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The Peace Effects of Inter-Korean Trade and the Political-Economic Separation: Analysis of the Reciprocal Effects of Inter-Korean Relations and Inter-Korean Trade†

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This paper empirically examines the relationship between inter-Korean trade and inter-Korean relations over the past three decades. It asks two questions: (1) Does inter-Korean trade contribute to improved inter-Korean relations and peace on the Korean Peninsula? (2) Does improved inter-Korean relations lead to increased inter-Korean trade? The study employs a time-series causal relationship analysis methodology to answer these questions. The findings show that during the progressive government's reign, inter-Korean trade was not impacted by inter-Korean relations. This is due to the implementation of a political-economic separation policy towards North Korea. Moreover, the increase in general trade and processing on commission did enhance inter-Korean relations, reflecting the "inclusive policy" aimed at achieving peace on the Korean Peninsula through inter-Korean trade. In contrast, during the conservative government's reign, inter-Korean relations had a direct impact on inter-Korean trade, with deteriorating relations leading to a significant decrease in trade. This was due to the implementation of North Korea policies that were linked to politics and the economy.

Key Word: Inter-Korean Trade, Inter-Korean Relations, GDELT, Peace Effect, Political-Economic Separation
JEL Code: F51, P33

I. Introduction

In 1989, South Korea and North Korea established the initial trade relationship, which has since been followed by various trade and economic cooperation

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projects, resulting in a substantial increase in economic exchanges[1] between the two countries. However, inter-Korean trade came to a halt in 2016 due to the deterioration of inter-Korean relations caused by North Korea's military provocations, leading to a significant decrease in trade and the suspension of the Kaesong Industrial Complex following North Korea's nuclear test. As of 2023, the security situation surrounding the Korean Peninsula, including North Korea's missile provocations and the strategic competition between the United States and China, suggests that inter-Korean relations will be difficult to improve. Nevertheless, given the quickly changing atmosphere in the region after North Korea expressed its willingness to participate in the Pyeongchang Olympics in its 2018 New Year's address, there is still a possibility that inter-Korean relations could change rapidly. Therefore, it is imperative to consider past experiences before resuming inter-Korean economic exchanges in case inter-Korean relations improve again.

Upon reflecting on the past 30 years of inter-Korean trade, there have been divergent views concerning the matter. Progressive political groups endorse the "peace economy theory," which posits that increased economic exchanges between North and South Korea enhance inter-Korean relations, motivating North Korea to desist from provocations while improving its relations with South Korea by attaining economic benefits through trade. Therefore, regardless of North Korea's military provocations or political situations, proponents of the "separation of politics-economy" principle advocate for continuous inter-Korean economic cooperation. Conversely, there are those who argue that inter-Korean trade should be halted if the security situation on the Korean Peninsula deteriorates due to a North Korean nuclear test or ICBM launch. The May 24 measures and the suspension of the Kaesong Industrial Complex during the conservative Lee Myung-Bak and Park Geun-Hye governments, respectively, serve as examples of this stance. Those holding this position are apprehensive that foreign currency derived from workers' wages at the Kaesong Industrial Complex or inter-Korean trade may be diverted to North Korea's missile and nuclear development funds. Consequently, opposing views on inter-Korean economic cooperation and trade persist to this day.

Up to this point, discussions surrounding inter-Korean trade have been primarily reliant on anecdotal evidence and incomplete examples. In order to address this issue, it is necessary to conduct a rigorous and objective analysis of empirical data to verify the hypothesis of inter-Korean economic cooperation prior to resuming inter-Korean trade and economic cooperation. This article seeks to accomplish this by examining the prevailing attitudes towards inter-Korean trade through a comprehensive empirical analysis of inter-Korean relations and trade spanning the last 30 years. The study's research questions are summarized below.

Hypothesis 1. Peace Effect

Can inter-Korean trade be regarded as a factor contributing to the improvement of

[1]Economic exchange generally involves trade and investment between countries. The South Korean government uses the phrase "economic exchange and cooperation," where exchange refers to trade and cooperation refers to investment. In this paper, economic exchanges are limited to trade according to the definition of the South Korean government. Moreover, we limit our analysis to trade as there is no reliable data on investment between the two Koreas.

inter-Korean relations and, consequently, to the establishment of peace on the Korean Peninsula? Alternatively, can a positive correlation be established between the increase in economic exchanges (trade) between the two Koreas and the enhancement of inter-Korean relations?

Hypothesis 2. Political-economic separation

Did inter-Korean relations have an impact on inter-Korean trade? Alternatively, has the continuity of inter-Korean trade been unaffected by inter-Korean relations? Alternatively, did a decline or contraction of inter-Korean trade occur in the event of any deterioration in inter-Korean relations?

The first hypothesis postulates the influence of inter-Korean trade on the state of inter-Korean relations, while the second hypothesis examines the effects of inter-Korean relations on inter-Korean trade. This study assumes that there exists a reciprocal relationship between inter-Korean trade and inter-Korean relations. To examine the qualitative perceptions or conditions of inter-Korean relations empirically, it is necessary to quantify these factors. Therefore, this study objectively quantified inter-Korean relations using internationally recognized standards for assessing relationships between countries. Additionally, inter-Korean trade was segmented into commercial and non-commercial types of trade, and the interplay between inter-Korean relations and inter-Korean trade was analyzed while accounting for differences in trade characteristics.

This study differs from prior studies in its approach to quantifying the qualitative characteristics of inter-Korean relations. Unlike previous research, which relied on hand-categorized and digitized event data from daily newspapers, this study utilizes a new dataset consisting of Google's search engine data to index recent inter-Korean relations. This provides a more comprehensive and objective analysis, as the data instances are accumulated through machine learning with minimal human intervention. Furthermore, this study addresses the limitation of prior research, which was primarily limited to the mid-2000s and lacked an analysis of later periods. By using Google's search engine data, this study offers a more comprehensive and up-to-date examination of inter-Korean relations.

In addition, prior research has analyzed inter-Korean trade by categorizing it broadly, positing total trade, commercial trade, and non-commercial trade categories, among others. However, this study went a step further and delved deeper into the analysis by dividing inter-Korean trade into more refined categories, including division and group levels, to determine if there were any differences or similarities in the effects on inter-Korean relations for each type of trade.

This study is organized as follows. In Chapter II, we conduct a review of existing studies on the topic, including those that analyze inter-Korean trade and its effects on inter-Korean relations. In Chapter III, the data to be used in this study is introduced. This includes a brief review of existing data on international events as well as the introduction of new data that will be used to measure inter-Korean relations. The section also provides a brief overview of inter-Korean trade data. Chapter IV presents the methodology and results of the time-series analysis, which will interpret the relationship between inter-Korean trade and inter-Korean relations,

including differences that take into account the period of the Korean government's administration and the nature of trade. Finally, Chapter V summarizes the key findings and conclusions and provides corresponding implications.

II. Literature Review

The esteemed German philosopher Immanuel Kant posited that promoting economic exchanges between nations is a crucial step in securing "eternal peace." He believed that countries that are economically interdependent will work to resolve disputes in order to safeguard their mutual interests. This debate on the relationship between trade, disputes and cooperation between nations continues to be a significant matter of discussion in international relations even today. Political and economic theorists including David Ricardo, Vladimir Lenin, John Maynard Keynes and Albert O. Hirschman have all explored the correlations between trade and political variables. Correlations between trade and political variables were initially explored in an empirical manner by Polachek (1978), and since then, a multitude of related studies have been conducted.

The relationship between trade and conflict between nations is reciprocal. Both trade and national relations impact each other. It is widely accepted that positive national relations lead to increased trade and investment. In addition, disputes between nations result in a decline of economic exchanges. This has been substantiated by numerous studies. However, the impact of trade on peace and conflicts between nations is still being debated. Proponents of liberalism contend that mutual economic dependence through trade and investment fosters incentives for conflict reduction and peace preservation, thereby improving national relations.[2] Conversely, some studies suggest that despite increased economic ties, national relations may deteriorate if economic dependence becomes too severe.[3] Hence, the relationship between trade and national relations is complex and influenced by various variables depending on the specific context and country characteristics.

Lee (2006) conducted a pioneering empirical analysis to investigate the relationship between inter-Korean trade and inter-Korean relations. The study aimed to test the "peace economic theory," which suggests that economic benefits from inter-Korean trade could ease tensions and strengthen peace between the two Koreas. It utilized the Korea Peace Index (KOPI), jointly developed by Hanyang University and JoongAng Ilbo, as a measure of inter-Korean relations and found it challenging to arrive at a definitive conclusion pertaining to the causal relationship between inter-Korean trade and peace on the Korean Peninsula. The analysis indicated that prior to October of 2002, North Korea's trade surplus had a significant impact on inter-Korean relations, but this relationship weakened following the second North Korean nuclear crisis during that month.

Lee (2010) expanded his research with the aim of reaffirming his hypothesis that inter-Korean economic cooperation positively impacts inter-Korean relations. To quantify these relations, the study utilized both the Korea Peace Index and Harvard

[2]Hegre, Oneal, and Russett (2010), Oneal and Russett (1997), Reuveny and Kang (1996).
[3]Barbieri (1996), Gasiorowski (1986), Martin, Mayer, and Thoenig (2008).

University's 1990-2004 international relations event data.[4] The study period from January of 1998 to December of 2004, a slightly wider range compared to the previous study. This study analyzed the impact of trade among North Korea, China, Japan, and the U.S. on North Korea's external behavior. The results showed that only trade with the U.S. had a significant impact on North Korea's behavior, while trade with other countries did not. Based on these findings, Lee (2010) suggested that trade with the U.S. may be perceived as a political and diplomatic signal, affecting North Korea's external behavior. Ultimately, Lee (2006) and Lee (2010) suggested that inter-Korean trade has no significant impact on inter-Korean relations, North Korean actions, or peace on the Korean Peninsula.

Ju and Kim (2006) conducted a comprehensive study to assess the evolution of inter-Korean relations from 1989 to 2005. The study took into account several key factors while dividing commercial transactions into those related to general trade, processing on commission, Mt. Geumgang tourism, and the Kaesong Industrial Complex. The researchers relied on data from the Chosun Ilbo and Yonhap News Agency, as well as the Ministry of Unification, to compute an index of inter-Korean relations, by carefully observing and recording instances of cooperation and disputes between the two Koreas. The results showed that inter-Korean relations improved with an increase in general trade, whereas trade in the form of commission processing had no significant impact on inter-Korean relations.

Kim and Lee (2013) conducted an analysis of inter-Korean trade and conflict relations spanning the period from January of 2000 to December of 2012. The data for the disputes was collected independently, utilizing the COPDAB (Conflict and Peace Data Bank) methodology. This study not only analyzed inter-Korean trade but also its impact on inter-Korean relations by considering North Korea-China trade and South Korea-China trade as relevant variables. The results of the analysis confirmed the relationship between inter-Korean trade and inter-Korean conflict and further validated the liberal theory of peace through trade in the context of inter-Korean relations.

Previous studies of inter-Korean relations and trade are limited as they only examine data up to the early 2010s. Since then, there have been significant changes in the relationship between North Korea and South Korea. The 5.24 measures in 2010 caused a complete cutoff of inter-Korean exchanges, excluding the Kaesong Industrial Complex. The suspension of inter-Korean trade in 2016, excluding humanitarian aid, was a result of North Korea's nuclear test and the subsequent closure of the Kaesong Industrial Complex. North Korea's continued nuclear tests and missile launches have internationalized the Korean Peninsula and led to a significant decrease in non-commercial transactions due to UN Security Council sanctions. To ensure accurate analysis methods and data, it is necessary to expand the analysis period and conduct a comprehensive analysis of inter-Korean relations and trade. This study aims to fulfill this need by presenting an extended examination of inter-Korean relations and trade.

[4]https://dataverse.harvard.edu/dataset.xhtml?persistentId=hdl:1902.1/FYXLAWZRIA

III. Data

A. *Inter-Korean Relations*

Event data techniques are widely employed to quantify interactions, such as cooperation and conflict, between countries. This approach involves observing events that take place between countries and converting them into numerical data using standardized methods. Event data encompasses the date of occurrence, the country responsible for the action (actor), the country that is the target of the event, and the event itself. The development of event data techniques took place during the Cold War period and was designed to examine the issues of conflict and cooperation between the United States and the Soviet Union scientifically. Notable studies that pioneered the use of event data techniques include Azar's Conflict and Peace Data Bank (COPDAB), McClelland's World Event/Interaction Survey (WEIS) project, and CAMEO (Conflict and Mediation Event Observations).

The ongoing efforts to collate events between countries as data have resulted in the availability of a representative database called GDELT (Global Database of Events, Language and Tone). This study utilizes GDELT, which is supported by the National Science Foundation (NSF). The database provides a substantial amount of information through its webpage,[5] facilitated by the use of software known as Textual Analysis by Augmented Replacement Instructions (TABARI). This software automatically converts text from news media sources into data.

This study utilizes the GDELT 1.0 Event Database,[6] a comprehensive resource that provides information on the origin and target countries, the behavior (classified according to the Goldstein Scale), and the location of events dating back to 1979 and up to the present day. The data is sourced from media articles collected by Google, in over 100 languages, and it reflects the tone of each article. The tone is determined through a numerical value that distinguishes the positive or negative nature of the actions between countries portrayed in the article. A positive score of an article is calculated using the proportion of words with positive emotional connotations, while a negative score is the proportion of words with a negative emotional meaning. These values are then combined to form an emotional index (AvgTone). Inter-country behaviors are classified based on the CAMEO code system, which modifies the Goldstein Scale system used in WEIS.

The GDELT dataset offers insights into the actions and behavior of countries, enabling the differentiation of South Korea's stance towards North Korea and vice versa. With the use of Google's data and cutting-edge technology, the world's largest database is constructed with a strong emphasis on objectivity as the information is generated through computer algorithms, minimizing human interference. This comprehensive dataset dates back to 1979 and continues to be updated daily, making it a valuable resource for time-series analysis and historical trends.

GDELT event data has been widely utilized in various fields and disciplines. Yuan

[5]https://www.gdeltproject.org/.

[6]Additionally, the GDELT 2.0 Event Database has been continuously updated every quarter hour since February 18, 2015. However, for the purpose of this study, which focuses on the variables of inter-Korean relations prior to 2015, the GDELT 1.0 Event Database will be utilized.

et al. (2020) leveraged this data to examine the interplay between cooperation and conflict among the United States, Russia, and China. Similarly, Voukelatou *et al*. (2020) utilized GDELT data to compute peace indices for individual countries. Furthermore, Alamro *et al*. (2019) employed this data to forecast the stock market index of Saudi Arabia, while Consoli *et al*. (2020) conducted an analysis of the Italian government bond market utilizing GDELT data. These examples demonstrate the versatility of GDELT data, which has found applications not only in the realm of international politics but also in economic and financial research.

Recently, South Korean researchers have been exploring the use of data to analyze inter-Korean and international relations. Park (2021) conducted an analysis of Korea-Japan trade disputes and Korea-China trade conflicts using GDELT. Son (2020) also used GDELT to examine changes in Korea-Japan relations over the course of 20 years and reported that the data effectively reflected these changes. Lee (2022) leveraged GDELT to analyze the impact of U.S.-China conflicts on Korea-China relations. Yi and Lim (2021) further analyzed the interplay between cooperation and conflict between South and North Korea using GDELT.

In this study, we examine the inter-Korean relationship as depicted through GDELT data. The time series covered in this analysis ranges from January of 1990 to December of 2021 and the daily GDELT data was consolidated on a monthly basis. GDELT data features two key indicators of the relationship between the two countries: the Goldstein Scale, which quantifies the level of cooperation and conflict, and the average tone (AvgTone) of media articles about events. The Goldstein Scale, which classifies events based on long-term academic and systematic standards, is utilized to express the value of inter-Korean relations in this study. On the other hand, the AvgTone index reflects the tone of the news coverage rather than the actual inter-Korean relationship, as it represents the positive or negative view of each article being analyzed.[7]

The Goldstein Scale is utilized to measure the nature of relationships between two entities, with negative values indicating a conflictual relationship and positive values indicating a cooperative one. In this research, the level of inter-Korean relations was calculated by taking the average of the Goldstein Scale values of events that took place during a given month. This average value represents the overall level of cooperation or conflict between North and South Korea, considering both nations' interactions with each other.

The trend of inter-Korean relations index is depicted in Figure 1, displaying crucial events that took place during each presidential term and their impacts on inter-Korean relations. It is evident that inter-Korean relations experienced a steep decline in response to major North Korean provocations and inter-Korean conflicts such as the missile launches, nuclear tests, and the sinking of the ROKS Cheonan. Conversely, inter-Korean relations experienced a significant surge when inter-Korean dialogue or cooperation was initiated. Therefore, the inter-Korean relations index presented in this paper aligns with the commonly accepted view of inter-Korean relations.

After examining the general perception, we will delve into the accuracy of the

[7]Park (2021) and Lee (2022) conducted research on the average tone of inter-country relationships, focusing on variables that can gauge the emotional reactions of individuals to specific events.

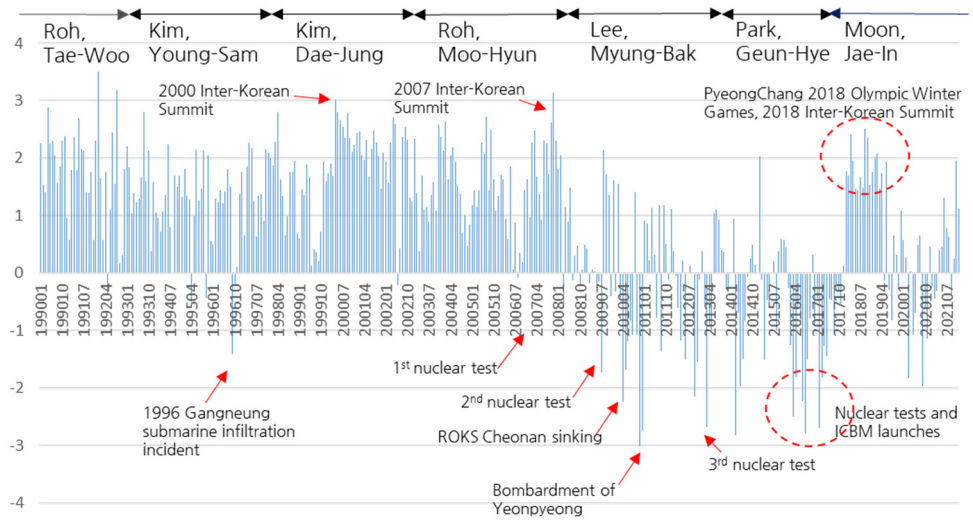

FIGURE 1. INDEX OF THE TREND OF INTER-KOREAN RELATIONS BY GDELT

inter-Korean relations figures estimated by GDELT by comparing them with indices that quantify the state of inter-Korean relations. The first index to be analyzed is the Korea Peace Index (KOPI) developed by the Asia-Pacific Research Center at Hanyang University and JoongAng Ilbo, using the COPDAB method. This index was created using the manual classification of inter-Korean relations events reported in Korean media articles, including Yonhap news. As shown in Figure 2, the trends of the Korean Peace Index (KOPI) and the inter-Korean relations index estimated by GDELT appear to be following a similar direction. In fact, a high correlation of 0.72 was discovered between the two indices.

The second index of inter-Korean relations is the Index of Geopolitical Risk from North Korea, developed by Jung *et al*. (2021). This index is a compilation of crucial events in inter-Korean relations, including military tensions, sanctions, inter-Korean dialogue and agreements, and economic cooperation, sourced from prominent

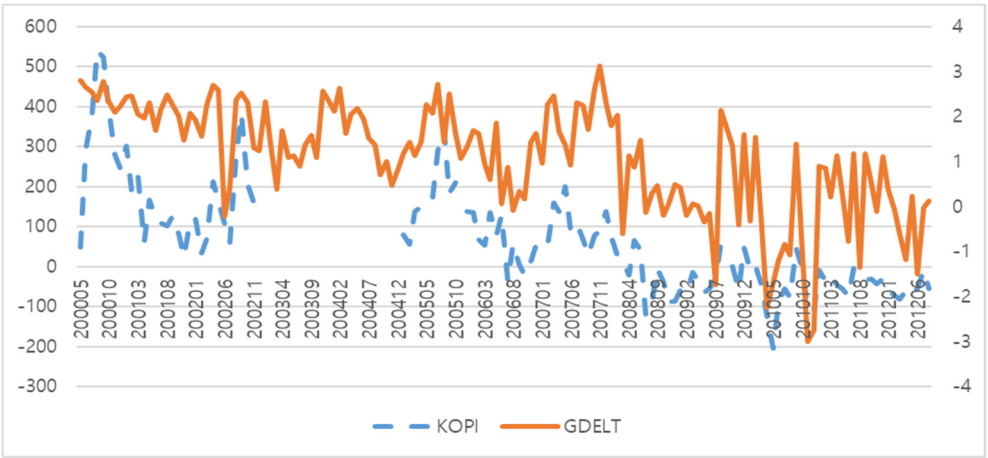

FIGURE 2. INTER-KOREAN RELATIONS ESTIMATED BY KOPI AND GDELT

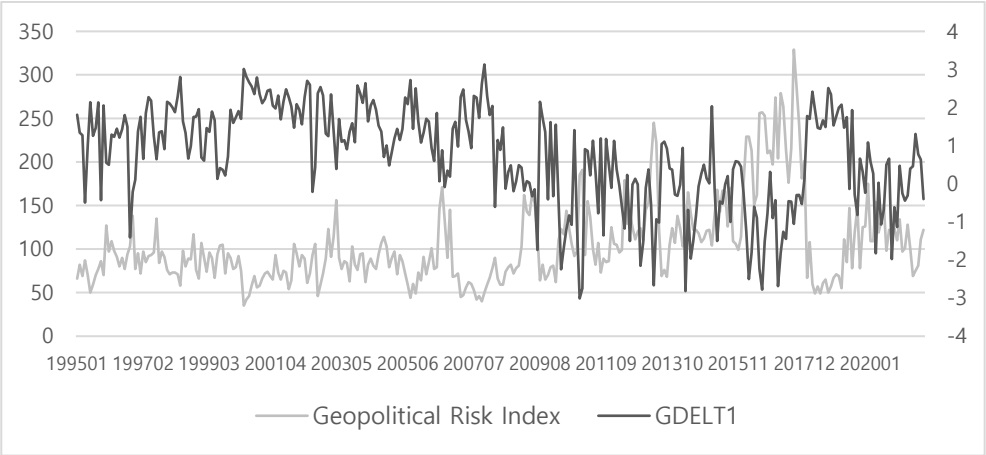

FIGURE 3. GEOPOLITICAL RISK INDEX AND GDELT

Korean media outlets. The data is quantified and covers a time frame of January of 1995 to September of 2021, with data compiled monthly. The trends of the geopolitical risk index and the GDELT inter-Korean relations index are depicted in Figure 3. An inverse relationship between the two indices can be seen, with the higher value of the geopolitical risk index indicating a higher level of risk or uncertainty in inter-Korean relations. The two indices appear as mirror images, and the correlation coefficient of -0.73 suggests a strong inverse relationship between the two. Consequently, the inter-Korean relations index, as depicted in GDELT, was discovered to be in consonance with the inter-Korean relations computed in prior studies as well as with general perceptions.

B. *Inter-Korean Trade*

The data on economic exchanges between South and North Korea was sourced from Inter-Korean trade data. The Inter-Korean Exchange and Cooperation System[8] offers access to Inter-Korean trade statistics, which can be downloaded for usage. The Inter-Korean trade information is updated on a monthly basis and can be sorted according to as many as ten units of HS code, providing a comprehensive classification of products. Additionally, Inter-Korean trade is differentiated between commercial and non-commercial transactions, as further outlined in Table 1.

To gain a comprehensive understanding of the impact of inter-Korean relations on inter-Korean trade, it is crucial to analyze the diversity of transactions by categorizing them based on the type and direction of flow. To achieve this, we need to delve into the intricacies of classifying inter-Korean trade and distinguish between imports and exports.

