

Employment and Value Added Induced by Final Demands

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1. Research Methodology and Data

Recently, production processes from material procurement to marketing have been split into many stages and the value added from the production was divided among various countries. In other words, the global value chain has deepened, thereby changing “trade in goods” to “trade in tasks.”¹

Therefore, we need to approach international trade in terms of the value added rather than gross value. Previous literature

proposed various methodologies to measure the trade in value added. They calculated the share of imported intermediate parts to produce the exporting goods using the input–output tables in specific years, but did not analyze the time–series trend of trade in value added. In addition, they did not provide the relative contribution of trade to the value added compared to other final demands such as investments and consumptions.

This study analyzes the effects of final demands such as exports, investments, and consumptions on employment and value added. Specifically, it uses World Input–Output Tables based on prices in the previous year and Socio-Economic Accounts of 14 countries and 20 sectors from 1996 to 2009.

¹ Countries no longer export what they produce exclusively in the integrated factory floors, but tend to specialize in specific tasks to obtain finished goods. Refer to WTO and IDE-JETRO(2011), p. 10, OECD(2011), p. 12, and OECD(2012), p. 7.

2. Employment Induced by Final Demands

The share of the employment induced by exports to the total employment turned out to be 16.8% on average in the all countries, which we investigated in this study, while the share of employment induced by investments and consumptions to the total employment amounted to 16.2%, 67.0%, respectively (Refer to Table 1).

Korea's share of employment, which was induced by exports, turned out to be 28.2% of the total employment, which is second only to Taiwan (38.8%). Most of the developed countries including the US (7.4%), EU (12.2%), Japan (10.0%), and Australia (13.2%) recorded about 10%. It is interesting to see that most of the developing countries including Indonesia (14.2%), Mexico (15.2%), and Brazil (11.1%) recorded the very low shares, compared to China (26.3%).

Korea's share of employment induced by investments in total employment turned out to be 15.9%, which is lower than the US (11.3%), Canada (14.6%), and Taiwan (12.4%). On the other hand, Korea's share of employment induced by consumptions in total employment turned out to be 55.9%, which is higher than China (45.4%) and Taiwan (48.9%). Investments played a key role in inducing employment next to consumptions in most of countries, while the exports played a key role in inducing employment next to consumptions in Korea.

Notably, the share of employment induced by the exports to the total employment is very similar to the employment inducement coefficient of exports. For example, the shares for the US, EU, and Japan turned out to be 7.4%, 12.2%, and 10.0%, respectively while the coefficients were 7.1, 10.5, and 9.4, respectively.

Table 1. International Comparison of Employment Inducement Effects of Trade

Unit: %

Country	Share of Employment Inducement (%)			Employment Inducement Coefficient (persons/million dollars)		
	Export	Investment	Consumption	Export	Investment	Consumption
Korea	28.2	15.9	55.9	14.4	19.1	22.4
US	7.4	11.3	81.3	7.1	8.9	9.8
EU	12.2	15.2	72.6	10.5	12.1	12.6
China	26.3	28.3	45.4	103.4	106.3	167.9
Japan	10.0	19.4	70.5	9.4	12.3	11.8
Taiwan	38.8	12.4	48.9	16.0	27.9	20.4
Indonesia	14.2	15.7	70.1	118.6	140.4	225.4
Canada	17.7	14.6	67.7	6.9	9.9	11.0
Australia	13.2	22.1	64.7	8.2	10.3	11.4
India	9.9	17.6	72.4	201.2	177.8	373.0
Mexico	15.2	17.5	67.4	29.1	41.9	45.5
Brazil	11.1	13.1	75.8	54.6	61.6	58.2
Turkey	15.7	10.6	73.6	24.2	27.4	28.1
Russia	15.4	12.4	72.2	31.9	48.1	61.0
average	16.8	16.2	67.0	45.4	50.3	75.6

Source: Author's calculation based on World Input-Output Database.

The employment inducement coefficient of exports turned out to be 14.4 for Korea, lower than Taiwan (16.0), but higher than Canada (6.9), the US (7.1), Australia (8.2), Japan (9.4), EU (10.5).

