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The Influence of Social Crowdedness in Retail Stores on Consumers' Shopping Satisfaction in the COVID-19 Era:
A Focus on the Moderating Effects of Happiness and Time Perspective*

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ABSTRACT

Purpose – The construct of social crowdedness has been debated whether it impacts consumer shopping satisfaction positively or negatively. However, as the COVID-19 has prolonged, people fear places full of people due to possible contamination and so they avoid such areas. Therefore, this study expects that social crowdedness has a negative effect. However, this study also predicts that consumers' individual values could moderate the negative effect of social crowdedness.

Design/Methodology/Approach – This study recruited an experimental study design for the research purpose above. Through two experiments, this study examined the effect of social crowdedness on shopping satisfaction and the moderating effect of happiness perspective (study 1) and time perspective (study 2).

Findings – The study found that people in a high social crowdedness condition showed lower shopping satisfaction. Furthermore, this negative reaction in a high social crowdedness condition was moderated depending on their dominant perspective.

Research Implications – Those with calm happiness and present-fatalistic perspective showed even greater shopping satisfaction in low social crowdedness conditions. In contrast, those with exciting happiness and present-hedonic time perspectives showed comparably higher satisfaction in a high crowdedness condition. The results are expected to provide critical strategic implications to retail managers.

Keywords: COVID-19, happiness perspective, retail promotion strategy, retail store management, shopping satisfaction, social crowdedness, time perspective

JEL Classifications: M30, M31

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I. Introduction

As the world becomes more hyperconnected, consumers' consumption patterns have increasingly moved to online/mobile purchases without visiting physical stores. In the aftermath, while online and mobile shopping is growing on a larger scale, offline shopping is struggling with negative growth. Furthermore, with the spread of social distancing culture due to the COVID-19 pandemic, people tend to avoid places full of people. Now that crowded places signal highly contaminable spots, 'un-tact consumption' has become commonplace.

However, there are still 'outstanding' offline stores that increase sales even in the pandemic era. Most representatively, luxury stores showed increased sales by 9.2% compared to the same period last year. The primary reason why luxury stores are enjoying high growth is the consumption power and consumption culture of the MZ Generation. People in the MZ Generation, who encompass Millennials and Generation Z, show a differentiated consumption culture with high consumption power estimated to be $3 trillion in the US in 2020. In particular, Generation Z's, who spend most of their life in the digital environment through Social Network Services (SNS), perceive offline spaces as more unique and differentiated than online stores. In practice, 67% of Generation Z's tend to purchase products at offline stores to reduce the probability of failure and to enjoy shopping much more vividly. As the MZ Generation are emerging as crucial pillars of consumption, it is expected that offline retailers will turn this crisis into an opportunity for growth by enhancing consumers' pleasure and satisfaction with offline shopping. In particular, as one of the distribution channels, offline stores have an important role in managing distribution (Brynjolfsson et al., 2013). Furthermore, since distribution channels have diversified and subdivided, the store level image determines consumer purchases (Hamilton & Chernev, 2010). Therefore, it is important to study the store environment during the COVID era. For this reason, it is imperative to examine the environmental factors of offline shopping so this study focuses on 'store crowdedness,' especially social crowdedness.

Research on store crowdedness has been continuously conducted since the 1980s and has seen crowdedness as two different constructs, namely spatial and social crowdedness (Machleit et al., 2000). Spatial crowdedness, which is generally related to physical density, has consistently been presented as a negative factor of consumers' shopping emotions and shopping behaviors (Choo, 2013; Jeon & Cho, 2012; Ji & Lee, 2005; Park, 2003; Park, 2008). On the other hand, social crowdedness, which is caused by a large number of people in a limited area and their interactions, has been reported as causing both negative and positive effects (Eroglu et al., 2005; Jeon & Cho, 2012; Kim & Jeon, 2018; Park, 2003; Park, 2008). Despite the inconsistent results of social crowdedness, there is still a gap between studies in identifying the boundary conditions separating the difference. Therefore, this study aims to figure out how social crowdedness affects customers' shopping satisfaction and, further, whether consumers' individual values, such as the happiness perspectives and time perspectives, can work as a moderator of reaction for social crowdedness.

The perspectives of happiness and time are subjective values that have a lasting effect on the preferences and tastes of individuals outside the cognitive level (Gilbert, 2006; Kim et al., 2019; Mogilner et al., 2011; Park et al., 2020; Stolarski et al., 2011). According to the previous studies on happiness and time perspectives, there are detailed subsets in each perspective (Mogilner et al., 2011; Zhang & Howell, 2011; Zimbardo & Boyd, 1999). For instance, there are two sub-dimensions of the happiness perspectives (exciting and calm) and five time perspectives (past positive, past negative, present hedonic, present fatalistic, and future-oriented). Because these values engage in the decision-making process, this study expects them to affect the reaction for social crowdedness in the store. Thereby, shopping satisfaction depends on the specific perspectives people have. Specifically, people with an exciting happiness perspective or

present hedonic time perspective are expected to comparably enjoy the highly crowded environment to boost excitement (Mogilner et al., 2011; Zhang & Howell, 2011; Zimbardo & Boyd, 1999). On the other hand, consumers with calm happiness perspectives or present fatalistic time perspectives are expected to prefer a pleasant shopping environment where they can feel a sense of stability and concentrate on shopping (Mogilner et al., 2011; Zhang & Howell, 2011).

