The Effect of the Small and Medium Sized Retailers on the Employment in the Manufacturing Industry

by Seong-hyuk Hwang and Jung-Hee Lee

Introduction

Retail and distribution industry has not been able to make progress as the social climate of despising commerce in Korea has long been prevailing. RDI fell behind in progress relatively compared to other industries as the formation of industrial capital centered on manufacturing sector was the priority of policy during the period of economic development in 1970-80s. After that period, in time for overall opening of retail and distribution market in 1996, the RDI in Korea has achieved rapid growth. In addition, the government administered a promotion policy for large sized retail & distribution enterprises to easily enter into the domestic retail market through enactment of "Distribution Industry Development Act" in 1997. As a result, small and medium sized retailers (SMRs) which have been a main axis in the retail trade in Korea has been shrunk and replaced by large sized retailers (LSRs) which had been organized by big conglomerates with financial capability and advanced information coverage.

As domestic retail and distribution market is reorganized by LSRs, SMRs are met with crisis of being kicked out of the market. Though emergent protection measures for SMRs are necessary, there still remains shortage of reasonable logic and effect on the economy was empirically not be authenticated.

Thus, the purpose of this study is to analyze the effect of retailers and wholesalers on the employment in the manufacturing industry in Korea. Thus, this study can help understanding

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about the reason why SMRs should be protected and promoted through empirical analysis of the effect on the national economy by SMRs. .

Empirical Analysis Model and Method of Estimation

The studies establish an estimation model for employment function referring other studies as following: Van Reenen(1997), Greenaway, Hine, and Wright(1999), Lokshin, Belderbos, and Carree(2008), Lachenmaier and Rottmann(2011), Cin(2012), Nahm(2013), Hamermesh(1989).

$$(1)\quad \ln L_{i,t} = \beta_0 + \beta_1 \ln L_{i,t-1} + \beta_2 \ln\left(\frac{w}{p}\right)_{i,t} + \beta_3 \ln S_{i,t} + \beta_4 \ln K_{i,t} + \beta_5 W^s{}_{i,t} + \beta_6 W^m{}_{i,t} + \beta_7 W^l{}_{i,t} + \beta_8 R^s{}_{i,t} + \beta_9 R^m{}_{i,t} + \beta_{10} R^l{}_{i,t} + \varepsilon_{i,t}$$

where i denote region, $L_{i,t}$ = employment in manufacturing at t point in time in region i, *w/p* = real wages at manufacturing industry, S stands for manufacturer's sales amount, and W^s, W^m, W^l, R^s, R^m, R^l indicate number of small sized wholesaler, medium sized wholesaler and large sized wholesaler, small sized retailer, medium sized retailer and large sized retailer, respectively.

In the equation (1), it will be predicted to have a positive relation between employment of previous period and that of current period unless it is in the period of economic transformation ($\beta_1 > 0$). In view of characteristic of employment function, as increase of wage may cause reduction of employment by manufacturers, negative correlation is expected between wage and employment by manufacturers ($\beta_2 < 0$). As increase of sale by manufacturer means increase of production quantity, employment for production is expected to also increase. Thus, positive relation is expected between sales amount and employment ($\beta_3 > 0$). The expansion of capital seems to appear different effect to employment according to the degree of elasticity of substitution for labor and capital. Thus, the relation between

capital and labor is unclear ($\beta_4 > 0$ or $\beta_4 < 0$). As RDI has a function to smoothly connect commodities between production and consumption as an intermediary agent, growth of RDI is expected to influence on the growth of manufacturers. Thus, it is expected that there are close relation between increase of number of both retailers and wholesalers and increase of employment by manufacturers ($\beta_5 > 0, \beta_6 > 0, \beta_7 > 0, \beta_8 > 0, \beta_9 > 0, \beta_{10} > 0$).

In order to estimate equation (1), this study employed the first difference GMM(Generalized Method of Moment) suggested by Arrelano and Bond(1991) and system GMM suggested by Blundell and Bond(1998) and Arrelano and Bover(1995).

