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The role of competitors on the relationship between IPR and export of Northeast Asian countries

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ABSTRACT

This study investigates the impact of intellectual property rights (IPR) protection and the regulatory role of third countries on exports from Northeast Asian countries (NEAs) during the period 2006-2017. Using the System Generalized Method of Moments (sys-GMM) estimation, the study analyzes how IPR protection in importing countries affects NEA exports across different product categories. The results show that stronger IPR protection in importing countries significantly boosts NEA exports of copyable goods such as primary products, natural resource-intensive goods, and unskilled labor-intensive goods through the market expansion effect. The presence of third countries enhances this effect through increased competition. However, for technology- and human-capital-intensive goods, third-country incentives modify the impact of IPR protection, suggesting a shift toward market power effects. The effect of IPR protection on exports varies across product types and is significantly influenced by third-country competition. The findings suggest that NEA countries should enhance R&D, upgrade trade infrastructure, and promote trade liberalization. Furthermore, linking export profiles with third countries can help maximize the benefits of IPR protection and maintain export competitiveness in the global market.

Contribution/ Originality: This study is the first to empirically examine the moderating role of third-country competition in the relationship between IPR protection and NEA exports, using disaggregated product categories and System GMM estimation.

1. INTRODUCTION

In the context of global economic integration, intellectual property rights (IPR) have become an increasingly important factor in international trade policies. Since the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) came into effect, IPR protection has been closely tied to technological development and innovation while exerting a significant influence on trade activities, particularly exports (Maskus & Penubarti, 1995; Smith, 1999). However, the relationship between IPR protection and exports remains a contentious issue both in theory and practice (Chen, 2017; Maskus & Penubarti, 1995; Sweet & Eterovic Maggio, 2015).

From a policy perspective, IPR protection is expected to balance the temporary monopolistic benefits of the innovating country with the importing country's need for affordable access to products (Hoekman & Kostecki, 2001). In practice, however, developed and developing countries face considerable challenges in achieving this balance. Developed countries often support stricter IPR protection to safeguard the interests of domestic companies and limit

imitation in developing countries (Connolly & Valderrama, 2005; Fan, Gillan, & Yu, 2013). Meanwhile, developing countries argue that such tightening creates monopolies, increases economic disadvantages, and limits access to new technologies (Liao & Wong, 2009; Schneider, 2005).

Theoretically, IPR protection significantly impacts exports through two opposing effects: the market power effect and the market expansion effect. The market power effect arises when exporting countries leverage monopolies to reduce export volumes and increase prices, whereas the market expansion effect occurs when stricter IPR protection in importing countries increases demand for imported goods from the exporting country (Maskus & Yang, 2018; Vishwasrao, 1999). Previous studies have shown that the impact of IPR protection on exports depends on factors such as the economic development level of the importing country (Maskus & Penubarti, 1995; Sweet & Eterovic Maggio, 2015). The imitation capacity of the importing country (Ivus, 2011; Smith, 1999) or the characteristics of exported goods (Galushko, 2012; Maskus & Yang, 2018).

Nevertheless, prior research has not adequately focused on the role of third countries in moderating the impact of IPR protection on exports. Third countries can play a crucial role in supply chains, trade behavior, and pricing strategies of exporting countries (Fukui, Hammer, & Jones, 2013). Particularly in the context of Southeast Asian countries that lead in the production of technology-intensive goods, studying the role of third countries is essential to clarify these complex relationships.

This study seeks to examine how IPR protection influences exports, with a particular focus on the role of third countries in this dynamic. The research not only enhances theoretical understanding but also offers valuable practical guidance for policymakers and businesses.