In summary, although people prefer to shop in stores where it is not crowded much due to the COVID-19 pandemic, the fundament effect of COVID-19 will be moderated by the happiness and time perspectives that consumers have. Across two experiments, the present study tries to shed light on the effect of social crowdedness in offline stores on shopping satisfaction in the era of COVID-19, and the moderating role of happiness and time perspectives. As the level of social crowdedness can cause negative effects on consumers' shopping satisfaction, these findings can give implications for researchers in social crowdedness literature and offline retailers who are in accelerated trends of online/mobile shopping. In particular, offline shop managers can develop operational strategies that heighten satisfaction and revisit intention by applying their primary target customers' happiness and time perspectives.

II. Literature Review

1. Social Crowdedness and Shopping Satisfaction

Crowdedness is an unpleasant feeling that shoppers feel when they are incapable of controlling the situation due to many people in one place. It is different from the concept of density which refers to the extent to which something is filled or covered with people, because crowdedness varies according to physical, situational, and personal factors (Baum & Paulus, 1987). Since a crowded environment generally induces negative emotions and avoidance behavior, early research on crowdedness has seen it as a cause of displeasure and anxiety, which lead to declined information exploration behavior and inclined adverse behavioral reactions, such as avoidance (Baum & Greenberg, 1975).

However, it is not hard to find people waiting in long queues despite the crowdedness in some stores, and this was a piece of new evidence that suggests perceived crowdedness does not always negatively affect satisfaction (Graefe et al., 1984). Machleit et al. (2000) divided crowdedness into two aspects: spatial and social, considering that crowdedness can be perceived differently due to its psychological aspects that reflect one's mental state. Specifically, people feel spatial crowdedness when the physical density of the store is high, while social crowdedness is felt when a large number of consumers are in the store and there is a high number of interactions. Along with the conceptual difference between spatial and social crowdedness, there is a gap in the consequences of the two different crowdedness. Research on spatial crowdedness consistently reported that it enhances negative emotions by increasing discomfort (Eroglu et al., 2005; Ji & Lee, 2005; Lim & Chun, 2015). However, the studies on social crowdedness have reported mixed results. On one hand, some studies report that social crowdedness increases negative emotions (e.g., anger) and lowers consumers' utilitarian shopping value. At the same time, it was also found to arouse positive emotions (e.g., surprise) and strengthens the hedonic shopping value and overall shopping satisfaction (Eroglu et al., 2005; Park, 2008; Lim & Chun, 2015; Kim & Jeon, 2018). Because having some number of shoppers acts as an essential element of the store environment (Machleit et al., 2000), an excessively lower level of social crowdedness can induce isolation as social contact decreases in a vast space (Altman, 1975; Sundstrom, 1977).

However, in recent years, due to the impact of COVID-19, there have been changes in people's food, clothing, and shelter. Consumers' attitudes toward social crowdedness have changed as the government implemented so-called "social distancing" policies to cope with the pandemic. A study by Li et al. (2021) found that consumers

fear that they are more likely to get infected with a disease like COVID-19 the more crowded it is in-store, and it also showed that these safety concerns with crowdedness eventually lead consumers to have a negative attitude. In particular, through the experiment of Wang et al. (2021), it was confirmed that the response of leaving the store decreased as partitions were installed in the store or when tables were placed further away from each other. As such, even if the number of people in the store is the same, the fact that consumers are more willing to stay in the store only by installing partitions or setting the distance between tables can be interpreted as negatively accepting the high level of social crowdedness in the store. Therefore, in this study, based on the results of a priori studies conducted after the pandemic, it is predicted that the higher the social crowdedness, the lower the shopping satisfaction of consumers.

H1: Due to the COVID-19 pandemic and prevalent social distancing policies, consumers will show negative feelings and behaviors for shopping when the level of social crowdedness is high.

Table 1. The Different Results of the Effect of Crowdedness on Shopping Satisfaction

Construct		Effect on Shopping Behaviors	Reference
Spatial Crowdedness	Negative	he high degree of physical density gives displeasure and anxiety	Graefe et al., 1984; Baum & Paulus, 1987; Eroglu et al. 2005; Lim & Chun, 2015; Ji & Lee, 2005
Social Crowdedness	Positive	Arouses positive emotions (e.g., surprise) and strengthens the hedonic shopping value and overall shopping satisfaction Some number of shoppers act as an essential element of the store environment	Eroglu et al., 2005; Kim & Jeon, 2018; Lim & Chun, 2015; Park, 2008
	Negative	Increases negative emotions (e.g., anger) and lowers consumers' utilitarian shopping value	Eroglu et al., 2005; