social economy using the Hypothetical Extraction Method (HEM). There are three results based on the empirical analysis. First, the total employment linkage effect of overall industry estimated by HEM is 38,575,267 persons. Second, the total employment linkage effect in the social service industry is estimated as second highest value next to 'Wholesale and retail trade'. Finally, when manufacturing industry and service industry are compared, average employment linkage inducement effect in the manufacturing industry (11,507 persons) is lower than that in the service industry (34,707 persons). In conclusion, it is essential to intensively foster the social service industry to create employment as a part of regional industrial policies, because the social service industry shows higher employment effects affecting the other industries in the era of growth without enough employment. In addition, it is necessary to make industrial linkage policies with service industries; the linkage relationship among industries can foster the social service industry in the industrial ecosystem.

Keywords: Social Services, Employment Hypothetical Extraction Method, South Korea

INTRODUCTION

Recently, social economy has risen in importance as an alternative to cope with high financial press, low creation of jobs, and high welfare demand. Historically, social economy contributes to creation of new jobs, particularly for the socially neglected or vulnerable class, and to stable maintenance in employment (CIRIEC, 2000). Social economy also plays a valuable role in creating employment by self-reliant organizations like cooperative associations in social service industries such as medical, educational and cultural services (EESC, 2012).

In Korea, social enterprise is defined as an organization that supports social services or provides jobs to the socially neglected or vulnerable class, and is considered as one of the most representative social economy organizations in the country. It is expected to play a major role in a social economy as it acts as a means of creating employment among other things.

However, until now, it has been very hard to produce a ripple effect affecting the overall economy in terms of the size, employment, salary, and value added of the national social

service industry, for social service is spread across several industries as per Korea Standard Industrial Classification (KSIC). So, to develop a new social service and establish a social service industry focused on innovation and demand, the central government enacted the Social Service Industrial Special Code (SSISC) in 2013.

In the era of industrial structure acceleration by economic growth, it is meaningful to understand industrial structural type of employment in a social service industry, because it induces positive industrial structural change for creating employment in view of industrial policy.

Especially, in order to revive social economy as an alternative to solve national problems such as welfare, financial press and creation of jobs, the social service industry should be promoted. For this purpose, it is necessary to foster the industries which are positively linked with the social service industry in the economic system.

The purpose of this study is to re-classify the social service industry in the existing industrial classification by using the Hypothetical Extraction Method (HEM) that measures the employment linkage effects based on the input-output table of South Korea.

This study could contribute towards changing the industrial structure to fulfil the demand for welfare and employment, and to construct infrastructure for institutional support based on the change in the era of growth without adequate employment.

THEORETICAL REVIEW

Social Service and Social Economy

In Europe, organizations in the 3rd sector are deeply connected to the social service industry and employment. Especially, OECD defines organizations in the 3rd sector as social economic organizations when the organizations in the 3rd sector supply social services needed to regions or the nation. Also, OECD defines social economic organizations as non-profit organizations with social factors and economic factors. Unlike government or profit organizations, the social economic organizations in the 3rd sector create core values on people rather than on capital. Hence, social economic organizations pursue universal and social values such as creation of jobs, citizenry link, and other social purposes (Lee *et al.*, 2013). This means that social economy, as supporters of social service, take action to increase the importance of social services in national or local welfare policy, and also welfare demand of local residents lacking sufficient support in public or private economy.

Today, the economic system of nations has complicated the linkage relationship among diverse industries. For instance, goods and services produced by social services are supported to or supported by relationship among related various industries. Hence, it is necessary to identify which industries have the most intensive linkages with the social service industry.

Estimation of Employment Linkage Effect by Hypothetical Extraction Method (HEM): The Concept

Linkage effects in the industry linkage model were introduced as forward and backward linkages by Hirshman (1958). Since then, linkage effect among industries has become a core analytical tool to analyze the importance of each industry in the economy (Miller and Blair, 2009). Especially, the idea of HEM was suggested by Strassert (1968), whilst Schultz (1976) applied HEM in empirical analysis (Na and Kim, 2016). In addition, Clements and Rossi (1991) discussed the direct and indirect effects in calculation. Moreover, HEM was suggested to measure the employment contribution of a specific industry within the totality of industries (Meller and Marfán, 1981; Groenwold *et al.*, 1987).