Figure 4 illustrates the annual scope of inter-Korean trade, which has been segregated into non-commercial and commercial transactions. Over a period of 33 years, from 1989 to 2021, the total inter-Korean trade volume amounted to $24.86 billion, with commercial transactions accounting for 88.9% ($22.1 billion) and non-

[8]https://www.tongtong.go.kr/unikoreaWeb/ui/pblc/guidance/dta/PGDDTDtaBbsNrstkrTradeStatsGuidance.do

TABLE 1—INTER-KOREAN TRADE CLASSIFICATION BY TYPE

Section	Division	Group
Commercial transactions	Trade	General trade
		Processing on commission
	Economic cooperation projects	Kaesong Industrial Complex
		Mt. Geumgang Tourism
		Other economic cooperation projects
	Light industry projects	Light industry projects
	Cooperation projects before 2004	Cooperation projects before 2004
Non-commercial transactions	Assistance to North Korea	Privately funded
		Government-funded
		Assistance to North Korea before 2004
	Socio-cultural projects	Socio-cultural projects
	Light water reactor projects	Light water reactor construction
		KEDO heavy oil
	Energy assistance	Energy assistance

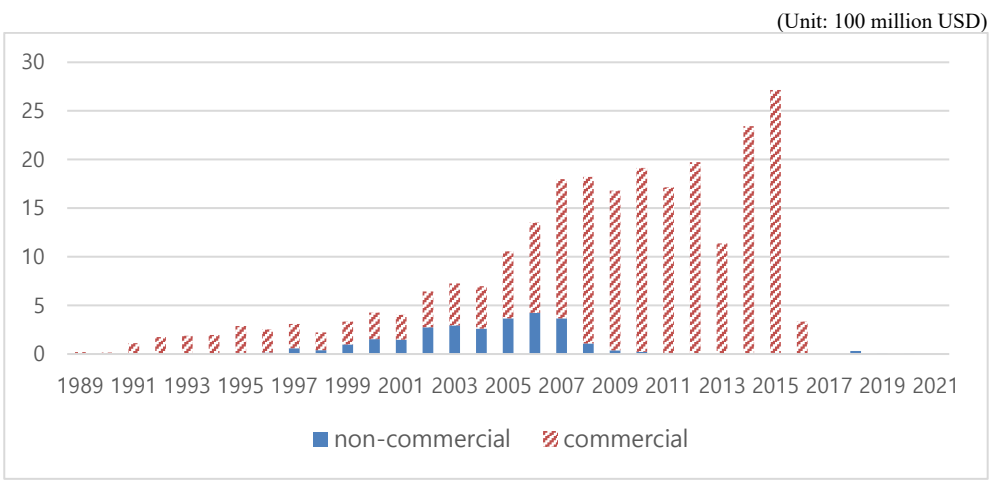

FIGURE 4. INTER-KOREAN TRADE: NON-COMMERCIAL AND COMMERCIAL TRANSACTIONS

commercial transactions constituting 11.1% ($2.76 billion). The initiation of commercial transactions took place in 1989 and ceased in 2016, while non-commercial transactions commenced in 1995 and continued until 2021. The suspension of commercial inter-Korean trade was a result of the closure of the Kaesong Industrial Complex and sanctions imposed on North Korea, while non-commercial trade was initiated with the assistance to North Korea during North Korea's economic crisis in the mid-1990s, continuing until 2021. The inter-Korean trade volume witnessed a significant rise in the mid-2000s, reaching a level of at least $2.7 billion in 2015. However, after North Korea's fourth nuclear test in 2016 and the subsequent closure of the Kaesong Industrial Complex, the trade volume experienced a significant decline, with only minor non-commercial transactions

maintained since 2017.

Examining the non-commercial transactions between North and South Korea reveals that South Korea is the predominant exporter, accounting for 99.4% of all non-commercial transactions. This suggests that the non-commercial transactions are a one-sided effort on South Korea's part to provide assistance. During the presidencies of Kim Dae-Jung (1998 to 2003) and Roh Moo-Hyun (2003 to 2008), 89% of all non-commercial transactions took place. This period coincided with North Korea's period of severe hardship, including widespread starvation, following an economic crisis. As a result, the international community, including South Korea, delivered numerous humanitarian aid shipments to North Korea. The main items exported through non-commercial transactions were fertilizers, grains, mineral fuels, and medical supplies.

Regarding commercial transactions, the import-export ratio between North and South Korea is recorded as 57:43, demonstrating a bi-directional trade pattern, unlike non-commercial transactions. Unlike the latter, which are predominantly executed by South Korea, South Korea's imports from North Korea surpass its exports. When examining commercial inter-Korean trade based on the division level, it is observed that 67.5% of the transactions fall under the category of economic cooperation projects, while 31.9% are classified as trade. The largest contributor to the economic cooperation projects category is the Kaesong Industrial Complex project, accounting for 64.7% of such transactions, followed by the Mt. Geumgang Tourism project at 2.3% and other economic cooperation projects at 0.4%. With regard to general trade, 17.8% of commercial transactions are accounted for, with processing on commission making up 14.1%. This highlights the significant role that the Kaesong Industrial Complex project, general trade, and processing on commission play in commercial transactions between the two Koreas.

The key features of inter-Korean trade can be summarized as follows: non-commercial transactions started later than commercial transactions and have remained small in scale. Unlike commercial transactions, where imports and exports between North Korea and South Korea are balanced, non-commercial transactions are mostly carried out by South Korea, making it appear as unilateral support. Commercial transactions also vary by type, with the Kaesong Industrial Complex project and processing on commission being the most common. These types of trade involve raw materials being exported to North Korea, where intermediate and final products are manufactured using North Korean labor, before being imported back into South Korea. This has resulted in a two-way trade form with similar levels of exports and imports. On the other hand, most general trade imports from North Korea are of the one-way type. North Korea lacks the purchasing power to buy South Korean products, thus resulting in a small scale of South Korean exports. Imports from North Korea to South Korea are primary products, such as fish, minerals, sand, and vegetables, all of which are traded due to their comparative advantage. Hence, general trade between the two Koreas is economically motivated, just like regular trade with other countries.

In conclusion, to assess the interplay between inter-Korean trade and inter-Korean relations accurately, it is recommended to analyze trade characteristics and imports and exports separately rather than treating inter-Korean trade as a homogeneous entity.

IV. Empirical Analysis

In this section, we conduct an empirical analysis of the relationship between the two aforementioned variables through the use of the inter-Korean relations index calculated by GDELT and inter-Korean trade data. To account for fluctuations in trade amounts, we use logarithmic transformation after adding a constant of 1. This correction was necessary to prevent errors that may arise when taking the logarithm of zero at the monthly level.

Inter-Korean trade has fluctuated primarily due to military and security tensions between North and South Korea. These tensions had a direct impact on the suspension and resumption of inter-Korean trade and economic cooperation projects. The study analyzed the timing and end points of each type of inter-Korean trade, taking into consideration only the periods during which actual trade was conducted. The analysis periods varied according to the trade type. For commercial transactions, the analysis was limited to the period up to March of 2016. Regarding the division level, the analysis period was up to May of 2010 for general trade and March of 2016 for economic cooperation projects. This was necessary due to the complete suspension of inter-Korean trade, excluding the Kaesong Industrial Complex, after the Korean government's May 24 measures in 2010. The Mt. Geumgang tourism project was virtually suspended following the tourist shooting incident in July of 2008; thus, the time point was set as the analysis period. Non-commercial transactions, which began in 1995, have continued to the present due to the existence of humanitarian support, regardless of sanctions. As a result, the research period for assistance to North Korea was up to December of 2021. Lastly, the relationship between inter-Korean relations was examined by dividing the imports and exports of inter-Korean trade according to the type of trade.

In order to examine the relationship between the inter-Korean relations index and the inter-Korean trade data, it is imperative to confirm the stationarity of the time-series variables. This requires conducting a unit root test on the variables. The ADF (augmented Dickey-Fuller) test is utilized to determine the unit root of the time-series variables. The results of the ADF test for both inter-Korean relations and inter-Korean trade are presented in Appendix 1. The inter-Korean relations variable is found to exhibit stationary characteristics. However, the inter-Korean trade variables are observed to either exhibit stationary or non-stationary time series characteristics depending on the trade type and period.

The Granger causality test is commonly utilized to analyze relationships between time-series variables. This test determines the significance of an independent variable in predicting the dependent variable in the present, distinct from a general causal relationship. In situations where it is challenging to establish an experimental group and a control group in the analysis of time-series variables, the Granger causality test is predominantly utilized due to such practical limitations of the data. This study will assess the relationship between inter-Korean relations and inter-Korean trade through the application of the Granger causality test.

When the integration order between time-series variables is consistent, a general regression analysis is utilized to determine if the past value of the independent variable has an impact on the current value of the dependent variable. However, if

the integration order between the independent and dependent variables is not equivalent, such as when analyzing the relationship between I(0) and I(1), the possibility of a spurious correlation can arise. Regardless of the timing, inter-Korean relations variables are considered I(0), while inter-Korean trade variables can be either I(0) or I(1) depending on the timing and form. As such, a methodology that takes this into account must be employed when analyzing the relationship between the two. Toda and Yamamoto (1995) developed a methodology that verifies causal relationships between variables with different integration orders, considering the aforementioned issue. This methodology can be used to verify causal relationships regardless of whether the time series is stationary or non-stationary. Consequently, here the methodology developed by Toda and Yamamoto (1995) is applied to assess the causal relationship between inter-Korean relations and inter-Korean trade.

The control variable was employed under the assumption that inter-Korean relations and trade would exhibit a linear trend and be impacted by the political orientation of the South Korean government. Notably, the imposition of independent sanctions by South Korea against North Korea in the form of the May 24 measures in 2010 and the UN Security Council's sanctions against North Korea between 2016 and 2017 have significantly altered the nature of inter-Korean trade. As a result, following these pivotal events, they were subsequently categorized and managed as dummy variables.

The null hypothesis to be evaluated through Granger causality is that the coefficients of past values of X (independent variables) are all zero with regard to determining the current value of Y (dependent variable). The outcomes of the Granger causality test simply indicate whether the coefficients are rejected (the historical values of the independent variable do not contribute to predicting the current value of the dependent variable) and whether it is necessary separately to determine the direction of influence, whether positive (+) or negative (-).

The correlation between inter-Korean relations and inter-Korean trade is widely acknowledged to be positive. Improved inter-Korean relations are likely to result in a rise in inter-Korean trade, whereas a decline in inter-Korean relations may lead to a decrease in inter-Korean trade. Upon conducting a thorough examination of the regression analysis coefficients, it was found that there were no instances where the inter-Korean relationships had a detrimental impact on inter-Korean trade, which was in line with the expected outcomes. In the accompanying tables, the symbol '⇨' signifies that there is a positive causal relationship between inter-Korean relations and the type of trade. Conversely, the symbol '⇦' indicates that inter-Korean trade has a positive impact on inter-Korean relations.

Table 2[9] provides a summary of the causal relations observed in various types of inter-Korean trade. The noteworthy finding is that inter-Korean relations exert a significant influence on trade, while the reverse is not observed in any form of trade. The unilateral impact of inter-Korean relations on trade remains consistent across both commercial and non-commercial transactions, serving as the criteria for segmentation. Furthermore, inter-Korean relations exhibit a unilateral effect on trade across most trade forms. Specifically, an improvement in inter-Korean relations

[9]Appendix Table A2 provides a summary of the Granger causality test statistics and significance pertaining to the various trade types and governments.

TABLE 2—GRANGER CAUSALITY RESULT 1: WHOLE PERIOD

	Total amount	Export	Import
Total transaction	⇨	⇨	⇨
1. Commercial transaction	⇨	X	⇨
1.1. Trade	X	X	X
1.1.1. General trade	X	X	X
1.1.2. Processing on commission	X	X	X
1.2. Economic cooperation projects	X	X	⇨
1.2.1. Kaesong Industrial Complex	⇨	⇨	X
1.2.2. Mt. Geumgang Tourism	X	X	-
2. Non-commercial transaction	⇨	⇨	-
2.1. Assistance to North Korea	⇨	⇨	-

leads to an overall increase in inter-Korean trade, including both commercial and non-commercial transactions. Conversely, in the event of the deterioration of inter-Korean relations, a causal link exists whereby the volume of trade diminishes.

First, we examine the impact of inter-Korean relations on commercial trade. Specifically, the imports in general trade and processing on commission trade, both subcategories of trade, experience a positive impact from inter-Korean relations. This signifies that improved inter-Korean relations result in a rise in South Korea's general trade and processing of commission trade. Conversely, when inter-Korean relations weaken, the value of these types of trade decreases. However, for the Kaesong Industrial Complex, which is a subcategory of economic cooperation projects, inter-Korean relations have a positive impact on exports but not imports. Moreover, inter-Korean trade associated with the Mt. Geumgang tourism project does not exhibit a correlation with inter-Korean relations. This raises the question of why the import and export of inter-Korean trade are affected differently by the type of trade. The import volume of general trade and processing on commission trade exceeds that of exports, and it is sensitive to the influence of inter-Korean relations because it represents a means of acquiring foreign currency for North Korea. Conversely, in the context of the Kaesong Industrial Complex trade, imports are associated with the volume of exports and thus inter-Korean relations may have a more direct impact on exports. Mt. Geumgang tourism trade is a form of trade aimed at promoting tourism rather than commercial trade. Accordingly, the effect of inter-Korean relations on it may be limited.

An impact of inter-Korean relations on commercial transactions, particularly imports, was observed. The subclass of commercial transactions, i.e., general trade, remained unaffected by inter-Korean relations, while trade projects related to economic cooperation were affected. Subcategories of trade, such as general trade and processing on commission, were either unaffected or impacted by inter-Korean relations. In the specific case of the Kaesong Industrial Complex project, exports were influenced by inter-Korean relations, whereas imports were not found to be related to such relations. It has been established that inter-Korean trade conducted under the tourism project at Mt. Geumgang was not influenced by inter-Korean relations. Non-commercial forms of trade, such as assistance to North Korea, were found to be unilaterally affected by inter-Korean relations. To elaborate, an improvement in inter-Korean relations leads to an increase in South Korea's support

TABLE 3—GRANGER CAUSALITY RESULT 2: PROGRESSIVE GOVERNMENT

	Total amount	Export	Import
Total transaction	X	X	X
1. Commercial transaction	X	X	X
1.1. Trade	X	X	X
1.1.1. General trade	⇦	X	⇦
1.1.2. Processing on commission	⇦	X	X
1.2. Economic cooperation projects	X	X	X
1.2.1. Kaesong Industrial Complex	X	X	X
1.2.2. Mt. Geumgang Tourism	X	X	-
2. Non-commercial transaction	⇨	⇨	-
2.1. Assistance to North Korea	⇨	⇨	-

for North Korea, while deterioration of these relations results in a decrease in such support.

The study aims to determine the variation in the reciprocal impact of inter-Korean relations and inter-Korean trade based on the political orientation of the South Korean government. The analysis is conducted by dividing the periods of South Korean governance into conservative and progressive eras. The period from March of 1998 to February of 2008, characterized by the presidencies of Kim Dae-Jung and Roh Moo-Hyun, is considered here as a progressive government era, while the presidencies of Lee Myung-Bak and Park Geun-Hye from March of 2008 to February of 2017, is considered as a conservative government era.

Table 3 encapsulates the relationship between inter-Korean relations and inter-Korean trade during the era of progressive governments in South Korea. During these progressive governments, the effects of general trade and processing on commission are found to be positive. Specifically, as the volume of South Korean imports from North Korea (or North Korean exports to South Korea) increased, it had a positive impact on the relationship between the two nations. The Kaesong Industrial Complex and Mt. Geumgang tourism projects, on the other hand, were not found to have a direct impact on inter-Korean relations. Non-commercial transactions, such as assistance to North Korea, were solely dependent on the state of inter-Korean relations.

The interplay between inter-Korean relations and inter-Korean trade during the era of progressive governments can be analyzed as follows. First, the observation that inter-Korean relations did not hinder trade in terms of commercial dealings highlights the adherence to the principle of separating politics from business at the time. The progressive governments stressed the need for establishing stable inter-Korean relations and emphasized that inter-Korean trade should persist regardless of political circumstances or developments on the Korean Peninsula. In fact, the Kim Dae-Jung government upheld this principle of separation even during military provocations such as the North Korea's submarine infiltration incident in 1998 and the Battle of Yeonpyeong in 1999.[10] The positive impact of general trade and processing on commission on inter-Korean relations can be attributed to what is termed the "peace effect." The influx of general trade into Korea was found to have

[10]Ministry of Unification North Korean Information Portal, "Principle of Political-Economic Separation" (https://nkinfo.unikorea.go.kr/nkp/term/viewKnwldgDicary.do?pageIndex=15&dicaryId=43&searchCnd=0&searchWrd=).

TABLE 4—GRANGER CAUSALITY RESULT 3: CONSERVATIVE GOVERNMENT

	Total amount	Export	Import
Total transaction	⇨	⇨	⇨
1. Commercial transaction	⇨	⇨	⇨
1.1. Trade	X	-	X
1.1.1. General trade	⇨	-	⇨
1.1.2. Processing on commission	X	-	X
1.2. Economic cooperation projects	⇨	⇨	⇨
1.2.1. Kaesong Industrial Complex	⇨	⇨	⇨
1.2.2. Mt. Geumgang Tourism	⇨	⇨	-
2. Non-commercial transaction	X	⇨	-
2.1. Assistance to North Korea	X	⇨	-

a positive impact on the relationship between North and South Korea. The export of general trade products to the South was a major source of foreign currency for North Korea. Thus, it can be deduced that North Korea was mindful of its relationship with South Korea, considering that an increase in exports to South Korea led to an increase in foreign currency income. This phenomenon aligns with the goals of the "Sunshine policy," which aimed to enhance North Korea's economic ties with South Korea and promote inter-Korean trade, ultimately leading to an improvement in North Korea's behavior and the overall relationship between the two nations.

Table 4 provides a comprehensive overview of inter-Korean relations and inter-Korean trade during the period from March of 2008 to February of 2017, when conservative governments led by Presidents Lee Myung-Bak and Park Geun-Hye were in power.[11] It has been established that the state of inter-Korean relations has a one-way impact on inter-Korean trade. Specifically, inter-Korean relations exerted an influence on inter-Korean trade, but inter-Korean trade did not affect inter-Korean relations. The direction of this impact was found to be positive. In other words, inter-Korean relations impacted inter-Korean trade in a positive manner. This correlation becomes particularly noteworthy when considering the tense inter-Korean relations during the presidencies of Lee Myung-Bak and Park Geun-Hye, which led to a decrease in the magnitude of inter-Korean trade. The unilateral impact of inter-Korean relations on inter-Korean trade serves as a demonstration of the interplay between politics and business. In contrast to the rules of a progressive government, inter-Korean economic exchanges during the conservative government were directly influenced by inter-Korean relations and events such as South Korea's 5.24 sanctions and the suspension of the Kaesong Industrial Complex project following North Korea's nuclear test.

The empirical analysis of inter-Korean relations and trade has revealed the following insights. During the progressive government era, commercial transactions remained unaffected or had a minimal impact on inter-Korean relations. This reflects the implementation of South Korea's policy toward North Korea of separating politics and business, with a focus on proceeding with inter-Korean trade. The analysis of trade types also showed that improvements in inter-Korean relations were

[11]As a result of the implementation of measures on May 24, 2010, the export of ordinary trade and commission processing trade was discontinued during that year. The limited time- series data was not adequate to include this type of trade in the analysis.

correlated with an increase in general trade, likely due to the "inclusive policy" aimed at promoting peace and stability through inter-Korean trade. In contrast, during the era of conservative governments, the strained inter-Korean relations had a unilateral impact on inter-Korean trade, resulting in a decline in transactions overall, both commercial transactions and non-commercial transactions (assistance to North Korea). This was due to North Korea's political and military provocations, which prompted the suspension of economic exchanges between North and South Korea.[12]

The dynamics of non-commercial transactions, such as assistance to North Korea, are influenced solely by inter-Korean relations regardless of the government's tendencies. A correlation was observed between improvements of inter-Korean relations and increased levels of South Korean assistance to North Korea, as well as declines in assistance when relations worsen. This pattern was evident under both conservative and progressive governments. This suggests that incidents such as North Korea's military provocations that deteriorate inter-Korean relations may impact the South Korean public's sentiment towards North Korea, thereby altering the stance of civic groups or governments that provide aid to North Korea.

This paper's empirical analysis is distinct from previous analyses that examined the correlation between inter-Korean trade and the inter-Korean relations. By extending the time frame to include the period since 2010, during which significant incidents took place that affected inter-Korean relations, it becomes evident that the conservative and progressive governments exhibit discernible differences. This study makes a contribution by analyzing inter-Korean trade at a detailed level, specifically focusing on exports and imports. Finally, an inter-Korean relations index that is objectively measured was introduced with the aim of proposing the potential for broader future research in related areas.

V. Conclusion

Currently, inter-Korean relations are in a strained state, but we should prepare for the resumption of inter-Korean trade due to the improvement of inter-Korean relations in the future. To this end, first it is necessary to reconfirm the existing perception of inter-Korean trade in the past. It is necessary to evaluate whether inter-Korean trade actually had a peace effect that improved inter-Korean relations and whether the principle of political-economic separation of inter-Korean trade was in fact well implemented using objective data and a proper methodology.

There exists a divergence of opinions concerning the peace-enhancing effects of inter-Korean trade on the Korean Peninsula and the furtherance of peace through this medium. Those who support the peace effect of inter-Korean trade assert that economic exchanges between South and North Korea should persist irrespective of

[12]The text revealed that the deteriorated inter-Korean relations led to a disruption or reduction in inter-Korean trade. Conversely, if the relations between North and South Korea improve, will inter-Korean trade increase? If inter-Korean relations improve and become politically stable, it is also undeniable that there will be a possibility of increased economic activity by South Korean companies investing in North Korea. Moreover, the approval of new investments and an improved investment climate due to improved inter-Korean relations will have a positive impact on trade. Hence, it is believed that an improvement in inter-Korean relations may have a positive impact on inter-Korean trade. We thanks to the reviewer for providing the clues about hint on this.

political circumstances, emphasizing the separation of politics and economics. Conversely, others advocate for the continuation or severance of economic exchanges in accordance with North Korea's actions.

This study presents an empirical analysis of the reciprocal effects between inter-Korean relations and inter-Korean trade data spanning three decades. The research findings suggest that the contribution of inter-Korean trade to peace on the Korean Peninsula remains inconclusive. The analysis revealed that inter-Korean trade had limited impact on inter-Korean relations. However, this conclusion varied based on the Korean government's stance. When a progressive government was in power, a positive effect on inter-Korean relations was observed through an increase in certain imports from North Korea. Nonetheless, the overall impact of inter-Korean trade on inter-Korean relations remained insignificant. This indicates that the potential for inter-Korean economic cooperation to foster peace was evident at a specific juncture but not in a general sense. An investigation into the correlation between the fluctuations in inter-Korean relations and their impacts on inter-Korean trade revealed that when a progressive government held power, the principle of separating politics and business was upheld. However, when a conservative government was in office, it was established that the ups and downs of inter-Korean relations did indeed affect inter-Korean trade.

In light of the recent economic decline in North Korea resulting from sanctions and the COVID-19 pandemic, calls for humanitarian aid have once again arisen. Regardless of the political and military circumstances, it is imperative that aid be provided to North Korea. According to this study, which analyzed empirical data, past assistance to North Korea was influenced by inter-Korean relations. Instead, aid was directly impacted by North Korea's actions towards South Korea, regardless of government tendencies. In other words, it is uncertain if aid to North Korea can continue, even if North Korea engages in military provocations such as nuclear tests or missile launches in the future. The study also found that non-commercial transactions such as assistance to North Korea are affected by inter-Korean relations, even during the pursuit of an "inclusive policy" by a progressive government.

This study has made the following contributions. First, the study provides an empirical analysis of the relationship between inter-Korean trade using objective and comprehensive data (GDELT). Unlike previous studies that utilized an inter-Korean relations index that was subjective and limited in scope, this study utilizes GDELT to augment these limitations. While this is not the first study to analyze inter-Korean relations through GDELT, the study is unique in its application of GDELT in that it empirically verifies the relationship with inter-Korean trade. The data employed in this study has the potential to be used in a range of future research topics, including the relationships between South Korea and its neighboring countries, such as Japan, China, the United States, and Russia, among others. Secondly, the study investigates the structural changes in the relationship between inter-Korean relations and inter-Korean trade since 2010. The correlation between changes in inter-Korean relations and inter-Korean trade was examined, and the heterogeneity of mutual influence was analyzed comprehensively according to government propensities and trade types. However, the study acknowledges that limitations in the data prevent a thorough analysis of the exact causal relationship between inter-Korean relations and inter-Korean trade.

APPENDIX

TABLE A1—STATIONARY TIME-SERIES VARIABLES (ADF TEST RESULT)

(1) Whole Period: Jan, 1991~Dec, 2021

	level		difference		Stationary
	No Trend	Trend	No Trend	Trend	
Inter-Korean relations	-3.170**	-3.925**	-10.667***	-10.657***	I(0)
Total transaction	-1.859	-2.499	-12.519***	-12.571***	I(1)
Total transaction , import	-0.933	-1.792	-7.565***	-7.680***	I(1)
Total transaction, export	-1.787	-2.465	-7.950***	-8.082***	I(1)
Commercial transaction	-3.777***	-4.480***	-10.272***	-10.327***	I(0)
Commercial transaction, import	-4.613***	-5.236***	-12.862***	-12.901***	I(0)
Commercial transaction, export	-3.348**	-4.499***	-6.575***	-6.745***	I(0)
Trade	-3.387**	-3.965***	-4.181***	-4.342***	I(0)
Trade, import	-3.639***	-3.919**	-4.608***	-4.771***	I(0)
Trade, export	-5.009***	-4.612***	-4.842***	-5.561***	I(0)
General trade	-3.978***	-4.255***	-4.520***	-4.492***	I(0)
General trade, import	-4.386***	-4.527***	-11.479***	-11.518***	I(0)
General trade, export	-3.448***	-3.363*	-7.669***	-7.798***	I(0)
Processing on commission	-4.144***	-8.691***	-4.217***	-4.010***	I(0)
Processing on commission, import	-4.762***	-7.872***	-4.494***	-4.648***	I(0)
Processing on commission, export	-8.919***	-12.327***	-3.089**	-3.470**	I(0)
Economic cooperation projects	-4.158***	-4.633***	-9.022***	-9.200***	I(0)
Economic cooperation projects, import	-3.872***	-3.159*	-5.971***	-6.370***	I(0)
Economic cooperation projects, export	-4.537***	-4.907***	-7.708***	-7.912***	I(0)
Kaesong Industrial Complex	-5.895***	-5.956***	-7.202***	-7.479***	I(0)
Kaesong Industrial Complex, import	-4.440***	-4.597***	-7.787***	-7.975***	I(0)
Kaesong Industrial Complex, export	-5.985***	-5.942***	-7.873***	-8.051***	I(0)
Mt. Geumgang Tourism	-5.330***	-5.780***	-9.833***	-9.980***	I(0)
Mt. Geumgang Tourism, export	-4.888***	-5.506***	-9.718***	-9.850***	I(0)
Non-commercial transaction	-1.908	-3.004	-9.048***	-9.060***	I(1)
Non-commercial transaction, export	-1.332	-2.577	-6.628***	-6.688***	I(1)
Assistance to North Korea	-2.49	-3.294*	-9.178***	-9.282***	I(1)
Assistance to North Korea, export	-2.543	-3.344*	-9.167***	-9.263***	I(1)

Note: 1) *, **, and *** indicate significant at the significance levels of 10%, 5%, and 1%, respectively; 2) The order is selected by AIC (Akaike's information criterion).

TABLE A1—STATIONARY TIME-SERIES VARIABLES (ADF TEST RESULT) (CONT'D)

(2) Progressive Government: Mar, 1998~Feb, 2008

	level		difference		Stationary
	No Trend	Trend	No Trend	Trend	
Inter-Korean relations	-4.988***	-4.968***	-11.369***	-11.326***	I(0)
Total transaction	-1.935	-5.992***	-8.541***	-8.486***	I(0)
Total transaction , import	-1.558	-5.415***	-7.439***	-7.390***	I(0)
Total transaction, export	-3.608***	-6.304**	-11.076***	-11.056***	I(0)
Commercial transaction	0.882	-1.786	-6.274***	-6.475***	I(1)
Commercial transaction, import	-1.564	-5.425***	-7.471***	-7.423***	I(0)
Commercial transaction, export	0.197	-0.883	-4.953***	-4.968***	I(1)
Trade	0.319	-2.891	-5.781***	-5.784***	I(1)
Trade, import	0.271	-3.732**	-6.183***	-6.237***	I(0)
Trade, export	-0.345	-1.654	-5.044***	-5.019***	I(1)
General trade	-0.24	-3.481**	-4.607***	-4.597***	I(0)
General trade, import	-1.668	-5.283***	-7.586***	-7.528***	I(0)
General trade, export	-3.253**	-3.242*	-7.158***	-7.129***	I(0)
Processing on commission	0.328	-1.765	-4.468***	-4.473***	I(1)
Processing on commission, import	0.742	-2.036	-5.738***	-5.809***	I(1)
Processing on commission, export	-0.04	-1.593	-6.226***	-6.213***	I(1)
Economic cooperation projects	-4.585***	-5.722***	-8.597***	-8.643***	I(0)
Economic cooperation projects, import	-6.781***	-4.928***	-2.216	-4.213***	I(0)
Economic cooperation projects, export	-4.700***	-5.761***	-8.490***	-8.541***	I(0)
Kaesong Industrial Complex	-2.269	-4.553***	-4.599***	-3.887**	I(0)
Kaesong Industrial Complex, import	-4.638***	-3.236**	-3.398**	-4.532***	I(0)
Kaesong Industrial Complex, export	-1.987	-3.223**	-5.702***	-4.997***	I(0)
Mt. Geumgang Tourism	-6.860***	-7.356***	-8.510***	-8.570***	I(0)
Mt. Geumgang Tourism, export	-6.796***	-7.234***	-8.413***	-8.479***	I(0)
Non-commercial transaction	-5.222***	-6.247***	-12.171***	-12.188***	I(0)
Non-commercial transaction, export	-5.223***	-6.245***	-12.162***	-12.178***	I(0)
Assistance to North Korea	-6.024***	-7.513***	-10.662***	-10.798***	I(0)
Assistance to North Korea, export	-6.024***	-7.513***	-10.662***	-10.798***	I(0)

Note: 1) *, **, and *** indicate significant at the significance levels of 10%, 5%, and 1%, respectively; 2) The order is selected by AIC (Akaike's information criterion).

TABLE A1—STATIONARY TIME-SERIES VARIABLES (ADF TEST RESULT) (CONT'D)

(3) Conservative Government: Mar, 2008~Feb, 2017

	level		difference		Stationary
	No Trend	Trend	No Trend	Trend	
Inter-Korean relations	-5.671***	-6.147***	-9.898***	-9.849***	I(0)
Total transaction	-1.111	-1.889	-6.477***	-6.618***	I(1)
Total transaction , import	-1.002	-1.801	-7.850***	-7.952***	I(1)
Total transaction, export	-1.848	-2.413	-3.752***	-3.858**	I(1)
Commercial transaction	-0.893	-1.691	-7.009***	-7.113***	I(1)
Commercial transaction, import	-1.003	-1.801	-7.850***	-7.952***	I(1)
Commercial transaction, export	-1.332	-2.085	-6.446***	-6.551***	I(1)
Trade	-0.986	-2.23	-7.429***	-7.394***	I(1)
Trade, import	-1.036	-2.386	-7.375***	-7.340***	I(1)
Trade, export	-2.326	-3.522**	-8.561***	-9.106***	I(1)
General trade	-1.153	-2.431	-3.008**	-2.992	I(1)
General trade, import	-1.144	-2.43	-3.024**	-3.007	I(1)
General trade, export	-0.407	-1.709	-3.994***	-4.178***	I(1)
Processing on commission	-1.173	-1.232	-3.650***	-3.689**	I(1)
Processing on commission, import	-1.184	-1.274	-3.865***	-3.902**	I(1)
Processing on commission, export	-2.563	-3.540**	-8.549***	-9.086***	I(1)
Economic cooperation projects	-1.001	-1.706	-7.482***	-7.587***	I(1)
Economic cooperation projects, import	-1.284	-1.93	-8.246***	-8.348***	I(1)
Economic cooperation projects, export	-1.358	-2.056	-6.437***	-6.547***	I(1)
Kaesong Industrial Complex	-0.989	-1.691	-7.425***	-7.535***	I(1)
Kaesong Industrial Complex, import	-1.265	-1.91	-8.203***	-8.309***	I(1)
Kaesong Industrial Complex, export	-1.362	-2.055	-6.432***	-6.550***	I(1)
Mt. Geumgang Tourism	-2.027	-2.058	-6.030***	-6.165***	I(1)
Mt. Geumgang Tourism, export	-2.344	-3.036	-7.644***	-7.675***	I(1)
Non-commercial transaction	-3.673***	-5.633***	-11.509***	-11.459***	I(0)
Non-commercial transaction, export	-3.597***	-5.244***	-10.629***	-10.581***	I(0)
Assistance to North Korea	-1.685	-3.943**	-4.900***	-4.876***	I(0)
Assistance to North Korea, export	-1.79	-3.778**	-4.966***	-4.940***	I(0)

Note: 1) *, **, and *** indicate significant at the significance levels of 10%, 5%, and 1%, respectively; 2) The order is selected by AIC (Akaike's information criterion).

TABLE A2—RESULTS OF A GRANGER CAUSALITY TEST OF INTER-KOREAN RELATIONS AND INTER-KOREAN TRADE

	Whole period		Progressive gov		Conservative gov	
	←	→	←	→	←	→
Total transaction	0.905	10.496**	1.322	0.347	0.037	4.905**
Total transaction , import	2.122	6.292	6.9228*	4.564	0.062	7.084***
Total transaction, export	4.303	17.81***	1.998	0.496	0.021	3.9115**
Commercial transaction	0.503	6.7315***	0.980	0.002	0.172	8.041***
Commercial transaction, import	0.744	6.5805**	6.8059*	4.505	0.062	7.101**
Commercial transaction, export	4.029	2.321	0.053	0.434	1.179	6.4097**
Trade	17.280	9.355	13.739	29.455***	0.0006	2.6324
Trade, import	0.001	0.347	6.179	7.6516*	0.012	2.7798*
Trade, export	30.18***	13.021	0.735	0.679	-	-
General trade	8.6983**	1.234	12.668***	2.022	0.322	6.6269**
General trade, import	7.9984**	2.930	9.2362**	4.553	0.318	6.6643**
General trade, export	0.840	0.173	4.7629*	0.046	-	-
Processing on commission	8.781	10.655	24.812**	15.389	7.169	5.3331
Processing on commission, import	10.949	12.345	19.529*	26.151***	8.415	4.9613
Processing on commission, export	4.592	13.378	12.412	10.966	-	-
Economic cooperation projects	0.045	2.131	1.148	3.6847*	0.314	6.6417**
Economic cooperation projects, import	0.970	6.2433**	0.605	3.093	0.10871	6.413**
Economic cooperation projects, export	3.4708*	0.865	1.159	3.7302*	1.338	6.2844**
Kaesong Industrial Complex	1.542	7.719**	0.575	0.859	0.54326	5.9618**
Kaesong Industrial Complex, import	0.758	3.0618*	0.896	1.981	0.22434	5.8772**
Kaesong Industrial Complex, export	1.599	7.8682***	0.400	1.703	1.366	6.356**
Mt. Geumgang Tourism	2.200	2.249	0.694	1.537	-	-
Mt. Geumgang Tourism, export	2.489	2.497	0.892	1.821	-	-
Non-commercial transaction	2.792	26.141***	1.158	4.4463**	0.20675	1.9374
Non-commercial transaction, export	2.884	29.43***	1.151	4.4527**	0.45076	4.3885**
Assistance to North Korea	4.292	16.422**	2.248	11.069***	0.50999	1.9053
Assistance to North Korea, export	4.606	19.141***	2.249	11.07***	0.74351	4.0886**

Note: *, **, and *** indicate significant at the significance levels of 10%, 5%, and 1%, respectively.

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Productive Capacities, Structural Economic Vulnerability and Fiscal Space Volatility in Developing Countries†

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The current article has explored the effect of productive capacities (as defined by the United Nations Conference on Trade and Development) and of structural economic vulnerability (as defined by the United Nations) on fiscal space volatility in developing countries. It relies on the definition and measure of fiscal space proposed by Aizenman and Jinjarak (2010; 2011) and Aizenman et al. (2019). To compute the indicator of fiscal space and hence that of fiscal space volatility, fiscal space is considered as the ratio of outstanding public debt to the 'de facto tax base', the latter being the number of years of tax revenues needed for a country to repay its debt. Results based on a sample of 116 countries from 2000 to 2018 have revealed that the enhancement of productive capacities is associated with lower fiscal space volatility, while higher structural economic vulnerability heightens fiscal space volatility. On another note, highly vulnerable countries tend to experience a higher negative effect of productive capacities on fiscal space volatility than relatively less vulnerable countries.

Key Word: Productive capacities, Structural economic vulnerability, Fiscal space volatility
JEL Code: D24, O10, E60

I. Introduction

The COVID-19 pandemic has shown how developing countries are vulnerable to shocks, and even more so than developed countries. The vulnerability of developing countries at the macroeconomic level is not a new issue in the economic development literature (e.g., Barrot *et al*., 2018; Briguglio *et al*., 2009; Dabla-Norris

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and Gündüz, 2014; Essers, 2013; Guillaumont, 2009; 2017; Harjoto *et al*., 2020; Keefe, 2021; Montalbano, 2011; Lee, 2018).

Recognizing the greater extent of macroeconomic vulnerability experienced by least developed countries[1] (LDCs) among developing countries, the United Nations Committee for Development Policy (UN-CDP) has developed the concept of "structural economic vulnerability." Structural economic vulnerability is the structural component of a country's overall level of economic vulnerability, the latter being "the risk of a (poor) country seeing its development hampered by environmental or natural shocks as well as external shocks" (Guillaumont, 2009). Therefore, structural economic vulnerability indicates a country's extent of exposure to exogenous shocks as well as the size and frequency of these shocks. It is important to note that the conjunctural component of the overall economic vulnerability is referred to as "economic resilience," reflecting the country's capacity to react to shocks, as measured through the policies that it implements (Guillaumont, 2009).

In addition to being exposed to a high degree of structural economic vulnerability, developing countries, and in particular LDCs among them, suffer from low or insufficient levels of productive capacities that could enable them to reduce their exposure to negative shocks and mitigate the adverse effects of such shocks on their economies. According for example to the United Nations Conference on Trade and Development (UNCTAD, 2006, p.61), "productive capacities" refers to "the productive resources, entrepreneurial capabilities and production linkages which together determine the capacity of a country to produce goods and services, and enable it to grow and develop." To help researchers undertake policy analyses and make appropriate policy recommendations concerning countries' performance outcomes with regard to their productive capacities, UNCTAD launched in February of 2021 a comprehensive index of productive capacities (UNCTAD, 2020). This indicator helps to fill a void in the literature given that an indicator of productive capacities that could help with comparative analyses across countries did not exist. Many analyses have emphasized the importance of productive capacities for promoting economic growth and development as well as enhancing economic resilience in developing countries (e.g., Cornia and Scognamillo, 2016; Gnangnon, 2022; Shiferaw, 2017; UN, 2017; UNIDO, 2001).

While development aid inflows, remittances inflows and foreign direct investment inflows could help build productive capacities in developing countries, these countries should rely first and foremost on their own financial resources as a sustainable means of financing their development needs, including the strengthening of their productive capacities. Thus, securing greater fiscal space is an ultimate objective for governments in developing countries. At the same time, the volatility of fiscal policy, likely reflecting greater fiscal space volatility, is a source of major concern to policymakers, as it can significantly undermine economic growth (e.g., Afonso and Jalles, 2012; Fatás and Mihov, 2013; Fernández-Villaverde *et al*., 2015). For example, public spending volatility, which could lead to greater fiscal space volatility, heightens output volatility and hampers economic growth (e.g., Afonso

[1]According to the United Nations, LDCs are the poorest countries in the world and are those most vulnerable to external and environmental shocks. The category of LDCs was established for the first time by the United Nations in 1971. Detailed information about this category of countries can be obtained online at https://www.un.org/ohrlls/content/least-developed-countries (Access date: 10 January 2022).

and Furceri, 2010; Afonso and Jalles, 2012; Fatás and Mihov, 2013; Fernández-Villaverde *et al*., 2015). Likewise, with the exacerbation of the instability of both public investment and government consumption, the instability of tax revenue becomes detrimental to economic growth (e.g., Bleaney *et al*., 1995; Ebeke and Ehrhart, 2012).

How do productive capacities and structural economic vulnerability affect fiscal space volatility in developing countries? How does the strengthening of productive capacities affect fiscal space volatility in developing countries that face a higher degree of structural economic vulnerability? The present paper aims to address these two issues.

There are several definitions of the concept of fiscal space in the literature[2] (e.g., Botev *et al.*, 2016; Gnangnon, 2019a; 2019b; Nerlich and Reuter, 2016; Roy *et al*., 2007; Schick, 2009). For example, Heller (2005) considers fiscal space as the room in a government's budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy. More practically, Aizenman and Jinjarak (2010; 2011) define fiscal space as the ratio of public debt to public revenue. In other words, the authors propose the indicator of "de facto fiscal space[3]" as the ratio of outstanding public debt to the 'de facto tax base'. De facto fiscal space is the number of years of tax revenues needed for a country to repay its debt. In the present analysis, we define fiscal space in order to facilitate the interpretation of empirical outcomes: fiscal space is the ratio of the current total public revenue to the outstanding public debt. It reflects for a given country the ability and willingness of the country to fund fiscal expenditures and transfers using the current public revenues.

To investigate the effects of productive capacities and structural economic vulnerability on fiscal space volatility in developing countries and to examine how both factors interact in influencing fiscal space volatility in these countries, we rely on the indicator of fiscal space defined above, the indicator of productive capacities proposed by the UNCTAD (2020), and on the indicator of structural economic vulnerability as defined by the United Nations.

While a number of studies have explored the determinants of fiscal space (e.g., Botta *et al*., 2023; Gnangnon, 2018; 2019b; Gnangnon and Brun, 2020; Nerlich and Reuter, 2016), studies of the determinants of fiscal space volatility are scarce. This may be due to the lack of consensus among economists on how to measure "fiscal space." To the best of our knowledge, one of the few studies of the factors underpinning fiscal space volatility is that by Gnangnon (2020b), who used the indicator of fiscal space defined above to examine the effect of export product diversification on fiscal policy volatility through the avenue of economic growth volatility. He found that export product concentration enhances fiscal space volatility in countries that face greater economic growth volatility.

From a theoretical perspective, we argue, on the one hand, that by reducing economic growth volatility (e.g., Gnangnon, 2021) and enhancing economic resilience (e.g., Cornia and Scognamillo, 2016; Gnangnon, 2022; Shiferaw, 2017),

[2]Cheng and Pitterle (2018) provide a literature survey on the definition and measurement of fiscal space.

[3]Recent studies such as Aizenman *et al.* (2019), Gnangnon (2018, 2019a; 2019b; 2020a; 2020b) and Gnangnon and Brun (2020) have also utilized this operational definition of fiscal space in their respective analyses.

the strengthening of productive capacities would help dampen the effects of shocks on economies and hence reduce fiscal space volatility. On the other hand, it can be intuitive to consider that an increase in structural economic vulnerability, which reflects an increase in the level of exposure to shocks and/or a higher extent of shocks, is likely to result in greater volatility of fiscal space in developing countries. In addition, we expect that the development of productive capacities would dampen the heightening effect of structural economic vulnerability on fiscal space volatility on developing countries. Specifically, productive capacities would exert a greater negative effect on fiscal space volatility in countries that experience a higher degree of structural economic vulnerability.

The empirical analysis has confirmed these hypotheses. It used the feasible generalized least squares (FGLS) estimator and relied on a panel dataset of 116 developing countries over the period of 2000 to 2018.

The remainder of the paper is organized around five sections. Section II presents a theoretical discussion of the effects of productive capacities and structural economic vulnerability on fiscal space volatility. Section III lays down the empirical strategy. Section IV interprets the empirical results, and Section V concludes the paper.

II. Theoretical discussion of the effects of productive capacities and structural economic vulnerability on fiscal space volatility

On the one hand, we argue that by reducing economic growth volatility (e.g., Gnangnon, 2021) and enhancing economic resilience (e.g., Cornia and Scognamillo, 2016; Gnangnon, 2022; Shiferaw, 2017), the strengthening of productive capacities would help dampen the effects of shocks on economies and hence reduce fiscal space volatility. Thus, we formulate the following hypothesis.

Hypothesis 1. The strengthening of productive capacities is likely to be associated with a lower volatility of fiscal space.

On the other hand, it is intuitive to expect that an increase in structural economic vulnerability, which reflects an increase in the level of exposure to shocks and/or a higher extent of shocks, is likely to result in greater volatility of fiscal space in developing countries. In fact, the indicator of structural economic vulnerability has two main components, which are the exposure sub-index and the shocks sub-index (see for example Feindouno and Goujon, 2016). The former has five component indexes, while the latter encompasses three component indexes.

The five component indexes of the exposure sub-index (with their weights in brackets) are as follows: population size (25%); remoteness from world markets (25%); export product concentration (12.5%); share of agriculture, forestry, and fishery in GDP (12.5%); and the share of population living in low elevated coastal zones (25%). Thus, it is likely that a higher degree of exposure to shocks will enhance fiscal space volatility. For example, Gnangnon (2020b) found that an increase in the level of export product concentration results in higher fiscal space volatility. Similarly, countries whose production structure reflects a high share of agriculture, forestry, and fishery in their GDP are exposed to shocks, especially

environmental and external economic and financial shocks. Such shocks would adversely affect these economies and heighten the fiscal space volatility.

The three component indexes of the shocks sub-index (with their weights in brackets) are as follows: victims of natural disasters (25%), instability in agricultural production (25%), and instability in exports of goods and services (50%). It can be straightforward to expect that an increase in the extent of shocks faced by a country will heighten their fiscal space volatility. In other words, countries that face higher magnitudes of shocks will experience greater fiscal space volatility than countries that experience lower magnitudes of shocks.

On another note, Gnangnon (2021) showed that higher structural economic vulnerability is associated with greater economic growth volatility in developing countries. Therefore, we formulate the following hypothesis.

Hypothesis 2. A rise in structural economic vulnerability is likely to be positively associated with fiscal space volatility.

In light of hypotheses 1 and 2, we can postulate that through its positive economic resilience effect, the strengthening of productive capacities is likely to dampen the positive effect of structural economic vulnerability on fiscal space volatility. In light of the potential positive effect of economic growth volatility on the volatility of fiscal space, this theoretical expectation is further exemplified by the findings of Gnangnon (2021), who showed that the development of productive capacities contributes to dampening economic growth volatility in countries that face a higher level of structural economic vulnerability.

Therefore, we can postulate hypothesis 3, as follows.

Hypothesis 3. The strengthening of productive capacities is likely to result in lower fiscal space volatility in countries that face a rise in the level of structural economic vulnerability.

The next sections will test empirically each of these hypotheses.

III. Empirical Strategy

This section includes three sub-sections. First, we present the baseline model specification that helps address the questions at the heart of the analysis (sub-section III.A). Second, we briefly present some data analysis, notably concerning the key variables of interest in the analysis, specifically fiscal space volatility, productive capacities, and structural economic vulnerability (sub-section III.B). Third, we present the estimator used to carry out the empirical analysis and explain the different variants of the baseline model that will be estimated using this estimator (see sub-section III.C).

A. *Model specification*

As noted above, studies of the determinants of fiscal space volatility are scarce.

To explore the effects of productive capacities and structural economic vulnerability on fiscal space volatility, we draw from the work of Gnangnon (2020b). We postulate the following model:

$$FSVOL3_{it} = \alpha_0 + \alpha_1 PCI_{it-3} + \alpha_2 EVI_{it-3} + \alpha_3 \text{Log}(GDPC)_{it-3} + \alpha_4 \text{Log}(OPEN)_{it-3} + \alpha_5 INFLVOL_{it-3} + \alpha_6 DUMOUT_{it} + \mu_i + \gamma_t + \omega_{it} \quad (1)$$

Here, the subscripts i and t denote respectively a country and a year. Based on available data, an unbalanced panel dataset of 116 developing countries, of which 38 are LDCs and 78 are non-LDCs (i.e., countries not classified as LDCs in the full sample) over the period of 2000-2018, was constructed.

To save space here, we have defined the variables used in model (1) and their sources in Table A1. The dependent variable "$FSVOL3$" is our main indicator of fiscal space volatility. To compute it, first we calculate the index of fiscal space as the ratio of total public revenue (including grants and social contributions) to total public debt. The index of fiscal space volatility is subsequently computed as the ratio of the standard deviation of the indicator of fiscal space (over three-year rolling windows, that is, from $t-2$ to t) to the mean of the indicator of fiscal space over three-year rolling windows. Higher values of the indicator of fiscal policy volatility reflect greater fiscal space volatility.

Likewise, "PCI" is the indicator of productive capacities. This is the overall productive capacity index, which measures the level of productive capacities along the three pillars of the "productive resources, entrepreneurial capabilities and production linkages which together determine the capacity of a country to produce goods and services and enable it to grow and develop" (UNCTAD, 2006). It is computed as a geometric average of the following eight domains or categories: information communication and technologies, structural change, natural capital, human capital, energy, transport, the private sector and institutions. Each category index is obtained using the principal components extracted from the underlying indicators, weighted by their capacity to explain the variance in the original data. The category indices are normalized into 0-100 intervals (see UNCTAD, 2020).

"EVI" is the indicator of structural economic vulnerability. This is a measure of a country's level of structural economic vulnerability. The EVI indicator, referred to as the Economic Vulnerability Index, was established at the United Nations by the Committee for Development Policy (CDP) and is used by the latter as one of the criteria for identifying LDCs. It is computed on a retrospective basis for 145 developing countries (including 48 LDCs) by the "Fondation pour les Etudes et Recherches sur le Developpement International (FERDI)". EVI is computed as the simple arithmetic average of two sub-indexes, namely the intensity of exposure to shocks (exposure sub-index) and the intensity of exogenous shocks (shocks sub-index). These two sub-indexes are calculated using the weighted average of different component indexes, with the sum of the components' weights equals to 1 so that the values of EVI are between 0 and 100. As described above, the exposure sub-index has five component indexes, and the shocks sub-index has three component indexes. A rise in the EVI value indicates greater structural economic vulnerability.

