Export and Employment in Entertainment and Media Industry: Evidence from Firm-Level Panel Data*

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1 Introduction

Using firm-level panel data from Statistics Korea's Survey on Business Activities, this study estimates the impact of exports on domestic employment in the Entertainment and Media industry.[1] In Korea's earlier development phase, manufacturing exports played a key role in linking trade to employment. From the 1970s through the 1990s, manufacturing exports grew at an annual average rate of 12.4% in Korea, while employment expanded by 7.4%, reinforcing the virtuous cycle of "exports → growth → jobs." However, as the industrial base matured and core exports shifted toward labor-saving and technology-intensive activities, this linkage weakened—a phenomenon widely described as "jobless growth." Against this backdrop, as Korea's entertainment and media industry has expanded and become increasingly globalized, interest has grown in understanding its employment effects.

To that end, this article focuses on the relationship between export performance and labor employment in the Entertainment and Media industry. The dataset is organized at the firm–year level and contains detailed variables such as employment (regular and temporary workers), export and import amounts, revenue, assets, labor costs, and intangible assets such as design rights and trademarks. The panel structure enables control for unobserved firm

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[1]The Entertainment and Media Industry industry, broadly defined as the set of sectors engaged in the production, distribution, and consumption of cultural goods, encompasses publishing, comics, music, performances, games, films, animation, broadcasting, video, advertising, character businesses, knowledge information, and content solutions. Terminologies differ across countries and institutions. UNESCO, the European Union, and the OECD adopt broader designations such as Cultural and Creative Industries (CCIs) and Cultural and Creative Sectors (CCS). The United Kingdom refers to the Creative Industry, Singapore to the Copyright Industries, the United States to the Entertainment and Media Industry, and Japan to the Content Industry.

heterogeneity while capturing dynamics over time. The analysis compares pooled OLS, fixed effects, and random effects models, and evaluates robustness using the Hausman test.

In the United States, IP- and content-driven sectors have become central to both economic growth and international influence. Understanding whether and how content exports generate domestic jobs in Korea provides comparative evidence that can inform U.S. understanding of the "creator economy," digital trade, and the labor implications of intangible-intensive industries. By documenting firm-level export–employment relationships in the Korean context, this study contributes insights that resonate with broader global concerns over how knowledge-based exports shape labor markets.

2 Data and Summary Statistics

The data used in this study come from the Survey on Business Activities conducted annually by Statistics Korea for the period 2014–2022. This survey provides comprehensive information on firms' management activities—including business performance, diversification, affiliation, and incentive systems—with the purpose of supplying baseline statistics for economic policy and enabling research on corporate strategies and industrial structural changes.

For this study, we extracted variables relevant to analyzing the relationship between exports and employment. Employment variables are standardized into regular employees and temporary employees. Financial and performance variables include revenue, assets, investment assets, and labor costs. Trade activity is measured by exports and imports. Industrial structure is identified by two levels of industry classification: division and mid-level industry codes. In order to reduce skewness and facilitate regression analysis, log-transformed variables were constructed. To understand the data structure, we first present descriptive statistics of the main variables.

[Table 1 about here.]

The table above shows means, standard deviations, medians, minima, and maxima for employment, export and import amounts, revenue, assets, and labor costs. Exports are highly skewed: while many firms report zero exports, a small share of firms accounts for the majority of the export volume.

Figure 1 illustrates the yearly average employment of exporting and non-exporting firms from 2014 to 2022. Exporting firms employ substantially more workers on average—typically

around 400–500 employees—compared to only 150–180 employees for non-exporting firms. While exporters show fluctuations over time, their employment levels consistently remain more than twice as high as those of non-exporters. Similar gaps are also observed in revenue and asset size, indicating that exporters operate on a significantly larger scale across multiple dimensions.

[Figure 1 about here.]

When comparing average revenue, employment, and assets between exporting and non-exporting firms, caution is warranted. The data form an unbalanced panel in which firms may enter or exit over time and changes in eligibility criteria can alter the sample. Consequently, shifts in yearly averages may reflect sample composition rather than true growth or decline of the same firms. For example, the entry of new firms into the exporter group could lower the overall average without implying weaker performance for all exporters. Thus, the descriptive averages indicate relative size differences between exporters and non-exporters, but should not be read as direct evidence of long-term dynamics within identical firm groups.

3 Model Specification and Panel Regression Results

The empirical analysis is based on the following regression specification, which corresponds to the fixed-effects (FE) model:

$$\ln(\text{Employment}_{it}) = \alpha + \beta_1 \ln(\text{Exports}_{it}) + \beta_2 \ln(\text{Revenue}_{it}) + \beta_3 \ln(\text{Assets}_{it})$$
$$+ \beta_4 \ln(\text{InvestmentAssets}_{it}) + \beta_5 \ln(\text{Imports}_{it}) + \beta_6 \text{Trademarks}_{it}$$
$$+ \beta_7 \text{Industry-Year Wages}_{jt} + \text{YearDummies}_t + \text{FirmDummies}_i + \varepsilon_{it}$$

Here i indexes firms and t indexes years. In the pooled OLS specification, the firm dummies are omitted, so the model does not control for unobserved firm heterogeneity. In the random-effects (RE) specification, firm-specific heterogeneity is instead modeled through an error-components structure rather than firm-specific dummy variables.

To estimate the export–employment relationship, three types of models are employed: pooled OLS, fixed effects (FE), and random effects (RE). The dependent variable is the log of regular employment. The main regressor of interest is log exports, while the set of controls includes revenue, industry-year unit labor cost, assets, investment in tangible assets, imports, and trademarks. Standard errors are clustered at the firm level throughout the analysis.