The employment inducement coefficient of investments turned out to be 19.1 for Korea, higher than the US (8.9), EU (12.1), Japan (12.3), Canada (9.9), and Australia (10.3). On the other hand, the employment inducement coefficient of consumptions turned out to be 22.4 for Korea, higher than most of the developed countries and Taiwan (20.4).

This result reveals that Korea's share of employment induced by exports to the total employment is relatively high but its employment inducement coefficient of exports is relatively low. This implies that the share is high because of Korea's export dependent economic structure, but the Korean export does not create the expected employment because of the low employment inducement coefficient of exports.

Korea's share of employment induced by exports in total employment rose from 20.8% in 1996 to 28.2% in 2009 (refer to Table 2). On the contrary, Korea's share of employment induced by investments in total employment dropped from 24.3% to 15.9% during the same period. In case of consumptions, the share increased slightly from 55.0% to 55.9%.

Korea's employment inducement coefficient of exports dropped from 27.3 in 1996 to 14.4 in 2009. The employment inducement coefficient of investments and consumptions also dropped from 29.0 and 34.7 to 19.1 and 22.4, respectively, during the same period.

This result indicates that the trend of jobless growth has deepened in Korea. It is notable that the employment inducement coefficients dropped in case of exports much greater than investments and consumptions. For example, the exports of one million dollars created 27.3 persons in 1996, but same value of exports created 14.4 persons in 2009.

Table 2. Employment Inducement Effects of Korean Trade

Unit: %

Year	Share of Employment Inducement (%)			Employment Inducement Coefficient (persons/million dollars)		
	Export	Investment	Consumption	Export	Investment	Consumption
1996	20.8	24.3	55.0	27.3	29.0	34.7
1997	22.6	22.8	54.5	25.4	28.0	33.1
1998	29.5	14.6	55.9	29.4	27.9	38.6
1999	25.2	18.1	56.8	31.9	37.0	48.5
2000	24.9	18.9	56.2	26.7	32.1	40.3
2001	23.8	18.7	57.5	25.8	30.4	37.1
2002	22.1	19.5	58.3	26.3	33.3	38.9
2003	23.0	19.5	57.5	23.8	30.0	36.2
2004	25.2	19.0	55.7	21.3	27.1	32.7
2005	24.2	19.2	56.6	18.6	24.4	29.6
2006	23.8	19.2	57.0	15.4	20.8	25.1
2007	24.7	18.9	56.4	13.6	18.6	22.0
2008	26.8	18.9	54.4	12.5	17.8	20.4
2009	28.2	15.9	55.9	14.4	19.1	22.4

Source: Author's calculation based on World Input-Output Database.

3. Value Added Induced by Final Demands

We will divide the value added induced by each final demand by the total value added (refer to Table 3). The share of value added induced by exports to total value added turned out to be 31.3% for Korea in 2009, which was relatively higher than major economies except Taiwan (36.7%). The share for Korea's investments amounted to 15.9%, while the consumptions share was 52.7%.

On the other hand, the share of value added induced by exports to total value added turned out to be very different depending on countries. For example, the US (8.8%), EU (12.8%), and Japan (11.2%) are relatively lower than Canada (22.9%) and Australia (16.2%). Latin American countries including Mexico (17.1%) and Brazil (11.2%) turned out to be lower than Asian developing countries such as China (29.3%) and Indonesia (22.1%).

This result indicates that the share of value added induced by exports to total value added in case of the export-led Asian economies such as Korea, Taiwan, and China turns out to be relatively high, implying that the exports have played a key role in creating the domestic value added.

The value added inducement coefficient, which we obtained by dividing the induced value added by each final demand, turns out to be relatively high in the developed countries compared to the developing countries.

The value added inducement coefficients in the East Asian countries including Korea (0.606), China (0.717), and Taiwan (0.563) are relatively low, compared to developed countries such as the US (0.825), EU (0.786), Japan (0.835), Australia (0.839), and Canada (0.772). Such results are mainly due to the East Asian industrial structures characterized by the assembly processes.