The real per capita gross domestic product (constant 2010 US$) is denoted as "*GDPC*." The variable "*OPEN*" is the indicator of trade openness. It is the share of the sum of exports and imports of goods and services in GDP adjusted by the proportion of a country's trade level relative to the average world trade (see Squalli and Wilson, 2011, p.1758). Both "*GDPC*" and "*OPEN*" are transformed using the natural logarithm in order to reduce skewness in their distributions.

The variable "*INFLVOL3*" is here the indicator of inflation rate volatility. It is computed as the ratio of the standard deviation of the indicator of the inflation rate (over three-year rolling windows, that is, from $t-2$ to t) to the mean of the indicator of the inflation rate over three-year rolling windows. Higher values of the inflation volatility reflect greater volatility of the inflation rate. Finally, the variable "*DUMOUT*" is a dummy variable that captures outliers identified in the sample (see sub-section III.B).

Table A2 presents the descriptive statistics of the variables used in model (1). The lists of countries used in the analysis are provided in Table A3.

α_0 to α_6 are parameters that will be estimated. μ_i denotes countries' specific effects and the γ_t variables are temporal dummies that aim to capture global shocks that affect all countries together. ω_{it} is a random error term.

It is important to note that all variables in model (1) (except for the dummy-outlier) are considered at year $t-3$, with a view to ensuring their exogeneity with respect to the dependent variable. For example, considering the variable "*PCI*" at year $t-3$ means that we are examining the effect of the development of productive capacities in year $t-3$ on the volatility of fiscal space from year $t-2$ to year t. Likewise, introducing the variable "*EVI*" at year $t-3$ in model (1) indicates that we are examining the effect of structural economic vulnerability in year $t-3$ on the volatility of fiscal space from year $t-2$ to year t.

It should also be noted that while the initial period of analysis is from 2000 to 2018, in the end we actually have a period that goes from 2001 to 2018 given how we compute the indicator of fiscal space volatility and that of inflation volatility.

Let us now discuss the expected effects of the control variables contained in model (1). These control variables are included in model (1) because they are likely to influence the effects of productive capacities and structural economic vulnerability on fiscal space volatility. The real per capita income – which is a proxy for economic development – aims to capture differences across countries in the level of fiscal space volatility. Gnangnon (2021) found that advanced developing countries tend to experience higher volatility of fiscal space than do relatively less advanced countries. It is straightforward to expect that greater inflation volatility would be associated with higher fiscal space volatility. The effect of trade openness on fiscal space volatility can be ambiguous. On the one hand, trade openness can increase countries' exposure to shocks (e.g., Montalbano, 2011) and hence potentially increase fiscal space volatility as well. On the other hand, trade openness can promote innovation, including that which arises through exchanges of intangible ideas (e.g., Akcigit and Melitz, 2022; Grossman and Helpman, 1995; Melitz and Redding, 2022; Shu and Steinwender, 2018). In turn, innovation can enhance countries' resilience to shocks, including climate shocks (e.g., Matos *et al*., 2022), economic and financial shocks (e.g., Cappelli *et al*., 2021), and health shocks (e.g., Paunov and Planes-Satorra, 2021).

In this scenario, trade openness could contribute to lowering fiscal space volatility.

B. *Data Analysis*

Before turning to the estimation method employed to conduct the empirical analysis, we find it useful to provide some insights into the developments of our key variables of interest (i.e., fiscal space volatility, productive capacities, and structural economic vulnerability) over the full sample. Figure 1 shows how these variables have evolved over time over the full sample. We observe that fiscal space volatility rose from 2001 to 2006, reached its peak in 2006, and then declined up to 2012. It then rebound from 2012 to 2016 and subsequently declined from 2016 to 2018. In the meantime, Figure 1 shows a declining trend of structural economic vulnerability over time and an increasing trend of productive capacities, on average, over the full sample.

Figure 2 presents the correlation pattern (in the form of a scatter plot) between productive capacities and fiscal space volatility on the one hand and between structural economic vulnerability and fiscal space volatility on the other hand, over the full sample. It shows that the indicator of productive capacities is negatively correlated with fiscal space volatility while the indicator of structural economic vulnerability is positively correlated with fiscal space volatility. In addition, we note the presence of outliers concerning instances where the values of the indicator of fiscal space volatility exceed 0.5. We take into account these outliers in the regression by introducing the dummy outlier "*DUMOUT*," which takes a value of 1 for these outliers, and 0 otherwise. The same patterns are observed for the sub-samples of LDCs and non-LDCs (see Figure 3). The empirical analysis will provide further guidance as to whether these correlation patterns indeed reflect causality.

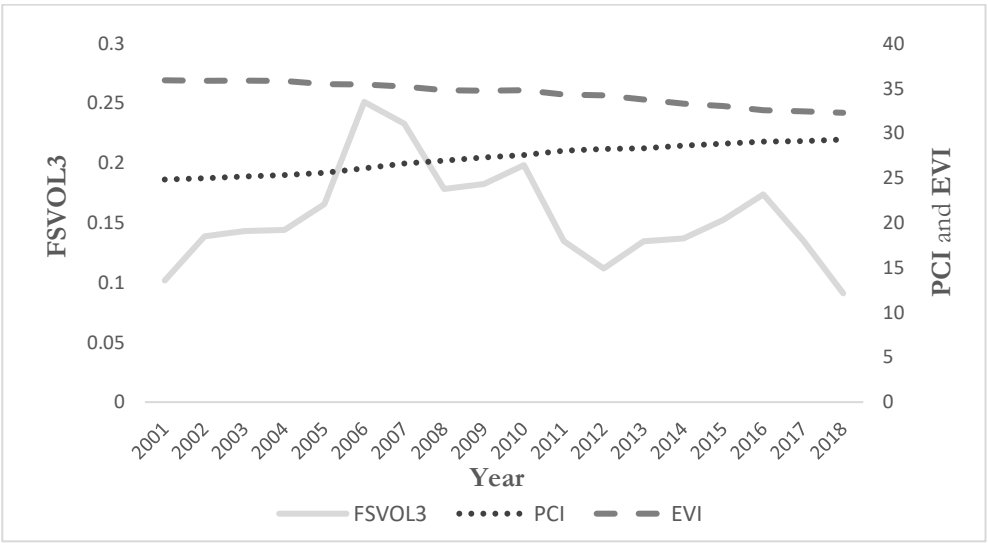

FIGURE 1. PRODUCTIVE CAPACITY, STRUCTURAL ECONOMIC VULNERABILITY AND FISCAL SPACE VOLATILITY OVER THE FULL SAMPLE

Source: Author.

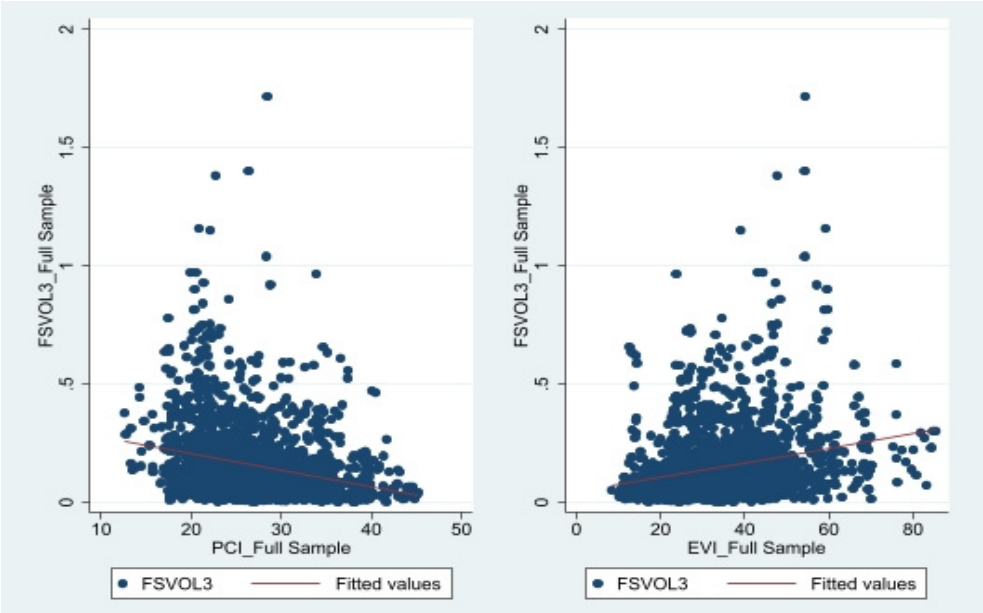

FIGURE 2. CROSS PLOT BETWEEN PRODUCTIVE CAPACITY, STRUCTURAL ECONOMIC VULNERABILITY AND FISCAL SPACE VOLATILITY OVER THE FULL SAMPLE

Source: Author.

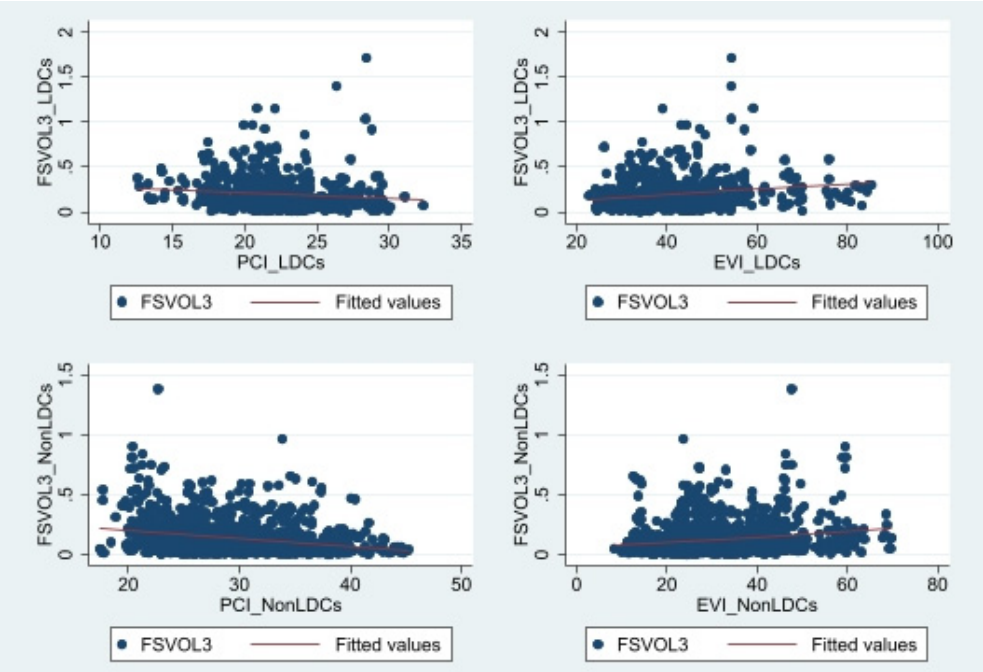

FIGURE 3. CROSS PLOT BETWEEN PRODUCTIVE CAPACITY, STRUCTURAL ECONOMIC VULNERABILITY AND FISCAL SPACE VOLATILITY OVER THE SUB-SAMPLES OF LDCS AND NON-LDCS

Source: Author.

C. *Econometric Approach*

To test hypotheses 1 to 3, we estimate the baseline model (1) by means of the feasible generalized least squares (FGLS) estimator. This estimator generates more efficient estimates than those obtained from the ordinary least squares estimator, notably in the presence of heteroskedasticity, as well as serial and cross-sectional correlations (e.g., Bai *et al*., 2021; Zellner, 1962).

First, we test hypotheses 1 and 2 (notably the effects of productive capacities and structural economic vulnerability on fiscal space volatility) by estimating the baseline model (1) over the full sample and the sub-samples of LDCs and non-LDCs. The outcomes of these estimations are presented in Table 1.

Next, we examine how the effects of productive capacities and structural economic vulnerability vary across countries in the full sample. To that effect, we estimate in the first instance a variant of model (1) in which we introduce the interaction between the indicator of productive capacities and the real per capita income. The outcomes of this regression are presented in column [1] of Table 2. We then estimate another variant of model (1) that includes the interaction variable between the indicator of structural economic vulnerability and the real per capita income. The estimates arising from this regression are reported in column [2] of Table 2.

We test hypothesis 3 by estimating another variant of model (1) in which we interact the variables "*PCI*" and "*EVI*." The outcomes of this estimation are presented in Table 3.

TABLE 1—EFFECTS OF PRODUCTIVE CAPACITY AND STRUCTURAL ECONOMIC VULNERABILITY ON FISCAL SPACE VOLATILITY (ESTIMATOR: FGLS (WITH PANEL-SPECIFIC FIRST-ORDER AUTOCORRELATION))

	Full Sample	LDCs	Non-LDCs
Variables	FSVOL3	FSVOL3	FSVOL3
	(1)	(2)	(3)
PCI_{t-3}	-0.0107***	-0.00687***	-0.0120***
	(0.000942)	(0.00176)	(0.00110)
EVI_{t-3}	0.00188***	0.00194***	0.00147***
	(0.000272)	(0.000497)	(0.000387)
Log($GDPC$)$_{t-3}$	0.0370***	0.0165	0.0557***
	(0.00478)	(0.0120)	(0.00566)
Log($OPEN$)$_{t-3}$	-0.000168	0.00472	-0.000391
	(0.00185)	(0.00397)	(0.00215)
$INFLVOL_{t-3}$	5.13e-05	0.000337	0.000133
	(0.000249)	(0.00137)	(0.000256)
DUMOUT	0.477***	0.480***	0.430***
	(0.0145)	(0.0227)	(0.0167)
Constant	0.0324	0.156*	-0.0846**
	(0.0316)	(0.0804)	(0.0369)
Observations - Countries	1,526 - 116	539 - 38	987 - 78
Pseudo R-squared	0.7703	0.7792	0.7614
Wald Chi2 statistic (p-value)	1779.85 (0.000)	690.89 (0.000)	1080.37 (0.000)

Note: 1) *p-value<0.1, **p-value<0.05, ***p-value<0.01; 2) Robust standard errors are in parenthesis, as they are clustered at the country level; 3) The Pseudo R^2 is calculated as the correlation coefficient between the dependent variable and its predicted values; 4) Time dummies are included in the FGLS-based regressions.

TABLE 2—EFFECT OF PRODUCTIVE CAPACITY AND STRUCTURAL ECONOMIC VULNERABILITY ON FISCAL SPACE VOLATILITY FOR VARYING LEVELS OF REAL PER CAPITA INCOME OVER THE FULL SAMPLE (ESTIMATOR: FGLS (WITH PANEL-SPECIFIC FIRST-ORDER AUTOCORRELATION))

Variables	FSVOL3 (1)	FSVOL3 (2)
PCI_{t-3}	-0.0242***	-0.0111***
	(0.00322)	(0.000886)
EVI_{t-3}	0.00202***	0.0106***
	(0.000284)	(0.00153)
$[PCI_{t-3}]$*[Log($GDPC$)$_{t-3}$]	0.00161***	
	(0.000371)	
$[EVI_{t-3}]$*[Log($GDPC$)$_{t-3}$]		-0.00112***
		(0.000186)
Log($GDPC$)$_{t-3}$	-0.00367	0.0778***
	(0.0111)	(0.00802)
Log($OPEN$)$_{t-3}$	0.000386	-0.000772
	(0.00191)	(0.00178)
$INFLVOL_{t-3}$	4.53e-05	0.000115
	(0.000244)	(0.000249)
$DUMOUT$	0.474***	0.476***
	(0.0142)	(0.0135)
Constant	0.363***	-0.287***
	(0.0869)	(0.0607)
Observations - Countries	1,526 - 116	1,526 - 116
Pseudo R-squared	0.7735	0.7768
Wald Chi2 statistic (p-value)	1904.40 (0.000)	2140.22 (0.000)

Note: 1) *p-value<0.1, **p-value<0.05, ***p-value<0.01; 2) Robust standard errors are in parenthesis; 3) The Pseudo R^2 is calculated as the correlation coefficient between the dependent variable and its predicted values; 4) Time dummies are included in the FGLS-based regressions.

TABLE 3—INTERACTION EFFECT OF PRODUCTIVE CAPACITY AND STRUCTURAL ECONOMIC VULNERABILITY ON FISCAL SPACE VOLATILITY OVER THE FULL SAMPLE (ESTIMATOR: FGLS (WITH PANEL-SPECIFIC FIRST-ORDER AUTOCORRELATION))

Variables	FSVOL3 (1)
PCI_{t-3}	-0.00498***
	(0.00149)
EVI_{t-3}	0.00634***
	(0.00110)
$[PCI_{t-3}]$*$[EVI_{t-3}]$	-0.000167***
	(3.83e-05)
Log($GDPC$)$_{t-3}$	0.0385***
	(0.00470)
Log($OPEN$)$_{t-3}$	-0.00154
	(0.00182)
$INFLVOL_{t-3}$	8.81e-05
	(0.000251)
$DUMOUT$	0.479***
	(0.0140)
Constant	-0.145***
	(0.0502)
Observations - Countries	1,526 - 116
Pseudo R-squared	0.7728
Wald Chi2 statistic (p-value)	1868.82 (0.000)

Note: 1) *p-value<0.1, **p-value<0.05, ***p-value<0.01; 2) Robust standard errors are in parenthesis; 3) The Pseudo R^2 is calculated as the correlation coefficient between the dependent variable and its predicted values; 4) Time dummies are included in the FGLS-based regressions.

TABLE 4—INTERACTION EFFECT OF PRODUCTIVE CAPACITY AND STRUCTURAL ECONOMIC VULNERABILITY ON FISCAL SPACE VOLATILITY OVER THE FULL SAMPLE (ESTIMATOR: FGLS (WITH PANEL-SPECIFIC FIRST-ORDER AUTOCORRELATION))

Variables	FSVOL4	FSVOL4	Variables	FSVOL5	FSVOL5
	(1)	(2)		(3)	(4)
PCI_{t-4}	-0.0135***	-0.00600***	PCI_{t-5}	-0.0178***	-0.00768***
	(0.00116)	(0.00215)		(0.00136)	(0.00262)
EVI_{t-4}	0.00196***	0.00775***	EVI_{t-5}	0.00220***	0.0101***
	(0.000354)	(0.00150)		(0.000465)	(0.00163)
$[PCI_{t-4}]*[EVI_{t-4}]$		-0.000220***	$[PCI_{t-5}]*[EVI_{t-5}]$		-0.000296***
		(5.41e-05)			(6.13e-05)
$\text{Log}(GDPC)_{t-4}$	0.0509***	0.0539***	$\text{Log}(GDPC)_{t-5}$	0.0720***	0.0764***
	(0.00598)	(0.00601)		(0.00697)	(0.00671)
$\text{Log}(OPEN)_{t-4}$	0.000531	-0.00242	$\text{Log}(OPEN)_{t-5}$	0.00152	-0.00275
	(0.00243)	(0.00245)		(0.00284)	(0.00268)
$INFLVOL_{t-4}$	-1.03e-05	-1.68e-05	$INFLVOL_{t-5}$	-0.000122	-4.30e-05
	(7.15e-05)	(7.25e-05)		(0.000235)	(0.000278)
DUMOUT	0.497***	0.486***	*DUMOUT*	0.440***	0.416***
	(0.00888)	(0.0106)		(0.0107)	(0.0123)
Constant	0.0238	-0.222***	Constant	0.00856	-0.334***
	(0.0416)	(0.0690)		(0.0476)	(0.0760)
Observations - Countries	1,431 - 114	1,431 - 114	Observations - Countries	1,335 - 114	1,335 - 114
Pseudo R-squared	0.7025	0.7055	Pseudo R-squared	0.6593	0.6601
Wald Chi2 statistic	20717.80	9208.13	Wald Chi2 statistic	12865.18	6409.49
(p-value)	(0.000)	(0.000)	(p-value)	(0.000)	(0.000)

Note: 1) *p-value<0.1, **p-value<0.05, ***p-value<0.01; 2) Robust standard errors are in parenthesis; 3) The Pseudo R^2 is calculated as the correlation coefficient between the dependent variable and its predicted values; 4) Time dummies are included in the FGLS-based regressions.

Finally, we carry out a robustness check of the outcomes reported in column [1] of Tables 1 and 3 by measuring fiscal space volatility using four-year rolling windows and five-year rolling windows. In other words, the first other measure of fiscal space volatility is denoted as "*FSVOL4*" and is computed as the ratio of the standard deviation of the indicator of fiscal space (over four-year rolling windows, that is, from $t-3$ to t) to the mean of the indicator of fiscal space over four-year rolling windows. The second alternative measure of fiscal space volatility (denoted as "*FSVOL5*") is computed as the ratio of the standard deviation of the indicator of fiscal space (over five-year rolling windows, that is, from $t-5$ to t) to the mean of the indicator of fiscal space over five-year rolling windows. Higher values of these two indicators of fiscal space volatility reflect greater volatility of fiscal space.

The results in columns [1] and [3] of Table 4 are obtained by estimating the baseline model (1), where the dependent variables are respectively "*FSVOL4*" and "*FSVOL5*." Likewise, the results in columns [2] and [4] of Table 4 are uncovered by estimating the specifications of model (1) that include the interaction between the variables "*PCI*" and "*EVI*," and where the dependent variables are respectively "*FSVOL4*" and "*FSVOL5*."

IV. Estimation Outcomes

We note across columns [1] to [3] of Table 1 that at the 1% level, productive capacities reduce fiscal space volatility and that structural economic vulnerability heightens it, respectively, over the full sample, as well as the sub-samples of LDCs and non-LDCs. **These findings confirm hypotheses 1 and 2 set out above.** Interestingly, the magnitude of productive capacities exerts a stronger negative effect on fiscal space volatility in non-LDCs than in LDCs. Concurrently, structural economic vulnerability exerts a stronger positive effect on fiscal space volatility in LDCs than in non-LDCs. In terms of magnitude, we find that over the full sample, an increase in the value of the index of productive capacities by one point is associated with a reduction of fiscal space volatility by 0.011 points. In other words, an increase in the index of productive capacities by one standard deviation is associated with a reduction of fiscal space volatility of 0.065 points (= 6.052*0.0107). Similarly, over the full sample, an increase in the value of the index of structural economic vulnerability by one point is associated with a rise in fiscal space volatility by 0.00188 points. For LDCs and non-LDCs, the magnitude of the effect of productive capacities on fiscal space volatility amounts respectively to -0.00687 and -0.012. Likewise, for LDCs and non-LDCs, the magnitude of the effect of structural economic vulnerability on fiscal space volatility amounts to 0.00194 and 0.00147, respectively for LDCs and non-LDCs.

Regarding the control variables, we find over the full sample a positive effect of the real per capita income on fiscal space volatility, at the 1% level. Put differently, developing countries with higher incomes tend to exhibit higher fiscal space volatility than developing countries with relatively lower incomes. Trade openness and volatility of the inflation rate are not significantly associated with fiscal space volatility, at the 10% level. Finally, and without surprise, we find that fiscal space volatility is higher for outlier countries than for non-outlier countries, as the coefficient of the indicator "*DUMOUT*" is positive and significant at the 1% level across the three columns of Table 1. These findings concerning the control variables are confirmed in Tables 2 to 4.

Turning to the outcomes in Table 2, we find from column [1] of this table that the coefficient of the variable "PCI_{t-3}" is negative and significant at the 1% level, while the interaction term associated with the variable "$[PCI_{t-3}]$*[Log$(GDPC)_{t-3}$]" is positive and significant at the 1% level. These outcomes tend to suggest that, on average, over the full sample, productive capacities negatively affect fiscal space volatility but only up to a level of the real per capita income; beyond that level, the effect of productive capacities on fiscal space volatility becomes positive. This level of real per capita income above which the effect of productive capacities on fiscal space volatility changes amounts to US$ million 3.372 [= exponential (0.0242/0.00161)]. The latter is far higher than the maximum value of real per capita income in the full sample, which is US$ 69679.1. We conclude that on average, over the full sample, productive capacities always exert a negative effect on fiscal space volatility (that

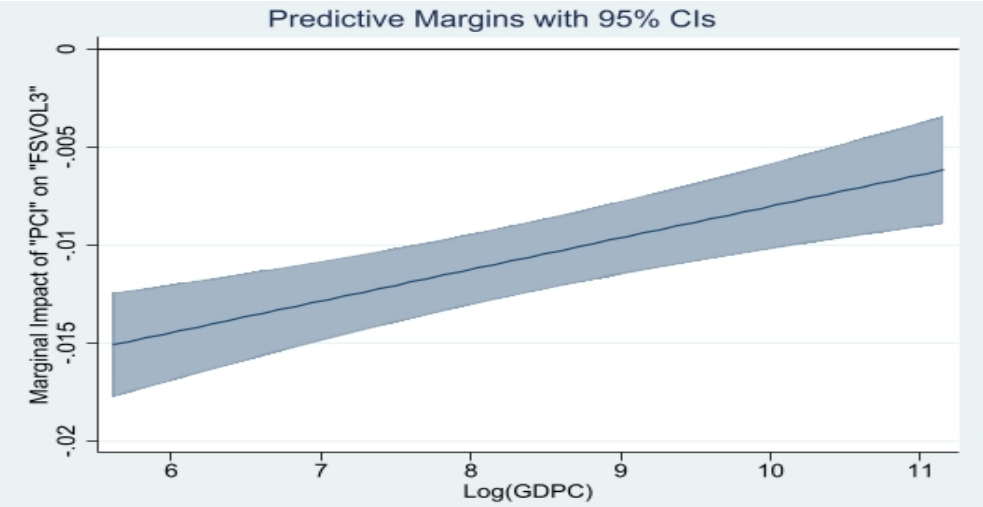

FIGURE 4. MARGINAL IMPACTS OF "*PCI*" ON "*FSVOL3*" FOR VARYING LEVELS OF REAL PER CAPITA INCOME

Note: The variable "Log(*GDPC*)" is considered at year *t*-3.

