

The Impact of Trade Shocks on Labor Reallocation in South Korea*

Kyong Hyun KOO Research Fellow, Trade and Investment Policy, International Trade, Investment and Economic Security
(khkoo@kiep.go.kr)

I. Introduction

South Korea, with its high degree of economic dependence on foreign trade, has experienced significant changes in its labor market due to shifts in trade structure. Since the 2000s, the rapid economic growth of China and Vietnam and the resulting increase in imports and exports with these countries have not only transformed Korea's industrial employment distribution but also substantially affected workers' income and employment stability. Workers in industries facing intensified import competition experienced decreased wage growth rates over the long term and higher probabilities of involuntary job loss, while those in export-growing industries enjoyed higher wage growth rates and employment stability during the same period. (Koo and Kim 2020; Koo et al. 2022)

This study analyzes how workers were reallo-

cated across industries or occupations during the process of labor demand adjustment in South Korean domestic industries following exogenous trade shocks caused by the economic rise of China and Vietnam. It examines whether Korea's labor market was sufficiently effective in terms of labor movement from comparative disadvantage sectors to comparative advantage sectors in response to changes in trade. Through this analysis, the study aims to understand the mechanisms by which inefficiencies in Korea's labor reallocation process lead to workers' income decline and derive policy implications.

This research holds significance as the first empirical study to examine the effects of trade shocks from China and Vietnam on labor reallocation across Korean industries and occupations. Furthermore, by utilizing the Korean

* This is a summary article based on the third chapter of Koo et al. (2024).

Employment Insurance Database, which contains comprehensive information on all workers enrolled in Korea's employment insurance system, this study enhances the accuracy of analyzing domestic workers' reallocation across industries and occupations over the extended period from 2003 to 2019.

II. Empirical Methodology and Data

The basic econometric model is as follows, which is based on the models used by Koo and Kim (2020) and Koo et al. (2022).

$$Y_{ij[t,t+9]} = \beta_0 + \beta_1 IMP_{j[t,t+9]} + \beta_2 EXS_{j[t,t+9]} + \theta X_{ijt} + \alpha_i + \eta_{[t,t+9]} + \epsilon_{ij[t,t+9]}$$

The dependent variable $Y_{ij[t,t+9]}$ represents variables related to industry and occupation changes over 10 years ($t \sim t+9$) for worker i engaged in industry j in year t . A key explanatory variable, $IMP_{j[t,t+9]}$ represents industry j 's import competition exposure to China and Vietnam over 10 years ($t \sim t+9$). Specifically, this variable is calculated by dividing the change in import value from China and Vietnam for Korea's industry j during the period t to $t+9$ by the industry's base year (2003) gross domestic demand, and then converting it into an annual percentage (%) unit.¹ Since this variable is created using the change

in Korea's import value from China and Vietnam, it contains endogeneity problems, as it can be influenced not only by exogenous shocks like the rapid economic growth of China and Vietnam but also by various domestic economic conditions. To mitigate the endogeneity problem, an instrumental variable was constructed using the import changes from China and Vietnam during the same period for other countries with similar regional and economic scales to Korea, following the method of Koo and Kim (2020) and Koo et al. (2022).²

Another key explanatory variable, $EXS_{j[t,t+9]}$ indicates the export growth exposure to China and Vietnam for industry j over the 10-year period (from year t to $t+9$). It is a variable calculated by dividing the change in export value to China and Vietnam for Korea's industry j during the period t to $t+9$ by the industry's base year (2003) gross domestic product, and then converting it into an annual percentage (%) unit. Similar to $IMP_{j[t,t+9]}$, to alleviate the endogeneity problem, an instrumental variable was constructed using the change in export value to China and Vietnam from a group of comparable countries during the same period, instead of Korea's own export value changes.³

X_{ijt} includes characteristic variables for worker i in industry j in year t (such as age,

¹ For more detailed equations, please refer to Chapter 3, Section 2 of Koo et al. (2024).

² The countries used to construct the instrumental variables include Japan, Taiwan, Singapore, Malaysia, Thailand, and India.