HEM can be used to extract a specific industry and to calculate the effects of the change of the specific industry on production in a regional economy. That is, with the hypothetical assumption of the disappearance of a specific industry in a regional economy, the change in total production of the regional economy is estimated. Lopes (2011) and Groenwold *et al.* (1993) estimated employment linkage effects by the extraction of industries based on categories in an inter-industry relation table with HEM which was suggested by Schultz (1976), Meller and Marfán (1981), and Groenwold *et al.* (1987).

To analyze the economic effects of the job supporting project in Korea, Bae and Kang (2006) reclassified social service industry focusing on the creation of jobs and estimated a ripple effect of the industry. Seo (2013) made a social accounting matrix based on categories in an inter-industry relation table and estimated production inducement effects and income inducement effects in the social service industry. However, these studies show unclear criteria to classify the social service industry unlike SSISC, and cannot be used to estimate the effects of employment based on the change of final demand.

The purpose of this study is to extract social service industry based on existing categories in an inter-industry relation table with recently enacted official definitions and criteria of social service industry, and estimate employment linkage effects among industries by the change of final demand of total economy. This study can be differentiated from previous studies in the literature on several counts. First, social service industry can be categorized with more clear criteria. Second, indirect employment linkage effects with other industries of social service industry can be analyzed.

EMPIRICAL ANALYSIS

Industrial Employment Linkage Effect

Estimated total employment linkage effect by HEM is composed of ‘direct effect’ and ‘linkage inducement effect’. Total employment linkage effect in each industry include directly needed employment for producing materials in a specific industry as well as indirectly induced employment to spread the materials produced in the industry. Total employment linkage effect with direct effect and linkage inducement effect can be examined in manufacturing industry and service industry.

The overall total employment linkage effect is estimated as 14,561,141 persons; within which, direct effect is 4,267,437 persons, and linkage inducement effect is 10,293,705 persons. Industries with a higher order based on total employment linkage effect in

manufacturing industry are ‘Electronic and electrical equipment manufacturing’ (2,451,184 persons), ‘Chemical product manufacturing’ (1,953,081 persons), ‘Transportation’ (1,755,988 persons), and so on. In addition, industries with higher order based on linkage inducement effect are ‘Electronic and electrical equipment manufacturing’ (1,700,861 persons), ‘Petroleum and coal product manufacturing’ (1,537,745 persons), ‘Chemical product manufacturing’ (1,358,813 persons), and so on.

It is estimated that the total employment linkage effect in service industry is 18,397,680 persons, with a direct effect of 2,069,290 persons and an employment linkage inducement effect of 1,164,373 persons. Industries with a relatively high order based on total employment linkage effect are ‘Wholesale and retail trade’ (3,233,664 persons), ‘Social services’ (3,054,616 persons), ‘Transportation’ (1,958,028 persons), and so on. On the other hand, industries with higher order based on employment linkage inducement effect are ‘Wholesale and retail trade’ (1,164,373 persons), ‘Transportation’ (868,928 persons), ‘Social services’ (620,367 persons), and so on.

When manufacturing industry and service industry are compared, total employment linkage effect in service industry (average 1,415,206 persons) is higher than that in manufacturing industry (average 1,120,088 persons); however, employment linkage inducement effect in the service industry (average 467,906 persons) is lower than in the manufacturing industry (average 791,823 persons). That is, the employment inducement effect affecting the whole economy through linkage with other industries is higher in the manufacturing industry than that of the service industry.

Meanwhile, total employment linkage effect in social service industry is estimated as the 2nd highest value next to ‘Wholesale and retail trade,’ and directly needed employment for producing materials in the industry is estimated as 2,434,250 persons which is the highest value among service industries. In addition, the employment linked inducement effect is estimated as the 3rd highest value among service industries. Hence, social service industry shows high value in indirect induced effect to spread the materials produced in the industry as well as in direct effect needed employment for producing materials in the industry.