Source: Author.

is, regardless of the countries' real per capita income), but the magnitude of this negative effect is higher withthe lower the real per capita income levels. In other words, less developed countries among developing countries experience a stronger negative effect of productive capacities on fiscal space volatility compared to relatively advanced developing countries. These findings are confirmed in Figure 4, which displays, at 95% confidence intervals, the marginal impact of productive capacities on fiscal space volatility, conditioned on real per capita income. This figure shows that productive capacities always negatively affect fiscal space volatility, with the magnitude of this negative effect becoming lower as countries experience higher real per capita income.

We now turn to affect outcomes in column [2] of Table 2. These results indicate that the coefficient of the variable "*EVI*" is positive and significant at the 1% level, while the interaction term of the variable ("$[EVI_{t-3}]$*[Log$(GDPC)_{t-3}$]") is negative and significant at the 1% level. We therefore conclude that over the full sample, the effect of structural economic vulnerability on fiscal space volatility is negative for countries whose real per capita incomes are lower than US$ 12891 [= exponential (0.0106/0.00112)] and positive for countries whose real per capita incomes exceed US$ 12891. Figure 5 tends to confirm these findings. It shows at the 95% confidence intervals the marginal impact of structural economic vulnerability on fiscal space volatility, conditioned on real per capita income. It appears that this marginal impact is positive for countries whose real per capita incomes are lower than US$ 8481.25 [= exponential(9.045613)], with the magnitude of the positive effect of structural economic vulnerability on fiscal space volatility increasing as real per capita income decreases. At the same time, countries whose real per capita incomes range from US$ 8481.25 to US$ 28707.1 [= exponential(10.2649)] experience no significant effect of structural economic vulnerability. Note that the numbers "9.045613" and

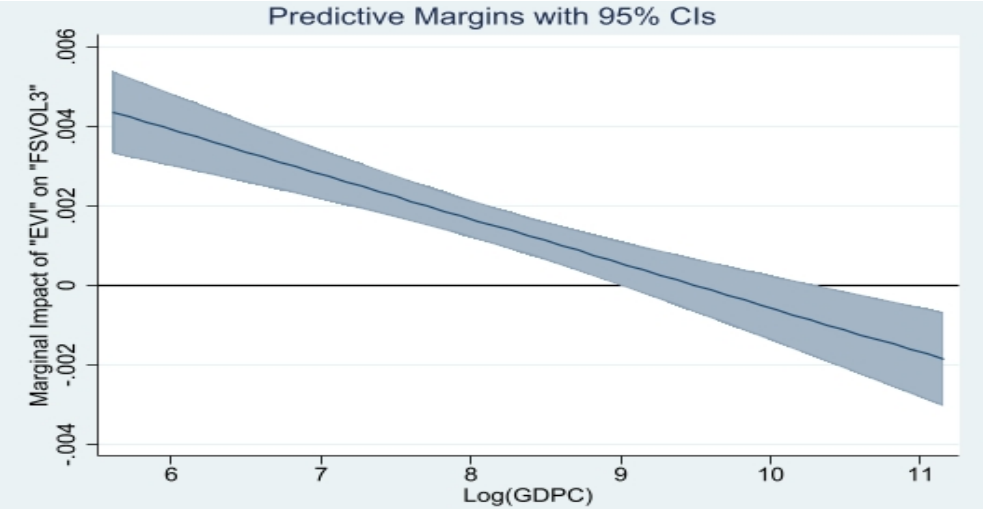

FIGURE 5. MARGINAL IMPACTS OF "*EVT*" ON "*FSVOL3*" FOR VARYING LEVELS OF REAL PER CAPITA INCOME

Note: The variable "Log(*GDPC*)" is considered at year *t*-3.

Source: Author.

"10.2649" are obtained when constructing Figure 5 using the software Stata. They represent respectively the minimum and maximum values of the variable "Log(*GDPC*)" at which the marginal impact of structural economic vulnerability on fiscal space volatility becomes statistically nil at the 95% confidence interval. Finally, for countries whose real per capita incomes exceed US$ 28707.1, the effect of structural economic vulnerability on fiscal space volatility is negative, and the higher the real per capita income is (i.e., above US$ 28707.1), the greater the magnitude is of the negative effect of structural economic vulnerability on fiscal space volatility. This latter outcome suggests that more advanced developing countries are better equipped (for example in terms of financial and human capital resources, as well as capital stock) than relatively less advanced countries (including LDCs) to cope with the adverse economic and social effects of structural economic vulnerability that would translate into greater fiscal space volatility.

We now consider the outcomes reported in Table 3. To recall, these outcomes serve primarily to test the hypothesis 3 set out in section 2, that is, to examine the extent to which productive capacities affect fiscal space volatility for varying degrees of structural economic vulnerability. It appears from this table that the coefficients of the variables "PCI_{t-3}" and "$[PCI_{t-3}]$*$[EVI_{t-3}]$" are negative and significant at the 1% level. These estimates suggest that productive capacities always influence negatively and significantly fiscal space volatility, regardless of the degree of structural economic vulnerability. In addition, the higher the level of structural economic vulnerability is, the greater is the magnitude of the negative effect of productive capacities on fiscal space volatility. These findings are confirmed in Figure 6, which presents, at 95% confidence intervals, the marginal impact of productive capacities on fiscal space volatility, conditioned on the degree of structural economic vulnerability. It appears from this figure that this marginal

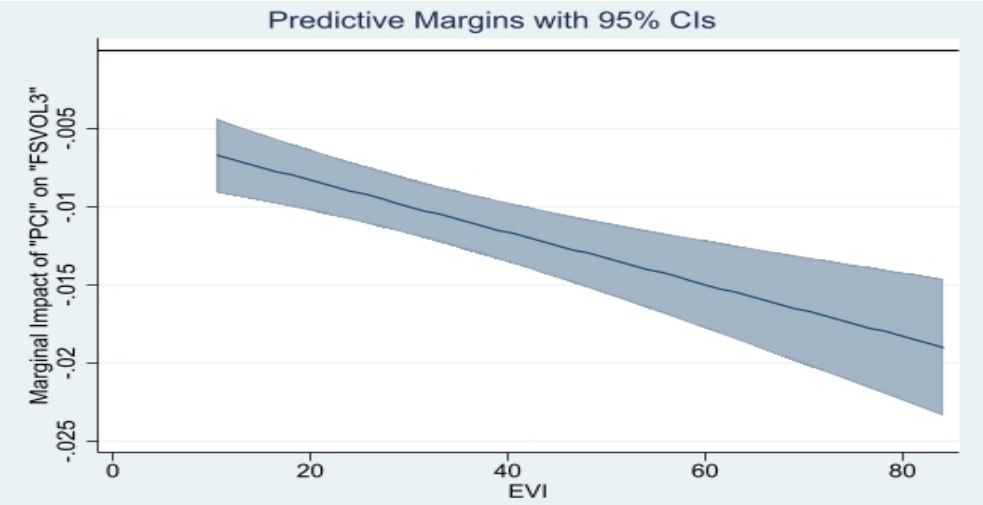

FIGURE 6. MARGINAL IMPACTS OF "*PCI*" ON "*FSVOL3*" FOR VARYING DEGREES OF STRUCTURAL ECONOMIC VULNERABILITY

Note: The variable "*EVI*" is considered at year *t*-3.

Source: Author.

impact is always negative and significant and that it decreases as the level of structural economic vulnerability rises.

The key message conveyed by the outcomes reported in Table 3 (along with Figure 6) is that productive capacities exert a stronger negative effect on fiscal space volatility in countries that face a higher degree of structural economic vulnerability than in counties with a relatively low level of structural economic vulnerability. **These findings confirm hypothesis 3**.

Finally, we take up the results in Table 4 regarding the robustness of the outcomes in column [1] of Tables 1 and 3. We note from columns [1] and [3] of Table 4 that over the full sample, productive capacities exert a negative and significant effect (at the 1% level) on fiscal space volatility, while structural economic vulnerability exerts a positive and significant effect (also at the 1% level) on fiscal space volatility. These findings confirm hypotheses 1 and 2 and align with those obtained in column [1] of Table 1. Interestingly, the magnitudes of these effects are higher in terms of absolute values for "*FSVOL5*" than for "*FSVOL4*," and then for "*FSVOL3*."

Furthermore, in both columns [2] and [4] of Table 4, we obtain findings that align with those in Table 3. Specifically, we find that the coefficients of the variables "PCI_{t-4}" and "$[PCI_{t-4}]$*$[EVI_{t-4}]$" are all negative and significant at the 1% level, as shown in column [2] of Table 4. Similarly, the estimates associated with the variables "PCI_{t-5}" and "$[PCI_{t-5}]$*$[EVI_{t-5}]$" are also all negative and significant at the 1% level, as shown in column [4] of Table 4. We therefore reach conclusions identical to those derived from Table 3, whereby productive capacities always influence negatively and significantly fiscal space volatility, with the magnitude of this negative effect increasing as the degree of structural economic vulnerability rises. Figures 7 and 8 confirm these findings. These two figures present at 95%

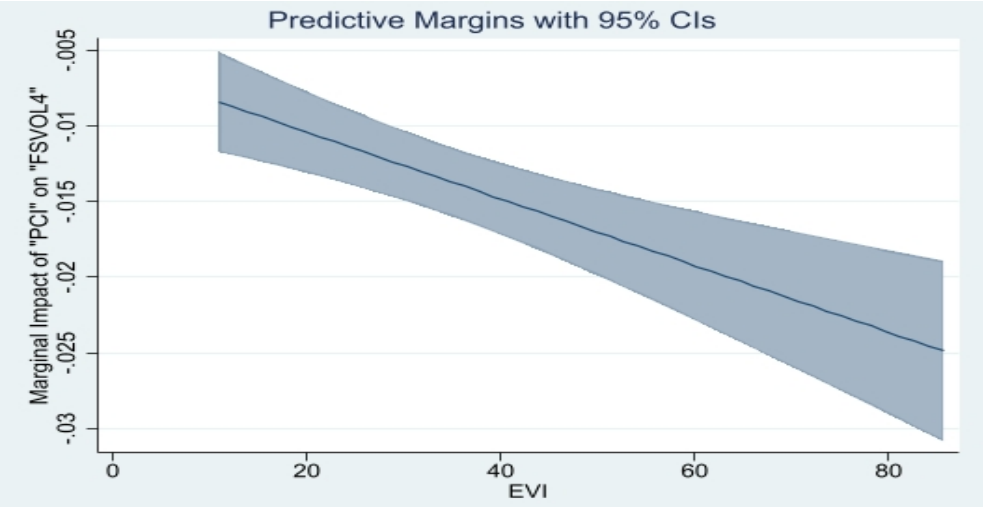

FIGURE 7. MARGINAL IMPACTS OF "*PCI*" ON "*FSVOL4*" FOR VARYING DEGREES OF STRUCTURAL ECONOMIC VULNERABILITY

Note: The variable "*EVI*" is considered at year *t*-4.

Source: Author.

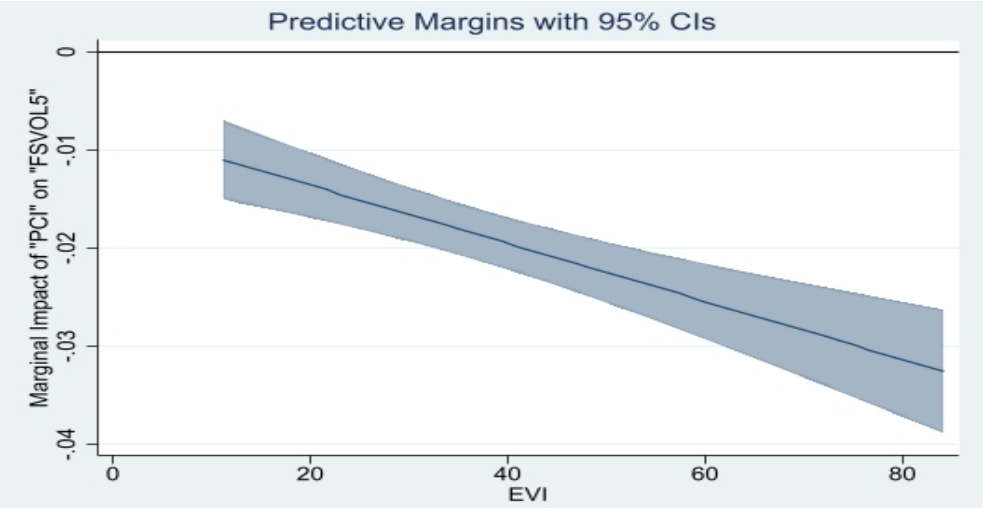

FIGURE 8. MARGINAL IMPACTS OF "*PCI*" ON "*FSVOL5*" FOR VARYING DEGREES OF STRUCTURAL ECONOMIC VULNERABILITY

Note: The variable "*EVI*" is considered at year *t*-5.

Source: Author.

confidence intervals the marginal impact of productive capacities respectively on fiscal space volatility indicators FSVOL4 and FSVOL5, conditioned on the degree of structural economic vulnerability. In both figures, the marginal impact of productive capacities respectively on fiscal space volatility is always negative and significant, and decreases as the degree of structural economic vulnerability rises. In

other words, highly structurally vulnerable countries tend to experience a stronger negative effect of productive capacities on fiscal space volatility than relatively less structurally vulnerable countries.

V. Conclusion

This article investigated the effects of productive capacities and structural economic vulnerability on fiscal space volatility in developing countries using a panel dataset of 116 countries over the period of 2000 to 2018. The results indicate that the development of productive capacities is associated with lower fiscal space volatility, while higher structural economic vulnerability is associated with greater fiscal space volatility. While the strengthening of productive capacities exerts a stronger negative effect on fiscal space volatility in non-LDCs than in LDCs, the increase in structural economic vulnerability induces greater fiscal space volatility in LDCs than in non-LDCs. The analysis of the extent to which the effects of productive capacities and structural economic vulnerability on fiscal space volatility vary across countries in the full sample provides a better picture of these effects. We found that regardless of countries' real per capita income, the development of productive capacities is always associated with lower fiscal space volatility. However, the lower the real per capita income is, the higher the magnitude of the negative effect of productive capacities on fiscal space volatility becomes. These findings do not contradict those observed over LDCs versus non-LDCs, as the latter represent average effects over each of these sub-samples while the former are marginal effects for varying levels of real per capita income. We also find that for less developed countries, i.e., those whose real per capita incomes are lower than US$ 8481.25 (this set of countries includes LDCs), structural economic vulnerability enhances fiscal space volatility, while countries whose real per capita incomes are higher than US$ 28707.1 tend to experience a negative effect of structural economic vulnerability on fiscal space volatility.

Finally, the analysis reveals that highly structurally vulnerable countries tend to experience a stronger negative effect of productive capacities on fiscal space volatility than relatively less structurally vulnerable countries.

From a policy perspective, these findings have shown that if highly vulnerable countries are to reduce their fiscal space volatility, they need to foster their productive capacities. Strengthening productive capacities in developing countries would surely require efforts by both national policymakers and international institutions, in a coordinated manner.

We recognize that the concept of "fiscal space" and hence that of "fiscal space volatility" are complex and difficult to measure. The present study aims to shed the first light on the effect of productive capacities and structural economic vulnerability on fiscal space volatility by relying on a simple measure of fiscal space. An avenue for future research could involve using other possible indicators of fiscal space (and hence of fiscal space volatility) and eventually other indicators of productive capacities to conduct such an analysis.

APPENDIX

TABLE A1—DEFINITIONS AND SOURCES OF VARIABLES

Variables	Definition	Source
FSVOL3	This is the indicator the fiscal space volatility computed over three-year rolling windows. To compute this indicator, first we compute an index of fiscal space. The indicator of the fiscal space is measured by the ratio of total public revenue (including grants and social contributions) to total public debt. The index of fiscal space volatility is computed as the ratio of the standard deviation of the indicator of fiscal space (over three-year rolling windows, that is, from t-2 to t) to the mean of the indicator of fiscal space over three-year rolling-windows. Higher values of the indicator of fiscal space volatility reflect greater volatility of fiscal space.	The indicator of fiscal space was computed by the author using data on total government public debt extracted from the World Economic Outlook, October 2020. Data on public revenue are extracted from the UNU-WIDER Public Revenue Dataset. See online: https://www.wider.unu.edu/project/government-revenue-dataset (Access date: 8 December 2021). The indicator of fiscal space volatility was computed by the author using data concerning the indicator of fiscal space.
FSVOL4	This is the indicator the fiscal space volatility over four-year rolling windows. It is computed as the ratio of the standard deviation of the indicator of fiscal space (over four-year rolling windows, that is, from t-3 to t) to the mean of the indicator of fiscal space over four-year rolling-windows. Higher values of this indicator of fiscal space volatility reflect greater volatility of fiscal space.	Author's computation using data on the indicator of fiscal space whose computation is described above.
FSVOL5	This is the indicator the fiscal space volatility over five-year rolling windows. It is computed as the ratio of the standard deviation of the indicator of fiscal space (over five-year rolling windows, that is, from t-5 to t) to the mean of the indicator of fiscal space over five-year rolling-windows. Higher values of this indicator of fiscal space volatility reflect greater volatility of fiscal space.	Author's computation using data on the indicator of fiscal space whose computation is described above.
PCI	This is the overall productive capacity index. It measures the level of productive capacities along three pillars: "the productive resources, entrepreneurial capabilities and production linkages which together determine the capacity of a country to produce goods and services and enable it to grow and develop" (UNCTAD, 2006). It is computed as a geometric average of the following eight domains or categories: information communication and technologies, structural change, natural capital, human capital, energy, transport, the private sector and institutions. Each category index is obtained using the principal components extracted from the underlying indicators, weighted by their capacity to explain the variance of the original data. The category indices are normalized into 0-100 intervals (see UNCTAD, 2020).	United Nations Conference on Trade and Development (UNCTAD) Statistics portal: https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en (Access date: 8 December 2021).

TABLE A1—DEFINITIONS AND SOURCES OF VARIABLES (CONT'D)

Variables	Definition	Source
EVI	This is the measure of countries' levels of structural economic vulnerability. The EVI indicator is referred to as the Economic Vulnerability Index. It was established at the United Nations by the Committee for Development Policy (CDP) and is used by the latter as one of the criteria for identifying LDCs. It is computed on a retrospective basis for 145 developing countries (including 48 LDCs) by the "Fondation pour les Etudes et Recherches sur le Developpement International (FERDI)". The EVI is computed as the simple arithmetic average of two sub-indexes, the intensity of exposure to shocks (exposure sub-index) and the intensity of exogenous shocks (shocks sub-index). These two sub-indexes are calculated using a weighted average of different component indexes, with the sum of the components' weights equal to 1 so that the values of EVI range from 0 to 100. The exposure sub-index has five component indexes, and the shocks sub-index has three component indexes. The five component indexes of the exposure sub-index (with their weights in brackets) are as follows: population size (25%); remoteness from world markets (25%); exports concentration (12.5%); share of agriculture, forestry and fishery in GDP (12.5%); and the share of population living in low elevated coastal zones (25%). The three component indexes of the shocks sub-index (with their weights in brackets) are as follows: victims of natural disasters (25%), instability in agricultural production (25%), and instability in the exports of goods and services (50%). A rise in the EVI values indicates greater structural economic vulnerability. For further details on the computation of the EVI, see for example Feindouno and Goujon (2016).	Data on EVI are extracted from the database of the Fondation pour les Etudes et Recherches sur le Developpement International (FERDI) - see online at: https://ferdi.fr/donnees/un-indicateur-de-vulnerabilite-economique-evi-retrospectif (Access date: 8 December 2021).
GDPC	Per capita gross domestic product (constant 2010 US$).	World Bank Indicators (WDI)
OPEN	This is the indicator of trade openness. It is the share of the sum of exports and imports of goods and services in GDP adjusted by the proportion of a country's trade level relative to the average world trade (see Squalli and Wilson, 2011, p.1758).	Author's calculation using data on exports and imports of goods and services from WDI.
INFLVOL3	This is the index of inflation volatility over three-year rolling windows. It is computed as the ratio of the standard deviation of the indicator of the inflation rate (over three-year rolling windows, that is, from t-2 to t) to the mean of the indicator of the inflation rate over three-year rolling-windows. Higher values of this indicator of inflation volatility reflect greater volatility of the inflation rate.	Author's calculation based on inflation rate data extracted from WDI.
INFLVOL4	This is the index of inflation volatility over four-year rolling windows. It has been computed as the ratio of the standard deviation of the indicator of the inflation rate (over four-year rolling windows, that is, from t-3 to t) to the mean of the indicator of the inflation rate over four-year rolling-windows. Higher values of this indicator of inflation volatility reflect greater volatility of the inflation rate.	Author's calculation based on inflation rate data extracted from WDI.
INFLVOL5	This is the index of inflation volatility over five-year rolling windows. It is computed as the ratio of the standard deviation of the indicator of the inflation rate (over five-year rolling windows, that is, from t-4 to t) to the mean of the indicator of the inflation rate over five-year rolling-windows. Higher values of this indicator of inflation volatility reflect greater volatility of the inflation rate.	Author's calculation based on inflation rate data extracted from the WDI.

TABLE A2—DESCRIPTIVE STATISTICS OF THE VARIABLES USED IN THE MODEL OF FISCAL SPACE VOLATILITY

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
FSVOL3	1,526	0.156	0.163	0.001	1.717
FSVOL4	1,526	0.190	0.185	0.001	1.984
FSVOL5	1,526	0.218	0.204	0.007	2.218
PCI	1,523	27.539	6.052	12.577	45.210
EVI	1,526	33.930	12.465	8.347	84.313
GDPC	1,523	6564.637	10482.740	282.647	69679.090
OPEN	1,501	0.0027	0.00997	3.03e-09	0.0946
INFLVOL3	1,526	0.484	4.297	-90.427	28.492
INFLVOL4	1,526	0.415	15.376	-541.897	215.961
INFLVOL5	1,526	0.464	6.719	-247.732	10.641

TABLE A3—LISTINGS OF THE 116 COUNTRIES CONTAINED IN THE FULL SAMPLE AND THE 38 COUNTRIES IN THE SUB-SAMPLE OF LDCS

Full sample			LDCs
Algeria	Ghana	Pakistan	Angola
Angola	Grenada	Panama	Bangladesh
Armenia	Guatemala	Papua New Guinea	Benin
Azerbaijan	Guinea	Paraguay	Bhutan
Bahamas, The	Guinea-Bissau	Peru	Burkina Faso
Bahrain	Guyana	Philippines	Cambodia
Bangladesh	Haiti	Qatar	Central African Republic
Barbados	Honduras	Rwanda	Chad
Belize	India	Samoa	Comoros
Benin	Indonesia	Saudi Arabia	Congo, Dem. Rep.
Bhutan	Iran, Islamic Rep.	Senegal	Gambia, The
Bolivia	Iraq	Seychelles	Guinea
Bosnia and Herzegovina	Israel	Sierra Leone	Guinea-Bissau
Brazil	Jordan	Singapore	Haiti
Brunei Darussalam	Kazakhstan	Solomon Islands	Kiribati
Burkina Faso	Kenya	South Africa	Lao PDR
Cabo Verde	Kiribati	South Sudan	Lesotho
Cambodia	Korea, Rep.	Sri Lanka	Liberia
Cameroon	Kuwait	St. Vincent and the Grenadines	Madagascar
Central African Republic	Kyrgyz Republic	Sudan	Malawi
Chad	Lao PDR	Suriname	Mali
Chile	Lebanon	Tajikistan	Mauritania
China	Lesotho	Tanzania	Mozambique
Comoros	Liberia	Thailand	Myanmar
Congo, Dem. Rep.	Madagascar	Timor-Leste	Nepal
Congo, Rep.	Malawi	Togo	Niger
Costa Rica	Malaysia	Tonga	Rwanda
Cote d'Ivoire	Maldives	Tunisia	Senegal
Cyprus	Mali	Turkey	Sierra Leone
Dominica	Mauritania	Uganda	Solomon Islands
Dominican Republic	Mauritius	United Arab Emirates	South Sudan
Ecuador	Morocco	Uruguay	Sudan
El Salvador	Mozambique	Uzbekistan	Tanzania
Equatorial Guinea	Myanmar	Vanuatu	Timor-Leste
Eswatini	Namibia	Venezuela, RB	Togo
Fiji	Nepal	Vietnam	Uganda
Gabon	Niger	Zambia	Vanuatu
Gambia, The	Nigeria	Zimbabwe	Zambia
Georgia	Oman		

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변호사검색상담 플랫폼의 경제적 가치 추정†

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본 연구에서는 국내 소비자들을 대상으로 변호사가 제공하는 법률서비스 이용현황을 살펴보고 변호사 검색 및 상담을 용이하게 하는 플랫폼이 소비자들의 효용을 얼마나 증가시킬 수 있고, 또 이를 통해 변호사 법률서비스 시장이 얼마나 확대될 수 있는지를 실증적으로 살펴보고자 한다. 이를 위해 본 연구는 컨조인트 설문으로 수집한 자료에 이산선택 수요모형을 적용해 소비자가 인식하는 변호사 검색상담 플랫폼의 가치를 산정하고 시뮬레이션 방법으로 플랫폼의 변호사 법률서비스 시장확대 효과를 추정한다. 분석 결과, 소비자가 지인으로부터 변호사를 소개받거나 오프라인에서 직접 변호사를 찾는 것 대신 플랫폼을 이용해 변호사를 찾고 상담받는 것에 대해 부여하는 상대적 가치는 약 70,414원으로 추정되었다. 변호사검색상담 플랫폼의 존재로 인해 변호사 법률서비스 시장의 규모가 적게는 18.9%에서 많게는 70.2%까지 증가할 수 있을 것으로 나타났는데, 특히 플랫폼은 법률서비스 이용 취약계층의 서비스 접근성을 상대적으로 더 높여 이용을 증대시킬 것으로 예측된다.