Data and Results of Estimation

Data

Information on employment, capital and wage were based on ‘Mining and Manufacturing Survey’ issued by the Statistics Korea. Data on the number of retailers and wholesalers by sizes used ‘Wholesale and Retail Trade Survey’ issued by the Statistics Korea too. Analysis period was 1999 through 2013. Regions were divided into Seoul and six Metropolitan Cities adding nine provinces with total 17 districts.

Employment by manufacturing industry used the number of employees at manufacturing industry. For capital, the tangible asset amount at the closing date of the fiscal year was used. For sales, the sales figures of manufacturing industry were used. For wages, the total annual salary expenses of manufacturing industry were divided by the number of employees. For items such as tangible assets at year end, sales and wages where the amounts are noted in currency units were transferred to fixed value by deflating to consumer’s price index. Given the availability of the data provided by the Korean National Statistics Office, the number of wholesalers and retailers by sizes was classified into ones by number of employees of under

nine for small, 10-19 for medium and over 20 for large. Natural logarithm was adopted for all variables. (see Table 1)

Results of Estimation

As a result of estimation by the first difference GMM, it showed that one percent increase of employment in previous period by manufacturer made 0.55% increase of employment in current period. In addition, it was also assumed that one percent increase of sale by manufacturer would bring 0.17% increase of employment. When establishing analysis model that has effect on employment by manufacturer, all signs of assumed explanatory variables appeared to be coincident as a whole. In the effect that number of retailers and wholesalers has on employment by manufacturer, one percent increase of the number of small sized retailers was assumed to bring 0.18% increase of employment by manufacturer. Number of other retailers and wholesalers except number of small retailers did not show any statistical influence (see Table 2).

As a result of estimation by System GMM, it showed similar result as estimated in the first difference GMM. In the estimation by the first difference GMM, increase of number of LSRs showed no effect on employment by manufacturer, but it did by System GMM. However, one percent increase of number of small sized retailers causes 0.13% increase of employment by manufacturers, while one percent increase of number of LSRs was assumed to bring merely 0.025% increase of employment by manufacturers. In other words, increase of number of small sized retailers showed to have more effect on employment by manufacturer. (see Table 2)

Conclusion

The Korean government has been focusing on spurring domestic consumption to recover

economy. So, Retail and distribution companies have latched onto this to argue that regulations against larger retailers including SSM(Super Supermarkets) need to be scrapped to promote more consumption. At present, the Korean government regulates the number of business days in order to protect smaller retailers. There are also opinions about restructuring small sized retailers to make them more competitive and efficient across the entire RDI. However, in this study, it has been shown that small sized retailers have a greater effect on job creation in the manufacturing industry than their larger counterparts. Therefore, the need protecting small sized retailers is great enough in increasing and keeping employment in Korean economy. However, as mentioned earlier, the reason that restructuring of small sized retailers constantly gets mentioned is because they do not have economy of scale. Therefore the government needs to provide policies so that small sized retailers can get together through collaboration to achieve greater economy of scale. To that end, much investment is required in both the infrastructure and the mindset related to the field. Guidelines that include reasonable restrictions on LSRs until the smaller ones become more competitive would also be needed to ensure a more balanced development of the retail and distribution market.

Meanwhile, SMRs and LSRs should not see each other as only competitors, but as complementary in the wider context. The RDI plays an important role in the nation's economy and therefore efforts to establish a healthy system for the development of this industry is needed.

The government should not only consider the relationships of various parties within the RDI, but also the effect that the industry has on other industries when charting relevant policies. In the end, policies targeted at making small sized retailers more competitive should go beyond merely protecting them and aim at achieving balanced development across various industries and resolving unemployment issues.

Refrerence

Arellanon, Mauel, and Stephen Bond (1991). ‘Some Tests of Specification for Panel Data: Monte Carlo Evidence and Application to Employment Equations,’ *The Review of Economic Studies*, 58(2), 277-297.

Arellanon, Manuel, and Olympia Bover (1995). ‘Another look at the instrumental variable estimation of error-components model,’ ’ *Journal of Econometrics*, 68(1), 29-51.