2. THEORETICAL DEVELOPMENT

2.1. Gravity Model

The gravity model proposed by Tinbergen (1962) is a widely used econometric tool in international trade research. Inspired by Newton's law of gravity, this model explains trade flows between two countries based on their economic size and geographical distance. According to the basic framework, the trade value between two countries is directly proportional to their economic size, measured by their gross domestic product $(GDP_{i,t}, GDP_{j,t})$ and inversely proportional to the geographical distance between them $(DIST_{ij})$. The general formula of the model is expressed as follows.

$$Export_{ij,t} = \frac{G \times GDP_{i,t} \times GDP_{j,t}}{DIST_{ij}} \quad (1)$$

Where i represents the exporting country, j represents the importing country, and t denotes the year. GDP plays a crucial role in facilitating international trade (Feenstra, 2004). It reflects a country's production capacity, consumption potential, and its ability to engage in both exports and imports (Chen & Novy, 2011). Countries with higher GDPs tend to have more diversified economic structures, allowing them to supply a broader range of goods and services to both export and import markets (Meissner, 2007). Economic growth in both trading countries further enhances trade flows, as stronger economies typically stimulate both the supply and demand sides of international trade (Anderson & van Wincoop, 2004).

However, geographical distance remains a major challenge in global trade. It directly affects transportation costs, delivery times, and the efficiency of cross-border transactions (Anderson & van Wincoop, 2004). Longer distances typically increase trade costs, which in turn reduce trade volumes between nations (Heo & Doanh, 2020; Tinbergen, 1962). However, advancements in transportation technology and logistics infrastructure have mitigated the impact of geographical distance in certain cases, particularly in high-value-added industries or global supply chains (Baldwin, 2006; Hummels, 2007).

Extending the gravity model, some studies have found that current exports are influenced by past exports ($Export_{ij,t-1}$) (Doanh, Gam, & Heo, 2022). Larger past export volumes between two countries help build trust and

experience, which in turn enhance current export values between them (Linh, Doanh, & Quynh, 2019). Accordingly, Equation 1 will be logarithmized and supplemented with the $Export_{ij,t-1}$ factor as follows.

$$lnExport_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \varepsilon_{ij,t} \quad (2)$$

In addition to the fundamental factors, this study extends the gravity model by incorporating IPRs and the impact of third countries.

2.2. The Impact of Intellectual Property Rights on Exports

IPR protection has a dual impact on exports through two main effects: the market power effect and the market expansion effect. According to the market power effect, stricter IPR protection in importing countries restricts imitation, creating a monopolistic advantage for the exporting country. This may lead exporting firms to reduce the quantity of goods to increase prices or shift their mode of supply to direct investment or licensing (Ferrantino, 1993; Zigić, 2000). Conversely, the market expansion effect suggests that IPR protection reduces counterfeit production, thereby increasing the demand for imports from the innovating country, particularly when imitation costs exceed import costs (Ivus, 2011; Mondal & Gupta, 2006). The actual impact of IPR protection depends on factors such as the level of economic development, imitation capacity, and the characteristics of goods. The market power effect tends to dominate in importing countries with low imitation capacity, while the market expansion effect is more prevalent in countries with high imitation capacity or for low-technology products (Fan et al., 2013; Smith, 1999). Accordingly, Equation 2 will be logarithmized and extended with the IPR variable as follows.

$$lnExport_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \beta_3 lnDIST_{ij} + \beta_4 IPR_{j,t} + \varepsilon_{ij,t} \quad (3)$$

2.3. The Impact of Third Countries

The impact of third countries on the relationship between IPR protection and exports depends on the competitiveness and characteristics of goods. The presence of a third country (another trading partner of the importing country j (w)) that supplies similar products reduces the monopoly advantage of the innovating country, providing additional choices for the importer. In this case, if the initial exporting country reduces the quantity of goods to increase prices, the importer may shift to sourcing from the third country, thereby diminishing the monopoly advantage of the innovating country (Klotz, Kniahin, & Jansen, 2016; Zigić, 2000). Based on this argument, we develop Equation 4 by extending Equation 3 as follows.

$$lnExport_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \beta_3 lnDIST_{ij} + \beta_4 lnIPR_{j,t} + \beta_5 (lnIPR_{j,t} * ES_{(iw,j)t}) + \varepsilon_{ij,t} \quad (4)$$

In which, $ES_{(iw,j)t}$ represents the export similarity between country i and third countries w to the market of country j at time t. This similarity is calculated based on the study by Doanh et al. (2022) as follows.

$$ES_{(iw,j),t} = \sum_{j=1} min\left(\frac{EX_{kij,t}}{EX_{ij,t}}, \frac{EX_{kwj,t}}{EX_{wj,t}}\right) \times 100 \quad (5)$$

Where:

$EX_{kij,t}$ is the k^{th}-product exported by country i to country j at time t.