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years of service, etc.), along with several characteristic variables for industry j corresponding to the base year (2003) (such as capital per worker and average salary per worker by industry, and the cumulative relative amount of foreign direct investment in China and Vietnam). α_i represents the fixed effects that control for the time-invariant characteristics of worker i . $\eta_{[t,t+9]}$ signifies the time fixed effects corresponding to the period from t to $t+9$.

This study primarily used the Employment Insurance Database (DB) provided by the Korea Employment Information Service as its main analytical data. This dataset, which covers all workers enrolled in employment insurance, provides individual worker's job information (industry, occupation, start and end dates, etc.) and personal characteristic information (gender, age). As it includes all workers subscribed to employment insurance, the sample size is large. It also provides detailed industry codes for the workplaces where workers are employed. Additionally, since 2006, it provides three-digit occupation codes for new subscribers, making it suitable for analyzing labor reallocation patterns across industries and occupations.

The import competition and export growth exposure variables for a total of 64 medium-classification manufacturing industries with respect to China and Vietnam were constructed using country-specific import/export

data (HS code 6-digit) from UN Comtrade and the Bank of Korea's Input-Output tables (2003, 2005-2019). Data such as capital per worker and average salary per worker by industry for the base year (2003), and the cumulative relative amount of foreign direct investment in China and Vietnam for each year were constructed from the National Business Survey, the Mining and Manufacturing Survey, and the Export-Import Bank of Korea's foreign direct investment data.⁴

III. Main Results

The main empirical results are as follows. First, workers who were employed in industries with high exposure to import competition from China and Vietnam early in their careers had a higher probability of experiencing job changes within 10 years, and also a higher probability of involuntary job loss (see Table 1). When these workers changed jobs, there was a higher probability of moving to a different medium-classification industry and a lower probability of moving to a different large-classification industry (see column 1 and 2 in Table 2). This suggests they were more likely to transition to a proximate industry within the same large-classification, largely due to their tendency to remain within the import-competing industry group rather than moving to an export-growing sector during job changes.⁵ Furthermore, workers who were

⁴ The same data constructed in Koo et al. (2022) were used.

⁵ Additional analysis in this study shows that, on average, 33.2% of workers employed in the top 20 import-competing indus-

tries in year 1 were still working in the top 20 import-competing industries in year 10, while only 9.6% had moved to the top 20 export-growth industries. In contrast, workers employed in the top 20 export-growth industries in year 1 had a

engaged in import-competing industries early in their careers also had a higher probability of changing occupations when changing jobs

(see column 3 and 4 in Table 2). This indicates a relatively high risk of losing occupation-specific human capital.

Table 1. Long-Term Effects (10 Years) of Trade Shock Exposure from China and Vietnam on Manufacturing Workers' Job Mobility in South Korea

	Period: 2003~2019	
	1: Job change over 10 years	1: Involuntary job loss over 10 years
	(1)	(2)
Industrial exposure to import competition for 10 years	0.0010*** (0.0002)	0.0029*** (0.0004)
Industrial exposure to export expansion for 10 years	-0.0024*** (0.0002)	-0.0013*** (0.0003)
Time-varying individual characteristics	0	0
Initial industrial characteristics	0	0
Individual fixed effects	0	0
Year fixed effects	0	0
Sample	All	Workers w/ job change
Observations	23,068,025	16,322,882
# Of respondents	4,733,893	3,978,128

Note: 1) Numbers in parentheses indicate robust standard errors (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

2) Job change refers to no longer working at the employer where one was employed in the first year, based on the 10th year of employment.

3) Involuntary job loss refers to job separation due to external factors (such as deterioration of company management conditions, contract termination, etc.) rather than personal reasons or retirement age.

Source: Authors' compilation using data from Korean Employment Insurance DB, UN Comtrade, National Business Survey, Mining and Manufacturing Survey, and Bank of Korea Input-Output Tables.