Key Word: 법률서비스 시장, 변호사검색상담, 온라인플랫폼, 소비자지불의사
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Ⅰ. 서 론

디지털 기술의 발전과 확산이 가속화되면서 우리 사회는 “4차 산업혁명 시대” 또는 “제2의 기계시대” 등으로 불리는 변화를 경험하고 있다. 디지털전환은 더 높은 연결성(connectivity), 인공지능(Artifical Intelligence), 자동화(automation)를 특징으로 하고 있는데, OECD의 조사에 따르면 16~24세 중 매일 인터넷을 이용하는 사람의 비중은 2010년 80%에서 2019년 95%로 증가했고, 55~74세 이용자 비중도 2010년 30%에서 2019년 58%로 증가했다(OECD, 2020). 특히 한국에서는 60대 이상을 제외하고 전 연령대에서 스마트폰 이용률이 100% 달할 정도로 무선인터넷 이용이 빠르게 확산되었다.

인터넷 이용자가 증가하고 이들의 온라인플랫폼 이용량이 증가하면서 디지털플랫폼은 전 세계적으로 증가하는 추세인데, 2013년에서 2020년 사이 OECD 국가당 평균 플랫폼 개수는 약 3배(200 → 600)로 증가했고, 1인당 플랫폼 웹사이트 트래픽(방문 횟수)은 약 4배 증가했다(Costa *et al.*, 2021). 국내에서도 디지털플랫폼을 통한 거래가 빠르게 증가하고 있는데, 2021년 O2O(online to offline) 서비스 비즈니스 기반 시장규모(O2O 서비스 기업이 제공하는 플랫폼 등 비즈니스를 통해서 발생한 매출)는 5조 4,323억원으로 2020년 대비 54.6% 성장했고, 2021년 O2O 서비스를 통한 거래액 시장규모는 약 147조원으로 2018~21년 연평균 22.9% 성장했다(과학기술정보통신부, 2021). 코로나19 팬데믹은 이러한 디지털전환을 더욱 가속화시켰는데, McKinsey(2020)는 디지털 채널을 통해 판매 및 고객관리 등 소비자 접촉을 한 기업의 비중은 과거 추세에 비해 3~4배 빠르게 증가했다고 보고했다.

디지털 기술의 발전은 기존 산업의 생산성을 증대시키는 동시에 새롭고 혁신적인 제품과 서비스의 출현을 촉진시킴으로써 경제성장에 기여할 수 있다(OECD, 2019). 먼저 노동 및 자본이 디지털 기술과 융합되면서 생산성이 제고될 수 있다. 로봇, AI, 소프트웨어를 통해 기존 공정을 자동화, 효율화하고 자원을 더 빠르고 효율적으로 배분 및 활용할 수 있다(예: 통신기술 발달, 공유경제 플랫폼). 둘째로 새로운 제품 및 서비스가 출현하고 기존 시장의 작동방식이 효율화될 수 있다. 디지털 기술을 통해 지식 및 정보 전달이 쉽고 빨라지며 새로운 아이디어가 이윤으로 창출되는 과정이 단축될 수 있다. 기업과 정부의 연구개발 활동 및 근로자 교육의 수월성도 제고될 수 있다. 또한 동영상, 음원, 웹툰 등 여러 디지털콘텐츠 사례에서 보듯이 거래방식 효율화로 기존 시장의 시장규모도 확대될 수 있다. 마지막으로 경쟁촉진을 통한 제품 및 서비스 품질이 개선될 수 있다. 물리적 시설 투자의 중요성이 감소함에 따라 진입 장벽이 낮아지고 경쟁이 촉진될 수 있으며, 디지털플랫폼을 통한 정보의 수집 및 공유가 수월해짐에 따라 정보의 비대칭성이 완화되고 제품 및 서비스의 품질이 개선될 수 있다. 이러한 생산성 증대는 경제성장으로 이어질 수 있는데, 1991~2018년 사이 출간된 196건의 실증연구 대부분이 ICT가 경제성장 또는 생산성 증대에 미치는 긍정적 영향을 확인했다(Vu *et al.*, 2020).

디지털전환은 소비자의 후생도 직접적으로 증대시킬 수 있다. 생산성과 효율성 증대로 기

존 제품 및 서비스의 가격이 인하될 수 있고, 탐색비용과 인증비용 감소로 정보비대칭성이 완화되는 것도 가격 인하 또는 품질 향상에 기여한다. 또한 디지털기술의 적용으로 혁신적 제품과 서비스가 공급되면서 이로부터 효용을 얻을 수 있다.

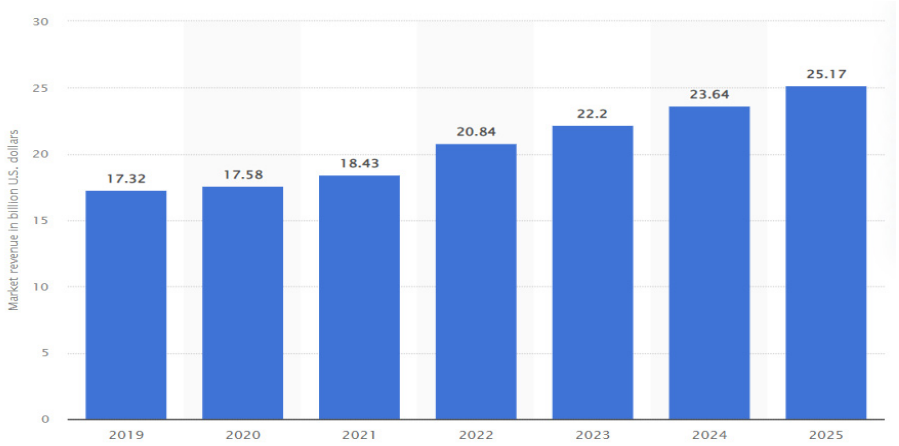
디지털전환은 법률시장에도 여러 가지 변화를 가져오고 있다. 법률과 기술의 합성어인 리걸테크 산업의 2019년 전 세계 규모는 173.2억달러이고 2025년까지 연평균 6%씩 성장해 251.7억달러 규모로 성장할 것으로 전망되고 있다(Statista, 2020). 미국 나스닥의 리포트는 향후 5년간 법률시장 전체 연평균 성장률 예상치가 4.4%인 데 비해 'legal tech', 'compliance'(RegTech), 'contracting'(Ktech)의 세 개 분야는 같은 기간 3배 성장할 것으로 예상했다(Nasdaq, 2021). 또한 리걸테크에 대한 지출은 2016년의 기업 내 법률 관련 지출 2.6%에서 2020년 3.9%로 이미 1.5배 증가했고, 이 비중은 2025년에 약 12%까지 증가할 것으로 예상되기도 한다(Gartner, 2021). 2023년 8월 기준 리걸테크 회사 수는 7,450개이고 투자규모는 135억달러(Tracxn, 2023)이며, Stanford codeX 통계 기준으로 legal marketplace 기업은 전체 리걸테크 기업의 약 8%를 차지한다.

리걸테크 산업이 앞으로도 지속적으로 성장할 것으로 예상되는 데는 몇 가지 이유가 있다. 우선 정부 규제로 인한 법률서비스의 복잡성이 증대하고 있다. 또 전 세계적으로 생성되는 데이터의 양이 빠르게 증가하고 있고 이에 따라 변호사들의 처리 부담도 증가하고 있다. 기업 법무팀들은 증가하는 업무에 대응해 인력을 늘리거나 외부 서비스를 활용하는 대신 리걸테크를 이용해 효율성을 높이려 할 것이다. 특히 복잡성이 낮은 작업은 변호사가 아닌 직원이 주요 작업절차를 디지털화하고 자동화 사용을 확대함으로써 부서의 효율성을 높이려 할 것이다. 데이터분석 기술 발전과 디지털플랫폼 시장 성장은 이러한 요구를 뒷받침해 줄 수 있다.

리걸테크 시장 중에서도 법률서비스 중개플랫폼 또는 변호사검색상담 플랫폼(legal marketplace)은 특히 많은 주목을 받고 있다.[1] 법률서비스 중개플랫폼은 다른 서비스 중개플랫폼과 같이 오프라인으로 이루어지던 거래를 온라인/디지털화함으로써 경제적 비용을 감소시킬 수 있다. 변호사 법률자문을 비롯한 정보 검색 및 비교 비용(탐색비용)의 감소, 통신을 이용한 서비스 제공 비용(생산비용)의 감소, 주로 변호사인 법률자문 제공자들의 평판과 신뢰성 확인 비용(인증비용)의 감소 등이 그것이다. 법률서비스 중개플랫폼은 법률서비스 생산의 효율성을 높일 뿐만 아니라 소비자 후생과 시장규모를 증대시킬 수 있다. 소비자는 자신이 원하는 변호사를 더 쉽게 만날 수 있고, 정보의 투명화로 서비스의 품질 향상과 가격 인하를 누릴 수 있다. 또한 소비자가 법률서비스를 보다 쉽고 저렴하게 이용하도록 함으로써 법률서비스 시장의 규모도 커질 수 있다.

변호사의 법률자문과 같은 전문직 서비스는 소비자가 서비스를 받기 전에는 그 품질을 잘 알 수 없고 받은 이후에도 가격과 품질의 적절성을 판단하기 어려운 특성을 가진 신뢰재

[1]이에 해당하는 온라인플랫폼들은 법률서비스 소비자와 공급자를 매개해 주는 역할을 하기 때문에 중개서비스 플랫폼이라고 부를 수 있으나, 후술하듯이 우리나라에서는 해당 플랫폼이 중개의 역할을 하는지 광고의 역할을 하는지가 첨예한 쟁점 중 하나이므로 본 논문에서는 변호사검색상담 플랫폼이라 칭한다. 논문의 연구 내용도 여러 법률서비스 중에 변호사의 법률상담서비스에 초점을 맞추고 있기 때문에 그 대상을 변호사검색상담 플랫폼이라 칭하는 것이 적절할 것이다.



Source: Statista(2020).

Figure 1. Worldwide Legal Tech Market Revenue Forecast

(credence good)이다. 의료서비스, 정비 및 수리, 금융자문, 미용 등도 신뢰재의 범주에 포함된다. 신뢰재의 경우 소비자는 서비스 품질과 가격뿐만 아니라 어떤 서비스가 필요하고 얼마나 필요한지까지도 판단하기 어렵다. 이 때문에 신뢰재 시장에서는 크게 세 가지의 문제가 발생할 수 있다. 첫째는 과소 공급(underprovision)의 문제이다. 전문가가 소비자에게 필요한 것보다 과소한 서비스를 제공할 수 있다는 것으로, 예를 들면 재판이 필요한 사건에 대해 변호사가 합의로 종결할 것을 제안하는 경우이다. 둘째는 과잉 공급(overprovision)의 문제이다. 이는 소비자에게 필요한 것 이상의 서비스를 제공하는 경우를 말하는데, 항소 시 승소 가능성이 낮은 사건에서 항소를 제안하는 것을 예로 들 수 있다. 마지막은 과잉 과금(overcharging)의 문제로, 제공한 서비스 이상의 비용을 요구하는 것을 의미한다(Dulleck *et al.*, 2011, Balafoutas and Kerschbamer, 2020).

신뢰재에 대한 경제학 연구들은 신뢰재의 문제를 해결하는 방법으로 소비자의 정보접근성 제고, 진단과 처치의 분리(예: 의약분업), 책임 부과(liability)와 비용 검증 가능성(verifiability), 전문가 간 경쟁 활성화, 평판 조회/활용 용이성, 2차 소견(second opinion) 등 다양한 방법을 제안한 바 있다(Bindra *et al.*, 2021; Kerschbamer and Sutter, 2017; Schneider, 2012). 전문가서비스 중개플랫폼은 이들 메커니즘 중 일부를 구현하는 방법이다. 즉, 소비자의 정보접근성 제고, 경쟁 활성화, 평판 활용(후기 및 평점), 2차 소견 청취 비용 감소 등을 통해 신뢰재의 문제를 줄일 수 있다. 전문직 면허는 정부 또는 비정부 기관에서 최소한의 전문가 자질을 검증하는 수단이라는 점에서 신뢰재의 문제를 해결하는 하나의 방안이 되지만, 충분한 수의 전문가 공급이 없는 경우 서비스 비용과 품질의 불투명성 문제는 사라지지 않고 경우에 따라 사회후생은 오히려 감소할 수 있다. 또한 면허는 기득권자의 지대를 만들어 전문가의 공급을 줄이는 결과를 낳을 수 있고, 면허를 취득하기 위해 투자해야 하는 사회적 비용(노력 포함)을 과도하게 발생시킬 수 있다. 예를 들어 Kleiner and Soltas(2019)는 미국 내 전기기사, 안경사, 치과보조, 보안요원 등 (법률, 의료 등 전문

직 미포함) 직종에서 면허가 사회후생을 약 12% 감소시킴을 보이기도 했다.

전문가서비스 온라인플랫폼은 소비자와 서비스 제공자 간 정보비대칭 문제를 해소함으로써 거래비용을 줄이고 신뢰재의 문제를 감소시킬 수 있을 것이라는 기대를 안고 여러 분야에서 빠르게 성장하고 있다. 국내에서는 변호사검색상담 플랫폼인 로톡, 로앤굿, 로시컴, 불변이 경쟁하며 시장성장을 이끌고 있고, 미용・의료정보 플랫폼 시장에서는 강남언니, 바비톡 등의 기업이, 세무사 검색플랫폼 시장에서는 삼쩜삼, 찾아줘세무사, 세무통과 같은 기업이 등장해 소비자들의 호응을 얻고 있다. 그러나 전문가서비스 플랫폼이 성장하면서 대한변호사협회, 대한의사협회, 한국세무사회, 한국공인중개사협회 등 기존의 전문가 단체들은 플랫폼들이 부당한 알선행위를 한다는 혐의로 소송을 제기하거나 법규 및 자체규정을 개정하는 등 전문가 단체들과 플랫폼 간의 갈등이 커지고 있다. 이러한 환경에서 전문가서비스 플랫폼이 소비자에게 어느 정도의 효용을 주고 시장발전에 어떤 영향을 주는지를 살펴보는 것은 정책적으로 큰 의미를 가질 것이다. 뉴질랜드의 법률서비스 시장을 대상으로 면허가 필요한 변호사 회사와 별도의 면허나 규제가 없는 노무사 회사 간 웹사이트 가격정보 투명성을 비교한 Choe(2021)를 제외하면 온라인 법률서비스를 대상으로 정량적인 분석을 한 연구가 전무하다는 점에서 본 연구의 학술적 의의도 찾을 수 있다.

본 연구는 국내 소비자들을 대상으로 변호사가 제공하는 법률서비스 이용 현황을 살펴보고 변호사 검색 및 상담을 용이하게 하는 플랫폼이 소비자들의 효용을 얼마나 증가시킬 수 있고, 또 이를 통해 변호사 법률서비스 시장이 얼마나 확대될 수 있는지를 실증적으로 살펴보고자 한다. 이를 위해 다음 장에서는 설문조사에서 나타난 국내 소비자들의 변호사 법률서비스 이용 현황을 살펴보고 이후 컨조인트 실험과 이산적 선택수요모형을 이용해 소비자가 인식하는 변호사검색상담 플랫폼의 가치 및 플랫폼의 변호사 법률서비스 시장확대 효과를 추정한다.

Ⅱ. 변호사검색상담 서비스 이용 현황

본 연구는 정보통신정책연구원(2022)의 『디지털 플랫폼을 통한 혁신선도 및 사회가치 창출 방안 연구』를 위해 엠브레인에 의뢰해 2022년 11월에 실시한 설문조사 자료의 일부를 이용해 수행되었다. 변호사검색상담 서비스 이용 현황 및 의향에 대한 설문대상 표본은 800명이고 이들은 연령, 성별, 지역별로 할당 추출되었다. 본 연구진은 컨조인트 설문에 앞서 응답자들의 변호사 법률서비스 이용 경험과 의향을 질문했는데, 여기에서도 변호사를 검색하고 상담을 받을 수 있는 플랫폼의 필요성을 찾아볼 수 있다. 대법원의 자료에서 나타난 바에 따르면 2017~22년간 형사소송 1심 재판에서 변호사의 도움 없이 소송을 진행한 이른바 '나홀로 소송'의 비율이 약 45%에 달했고,[2] 2016~21년간 민사 본안소송 1심에서의 나홀로 소송 비율은 72.7%에 달했다. 이는 높은 변호사 수임료에 기인하는 것이기도 하지만,

[2] 『리걸타임즈』, 「형사소송 1심 재판 45%는 변호사 없는 '나홀로소송'」, 2022. 10. 19.

알음알음 변호사를 찾는 기존의 관행과도 관련이 있을 것이다. 주변에 알고 지내는 변호사의 수를 묻는 질문에 대해 Table 1에 나타난 바와 같이 전체 응답자 중 73.4%는 알고 지내는 변호사가 없다고 응답했다. 특히 응답자 중 연령, 학력, 소득이 낮을수록 알고 지내는 변호사가 없다고 응답한 비율이 높아 경제사회적 취약계층일수록 법률서비스에 대한 접근성도 낮아질 가능성이 크다는 것을 알 수 있다. 유료로 변호사 제공 법률서비스를 이용한 경험을 가진 응답자의 비율은 약 20.5%로 그리 높지 않다. 그러나 여기에서도 학력이 높고(대학원 이상 28.3%) 가구소득이 높을수록(월평균 1천만원 이상 30.5%) 유료 법률서비스 이용 경험 비율이 높아지는 경향을 보였다.

법률서비스 유료 이용 경험이 있는 응답자의 과거 변호사 탐색방법은 Table 2와 같다. 법률서비스 유료 이용 경험자들 중 49.4%는 지인에게 소개받아 서비스를 이용하였으며 알고 지내던 변호사로부터 서비스를 제공받은 비율도 32.9%에 달하는 것에 비해, 플랫폼을 이용한 응답자는 12.8%로 낮은 이용률을 보였다. 다만, 20대와 30대, 월평균 가구 소득 399만원 이하 집단의 경우 인터넷 및 플랫폼을 이용한 경험이 상대적으로 높은 것으로 나타나, 전통적 변호사 탐색방법을 활용하기 어려운 집단에서 인터넷 및 플랫폼이 대체 수단으로 활용되고 있음을 확인할 수 있었다.

향후 법률서비스에 대한 수요 발생 시 변호사의 조력을 받을 의사가 있는 응답자에게 변호사 탐색 계획을 질의한 결과, Table 3와 같이 응답자의 44.6%는 플랫폼을 이용할 계획이며 인터넷 검색까지 포함할 경우 온라인을 통한 법률서비스 탐색이 65.8%에 달할 것으로

Table 1. The Number of Lawyers People Know around Them

		사례 수	1명	2명	3~4명	5명 이상	없음
전체		(800)	15.0	6.8	3.1	1.8	73.4
성별	남성	(407)	17.0	8.6	2.9	2.7	68.8
	여성	(393)	13.0	4.8	3.3	0.8	78.1
연령	20대	(153)	12.4	1.3	2.0	2.0	82.4
	30대	(155)	12.9	6.5	2.6	0.6	77.4
	40대	(190)	10.5	6.3	1.1	2.1	80.0
	50대	(203)	18.2	9.9	4.4	2.0	65.5
	60대	(99)	24.2	10.1	7.1	2.0	56.6
최종학력	중학교 졸업 이하	(2)	0.0	0.0	0.0	0.0	100.0
	고등학교 재학/졸업	(115)	15.7	4.3	0.0	1.7	78.3
	전문대 재학/졸업	(106)	11.3	4.7	1.9	0.0	82.1
	대학 재학/졸업	(485)	14.0	7.0	3.5	1.4	74.0
	대학원 이상	(92)	23.9	10.9	6.5	5.4	53.3
월평균 가구 소득	200만원 미만	(58)	12.1	1.7	3.4	0.0	82.8
	200~399만원	(227)	12.3	3.1	0.9	0.4	83.3
	400~599만원	(198)	17.7	8.1	0.5	3.5	70.2
	600~799만원	(171)	12.3	9.4	2.9	1.8	73.7
	800~999만원	(87)	20.7	10.3	8.0	1.1	59.8
	1,000만원 이상	(59)	18.6	8.5	13.6	3.4	55.9

Table 2. How to Find a Lawyer who Provides Legal Services

		사례 수	지인 소개	알고 지내던 변호사	인터넷 검색	플랫폼	기타	방송/옥외 광고
전체		(164)	49.4	32.9	27.4	12.8	3.0	1.8
연령	20대	(22)	45.5	22.7	36.4	27.3	4.5	4.5
	30대	(26)	30.8	34.6	38.5	19.2	3.8	0.0
	40대	(38)	52.6	31.6	26.3	5.3	2.6	2.6
	50대	(52)	55.8	32.7	25.0	9.6	1.9	1.9
	60대	(26)	53.8	42.3	15.4	11.5	3.8	0.0
최종 학력	중학교 졸업 이하	(1)	100.0	0.0	0.0	0.0	0.0	0.0
	고등학교 재학/졸업	(23)	39.1	21.7	39.1	17.4	0.0	0.0
	전문대 재학/졸업	(19)	52.6	31.6	31.6	5.3	10.5	0.0
	대학 재학/졸업	(95)	50.5	33.7	28.4	14.7	0.0	3.2
	대학원 이상	(26)	50.0	42.3	11.5	7.7	11.5	0.0
월평균 가구 소득	200만원 미만	(6)	50.0	33.3	50.0	33.3	0.0	16.7
	200~399만원	(30)	36.7	16.7	43.3	20.0	0.0	3.3
	400~599만원	(42)	57.1	23.8	21.4	14.3	4.8	2.4
	600~799만원	(45)	55.6	28.9	22.2	8.9	2.2	0.0
	800~999만원	(23)	43.5	47.8	26.1	8.7	4.3	0.0
	1,000만원 이상	(18)	44.4	72.2	22.2	5.6	5.6	0.0

나타났다. 이는 과거 지인의 소개나 알고 지내던 변호사를 통해 법률서비스를 탐색한 비율이 높았던 Table 2와 다소 상이한 결과로, 법률서비스 채널에 대한 탐색과 선택이 다양화될 가능성을 간접적으로 시사한 결과라 할 수 있다. 특히 플랫폼 활용 의향이 연령, 학력, 소득수준과 무관하게 대체로 40%대를 나타내고 있어, 플랫폼이 전통적 변호사 탐색방법의 차순위 대안이 아닌 법률서비스의 주요 탐색 수단으로 소비자들에게 인식되고 있다는 것을 알 수 있다.

컨조인트 설문과 수요함수를 이용해 법률서비스 플랫폼에 대한 이용자 지불의사를 추정하기에 앞서 본 설문에서는 만약 법률서비스 플랫폼에서 상담을 위한 유료회원 가입비를 받을 경우, 서비스 이용을 위해 지불할 의향이 있는 월 가입비가 얼마인지를 질문했고, 그 결과가 Table 4에[3] 제시되어 있다. 향후 법률서비스 이용을 위해 서비스 제공자인 변호사를 찾기 위한 수단으로 플랫폼을 활용하겠다는 의사를 밝힌 응답자는 가입비로 월평균 3,400원(또는 연 40,800원)을 지불할 용의가 있는 것으로 나타났다. 가입비에 대한 지불 의향은 연령 및 소득수준이 높아질수록 증가하는 경향을 확인할 수 있었다.