$EX_{kwj,t}$ is the k^{th}-product exported by the third country w to country j at time t.

$EX_{ij,t}$ and $EX_{wj,t}$ are the total exports of country i and the total exports of the third country to country j at time t, respectively.

According to Doanh et al. (2022), the impact of third countries on the relationship between IPRs and exports varies depending on the type of goods. For intellectual or technology-intensive goods, which are often characterized by complexity and reliance on specialized technological know-how, third countries often face difficulties in producing fully equivalent substitute products. The exporting country can maintain its monopoly advantage even if the importing country strengthens its intellectual property (IP) protection. In contrast, for low-tech or easily copied goods, third countries are fully capable of producing similar products with competitive quality and price. In these

cases, strengthening IP protection in the importing market can create a market expansion effect, as importers increase their purchases from both the innovator country and the third country. The degree of product similarity between the exporting country and the third country plays a key role in this mechanism. When the goods from these two sources are highly similar, the competitive advantage of the exporting country will decline, thereby strongly promoting the market expansion effect. Conversely, if the degree of similarity is low, the exporting country will still maintain its competitive advantage, and IP protection will easily trigger the market power effect. To verify this hypothesis, the study uses Equation 2 to analyze the impact of factors on exports in different commodity groups, including: basic goods (lnExport_P), resource-intensive goods (lnExport_NR), unskilled labor-intensive goods (lnExport_UL), technology-intensive goods (lnExport_TI), and human capital-intensive goods (lnExport_HC).

$$lnExport_{P}{}_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \beta_3 lnDIST_{ij} + \beta_4 lnIPR_{j,t} + \beta_5\left(lnIPR_{j,t} * ES_{(iw,j)t}\right) + \varepsilon_{ij,t} \quad (6)$$

$$lnExport_{N}R_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \beta_3 lnDIST_{ij} + \beta_4 lnIPR_{j,t} + \beta_5\left(lnIPR_{j,t} * ES\_NR_{(iw,j)t}\right) + \varepsilon_{ij,t} \quad (7)$$

$$lnExport_{U}L_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \beta_3 lnDIST_{ij} + \beta_4 lnIPR_{j,t} + \beta_5\left(lnIPR_{j,t} * ES\_UL_{(iw,j)t}\right) + \varepsilon_{ij,t} \quad (8)$$

$$lnExport_{T}I_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \beta_3 lnDIST_{ij} + \beta_4 lnIPR_{j,t} + \beta_5\left(lnIPR_{j,t} * ES\_TI_{(iw,j)t}\right) + \varepsilon_{ij,t} \quad (9)$$

$$lnExport_{H}C_{ij,t} = \beta_0 + \alpha_1 lnExport_{ij,t-1} + \beta_1 lnGDP_{i,t} + \beta_2 GDP_{j,t} + \beta_3 lnDIST_{ij} + \beta_4 lnIPR_{j,t} + \beta_5\left(lnIPR_{j,t} * ES\_HC_{(iw,j)t}\right) + \varepsilon_{ij,t} \quad (10)$$

3. METHODOLOGY

3.1. Method of Estimation

In this study, GDP is used as a measure of economic size. However, it may be correlated with the error term due to endogeneity issues. This endogeneity can stem from reverse causality, where the dependent variable influences GDP, or from unobserved factors that simultaneously affect both GDP and the dependent variable. To address this challenge, the study employs the system Generalized Method of Moments (sys-GMM) estimator. The sys-GMM approach is chosen for its effectiveness, particularly in cases where the dataset consists of short time series and explanatory variables that behave similarly to random walks. By leveraging lagged values of GDP and other instrumental variables from both the level equation and the differenced equation, sys-GMM mitigates the correlation between GDP and the error term, ultimately enhancing estimation efficiency (Blundell & Bond, 1998).