Blundell, Richard, and Stephen Bond (1998). ‘Initial Conditions and Moment Restrictions in Dynamic Panel Data Model,’ *Journal of Econometrics*, 87(1), 115-143.

Cin, Beom-Cheol, Chi-Ung Song, and Kuk-Hyun Choe (2012). ‘A Comparative Analysis of the Effects of the Types of Corporate Innovation on Employment,’ (in Korean) *Korean Corporation Management Review*, 19(6), 75-91.

Greenaway, David, Robert C. Hine, and Peter Wright (1999). ‘An Empirical Assessment of the Impact of Trade on Employment in the United Kingdom,’ *European Journal of Political Economy*, 15(3), 485-500.

Hamermesh, Daniel S. (1989). ‘Labor Demand and the Structure of Adjustment Costs,’ *The American Economic Review*, 79(4), 674-689.

Lachenmaier, Stefan, and Horst Rottmann (2011). ‘Effects of Innovation on Employment: A Dynamic Panel Analysis,’ *International Journal of Industrial Organization*, 29(2), 210-220.

Loksin, Boris, René Belderbos, and Martin Carree (2008). ‘The Productivity Effects of Internal and External R&D: Evidence from a Dynamic Panel Data Model,’ *Oxford Bulletin of Economics and Statistics*, 70(3), 399-413.

Nahm, Pyeong-Tak (2013). ‘Import Impacts in Manufacturing Employment,’ (in Korean) *Journal of Economic Studies*, 31(2), 181-198.

Neumark, David, Junfu Zhang, and Stephen Ciccarella (2008). ‘The Effects of Wal-Mart on

Local Labor Markets,' *Journal of Urban Economics*, 63(2), 405-430.

Van Reenen, John (1997). 'Employment and Technological Innovation: Evidence from U.K. Manufacturing Firms,' *Journal of Labor Economics*, 15(2), 255-284.

Table 1
Summary Statistics of Variables

Variable	N	Mean	Std. Dev	Min	Max
Number of Employees at Manufacturing Industry	240	154,193	167,950	2,911	844,866
Salary at Manufacturing Industry (in Million Won)	240	29.46	6.95	49,455	54.66
Sales of Manufacturing Industry (in Million Won)	240	64,000,000	65,200,000	16.99	309,000,000
Year-end Tangible Assets of Manufacturing Industry (in Million Won)	240	23,000,000	22,500,000	267,316	114,000,000
Number of Small Sized Wholesalers	240	12,714	19,010	1,089	90,972
Number of Medium Sized Wholesalers	240	603	992	25	7,084
Number of Large Sized Wholesalers	240	336	797	15	8,807
Number of Small Sized Retailers	240	39,132	31,284	9,004	144,550
Number of Medium Sized Retailers	240	462	645	28	6,357
Number of Large Sized Retailers	240	357	810	14	10,852

Table 2

Estimation Results of Dynamic Model

	First Difference GMM	System GMM
Employment at Manufacturing industry(-1)	0.5525 *** (0.0883)	0.8006*** (0.0465)
Salary at Manufacturing industry	-0.2125*** (0.0620)	-0.0847 (0.0537)
Sales at Manufacturing industry	0.1738*** (0.0347)	0.1157*** (0.0227)
Capital of Manufacturing industry	0.0045 (0.0389)	0.0353 (0.0232)
Number of Small Wholesalers	0.0728 (0.0496)	-0.0277 (0.0248)
Number of Mid-sized Wholesalers	0.0079 (0.0119)	-0.0094 (0.0128)
Number of Large Wholesalers	-0.0030 (0.0086)	-0.0074 (0.0109)
Number of Small Retailers	0.1833*** (0.0564)	0.1325*** (0.0589)
Number of Mid-sized Retailers	0.0079 (0.0059)	0.0111 (0.0101)
Number of Large Retailers	0.1015 (0.0107)	0.0253** (0.0113)
Constant		-1.2380*** (0.4603)

Note: 1) ( ) refers to standard error.
2) * indicates significance at a 10% significance level, ** indicates significance at a 5% significance level, and *** indicates significance at a 1% significance level