[3]기타로 응답한 10명의 지불용의를 금전적으로 환산하는 데 어려움이 따르기 때문에, 월 가입비 지불 의향의 평균과 표준편차 계산 시 해당 관측치는 제외하였다.

Table 3. How Would You Find a Lawyer when You Need Legal Services in the Future

		사례 수	플랫폼	지인 소개	인터넷 검색	알고 지내던 변호사	방송/옥외 광고	기타
전체		(652)	44.6	24.2	21.2	9.0	0.6	0.3
연령	20대	(116)	53.4	17.2	21.6	6.0	0.9	0.9
	30대	(124)	45.2	15.3	28.2	11.3	0.0	0.0
	40대	(150)	42.0	28.0	22.7	6.7	0.7	0.0
	50대	(169)	39.6	34.3	14.8	9.5	1.2	0.6
	60대	(93)	46.2	20.4	20.4	12.9	0.0	0.0
최종 학력	중학교 졸업 이하	(2)	0.0	100.0	0.0	0.0	0.0	0.0
	고등학교 재학/졸업	(92)	42.4	22.8	25.0	6.5	2.2	1.1
	전문대 재학/졸업	(82)	46.3	22.0	25.6	6.1	0.0	0.0
	대학 재학/졸업	(399)	44.9	23.8	20.6	10.0	0.5	0.3
	대학원 이상	(77)	45.5	28.6	15.6	10.4	0.0	0.0
월평균 가구 소득	200만원 미만	(43)	48.8	16.3	25.6	9.3	0.0	0.0
	200~399만원	(180)	42.2	26.7	24.4	5.0	1.7	0.0
	400~599만원	(162)	44.4	24.7	21.6	8.6	0.6	0.0
	600~799만원	(144)	46.5	25.0	19.4	7.6	0.0	1.4
	800~999만원	(73)	47.9	23.3	15.1	13.7	0.0	0.0
	1,000만원 이상	(50)	40.0	20.0	18.0	22.0	0.0	0.0

Table 4. Willingness to Pay for the Online Lawyer Search & Consultation Platform

(Unit: 1,000KRW)

		사례 수	평균	표준편차
전체		(281)	3.4	3.0
연령	20대	(60)	2.9	2.6
	30대	(54)	3.4	2.9
	40대	(61)	3.6	3.1
	50대	(64)	3.8	3.4
	60대	(42)	3.1	2.4
최종학력	중학교 졸업 이하	-	-	-
	고등학교 재학/졸업	(38)	3.3	2.9
	전문대 재학/졸업	(35)	3.0	2.8
	대학 재학/졸업	(174)	3.5	3.0
	대학원 이상	(34)	3.1	2.8
월평균 가구 소득	200만원 미만	(21)	2.5	2.7
	200~399만원	(75)	3.2	2.7
	400~599만원	(69)	3.6	3.3
	600~799만원	(65)	4.0	3.2
	800~999만원	(33)	2.8	2.5
	1,000만원 이상	(18)	3.4	2.8

Ⅲ. 분석방법

1. 이산선택실험의 설계

본 연구에 사용된 자료는 이산선택실험(discrete choice experiment) 형식의 컨조인트(conjoint) 설문을 이용하여 수집하였다.[4] 컨조인트 설문은 소비자에게 다양한 속성의 조합으로 구성된 선택대안을 제시한 후 그중 가장 선호하는 상품을 선택하게 하는 과정을 반복함으로써, 상품 선택 시 소비자들이 상대적으로 중요하게 여기는 특성에 대한 정보(Ben-Akiva *et al.*, 2019)를 얻는 연구 방법이라고 할 수 있다.

법률자문 서비스를 이용하고자 하는 소비자는 서비스 제공자인 변호사에 대한 정보를 얻기 위해 관련 정보의 제공 여부 및 수준을 기준으로 변호사 검색상담 채널을 선택할 확률이 높다. 따라서 본 연구에서는 변호사검색상담 채널의 속성을 대표하는 6가지 속성을 Table 5와 같이 선정하였다.

6가지 검색상담 채널 속성 및 수준의 조합으로 구성된 컨조인트 카드들 중 3개 세트를 설문 응답자마다 제시한 후 가장 선호하는 선택지를 하나 선택하도록 요구하였는데, 해당 카드의 예시는 Table 6와 같다. Ben-Akiva *et al.*(2019)은 적절한 컨조인트 설문 설계를 위해 고려해야 하는 9가지 요소로 설문 응답자 구성의 적절성, 설문 주제의 친근성, 현실이 적절히 반영된 속성 등과 함께 미선택 옵션(outside option)의 구성을 꼽았다. Table 6의 유형 D가 이와 같은 미선택 옵션으로, 소비 선택의 과정에서 소비자들이 주어진 3개의

Table 5. Attributes and Levels of Lawyer Search & Consulting Service Channel

속성	설명
비교 가능한 변호사 수	30분의 시간을 들여 상담료와 경력 등의 정보를 얻을 수 있는 변호사의 수
	수준 : ① 1명 / ② 5명 / ③ 10명 / ④ 20명
변호사 보수 정보	수임료: 변호사가 법률 행위나 사무 처리를 맡는 대가로 받는 보수 / 상담료: 변호사를 정식 선임하기 전 사건의 진행방법에 대한 조언의 대가로 받는 보수
	수준 : ① 수임료와 상담료 모두 공개 / ② 상담료만 공개 / ③ 모두 비공개
상담료 (10분당)	상담료는 10분 변호사 대면상담 기준
	수준 : ① 1만원 / ② 2만원 / ③ 3만원 / ④ 4만원 / ⑤ 5만원
다른 의뢰인 후기	변호사의 서비스를 경험해본 다른 의뢰인들이 남기는 평가
	수준 : ① 있음 / ② 없음
변호사 이력 정보	학력, 경력, 변호사 외 보유한 자격 등의 정보
	수준 : ① 공개 / ② 비공개
유사 사건 상담사례	의뢰인들의 법률문제에 대해 변호사들이 제시한 해결책 중 일부를 공개
	수준 : ① 공개 / ② 비공개

[4]따라서 정확하게 말하면 본 연구의 설문은 이산선택실험이라 할 수 있으나, 통상적으로 더 흔히 사용되는 방식에 따라 컨조인트 설문이라 명명한다.

Table 6. An Example of the Conjoint Card

귀하께서는 아래 변호사 선택 유형 중 어떤 것을 가장 선호하십니까?
하나만 선택해 주시기 바랍니다. [1개 선택]

	① 유형A	② 유형B	③ 유형C	④ 유형D
30분 내 비교 가능한 변호사 수	5명	1명	1명	유형 A, B, C 모두 선택하지 않음 (변호사 서비스를 이용하지 않음)
변호사 보수 정보	상담료만 공개	수임료+상담료 모두 공개	모두 비공개	
상담료(10분당)	2만원	2만원	1만원	
다른 의뢰인 후기	없음	없음	있음	
변호사 이력 정보	비공개	공개	비공개	
유사 사건 상담사례	공개	공개	비공개	

채널이 모두 마음에 들지 않아 변호사 법률서비스 탐색을 포기하는 경우를 모형에 반영하여 모형의 설명력을 높이고자 하였다. 현실에서도 오프라인 및 온라인에서 변호사 서비스를 사용할 수 있는 옵션이 있음에도 불구하고 변호사의 조력을 받지 않는 경우가 많은데, 유형 D는 이러한 선택지를 반영한다. 유형 D는 속성값으로는 30분 내 비교 가능한 변호사의 수와 상담료가 0이고 변호사 보수 정보, 다른 의뢰인 후기, 변호사 이력 정보, 유사 사건 상담사례가 모두 제공되지 않는 선택지라고 할 수 있다. 제시된 대안들이 소비자가 선호하는 속성을 많이 가지고 있는 경우 유형 D의 선택확률이 낮아질 것이다.

2. 수요함수 및 선택확률 추정

본 연구에서는 이산적 선택모형(discrete choice model) 중 혼합 로짓(mixed logit)을 이용하여 법률서비스 채널에 대한 소비자 수요추정을 하였다. 혼합 로짓모형은 상품 특성에 대한 개인의 선호를 반영하여 로짓모형의 IIA(independence of irrelevant alternatives) 가정에 의한 제한적 대체 패턴을 보완하면서도, 오차항이 타입 I 극단값 분포(type I extreme value distribution)를 따른다고 가정하여 간단한 형태의 선택확률(choice probability)을 도출할 수 있는 장점을 가진다고 할 수 있다.

법률서비스 채널에 대한 소비자의 효용함수는 식 (1)과 같다.

(1)
$$U_{ij} = \alpha Fee_j + X_j\beta_i + \epsilon_{ij}$$
$$= V_{ij} + \epsilon_{ij}$$

U_{ij} : 법률서비스 채널 j에 대한 소비자 i의 효용
Fee_j : 법률서비스 채널 j의 상담료
X_j : 법률서비스 채널 j의 특성변수 행렬
ϵ_{ij} : 오차항

채널 j가 주는 효용이 선택대안들(alternatives)보다 클 경우 소비자 i가 j를 선택($U_{ij} > U_{ik} \quad \forall j \neq k$)한다고 가정하는데, 이때 효용을 U_{ij}로 나타낸다. X_j는 컨조인트 설문을 구성하는 법률서비스 채널 특성 중 10분당 상담료(Fee_j)를 제외한 변수로, 30분 내 비교 가능한 변호사 수, 변호사 보수 정보 더미, 다른 의뢰인 후기 더미, 변호사 이력 정보 더미 및 유사 사건 상담사례 더미로 구성된다. 특성변수 X_j의 계수 β_i는 확률계수로, 소비자마다 상이한 선호를 반영할 수 있도록 하였으며 정규분포(normal distribution)를 가진다고 설정하였다. 상품의 가격이나 급여 등과 같이 의사결정자에게 같은 방향의 효용을 주는 특성 계수의 분포는 로그 정규분포(log normal distribution)가 유용한 것으로 알려져 있으나(Meijer and Rouwendal, 2006; Train, 2009), 30분 내 비교 가능한 변호사 수나 변호사 보수 정보 등은 특정한 방향성을 보인다고 볼 수 없기 때문에 정규분포로 가정하는 것이 타당하다. 다음으로 채널 j의 상담료(10분당) Fee_j의 경우 확률계수가 아닌 고정계수를 가지도록 하여 개별 소비자들이 상담료에 대해 평균적으로 같은 선호를 가지도록 설정하였다. 소비자의 급여, 자산, 소비성향 등에 따라 상품 가격에 대한 개인의 선호가 달라질 수 있음에도 불구하고, 서비스 가격 중 하나인 상담료가 고정계수인 것이 다소 부적절하다고 볼 수도 있다. 그러나 상담료는 법률서비스의 직접적인 서비스 비용이라기보다는 사건에 대한 대응 및 위임 여부를 판단하기 위한 비용으로, 법률서비스 수요가 있는 소비자라면 회피할 유인이 낮고 평균 수십만 원에서 수백만 원에 이르는 실제 수임료에 비해 매우 낮은 금액이라는 점에서 개인 특성에 따른 선호 차이는 크지 않다고 할 수 있을 것이다. 오차항 ϵ_{ij}는 앞서 설명한 것과 같이 타입 I 극단값 분포를 따르기 때문에, 소비자 i가 채널 j를 선택할 β_i 조건부 확률은 식 (2)와 같다.

(2) $$L_{ij}(\beta_i) = \frac{e^{V_{ij}}}{\sum_{k=1}^{K} e^{V_{ik}}}$$

식 (2)의 조건부 확률을 $f(\beta \mid \theta)$로부터 도출한 모든 β_i에 대해 적분한 비조건부 확률은 식 (3)과 같은데, 이를 혼합로짓확률(Train, 2009)이라고 한다.

(3) $$P_{ij} = \int L_{ij}(\beta_i) f(\beta \mid \theta) d\beta$$

그런데 식 (3)은 닫힌 해(closed form solution)가 존재하지 않기 때문에, P_{ij}의 불편추정량인 시뮬레이션 확률 SP_{ij}을 이용하여 시뮬레이션 로그우도함수(simulated log-likelihood function)를 식 (4)와 같이 세울 수 있다.

(4)[5] $$SLL = \sum_{i=1}^{I}\sum_{j=1}^{J} d_{ij} \ln SP_{ij}, \quad where\, SP_{ij} = \frac{1}{R}\sum_{r=1}^{R} L_{ij}(\beta^r)$$

[5] β^r는 $f(\beta \mid \theta)$에서 r번째로 추출한 값을 나타내며, d_{ij}는 i가 j를 선택했을 때 1의 값을 갖는 지시함수이다.

시뮬레이션 최대우도(maximum simulated likelihood)를 이용하여 식 (4)를 극대화하는 θ를 추정하게 되는데, 이때 시뮬레이션 횟수가 많아지면 추정의 정확도를 높일 수 있다(Hensher and Greene, 2003; Train, 2009). 따라서 본 연구에서는 홀튼 시퀀스(Halton sequence)를 이용한 1,000개[6]의 시뮬레이션 확률을 추정에 활용하였다.

3. 지불용의 및 시뮬레이션

수요추정 결과를 기반으로 채널 특성변수별 지불용의(willingness to pay)를 도출할 수 있다. 지불용의는 법률서비스의 각 속성별 세부 특성에 대해 소비자가 부여하는 효용의 크기를 금전적 가치로 환산한 것으로, 식 (3)에서와 같이 채널특성 변수의 계수를 상담료 변수의 계수 α로 나눠서 구하게 된다.

(5)[7]
$$WTP(X_{1j}) = -\frac{\partial U/\partial X_{1j}}{\partial U/\partial Fee_j} = -\beta_1/\alpha$$

Hole and Kolstad(2012)는 확률계수의 분포에 따라 지불용의 분포가 왜곡(skewed)되는 문제가 발생할 수 있기 때문에, Train and Weeks(2005)에서 제안한 지불용의 공간(willingness to pay space)에서 추정하거나 금전적 계수(monetary coefficient)를 고정계수로 설정하여 편향된 지불용의가 도출되는 잠재적 문제를 해결하도록 제안하였다. 고정계수인 금전적 계수로 나누는 방식은 추정의 직관성 및 편의성 측면에서 선호되는 반면, 고정계수 가정에서 오는 제약이 한계로 여겨지지만, 앞서 설명한 것과 같이 본 연구의 상담료 계수에 대한 가정은 적절성을 갖춰 특성별 지불용의를 기반으로 다양한 함의를 이끌어 낼 수 있었다.

지불용의에 더해 본 연구에서는 시뮬레이션을 통해 채널 특성 변화 및 특정 채널의 시장 진출입에 따른 선택확률(또는 점유율) 변화를 살펴보았다. 수요추정을 통해 도출한 시뮬레이션 최우추정량(maximum simulated likelihood estimator)을 이용하여 임의생성한 계수의 수를 소비자의 수로 가정하고, 충분히 많은 수의 모의선택확률을 도출한 후 이를 평균하여 시나리오별 선택확률 변화를 계산하였다. 식 (6)은 식 (4)의 시뮬레이션 확률 SP_{ij}와 유사해 보이지만, 수요추정을 통해 도출한 시뮬레이션 최우추정량을 이용했다는 점이 차이라고 할 수 있다.

(6)[8]
$$\overline{P_j} = \frac{1}{N}\sum_{n=1}^{N}\left(\frac{\exp\left(\alpha Fee_j + X_j\beta^n\right)}{\sum_{k=1}^{K}\exp\left(\alpha Fee_k + X_k\beta^n\right)}\right)$$

[6]Hole(2007a)은 충분히 많은 횟수로 500회를 제시하였고, Hole and Kolstad(2012)는 계수의 상관성을 고려하지 않은 모형에서 1,000회의 홀튼 추출(halton draw)을 실시하였다.

[7]X_{1j}는 채널 j의 5개의 특성변수 중 하나를 임의로 표시한 것으로, 개별 특성변수별 지불용의를 모두 계산할 수 있다.

[8]β^n은 n번째 추출한 계수를 의미한다.

수요추정에 따른 계수의 평균과 표준편차로부터 임의생성한 식 (6)의 β^n은 n번째 소비자의 법률서비스 채널 속성에 대한 선호를 나타낸다고 볼 수 있기 때문에, 시뮬레이션에서는 채널 속성(Fee_j 및 X_j)에 변화를 주면서 그에 따른 소비자의 선택확률 변화를 확인할 수 있다. 예를 들어 특정 채널의 상담료만 증가하거나 변호사의 보수 정보 중 일부를 의무적으로 공개하도록 하는 정책이 시행되는 등의 변화가 생겼을 때, 관련 속성의 수준을 변화시켜 법률서비스 채널별 선택확률을 새롭게 도출할 수 있다. 본 연구에서는 플랫폼 존재 여부에 따른 법률서비스 채널별 선택확률 변화를 확인하였는데, 자세한 사항은 5장에서 살펴보도록 한다.

Ⅳ. 수요함수 및 속성별 지불용의 추정 결과

1. 수요함수 추정 결과

시뮬레이션 최대우도를 통해 효용함수를 추정한 결과는 Table 7과 같다. 표에서 평균에 제시된 각 변수별 계숫값은 해당 변수가 1단위 증가할 때 소비자 효용의 변화를 나타낸다. 해당 값이 양(+)의 값이면 변수의 값이 증가할수록 효용이 커짐을 의미하고 음(-)이면 변수의 값이 증가할수록 효용이 작아짐을 의미한다. 따라서 Table 7의 결과를 보면 변호사를 검색하고 상담하는 채널에서 30분 내 비교 가능한 변호사 수가 많을수록 그 채널에 대한 소비자 효용이 커지는 반면, 상담료가 높아질수록 소비자 효용이 작아짐을 알 수 있다.

Table 7. Estimation Results

		상담료 계수 고정값		상담료 계수 정규분포	
		평균	표준편차	평균	표준편차
30분 내 비교 가능한 변호사 수		0.006 (0.004)	0.075*** (0.005)	0.016*** (0.004)	0.073*** (0.005)
변호사 보수 정보 (기준: 모두 비공개)	수임료와 상담료 공개	1.807*** (0.078)	1.357*** (0.070)	2.045*** (0.077)	1.091*** (0.072)
	상담료만 공개	0.707*** (0.073)	1.038*** (0.077)	0.925*** (0.071)	0.735*** (0.091)
상담료(10분당)		-0.439*** (0.017)		-0.560*** (0.027)	0.522*** (0.027)
다른 의뢰인 후기		0.603*** (0.058)	0.998*** (0.071)	0.849*** (0.061)	0.948*** (0.077)
변호사 이력 정보		0.682*** (0.051)	0.816*** (0.064)	0.687*** (0.052)	0.822*** (0.066)
유사 사건 상담사례		0.826*** (0.062)	0.749*** (0.099)	0.983*** (0.066)	0.800*** (0.108)
관측치		25,600			

Note: 괄호 안의 값은 표준오차임(* p<0.10, ** p<0.05, *** p<0.01).

변호사 보수 정보, 다른 의뢰인 후기, 변호사 이력 정보, 유사 사건 상담사례의 계수 추정치가 양(+)인 것은 변호사검색상담 채널에서 이러한 정보를 제공하는 것이 소비자의 효용을 높인다는 것을 의미한다.

앞서 언급했듯이 10분당 상담료에 대한 계수 추정치(영향력의 정도)는 고정되어 있다고 가정할 수도 있고 소비자마다 달라 정규분포를 따른다고 가정할 수도 있는데, Table 7에서는 두 가지 가정에 따른 추정 결과를 모두 보여준다. 추정 결과는 상담료 계수 추정치의 분포에 대한 가정과 질적으로는 크게 관계가 없는 것으로 나타났지만, 상담료 계수가 고정되어 있다고 가정하는 경우 비교 가능한 변호사 수의 영향력이 통계적으로 유의하지 않게 된다. 추정치가 통계적으로 유의하지 않다는 것은 추정치의 부호 및 크기와 관계없이 그 값이 0일 가능성을 배제할 수 없다는 것을 의미하는데, Table 7의 수치 뒤에 붙은 별표(*)가 많을수록 추정치의 통계적 유의성이 높은 것이고 별표가 없는 경우에는 유의성이 없다고 보아야 한다. 따라서 상담료 계수가 고정되어 있다고 가정하는 경우 30분 내 비교 가능한 변호사 수가 몇 명인지는 소비자 선택에 영향을 미치지 않는다는 것을 의미한다. 반면, 상담료에 대해 소비자마다 다른 효용을 반영한 모형에서는 비교 가능한 변호사 수가 증가할수록 효용이 증가하는 것을 확인할 수 있었다.

Table 7을 통해 확률계수의 평균뿐 아니라 표준편차도 확인할 수 있는데, 표준편차의 높은 유의성은 각 속성별 소비자의 선호가 다양함(Revelt and Train, 1998)을 나타낸다고 할 수 있다. 다시 말해, 속성에 대한 선호의 이질성은 법률서비스 시장의 수요 추정을 위해 혼합로짓 모형의 활용이 적절함을 뒷받침한다고 볼 수 있다. 한편, 지불용의나 시뮬레이션 도출에 앞서, 평균과 표준편차를 이용하여 각 속성별 소비자 선호의 분포 수준을 살펴볼 수 있다. 예를 들어 상담료 계수 정규분포 모형에서 상담료의 평균과 표준편차를 이용하여 계산한 표준 점수(z-value)[9]를 기준으로 상담료에 대해 양의 선호를 가지고 있는 소비자의 비율을 도출하면 약 14.2%임을 알 수 있다. 일반적으로 가격에 대해 음의 효용을 나타내는 것에 반하는 결과이지만, 법률서비스의 신뢰재적 특성이 일부 반영된 결과라고도 해석할 수 있다. 법률서비스의 경우 소비 이후에도 서비스의 유형이나 품질을 소비자가 평가하기 어렵기 때문에, 일부 소비자는 상담료가 높을수록 서비스 품질 역시 높을 것으로 기대할 가능성이 있다. 그러나 상담료의 계수를 정규분포로 설정함에 따라 양의 효용을 가진 소비자가 일부라도 존재하는 것이 불가피하다는 측면에서, 해당 결과에 대한 해석에 보수적인 접근이 필요하다고 할 수 있다.

본 연구에서는 전체 표본을 대상으로 한 분석 외에 알고 지내는 변호사 유무와 월평균 가구소득 수준에 따른 법률서비스 채널의 소비자 효용을 추정[10]하였다. 추정 결과, 하위 그룹을 구성하는 소비자 특성에 따라 법률서비스 채널을 구성하는 속성으로부터 얻는 효용의 크기가 다름을 확인할 수 있었다. 한편, 각 그룹별/속성별 계수의 부호가 Table 7과 유사[11]하고 대부분 유의한 결과가 도출되어, 본 분석의 강건성(robustness) 또한 확인할 수

[9] $z = \frac{x-\mu}{\sigma} = \frac{0+0.56}{0.522} \approx 1.073.$

[10] 하위 그룹의 수요추정 결과는 부록의 Table A1에서 확인할 수 있다.

[11] 계숫값이 유의하지 않은 30분 내 비교 가능한 변호사 수를 제외한 모든 변수의 부호는 Table 7과 일치하였다.

있었다.

2. 속성별 지불용의 추정 결과

Table 7에 제시된 변호사검색상담 채널의 각 속성에 대한 소비자 효용 추정치를 식 (3)에 따라 금액으로 변환하면 각 속성에 대한 지불용의를 계산할 수 있는데, 그 추정 결과가 Table 8에 제시되어 있다. 또한 지불용의 역시 확률변수이기 때문에, 지불용의의 평균과 더불어 95% 신뢰구간의 상한과 하한을 도출[12]하였다.

먼저 30분 내 비교 가능한 변호사 수가 1명 증가하는 데 대한 지불용의는 약 131원으로 매우 작다. 비교 가능한 변호사 수가 100명이 늘어나는 것에도 평균적으로 약 13,100원만 추가 지불할 의사가 있는 것이다. 반면, 정보 제공에 대한 지불용의는 상당히 큰데, 수임료 및 상담료 정보를 미공개하는 것에 비해 상담료만 공개하면 16,116원을 더 지불하고 여기에 수임료까지 공개하면 41,179원을 지불할 용의가 있는 것으로 나타났다. 다른 의뢰인 후기, 변호사 이력 정보, 유사 사건 상담사례의 제공에 대해서도 모두 1만원 이상의 지불용의가 있는 것으로 나타났다.