To validate the instruments, this study employs the Hansen test to examine the null hypothesis of no correlation between the instruments and the error term. Additionally, the AR(2) test is used to detect second-order autocorrelation in the residuals. The system-GMM approach effectively addresses endogeneity concerns, ensuring consistent and reliable estimations.

3.2. Data

The dataset covers 104 countries from 2006 to 2017. Export data, including total volume and commodity group breakdowns, were obtained from WITS. GDP figures were sourced from the IMF, while geographic distances came from the CEPII database. The IPR index was retrieved from the WEF. Export similarity indices were calculated using WITS data based on the 5-digit SITC rev.3 classification.

4. EMPIRICAL RESULTS

The results of the Levin-Lin-Chu (LLC) unit root test indicate that all variables in the model are stationary, as their P-values are less than 0.01, rejecting the null hypothesis of the presence of a unit root. This confirms that the variables do not exhibit trends over time, making them suitable for use in econometric analyses such as the GMM

method. The stationarity of the variables eliminates the risk of spurious relationships and ensures the stability and reliability of the estimations in the study.

Table 1. The result of Levin-Lin-Chu unit-root test.

Variables	Unadjusted-t	Adjusted-t	P-value[1]
$lnExport_{ij,t}$	-29.561	-16.517	0.000
$lnExport\_P_{ij,t}$	-33.780	-20.144	0.000
$lnExport\_NR_{ij,t}$	-28.812	-14.365	0.000
$lnExport\_UL_{ij,t}$	-28.334	-15.267	0.000
$lnExport\_TI_{ij,t}$	-30.084	-16.516	0.000
$lnExport\_HC_{ij,t}$	-32.916	-17.958	0.000
$lnGDP_{i,t}$	-26.949	-24.843	0.000
$lnGDP_{j,t}$	-34.782	-28.180	0.000
$TF_{j,t}$	-68.614	-46.727	0.000
$IPR_{j,t}$	-28.385	-10.036	0.000
$ES_{(iw,j),t}$	-26.810	-9.265	0.000
$ES\_P_{(iw,j),t}$	-33.116	-17.659	0.000
$ES\_NR_{(iw,j),t}$	-37.473	-18.745	0.000
$ES\_UL_{(iw,j),t}$	-32.861	-15.529	0.000
$ES\_TI_{(iw,j),t}$	-30.105	-11.166	0.000
$ES\_HC_{(iw,j),t}$	-31.754	-15.726	0.000

Source: Empirical results.

Table 1 presents the results of the Levin-Lin-Chu unit root test. The null hypothesis of a unit root is rejected for all variables at the 1% significance level, indicating that the series are stationary. These results confirm that the dataset is suitable for subsequent panel regression analysis.

4.1. The Impact of IPR on Exports from Northeast Asian Countries

This study examines how various factors influence exports from Northeast Asian (NEA) countries using the system Generalized Method of Moments (sys-GMM) model. Variables were added to the model in stages to assess their robustness and clarify their individual contributions. The findings indicate that the estimated coefficients remain stable across different models, with both their signs and statistical significance showing consistency. Furthermore, the results of the Sargan test and $AR(2)$ test to confirm that the models are well-specified and reliable, with appropriate instrumental variables and no signs of second-order autocorrelation in the residuals.

The coefficient of the lagged dependent variable $(lnExport_{ij,t-1})$ is positive and statistically significant in all four models. This result is in line with the findings of Freund and Pierola (2008), who argue that current export levels are significantly influenced by past exports due to the sustainability and cyclical nature of international trade. Additionally, both the GDP of the exporting country $(lnGDP_{i,t})$ and the GDP of the importing country $(lnGDP_{j,t})$ exhibit positive and highly significant coefficients across all four models. These findings are consistent with the studies of Anderson and van Wincoop (2004) and Chen and Novy (2011), which highlight GDP as a key indicator of a country's economic scale and its positive impact on production capacity and import demand.