Conversely, workers with high initial exposure to export growth to China and Vietnam experienced a lower probability of changing jobs within 10 years and a reduced likelihood of involuntary job loss (see Table 1). Among those who involuntarily lost their jobs, higher initial export growth exposure was associated with a lower probability of

changing medium-classification industries (see column 1 and 2 in Table 2). This suggests a higher likelihood of securing subsequent employment within the same industry group, thereby providing more opportunities to leverage their accumulated industry-specific human capital, even after involuntary job loss. This also led to a relatively lower

significantly smaller probability of 5.0% of moving to the top 20 import-competing industries by year 10, while the proba-

bility of still being employed in the top 20 export-growth industries was very high at 42.6% (Koo et al 2024).

probability of changing occupations during job transitions compared to workers from import-competing industries, indicating a

reduced risk of losing occupation-specific human capital (see column 3 and 4 in Table 2)

Table 2. Long-Term Effects (10 Years) of Trade Shock Exposure from China and Vietnam on Occupational Mobility of Involuntarily Displaced Manufacturing Workers in South Korea

	Period: 2006~2019			
	1: Industry change over 10 years (medium classification)	1: Industry change over 10 years (large classification)	1: Occupation change over 10 years (small classification)	1: Occupation change over 10 years (medium classification)
	(1) (2SLS)	(2) (2SLS)	(3) (2SLS)	(4) (2SLS)
Industrial exposure to import competition for 10 years	0.0052*** (0.0009)	-0.0050*** (0.0010)	0.0029*** (0.0011)	0.0036*** (0.0012)
Industrial exposure to export expansion for 10 years	-0.0026*** (0.0006)	0.0001 (0.0007)	-0.0014** (0.0006)	-0.0008 (0.0007)
Time-varying individual characteristics	0	0	0	0
Initial industrial characteristics	0	0	0	0
Individual fixed effects	0	0	0	0
Year fixed effects	0	0	0	0
Sample	Workers w/ involuntary job loss	Workers w/ involuntary job loss	Workers w/ involuntary job loss	Workers w/ involuntary job loss
Observations	1,208,096	1,208,096	1,208,096	1,208,096
# Of respondents	434,517	434,517	434,517	434,517

Note: 1) Numbers in parentheses indicate robust standard errors (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$).

2) The term “workers with involuntary job loss” in this analysis refers to those who experienced involuntary job loss between their 1st and 10th year, and were still observed in the Employment Insurance DB in their 10th year.

Source: Authors' compilation using data from Korean Employment Insurance DB, UN Comtrade, National Business Survey, Mining and Manufacturing Survey, and Bank of Korea Input-Output Tables.

IV. Conclusion

South Korean workers initially employed in industries exposed to import competition from China and Vietnam faced challenging job transitions and re-employment outcomes. They

experienced a heightened risk of involuntary job loss and, when re-employed, a lower likelihood of remaining within their original industry. Simultaneously, their mobility to high-growth, export-oriented industry groups was limited, and they also faced a higher probabilit-

ity of changing their existing occupation during job transitions. This implies a greater risk of losing industry-specific and occupation-specific human capital and difficulty in transitioning to higher-growth, comparative advantage industries, especially when compared to workers in export-growing sectors. Such difficulties likely contributed significantly to the long-term relative reduction in labor income for workers in import-competing industries. For instance, previous research demonstrated that a 10-percentage point increase in import competition exposure from China and Vietnam in a worker's initial industry correlated with a 4 to 5 percentage point decrease in long-term labor income growth over the subsequent decade. (Koo & Kim 2020, Koo et

al. 2022).

This analysis underscores the critical need for South Korea's trade-dependent economy to foster flexible and effective inter-industry labor reallocation. Given the rapid changes in the global trade environment and production technologies, the nation is poised for another significant industrial transformation. It is essential to prepare for short-term trade shocks while also laying the groundwork for long-term industrial competitiveness and reduced income polarization. This requires strengthening the safety net for workers in declining industries and comprehensively improving policies that support their transition into growth sectors.⁷ **KIEP**

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⁷ More specific policy suggestions are discussed in the fifth

chapter of Koo et al. (2024).