속성별 지불용의를 이용하면 변호사검색상담 채널 간 가치의 차이도 계산할 수 있다. 예컨대 지인 소개 등 오프라인을 통한 변호사 검색 및 상담의 경우 30분 내 비교 가능한 변호사의 수는 1명이고 다른 의뢰인들의 후기나 유사 사건 상담사례를 알 수 없기 때문에, 30분 내 비교 가능한 변호사의 수가 20명 이상이고(+2,620원) 다른 의뢰인의 후기(+13,739원)와 유사 사건 상담사례(+18,824원)를 제공하는 플랫폼은 오프라인에서의 변호사 탐색채널보다 적어도 35,183원 높은 가치[13]를 가진다. 많은 경우 변호사들이 오프라인에서 상담료와 수임료를 공개하고 있지 않다는 것까지 감안하면(+41,179원), 플랫폼의 상대적 가치는

Table 8. Willingness to Pay for the Attributes (Total Sample)

(Unit: KRW)

	지불용의	지불용의 하한[14] (0.025)	지불용의 상한 (0.975)
30분 내 비교 가능한 변호사 수	131	-46	308
수임료, 상담료 모두 공개	41,179	37,828	44,530
상담료만 공개	16,116	13,186	19,046
다른 의뢰인 후기	13,739	11,187	16,290
변호사 이력 정보	15,538	12,998	18,078
유사 사건 상담사례	18,824	15,800	21,848

[12]Hole(2007b)은 지불용의 신뢰구간 추정을 위한 분석방법의 정확성을 연구한 결과, 노이즈가 있는 데이터(noisy data)나 관측치 수가 너무 적은 경우 등이 아니라면 델타법(delta method)의 정확성이 가장 높은 것으로 나타났다. 따라서 본 연구에서도 델타법을 이용하여 지불용의 신뢰구간을 도출하였다.

[13]앞서 설명한 것과 같이 Table 7의 '30분 내 비교 가능한 변호사 수'의 계수가 유의하지 않기 때문에, 비교 가능한 변호사 수에 대한 지불용의(2,620원)를 제외할 경우 플랫폼이 32,563원 높은 가치를 가진다고 계산할 수 있다.

[14]95% 신뢰구간에서 상한과 하한은 백분위 기준 2.5와 97.5를 나타내며, Table 9의 상한과 하한도 동일하다.

76,362원까지 높아진다.

하위 그룹의 속성별 지불용의는 Table 9과 같다. 하위 그룹에 상관없이 30분 내 비교 가능한 변호사 수에 대해 가장 낮은 지불용의[15]를 보였으며, 수임료와 상담료를 모두 공개하는 것에 대해 가장 높은 지불용의를 나타냈다. 우선 알고 지내는 변호사 유무에 따른

Table 9. Willingness to Pay for the Attributes (Sub-samples)

(Unit: KRW)

하위 그룹		속성	지불용의		
			평균	하한	상한
알고 지내는 변호사 유무	알고 지내는 변호사 있음	30분 내 비교 가능한 변호사 수	340	-21	702
		수임료, 상담료 모두 공개	45,946	38,524	53,369
		상담료만 공개	18,007	11,738	24,277
		다른 의뢰인 후기	13,466	7,740	19,192
		변호사 이력 정보	18,110	12,193	24,026
		유사 사건 상담사례	20,518	13,682	27,354
	알고 지내는 변호사 없음	30분 내 비교 가능한 변호사 수	65	-139	269
		수임료, 상담료 모두 공개	39,720	35,967	43,474
		상담료만 공개	15,869	12,585	19,152
		다른 의뢰인 후기	13,917	11,088	16,745
		변호사 이력 정보	14,656	11,864	17,447
		유사 사건 상담사례	18,325	14,993	21,656
가구소득 기준	월평균 가구소득 800만원 이상	30분 내 비교 가능한 변호사 수	-112	-566	341
		수임료, 상담료 모두 공개	37,684	28,902	46,466
		상담료만 공개	9,411	1,172	17,649
		다른 의뢰인 후기	12,200	5,501	18,900
		변호사 이력 정보	17,504	10,711	24,296
		유사 사건 상담사례	20,654	13,237	28,071
	월평균 가구소득 400만원 이상 799만원 이하	30분 내 비교 가능한 변호사 수	163	-101	426
		수임료, 상담료 모두 공개	42,084	37,221	46,947
		상담료만 공개	17,741	13,447	22,035
		다른 의뢰인 후기	15,606	11,756	19,457
		변호사 이력 정보	16,392	12,686	20,097
		유사 사건 상담사례	18,684	14,196	23,172
	월평균 가구소득 399만원 이하	30분 내 비교 가능한 변호사 수	182	-101	464
		수임료, 상담료 모두 공개	41,544	36,126	46,963
		상담료만 공개	16,913	12,340	21,486
		다른 의뢰인 후기	11,930	8,030	15,831
		변호사 이력 정보	14,055	9,931	18,179
		유사 사건 상담사례	18,132	13,243	23,020

[15]전체 집단을 대상으로 추정한 결과와 같이 Table A1에서도 '30분 내 비교 가능한 변호사 수'의 계수는 유의하지 않았다. 따라서 Table 12의 각 하위 그룹별 소비자들이 해당 속성에 대해 지불용의가 없을 가능성이 있다고 할 수 있다.

차이를 살펴보면, 알고 지내는 변호사가 있는 소비자가 그렇지 못한 소비자보다 대부분의 속성에 대한 지불용의가 높게 나타났다. 이는 알고 지내는 변호사를 통해 법률서비스 속성의 중요성에 대해 인지하고 있을 확률이 높고, 그에 따라 더 높은 가치를 부여했을 가능성이 있다고 할 수 있다. 월평균 가구소득 기준에 따른 지불용의를 살펴보면 소득 상위 그룹(월 평균 가구소득 800만원 이상)이 나머지 두 그룹에 비해 변호사 이력 정보와 유사 사건 상담사례에 높은 지불용의를 보인 반면, 비용 정보와 다른 의뢰인 후기에 대해서는 대체로 낮은 지불용의를 보였다. 특히 상담료만 공개한 것에 대해서도 소득 중위와 하위 그룹[16] 모두 소득 상위 그룹보다 약 1.8배 이상의 지불용의를 나타냈다는 점은, 비용 측면에 대한 정보 부족이 상당수 소비자들의 법률서비스 이용에 제약으로 작용했을 가능성이 있다고 볼 수 있다.

기존 시장환경에서 법률서비스로부터 소외되었을 확률이 높은 소득 하위 그룹이 상위 그룹보다 플랫폼으로부터 얻게 될 효용이 높은 것으로 나타난 반면, 상대적으로 수월하게 법률서비스 정보를 취득할 가능성이 높은, 알고 지내는 변호사가 있는 집단이 더 큰 효용을 얻는 것으로 나타났다. 결과적으로 플랫폼은 특정 집단이 아닌 법률서비스가 필요한 모든 소비자의 효용을 증대시키는 방향으로 역할을 한다고 볼 수 있다.

V. 변호사검색상담 플랫폼의 시장확대 효과

변호사검색상담 플랫폼은 기존의 오프라인 및 인터넷 검색을 통한 변호사 서비스 수요를 일부 대체하지만 동시에 변호사의 법률서비스를 이용하지 않던 소비자를 끌어들여 변호사 시장의 규모를 키우는 역할을 할 수 있다. 이러한 플랫폼의 시장확대 효과를 살펴보기 위해 본 장에서는 앞서 실시한 변호사검색상담 채널에 대한 수요 추정 결과를 이용해 플랫폼이 등장함으로써 변호사 서비스 수요가 얼마나 증가할 수 있는지를 예측해 본다. 예측방법을 간략하게 설명하면 다음과 같다. 앞서 4장에서 효용함수 추정을 통해 계수들의 분포를 구했는데, 이 분포에 따라 서로 다른 효용함수 계수를 가진 복수의 이용자를 생성할 수 있다. 즉, 각 계수가 Table 7에 제시된 평균과 분산을 가지는 정규분포를 따른다고 가정하고, 분포로부터 1만개씩의 계수를 생성한 후 이를 조합해 하나의 가상적 이용자 효용함수를 구성한다. 1만명의 가상적 이용자를 생성하고 나면 현재 가용한 변호사검색상담 채널들이 주어질 때 각 채널의 선택확률을 계산할 수 있고, 플랫폼이 없을 때 남은 채널들의 선택확률도 계산해 비교할 수 있다. 이때 이용자가 변호사검색상담 채널을 이용해 변호사 법률서비스를 탐색하고 이용하는 것을 포기하는 선택도 할 수 있도록 하면 플랫폼이 선택지에 있을 때 변호사검색상담 채널을 이용해 변호사를 찾아 서비스를 받고자 하는 이용자의 비율이 얼마나 증가하는지도 계산할 수 있다.

이러한 시뮬레이션을 위해서는 선택지가 되는 변호사검색상담 채널들에 대한 가정이 필

[16]월평균 가구소득 400만원 이상 799만원 이하를 중위, 월평균 가구소득 399만원 이하를 하위 그룹으로 분류한다.

요하다. 우선 소비자가 선택할 수 있는 채널은 3가지, 즉 오프라인, 인터넷 검색, 플랫폼이 있고, 각 채널의 속성은 Table 10과 같다고 가정하였다. 일반적으로 지인을 통해 소개받거나 아는 변호사에게 상담받는 경우, 사전에 상담료와 수임료에 대한 정보 없이 변호사 이력만 아는 상태에서 상담을 시작할 가능성이 높고, 해당 변호사에 대한 다른 의뢰인 후기나 유사 사건에 대한 해당 변호사의 상담사례도 알지 못한다. 의뢰인이 직접 인터넷을 검색해 변호사를 찾는 경우는 30분에 10명 정도의 변호사를 검색해 볼 수 있다고 가정했다. 크고 작은 변호사 사무실은 홈페이지를 보유하고 있으며 여기에서 변호사들의 이력 정보를 게시하고 이용자들의 간단한 질문에 대한 Q&A 게시판도 운영하는 경우가 많다. 그러나 보통 수임료와 상담료는 공개되어 있지 않고 다른 의뢰인 후기도 게시하지 않는다. 반면, 플랫폼은 변호사 이력 및 보수 정보를 표준화된 표시방식으로 게시하고 다양한 기준으로 변호사들을 정렬해 쉽게 비교하도록 하고 있다. 한편, 세 가지 채널을 모두 이용하지 않는 것을 선택하는 경우 변호사의 법률서비스를 받을 의사가 없는 것으로 보고 30분 내 비교 가능한 변호사 수와 변호사 관련 정보가 없는 동시에 지불해야 하는 상담료도 0원이라고 가정한다.

네 가지의 선택지가 Table 10과 같은 속성을 가질 때 앞서 설명한 시뮬레이션 방법을 이용해 각 선택지의 선택확률을 계산할 수 있다. 선택확률은 상담료 수준에 따라 조금씩 다르게 추정되는데, 실제 변호사마다 상담료가 다소 상이하고 특히 오프라인에서 변호사를 찾아 상담을 받는 경우의 상담료에 대한 조사자료가 존재하지 않기 때문에 10분 상담료를 하나로 고정하지 않고 1만원에서 5만원까지 5가지로 가정해 시뮬레이션을 실시했다. 다만, 변호사들이 검색상담 채널에 따라 상담료를 차별하지 않는다고 보고 세 개 채널의 상담료는 모두 동일하다고 가정했다.

플랫폼의 존재 여부에 따른 변호사검색상담 채널의 선택확률 변화는 Table 11에 제시되어 있다. 플랫폼이 존재하지 않는 경우 오프라인이나 인터넷 검색을 통해 변호사를 찾고 법률서비스를 받을 확률이 늘어나지만, 변호사 서비스 탐색 자체를 포기하는 소비자들도 늘어날 것으로 예측된다. 예를 들어 변호사 상담료가 평균 10분당 2만원이라고 할 때 플랫폼이 없으면 28.4%의 잠재적 소비자가 변호사를 찾지 않는 데 반해, 플랫폼이 존재하면 변호사를 찾지 않는 소비자의 비율은 9.8%로 줄어든다. 이는 플랫폼의 존재로 인해 변호사 서비스

Table 10. Attributes for the Lawyer Search & Consulting Service Channels

속성	오프라인	인터넷	플랫폼	서비스 이용 X
비교 가능한 변호사 수	1	10	20	0
변호사 보수 정보	모두 비공개	모두 비공개	수임료와 상담료 모두 공개	모두 비공개
상담료(10분당)	1~5만원	1~5만원	1~5만원	0
다른 의뢰인 후기	없음	없음	있음	없음
변호사 이력 정보	있음	있음	있음	없음
유사 사건 상담사례	없음	있음	있음	없음

Table 11. Changes in Choice Probability of Each Lawyer Search & Consulting Service Channel Depending on the Presence of the Online Platform (Total Sample)

(Unit: %)

상담료	플랫폼 존재				플랫폼 미존재				서비스 미이용 증가분[17]	시장 성장률
	오프라인	인터넷	플랫폼	서비스 미이용	오프라인	인터넷	플랫폼	서비스 미이용		
1만원	7.2	11.1	74.6	7.1	23.7	54.8	0.0	21.5	14.4%p	18.4
2만원	6.6	10.5	73.1	9.8	21.1	50.5	0.0	28.4	18.6%p	26.0
3만원	6.0	9.7	71.2	13.1	18.3	45.5	0.0	36.3	23.1%p	36.3
4만원	5.2	8.9	68.7	17.1	15.3	39.9	0.0	44.8	27.6%p	50.1
5만원	4.5	8.0	65.8	21.8	12.4	34.0	0.0	53.5	31.7%p	68.3

를 구하는 소비자의 비율이 71.6%에서 90.2%로 18.6%p 늘어난다는 것을 의미하는데, 달리 말하면 변호사 법률서비스 시장의 규모가 약 26.0% 증대될 것임을 뜻한다.

앞서 2장의 설문조사 결과에서 보았듯이 연령, 학력, 소득 등에 따라 법률서비스에 대한 이용자의 접근성과 이용행태가 다르다. 따라서 변호사검색상담 플랫폼이 변호사 법률서비스 이용 여부에 미치는 영향도 이용자의 특성에 따라 다를 수 있다. 이를 살펴보기 위해 이용자를 하위 그룹별로 나누어 플랫폼 존재 여부에 따른 변호사 법률서비스 선택확률 변화를 시뮬레이션해 보았고, 그 결과를 Table 12에 제시했다. 먼저 전체 표본을 활용한 분석 결과와 같이 플랫폼의 존재는 모든 이용자 그룹에서 법률서비스 시장규모를 증대시키는 것으로 나타났다. 하위 그룹별로 보면 알고 지내는 변호사가 없거나 가구소득이 낮은 이용자들은 플랫폼이 없을 때 변호사 법률서비스를 이용하지 않는 비율의 증가분이 다른 이용자 그룹보다 높게 나타났다. 이는 플랫폼의 위축이 법률서비스 이용 취약계층의 서비스 접근성을 더 크게 떨어뜨릴 확률이 높음을 간접적으로 보여준다고 할 수 있다.

[17]플랫폼이 존재하지 않는 경우 서비스 미이용 소비자 비율의 증가분을 의미하는 것으로, 상담료가 1만원일 경우의 서비스 미이용 증가분은 21.5% - 7.1%=14.4%p로 계산한다.

Table 12. Changes in Choice Probability of Each Lawyer Search & Consulting Service Channel Depending on the Presence of the Online Platform (Sub-samples)

(Unit: %)

하위 그룹		상담료	플랫폼 존재				플랫폼 미존재				서비스 미이용 증가분	시장 성장률
			오프라인	인터넷	플랫폼	서비스 미이용	오프라인	인터넷	플랫폼	서비스 미이용		
알고 지내는 변호사 유무	있음	1	7.2	11.8	74.2	6.7	24.2	54.9	0.0	20.9	14.1%p	17.9
		2	6.8	11.4	73.0	8.9	22.2	51.4	0.0	26.4	17.6%p	23.9
		3	6.3	10.8	71.4	11.5	19.9	47.4	0.0	32.7	21.2%p	31.5
		4	5.8	10.1	69.5	14.6	17.5	42.9	0.0	39.6	25.0%p	41.3
		5	5.2	9.4	67.1	18.3	15.1	38.1	0.0	46.8	28.6%p	53.7
	없음	1	7.2	10.7	74.8	7.3	23.4	54.7	0.0	21.9	14.6%p	18.7
		2	6.5	10.1	73.2	10.2	20.6	50.1	0.0	29.3	19.1%p	27.0
		3	5.8	9.3	71.1	13.8	17.5	44.7	0.0	37.8	24.0%p	38.5
		4	4.9	8.4	68.5	18.2	14.4	38.7	0.0	47.0	28.8%p	54.2
		5	4.1	7.4	65.2	23.3	11.4	32.4	0.0	56.3	33.0%p	75.4
월평균 가구 소득	800만원 이상	1	9.0	14.2	68.1	8.7	24.1	54.3	0.0	21.6	12.9%p	16.4
		2	8.2	13.4	66.7	11.7	21.6	50.3	0.0	28.1	16.4%p	22.8
		3	7.3	12.4	65.0	15.3	18.9	45.6	0.0	35.5	20.2%p	31.3
		4	6.4	11.3	62.8	19.6	16.0	40.5	0.0	43.5	24.0%p	42.4
		5	5.5	10.1	60.1	24.4	13.2	35.0	0.0	51.8	27.4%p	57.0
	400만원 ~ 799만원	1	7.0	10.6	76.1	6.4	24.3	54.9	0.0	20.8	14.4%p	18.2
		2	6.4	10.1	74.7	8.8	21.8	50.7	0.0	27.5	18.7%p	25.8
		3	5.9	9.4	72.9	11.8	19.0	45.8	0.0	35.2	23.4%p	36.0
		4	5.2	8.7	70.6	15.6	16.1	40.3	0.0	43.6	28.1%p	49.8
		5	4.5	7.8	67.7	19.9	13.2	34.4	0.0	52.4	32.4%p	68.1
	399만원 이하	1	6.9	10.4	75.3	7.5	22.8	54.7	0.0	22.5	15.0%p	19.4
		2	6.2	9.8	73.7	10.3	20.1	50.2	0.0	29.7	19.4%p	27.6
		3	5.5	9.0	71.6	13.8	17.2	45.0	0.0	37.9	24.0%p	38.7
		4	4.8	8.2	68.9	18.1	14.2	39.2	0.0	46.6	28.5%p	53.5
		5	4.0	7.3	65.7	23.0	11.3	33.1	0.0	55.5	32.6%p	73.2

VI. 결 론

본 연구는 변호사 법률서비스를 이용하기 위해 자신에게 적합한 변호사를 탐색하고 상담을 받는 채널로서 온라인플랫폼이 이용자에게 얼마만큼의 경제적 가치를 줄 수 있고, 이를 통해 변호사 법률서비스에 대한 접근 가능성이 얼마나 증가할 수 있는지 정량적으로 살펴보고자 했다. 이용자 설문조사에서 나타난 이용행태를 보면 현재 많은 이용자들이 자신이 알고 있거나 지인이 추천해 주는 변호사에게 상담을 받고 사건을 의뢰함에도 불구하고 대다수

는 주변에 알고 지내는 변호사가 없어 상당한 탐색비용을 지불하고 있을 것으로 판단된다. 변호사들의 이력과 상담비용뿐만 아니라 이용자 후기와 유사 사건 상담사례 등의 정보들을 표준화된 방식으로 게시하는 온라인 변호사검색상담 플랫폼은 이러한 탐색비용을 크게 줄여 변호사 법률서비스에 대한 접근성을 높일 수 있다.

본 연구의 이용자 선택형 컨조인트 설문조사를 통한 변호사검색상담 채널에 대한 수요 추정 결과에 따르면, 이용자들은 온라인 변호사검색상담 플랫폼이 제공하는 여러 가지 편리성으로부터 높은 효용을 얻을 수 있었다. 이를 금전적 가치로 환산하면 오프라인 변호사 검색에 비해 적게는 35,183원에서 많게는 76,362원까지 효용이 높은 것으로 나타났다. 또한 시뮬레이션 방법으로 플랫폼의 변호사 법률서비스 시장확대 효과를 추정해 본 바에 따르면, 변호사검색상담 플랫폼의 존재로 인해 상담비용의 수준에 따라 변호사의 법률서비스 시장규모가 적게는 18.4%에서 많게는 68.3%까지 증가될 수 있을 것으로 나타났다. 특히 플랫폼은 알고 지내는 변호사가 없거나 상대적으로 소득이 낮은 법률서비스 이용 취약계층의 서비스 접근성을 상대적으로 더 높여 이용을 증대시킬 것으로 예측된다.

온라인플랫폼의 이러한 경제적 가치는 비단 법률서비스 영역에서만 존재하는 것이 아니다. 특히 정보비대칭의 잠재적 문제가 큰 신뢰재인 전문가서비스 시장에서는 이용자가 플랫폼으로부터 얻는 정보의 가치가 클 것이다. 경제의 디지털화 심화에 따라 여러 분야에서 전문가와 이용자를 연결시켜 주는 플랫폼들이 등장하면서 기존 전문가 단체와 플랫폼 간의 갈등도 격화되고 있다. 그러나 플랫폼은 이용자의 후생을 증대시킬 뿐만 아니라 전문가서비스 시장도 더욱 성장시킬 수 있는 도구이다. 특히 전문가에 대한 접근성이 낮고 탐색비용이 높은 이용자 계층과 실력은 있으나 고객 확보에 상대적으로 어려움을 겪는 전문가들을 거래시장으로 유도함으로써 이용자와 공급자 그룹 내부의 형평성도 제고할 수 있다. 이러한 점에서 본 연구 결과는 전문가서비스 플랫폼에 대한 정부의 정책 수립에 중요한 시사점을 제공한다.

부 록

Table A1. Demand Estimation Results (Sub-samples)

		알고 지내는 변호사 유무				가구소득 기준					
		알고 지내는 변호사 있음		알고 지내는 변호사 없음		월평균 가구소득 800만원 이상		월평균 가구소득 400만원 이상 799만원 이하		월평균 가구소득 399만원 이하	
		평균	표준편차	평균	표준편차	평균	표준편차	평균	표준편차	평균	표준편차
30분 내 비교 가능한 변호사 수		0.012*	0.060***	0.003	0.082***	-0.005	0.079***	0.007	0.072***	0.008	0.078***
		(0.007)	(0.009)	(0.005)	(0.006)	(0.010)	(0.012)	(0.006)	(0.007)	(0.007)	(0.008)
변호사 보수 정보 (기준: 모두 비공개)	수임료와 상담료 공개	1.658***	1.121***	1.874***	1.455***	1.643***	1.714***	1.765***	1.195***	1.944***	1.444***
		(0.134)	(0.122)	(0.096)	(0.085)	(0.205)	(0.196)	(0.108)	(0.096)	(0.136)	(0.121)
	상담료만 공개	0.650***	0.863***	0.749***	1.079***	0.410**	1.373***	0.744***	0.959***	0.791***	0.993***
		(0.129)	(0.140)	(0.088)	(0.092)	(0.195)	(0.214)	(0.103)	(0.111)	(0.122)	(0.133)
상담료(10분당)		-0.361***		-0.472***		-0.436***		-0.419***		-0.468***	
		(0.029)		(0.020)		(0.040)		(0.024)		(0.029)	
다른 의뢰인 후기		0.486***	0.939***	0.656***	1.019***	0.532***	1.218***	0.655***	0.962***	0.558***	0.914***
		(0.107)	(0.130)	(0.070)	(0.084)	(0.152)	(0.179)	(0.083)	(0.101)	(0.096)	(0.119)
변호사 이력 정보		0.653***	0.816***	0.691***	0.833***	0.763***	0.992***	0.687***	0.684***	0.658***	0.944***
		(0.095)	(0.117)	(0.061)	(0.076)	(0.134)	(0.160)	(0.069)	(0.093)	(0.091)	(0.109)
유사 사건 상담사례		0.740***	0.698***	0.864***	0.755***	0.900***	0.771***	0.784***	0.627***	0.848***	0.873***
		(0.112)	(0.184)	(0.074)	(0.126)	(0.149)	(0.247)	(0.087)	(0.165)	(0.108)	(0.169)
관측치		6,816		18,784		4,672		11,808		9,120	

Note: 괄호 안의 값은 표준오차임(* p<0.10, ** p<0.05, *** p<0.01).

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Estimating the Economic Value of the Online Marketplace for Legal Services†

By Minsoo Park, Jungmin Kim, and Hong Lee*

This study examines the usage status of legal services provided by lawyers targeting domestic consumers and investigates empirically how much online platforms that facilitate lawyer search and consultation can increase consumers' utility, and how much the lawyer legal service market will expand through this. To this end, this study applies a discrete choice demand model to the data collected through a conjoint survey to estimate the value of the lawyer search and consultation platform perceived by consumers, and estimates the effectiveness of the platform in expanding the market for lawyer legal services through a simulation method. As a result of the analysis, the relative value that consumers place on finding and consulting a lawyer using the online platform instead of being introduced to a lawyer by an acquaintance or searching for a lawyer offline is estimated to be about 70,414 won. It was found that the existence of lawyer search and consultation platforms could increase the market size of legal services by as little as 18.9% to as much as 70.2%. In particular, the platforms are expected to increase the accessibility of legal services to vulnerable groups.

Key Word: Legal Services Marketplace, Lawyer Search Consultation, Online Platform, Consumer Willingness to Pay
JEL Code: D12, D61, L15, L84

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