Geographical distance ($lnDIST_{ij}$) has a negative and statistically significant coefficient across all models, ranging from -0.647 (Model 1) to -0.457 (Model 4). This result corroborates the conclusions of Tinbergen (1962) and Disdier and Head (2008), who identify geographical distance as a significant trade barrier that increases transportation costs and reduces bilateral trade value. Similarly, the coefficient for landlocked status ($Landlock_j$) is negative and statistically significant, ranging from -0.354 (Model 2) to -0.235 (Model 4). This finding aligns with Carrère (2006), who argues that landlocked countries face substantial export limitations due to inadequate logistics infrastructure and higher transportation costs.

[1] The p-value of Adjusted-t.

Table 2. Impact of IPRs protection on NEA countries' exports.

Variables		Model 1	Model 2	Model 3	Model 4
$lnExport_{ij,t-1}$		0.370* (0.150)	0.415** (0.127)	0.537** (0.105)	0.562** (0.099)
$lnGDP_{i,t}$		0.488** (0.116)	0.478** (0.100)	0.380** (0.083)	0.360** (0.078)
$lnGDP_{j,t}$		0.649** (0.158)	0.576** (0.126)	0.453** (0.104)	0.415** (0.094)
$lnDIST_{ij}$		-0.647** (0.148)	-0.639** (0.135)	-0.485** (0.107)	-0.457** (0.099)
$Landlock_j$			-0.354** (0.082)	-0.245** (0.061)	-0.235** (0.059)
$TF_{j,t}$				0.0120** (0.003)	0.007** (0.002)
$IPR_{j,t}$					0.074** (0.023)
Constant		7.002** (1.597)	6.853** (1.476)	4.287** (0.952)	4.145** (0.919)
No of obs.		3432	3432	3432	3432
Sargan	Chi (2)	1.37	0.43	0.44	0.36
	Prob > chi2	0.242	0.512	0.508	0.546
AR(2)	Z	0.84	1.17	1.72	1.69
	Pr > z	0.400	0.243	0.086	0.092

Note: Standard errors in parentheses.
* significant at the 0.05 level; ** significant at the 0.01 level.
Source: Empirical results.

Table 2 presents the estimated results from Models 3 and 4, showing that trade freedom (TF_{jt}) has a positive and statistically significant impact on exports, with a coefficient of 0.0120 in Model 3 and 0.0070 in Model 4. This result is consistent with Cebula, Clark, and Mixon (2016), who argue that trade liberalization policies in importing countries encourage firms to expand exports and increase international trade flows.

Notably, the estimated coefficient of IPR_{jt} has a positive coefficient (0.074) and is statistically significant at the 1% level. This result confirms the market expansion effect in driving NEA exports, consistent with the findings of Sweet and Eterovic Maggio (2015) and Yang and Huang (2009). They emphasized that IPR protection reduces the risk of product imitation, fosters a fair competitive environment, and encourages exporting countries to trade more with markets that have stronger IPR protection. Accordingly, the results indicate that a 1% increase in IPR protection leads to a 0.074% increase in NEA exports, highlighting the positive role of transparent trade policies.

Table 3 presents the effects of IPR protection on exports of different commodity groups from NEA countries, revealing the interplay between the market expansion effect and the market power effect. For primary products, natural resource-intensive goods, and unskilled labor-intensive goods, IPR protection in importing countries aligns with the market expansion effect by discouraging counterfeit production and promoting a transparent trade environment. The coefficients of 0.148, 0.130, and 0.138, respectively, highlight the positive impact of IPR on exports of easily replicable products such as textiles and footwear.

Conversely, technology-intensive goods and human capital-intensive goods are influenced by the market power effect, with IPR coefficients of -0.0578 and -0.060, which are not statistically significant. These results suggest that when IPR protection limits imitation, exporting countries leverage monopolistic advantages, restricting the export of goods requiring advanced technology and skilled labor. However, the dominance of this effect remains unclear.

Table 3. Impacts of IPRs protection on NEA countries' exports by commodity groups.