Employment Linkage Effect in Social Service Industry

Employment linkage effects by final demand change in industries are estimated, when social services are excluded in the overall economic system (See Table 1). Industries with a higher order based on employment linkage inducement effect on social service industry by HEM are ‘Wholesale and retail trade’ (99,005 persons), ‘Mining and quarrying’ (55,611 persons), ‘Food services and accommodation’ (55,257 persons), ‘Chemical product manufacturing’ (50,333 persons) and so on. When manufacturing industry and service industry are compared, average employment linkage inducement effect in manufacturing industry (11,507 persons) is lower than that in service industry (34,707 persons), i.e., social service shows higher employment inducement effects with service industry than that with manufacturing industries. In ‘Wholesale and retail trade’ (99,005 persons), ‘Food services and accommodation’ (55,257), ‘Finance and insurance’ (42,658 persons), ‘Business support services’ (37,215 persons), ‘Transportation’ (35,688 persons), ‘Professional, scientific, and technical services’ (34,968 persons), ‘Cultural and other services’ (32,607 persons), ‘Communications and broadcasting’ (31,550 persons), it is estimated that employment linkage inducement effect in service industry is higher than that in manufacturing industry.

Table 1: Employment Linkage Inducement Effect on Social Service Industry by HEM

Industry	Employment Linkage Inducement Effect	Industry	Employment Linkage Inducement Effect
Agriculture, forestry and fishing	9,718	Electricity, gas, and steam supply	6,898
Mining and quarrying	55,611	Water supply, sewage and waste management, remediation services	10,616
Food, beverages and tobacco product manufacturing	15,115	Construction	6,154
Textile and leather product manufacturing	12,191	Wholesale and retail trade	99,005
Wood and paper product manufacturing, printing and reproduction of recorded media	16,616	Transportation	35,688
Petroleum and coal product manufacturing	1,852	Food services and accommodation	55,257
Chemical product manufacturing	50,333	Communications and broadcasting	31,550
Non-metallic mineral product manufacturing	2,225	Finance and insurance	42,658
Basic metal product manufacturing	4,775	Real estate and leasing	9,709
Fabricated metal product manufacturing, except machinery and furniture	6,156	Professional, scientific, and technical services	34,968
Machinery and equipment manufacturing	6,902	Business support services	37,215
Electronic and electrical equipment manufacturing	10,212	Public administration and defense	1,292
Precision instrument manufacturing	11,411	Educational services (Industry)	1,827
Transportation equipment manufacturing	4,087	Social insurance (national agency)	-
Other manufacturing	7,718	Cultural and other services	32,607

Table 1 shows the result of partial sum of employment linkage inducement effects of each industry by estimated final demand change in industries, when social services are excluded from the overall economic system. To examine the industrial linkage relationship in detail, Social Network Analysis (SNA) is applied. Even though several indices can be estimated by SNA, only ‘prestige centrality’ is considered in this study. The more nodes that are continuously connected with one node, the higher the centrality in linkage relationship. Hence, if any changes occur in industry with high prestige centrality, the ripple effects in whole networks caused by the change are increased.

Table 2 shows the prestige centrality in whole industries by employment inducement effects of social services. Like the employment inducement effects, prestige centrality which influences other industries of ‘Wholesale and retail trade’ shows the highest value (0.0405). Next, ‘Mining and quarrying’ (0.0227), ‘Food services and accommodation’ (0.0226), ‘Chemical product manufacturing’ (0.0206), ‘Finance and insurance’ (0.0174), ‘Electronic and electrical equipment manufacturing’ (0.0168) follow.

