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Objectives

The purpose of this study is to investigate the relationships between exporting and firm productivity and derive policy implications for Korean agro-food industry.

Introduction

- Self-selection hypothesis implies that a more productive firm that can bear the sunk entry cost of exporting makes entry decision into the export market.
- Learning-by-exporting hypothesis suggests that participating in exporting improve the productivity of firms through innovations due to the exposure to more competitive environments in the international market.
- “Self-selection” has been tested by many empirical researches and overall evidences are supportive. On the other hand, fewer studies have investigated “learning-by-exporting” and there is no consensus on the learning effect.
- Two hypotheses are not mutually exclusive, but one may better explain the relationship between exporting and productivity depending on the industry.

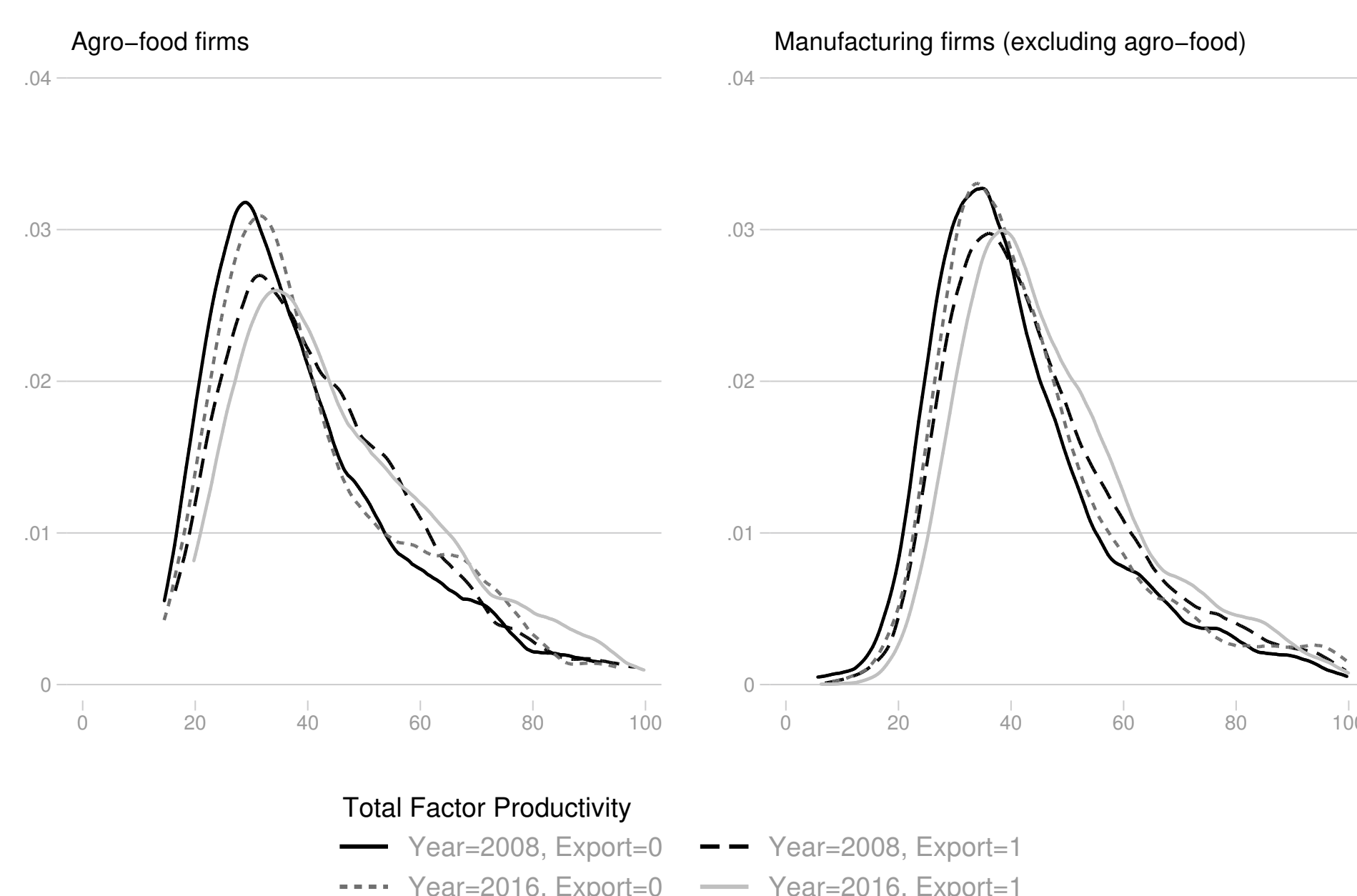


Figure 1: Kernel density of total factor productivity (TFP) in Korean exporting and non-exporting firms

Notes: TFPs in 2008 and 2016 by agro-food and manufacturing industries were estimated by using the methodology in Olley and Pakes (1996)[1].