Variables		Total export	Primary products	Natural-resource intensive products	Unskilled-labor intensive products	Technology intensive products	Human-capital intensive products
$lnExport_{ij,t-1}$		0.562** (0.099)					
$lnExport\_P_{ij,t-1}$			0.299** (0.103)				
$lnExport\_NR_{ij,t-1}$				0.641** (0.096)			
$lnExport\_UL_{ij,t-1}$					0.555** (0.137)		
$lnExport\_TI_{ij,t-1}$						0.726** (0.054)	
$lnExport\_HC_{ij,t-1}$							0.664** (0.038)
$lnGDP_{i,t}$		0.360** (0.078)	0.430** (0.088)	0.314** (0.102)	0.365** (0.118)	0.159** (0.043)	0.247** (0.032)
$lnGDP_{j,t}$		0.415** (0.094)	0.815** (0.132)	0.358* (0.141)	0.408** (0.129)	0.304** (0.064)	0.339** (0.042)
$lnDIST_{ij}$		-0.457** (0.099)	-1.221** (0.239)	-0.737** (0.212)	-0.855** (0.263)	-0.342** (0.084)	-0.242** (0.047)
$Landlock_j$		-0.235** (0.059)	-0.931** (0.234)	-0.488** (0.169)	-0.569** (0.193)	-0.0709 (0.078)	-0.244** (0.059)
$TF_{j,t}$		0.007** (0.002)	0.006 (0.006)	0.006 (0.006)	0.008** (0.003)	0.0107* (0.004)	0.00975** (0.003)
$IPR_{j,t}$		0.074** (0.023)	0.148* (0.059)	0.130* (0.062)	0.138* (0.055)	-0.0578 (0.031)	-0.0600 (0.039)
Constant		4.145** (0.919)	9.026** (2.122)	4.447** (1.445)	6.232** (1.955)	3.024** (0.723)	2.066** (0.499)
No of obs.		3432	3432	3432	3432	3432	3432
Sargan	Chi (2)	0.36	0.36	2.51	17.12	16.82	8.32
	Prob > chi2	0.546	0.551	0.113	0.194	0.052	0.079
AR(2)	Z	1.69	1.80	-0.33	1.92	1.33	1.26
	Pr > z	0.092	0.072	0.740	0.055	0.185	0.209

Note: Standard errors in parentheses.
* significant at the 0.05 level; ** significant at the 0.01 level.
Source: Empirical results.

4.2. The Impact of Third Countries on the Influence of IPR on Exports from Northeast Asian Countries

The presence of third countries significantly affects the relationship between IPR and exports, particularly through the level of export similarity between the third country and the main exporting country. When the third country supplies similar products to those of the main exporting country, the monopolistic advantage of the innovating country may be reduced, altering how IPR protection impacts exports.

Table 4 demonstrates that the impact of third countries on the relationship between IPR protection and exports varies notably across commodity groups. For easily replicable goods—such as primary products, natural resource-intensive goods, and unskilled labor-intensive goods—third-country competition amplifies the market expansion effect. This occurs because importing countries increase imports from both the innovating country and third countries. The interaction coefficients for these goods are 0.986, 0.955, and 0.617, all statistically significant at the 1% level, indicating high substitutability and sensitivity to third-country presence.

In contrast, the interaction effects for technology-intensive and human capital-intensive goods are much lower (0.182 and 0.196), suggesting that the presence of third countries may weaken the influence of IPR protection on exports. This can be attributed to technological diffusion, which enables third countries to acquire advanced production capabilities and compete more effectively. As a result, even products requiring skilled labor and expertise

face increased competition. This trend challenges the traditional export advantages of NEA countries in advanced sectors.

Table 4. The effects of third- country on the relationship between IPRs and export.