Table2: Prestige Centrality in all industries by Employment Linkage Effect in Social Service Industry

Industry	Prestige Centrality	Industry	Prestige Centrality
Agriculture, forestry and fishing	0.0040	Electricity, gas, and steam supply	0.0028
Mining and quarrying	0.0227	Water supply, sewage and waste management, remediation services	0.0043
Food, beverages and tobacco product manufacturing	0.0062	Construction	0.0163
Textile and leather product manufacturing	0.0050	Wholesale and retail trade	0.0405
Wood and paper product manufacturing, printing and reproduction of recorded media	0.0068	Transportation	0.0146
Petroleum and coal product manufacturing	0.0036	Food services and accommodation	0.0226
Chemical product manufacturing	0.0206	Communications and broadcasting	0.0129
Non-metallic mineral product manufacturing	0.0009	Finance and insurance	0.0174
Basic metal product manufacturing	0.0040	Real estate and leasing	0.0042
Fabricated metal product manufacturing, except machinery and furniture	0.0025	Professional, scientific, and technical services	0.0143
Machinery and equipment manufacturing	0.0048	Business support services	0.0152
Electronic and electrical equipment manufacturing	0.0168	Public administration and defense	0.0054
Precision instrument manufacturing	0.0047	Educational services (Industry)	0.0017
Transportation equipment manufacturing	0.0119	Social insurance (national agency)	0.0002
Other manufacturing	0.0032	Cultural and other services	0.0133

Average prestige centrality in manufacturing and service industries are 0.0070 and 0.0135, respectively. Comparing with the estimated results of employment inducement effects, the effects of prestige centrality of service industry are partially offsetting. This means that, even though linkage relationship among previous service industries are important to increase industrial growth of social services, it is also important to play a good role of some manufacturing industries such as 'Chemical product manufacturing', and 'Electronic and electrical equipment manufacturing'.

CONCLUSION

In this study, the employment linkage effects among industries by HEM are analyzed. Especially, to vitalize social economy, employment linkage effects focused on social service industry as a major active part is examined.

There are three results based on the empirical analysis. First, total employment linkage effect of whole industries estimated by HEM is 38,575,267 persons. Industries at a higher order based on total employment linkage effect in manufacturing industry are 'Electronic and electrical equipment manufacturing' (24,51,184 persons), 'Chemical product manufacturing' (1,953,081 persons), and 'Transportation' (1,755,988 persons); on the other hand, industries with a higher order based on total employment linkage effect are 'Wholesale and retail trade' (3,233,664 persons), 'Social services' (3,054,616 persons), and 'Transportation' (1,958,028 persons).

Second, total employment linkage effect in social service industry is estimated as second highest value next to 'Wholesale and retail trade', and directly needed employment for producing materials in the industry is estimated as 2,434,250 persons which is the highest value among service industries. Also, employment linked inducement effect is estimated as third highest among service industries. Hence, the social service industry shows high value in an indirect induced effect to spread the materials produced in the industry as well as through directly needed employment for producing materials in the industry.

Finally, when social services are excluded from the overall economic system, industries with a higher order based on employment linkage inducement effect on social service industry by HEM are 'Wholesale and retail trade' (99,005 persons), 'Mining and quarrying' (55,611 persons), 'Food services and accommodation' (55,257 persons), and 'Chemical product manufacturing' (50,333 persons). When manufacturing industry and service industry are compared, average employment linkage inducement effect in manufacturing industry (11,507 persons) is lower than that in service industry (34,707 persons); however, even though the linkage relationship among previous service industries are important to increase the industrial growth of social services, it is also important to play a good role in some manufacturing industries such as 'Chemical product manufacturing', 'Electronic and electrical equipment manufacturing'.

In conclusion, instead of passive policy application to cope with high welfare demand, it is important to intensively foster the social service industry for creating employment as a part of regional industrial policies. Social service industry shows higher employment effects affecting other industries in the era of growth with inadequate employment. In addition, it is necessary to make industrial linkage policies with service industries with linkage relationship among industries to foster social service industry in the aspect of industrial ecology. Especially, social service is tending to be recognized as only service industry; the social service industry should be considered to make linkage policies with some manufacturing industries, such as chemical product manufacturing, and electronic and electrical equipment manufacturing, with high employment linkage relationship.

Especially, social services are a major active part in social economy, and social economy can be a core analytical tool to supply social services. Thus, in the era of growth without adequate employment, as an alternative to cope with creation of employment, social economy should be connected with social service industries and other industries with higher linkage relationship among industries by regional industrial policies.

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