Table 3. International Comparison of value added Inducement Effects of Trade

Unit: %

Country	Share of Value Added Inducement (%)			Value Added Inducement Coefficient (persons/million dollars)		
	Export	Investment	Consumption	Export	Investment	Consumption
Korea	31.3	15.9	52.7	0.606	0.726	0.802
US	8.8	11.8	79.4	0.825	0.916	0.941
EU	12.8	15.3	71.9	0.786	0.875	0.893
China	29.3	33.2	37.5	0.717	0.775	0.861
Japan	11.2	17.9	70.9	0.835	0.898	0.939
Taiwan	36.7	8.9	54.5	0.563	0.741	0.845
Indonesia	22.1	18.9	59.0	0.846	0.775	0.871
Canada	22.9	13.8	63.3	0.772	0.802	0.884
Australia	16.2	22.1	61.7	0.839	0.849	0.896
India	12.8	26.5	60.6	0.742	0.766	0.895
Mexico	17.7	17.0	65.3	0.699	0.839	0.907
Brazil	11.2	11.8	77.0	0.816	0.81	0.87
Turkey	15.0	10.5	74.5	0.693	0.809	0.849
Russia	25.2	13.1	61.7	0.913	0.886	0.913
Rest of the World	21.1	16.4	62.5	0.658	0.693	0.819

Source: Author's calculation based on World Input-Output Database.

The share of value added induced by exports to Korean total value added have steadily increased since 1996 (refer to Table 4). The share rose from 20.8% in 1996 to 31.3% in 2009. The investments' share heavily dropped from 20.6% to 15.9% during the same period while the consumptions' share just slightly decreased from 53.2% to 52.7%.

On the other, the value added inducement coefficient dropped from 0.674 in 1996 to 0.606 in 2009. The value added coefficients of investments and consumptions dropped from 0.765 and 0.826 to 0.726 and 0.802 in the same period, respectively.

The Bank of Korea (2011, 2012) shows that the share of value added induced by Korean exports to total value added has increased

while those of investments and consumptions have dropped. In addition, the value added inducement coefficients in case of exports, investments, and consumptions have all decreased from 2005 to 2010.

These results released by the Bank of Korea confirm our findings but the numerical numbers are different from each other. For example, the share of induced value added to total value amounts to 28.6%, 18.2%, and 53.2% in case of Korean exports, investments, and consumptions, respectively while the value added inducement coefficients turned out to be 0.561, 0.773, and 0.803, respectively.

The numerical difference occurs partly because this study uses the data based on previous year prices while the Bank of Korea is based on the data of 2005 constant prices.

Table 4. Value Added Inducement Effects of Korean Trade

Unit: %

Year	Share of Value Added Inducement (%)			Value Added Inducement Coefficient (persons/million dollars)		
	Export	Investment	Consumption	Export	Investment	Consumption
1996	20.8	26.0	53.2	0.674	0.765	0.826
1997	23.1	24.1	52.8	0.674	0.771	0.837
1998	29.7	17.9	52.4	0.708	0.817	0.866
1999	28.0	19.6	52.4	0.634	0.719	0.801
2000	27.6	20.0	52.4	0.628	0.721	0.798
2001	26.1	19.7	54.2	0.667	0.758	0.828
2002	24.6	19.6	55.9	0.640	0.732	0.818
2003	25.2	20.0	54.7	0.621	0.732	0.818
2004	27.3	19.5	53.2	0.604	0.727	0.815
2005	26.9	19.6	53.5	0.587	0.709	0.794
2006	27.0	19.5	53.5	0.594	0.715	0.797
2007	28.0	18.8	53.1	0.599	0.715	0.802
2008	29.5	18.4	52.2	0.563	0.709	0.801
2009	31.3	15.9	52.7	0.606	0.726	0.802

Source: Author's calculation based on World Input-Output Database.

4. Conclusion

When we look into the Korean results, this study reveals that the share of employment induced by exports to the total employment has been increasing but the employment inducement coefficient for exports has shown the reverse trend. In addition, the share of value added induced by exports to the total value added has been increasing but the value added inducement coefficient for exports turned out to be decreasing.

This study provides the following policy implications for the Korean economy. First, Korea needs to prepare trade policies, considering that the positive effects of trade on employment have decreased steadily. Second, Korean export strategies need to focus on the products with a high share of value added, strengthening the competitiveness of material and intermediate goods in case of the industries with a low value added inducement coefficient. **KIEP**

Reference

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