Variables		Total export	Primary products	Natural-resource intensive products	Unskilled-labor intensive products	Technology intensive products	Human-capital intensive products
$lnExport_{ij,t-1}$		0.450** (0.151)					
$lnExport\_P_{ij,t-1}$			0.292** (0.111)				
$lnExport\_NR_{ij,t-1}$				0.584** (0.118)			
$lnExport\_UL_{ij,t-1}$					0.516* (0.201)		
$lnExport\_TI_{ij,t-1}$						0.589** (0.076)	
$lnExport\_HC_{ij,t-1}$							0.733** (0.039)
$lnGDP_{i,t}$		0.340** (0.086)	0.353** (0.094)	0.239** (0.089)	0.222* (0.094)	0.316** (0.061)	0.164** (0.029)
$lnGDP_{j,t}$		0.442** (0.121)	0.748** (0.146)	0.407** (0.125)	0.404* (0.169)	0.428** (0.083)	0.226** (0.036)
$lnDIST_{ij}$		-0.434** (0.111)	-1.064** (0.243)	-0.656** (0.204)	-0.621* (0.248)	-0.450** (0.097)	-0.170** (0.046)
$Landlock_j$		-0.223** (0.067)	-0.857** (0.253)	-0.328* (0.147)	-0.434* (0.191)	-0.128 (0.090)	-0.223** (0.064)
$TF_{j,t}$		0.005** (0.002)	0.013 (0.013)	0.007 (0.004)	0.006* (0.003)	0.007* (0.003)	0.004* (0.002)
$IPR_{j,t} \times ES_{(iw,j),t}$		0.622** (0.189)					
$IPR_{j,t} \times ES\_P_{(iw,j),t}$			0.986* (0.456)				
$IPR_{j,t} \times ES\_NR_{(iw,j),t}$				0.955** (0.266)			
$IPR_{j,t} \times ES\_UL_{(iw,j),t}$					0.617* (0.301)		
$IPR_{j,t} \times ES\_TI_{(iw,j),t}$						0.182* (0.090)	
$IPR_{j,t} \times ES\_HC_{(iw,j),t}$							0.196** (0.051)
Constant		5.389** (1.451)	8.230** (2.051)	4.370** (1.397)	5.874* (2.450)	3.571** (0.850)	1.817** (0.529)
No of obs.		3432	3432	3432	3432	3432	3432
Sargan	Chi (2)	4.86	0.67	2.88	3.14	0.95	6.37
	Prob > chi2	0.088	0.412	0.089	0.535	0.330	0.137
AR(2)	Z	1.58	1.77	-0.46	1.54	1.33	1.18
	Pr > z	0.115	0.076	0.642	0.123	0.184	0.240

Note: Standard errors in parentheses.
* significant at the 0.05 level; ** significant at the 0.01 level.
Source: Empirical results.

In summary, for easily replicable goods, importing countries tend to increase imports from both the innovating country and the third country, highlighting the market expansion effect driven by a rise in total import demand. Conversely, for highly proprietary products, particularly technology- or knowledge-intensive goods, third countries face challenges in direct competition, allowing the innovating country to maintain its monopolistic advantage and activate the market power effect. The level of export similarity between the third country and the innovating country

plays a crucial moderating role: high similarity fosters competition and market expansion, while low similarity preserves the monopolistic advantage of the innovating country.

5. CONCLUSION

The study clarified the impact of IPR and the presence of third countries on the exports of NEA countries during the period 2006–2017. The analysis confirms that IPR protection in importing countries has a positive effect on NEA exports, particularly through the market expansion effect. This impact is strongest for easily replicable goods, such as primary products, natural resource-intensive goods, and unskilled labor-intensive goods, as IPR protection reduces counterfeit production, fosters a transparent trade environment, and increases demand for legitimate imports.

The presence of third countries plays a crucial moderating role in the relationship between IPR and exports, with varying impacts across commodity groups. For easily replicable goods, third countries increase competition and strengthen the market expansion effect. For technology-intensive and human capital-intensive products, the presence of third countries alters the impact of IPR on exports. This emphasizes that the level of export similarity between the innovating country and the third country is a key determinant in shaping the effect of IPR on exports.

Based on the findings, the authors suggest that NEA countries should increase investment in research and development (R&D) to enhance the exclusivity of technology- and knowledge-intensive products, thereby leveraging the market power effect more effectively in markets with high levels of IPR protection. Additionally, improving logistics infrastructure, strengthening production capacity, and expanding trade liberalization policies in importing countries are crucial measures for NEA countries to maintain and enhance their position in international trade.

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