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Table 2 below reports the estimation results for the relationship between exports and employment under the three alternative specifications: (1) pooled OLS, (2) fixed effects, and (3) random effects. All models include year dummies, although the coefficients are not reported, to account for unobserved aggregate shocks. The table presents coefficient estimates together with clustered standard errors, as well as summary statistics such as R^2 and indicators for the inclusion of firm and year fixed effects.

[Table 2 about here.]

The results demonstrate that exports are positively associated with firm employment, with the coefficient on log exports ranging from 0.006 to 0.016 across specifications. The effect is strongest in the pooled OLS regression, while the within-firm FE estimate remains positive and statistically significant at the 10% level, providing evidence of a robust export–employment linkage even after controlling for unobserved heterogeneity. Revenue and assets also display large and highly significant coefficients, consistent with the interpretation that firm scale strongly drives employment. By contrast, imports and investment in tangible assets show little systematic relationship with employment, and trademarks are only marginally significant in some specifications.

The Hausman test results reject the null hypothesis that the random effects estimator is consistent. Taken together, these results strongly support the use of the fixed effects estimator over the random effects specification, indicating that unobserved firm heterogeneity is correlated with the regressors and must be controlled for in order to obtain consistent estimates.

4   Conclusion

This report analyzed firm-level panel data from 2014 to 2023 to examine the employment effects of exports. Descriptive statistics and figures revealed that exporters are larger and employ more workers than non-exporters. Regression analysis using pooled OLS, FE, and RE models consistently found positive associations between exports and employment, with the FE estimates providing the most robust evidence. The Hausman tests further confirmed the superiority of the FE specification. These results suggest that export activity plays an important role in sustaining labor demand in Korea's content industry, while also highlighting the need for policies that address endogeneity and ensure the broad diffusion of export-driven growth. Attention should also be paid to possible endogeneity, as growing firms may simultaneously increase exports and employment, complicating causal interpretation.

Table 1: Descriptive statistics

Variable	Mean	Std. Error	Min	Median	Max	N
Regular employment	208.5	6.048	5	92	21680	10049
Temporary employment	9.8	0.919	0	0	6381	10049
Design	1.9	0.129	0	0	227	7851
Trademark	28.2	1.217	0	5	6678	9176
Export amount	1665.3	211.007	0	0	678573	6115
Import amount	1851.1	133.500	0	0	274323	6384
Total assets	1.27e+05	8033.331	1	19955	28451247	10048
Investment in tangible assets	40583.0	5087.676	0	1223	23584048	9733
Revenue	70335.388	2650.7	0	17154	5512586	10048
Labor cost	14742.205	587.0	0	4933	1812607	10049

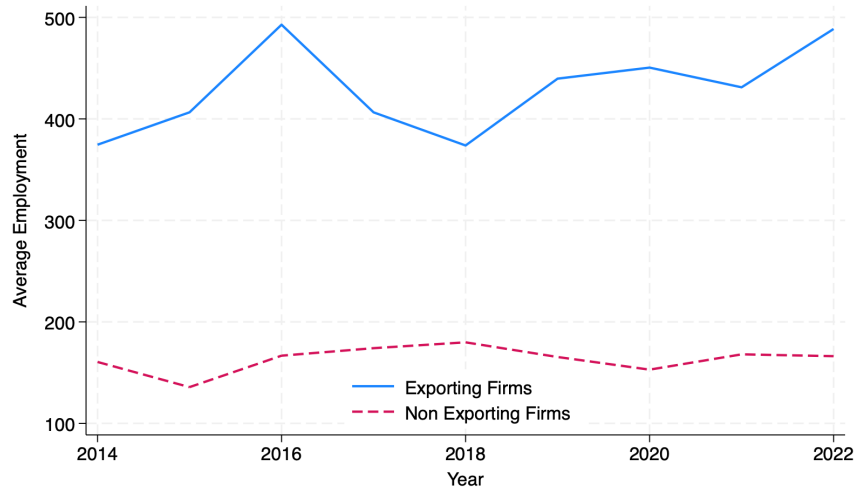Figure 1: Yearly Average Employment of Exporting and Non-Exporting Firms (2014–2022)

Table 2: Export and Employment: Pooled OLS, Fixed Effects, and Random Effects Results

	(1) Pooled OLS	(2) Fixed Effects	(3) Random Effects
Log of export amount	0.016**	0.006*	0.007*
	(0.007)	(0.004)	(0.003)
Log of revenue	0.438***	0.184***	0.243***
	(0.027)	(0.029)	(0.030)
Industry-year unit labor cost	0.001	-0.001	-0.000
	(0.002)	(0.001)	(0.001)
Log of total assets	0.120***	0.178***	0.191***
	(0.027)	(0.024)	(0.022)
Log of investment in tangible assets	0.001	0.003	0.005
	(0.007)	(0.004)	(0.004)
Log of import amount	-0.020***	0.001	-0.000
	(0.007)	(0.003)	(0.003)
Trademark	0.001**	0.000	0.000
	(0.000)	(0.000)	(0.000)
Observations	5,504	5,504	5,504
R^2	0.623	0.226	
R^2 (within)		0.226	0.225
R^2 (between)		0.547	0.555
R^2 (overall)		0.598	0.606
Firm FE	No	Yes	No
Year FE	Yes	Yes	Yes

Note: The table reports coefficient estimates with standard errors in parentheses. Stars denote statistical significance at the 10%, 5%, and 1% levels. Significance: $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Standard errors are clustered at the firm level. All models include year dummies, but coefficients are suppressed.