Methods (Self-selection)

- Data: Survey of Business Activity database (Statistics Korea) from 2006 to 2016
- Estimation: Pooled maximum quasi-likelihood estimation with Mundlak-Chamberlain device[2]
- $E(EX_{it}|\mathbf{x}_{it-1}) = \Phi(\alpha_t + \theta EX_{it-1} + \mathbf{x}_{it-1}\beta + \bar{\mathbf{x}}_i\zeta)$
- Dependent variables: Export status
- Covariates: Lagged Export, Financial information, Firm characteristics

Methods (Learning-by-exporting)

- Data and covariates: Similar to self-selection case
- Dependent variable: Productivity (TFP)
- Estimation 1: Fixed effects (FE) regression
- $\ln(TFP)_{it} = \alpha + c_i + \gamma EX_{it-2} + \mathbf{x}_{it-1}\beta + \varepsilon_{it}$
- Estimation 2: Propensity-score matching (PSM) with first entry to exporting on TFP[3]
- $\tau_{ATT}^{PSM} = E_{P(X)|D=1}\{E[Y(1)|D=1, P(X)] - E[Y(0)|D=0, P(X)]\}$

Results

- The results in Table 1 support the self-selection hypothesis: productive firms are more likely to be future exporters. Export status of last year, productivity, employment, overseas expansion and externalities on firm’s export status are positively related to the current export status. The results in agro-food firms are similar to those of manufacturing firms and all firms but the region- and industry-wide externalities are not crucial to agro-food firms.
- The results in Tables 2 and 3 hardly support the learning-by-exporting hypothesis: exporters are likely to be more productive. The results from FE regression and PSM approach show that there is no particular relationship between export entry and productivity after exporting.

Important Result

In Korean agro-food firms, total factor productivity is shown to be significantly related to the firm’s export status while learning effects are not clear.

Results (Self-selection)

Table 1: Estimates on decision to export

	Agro-food	Manufacturing	All
Exported last year	0.64** (0.09)	0.64** (0.02)	0.60** (0.02)
LN(TFP)	0.50* (0.21)	0.18** (0.05)	0.13** (0.03)
LN(employment)	0.27* (0.12)	0.20** (0.04)	0.25** (0.03)
Foreign capital ratio	0.007 (0.005)	0.002 (0.001)	0.002* (0.001)
Ad/sales	1.25 (2.17)	-0.93 (1.55)	0.36* (0.17)
Overseas expansion	0.35* (0.14)	0.15** (0.04)	0.16** (0.03)
Industry exporters	-0.17 (0.74)	0.93** (0.26)	0.61** (0.20)
Region exporters	1.10 (0.79)	0.47** (0.16)	0.24* (0.11)
Ind.-region exporters	-0.06 (0.33)	0.18 (0.11)	0.37** (0.09)
Number of firms	613	7762	14564
Pseudo R ²	0.60	0.55	0.61

Notes: * $p < 0.05$; ** $p < 0.01$. Robust standard errors are in parentheses. Debt/asset, R&D/sales, and Outsourcing/sales are included but suppressed to save space. They are not significant at the 5% level in all firm groups. Year dummies are included. Industry (outside region), Region (outside industry), Industry-region exporters are used to capture externalities.

Results (Learning-by-exporting)

Table 2: Estimates on productivity

	Agro-food	Manufacturing	All
Exported 2 years ago	0.010 (0.011)	-0.001 (0.004)	0.001 (0.004)
LN(employment)	0.018 (0.019)	0.060** (0.008)	0.050** (0.008)
Outsourcing/sales	0.066** (0.021)	0.019 (0.017)	0.005 (0.003)
Overseas expansion	0.010 (0.016)	0.001 (0.005)	-0.007 (0.005)
Number of firms	541	6791	12336

Notes: * $p < 0.05$; ** $p < 0.01$. Robust standard errors are in parentheses. Capital intensity, Debt/asset and R&D/sales are included but suppressed to save space. They are not significant at the 5% level in all firm groups. Year, region, and industry dummies are included.

Table 3: ATT of first entry to exporting on productivity

	Agro-food	Manufacturing	All
Two years after first entry	0.033 (0.069)	0.013 (0.022)	0.025 (0.023)
Number of control firms	88	1117	1990
Number of treated firms	76	962	1677

Notes: Average treatment effects on the treated (ATT) of the first entry of exporting on productivity is estimated by propensity-score matching with logit model and one match per observation. ATTs in all groups are not significant at the 10% level.

Conclusions

Given that the results support the self-selection hypothesis but hardly support the learning-by-exporting hypothesis, the export promoting policy would better focus on improving productivity rather than lowering the entry cost into foreign markets in the Korean agro-food sector. The results obtained from the current study would contribute to understanding the drivers of Korean agro-food exports and help determine the policy direction and priorities.

References

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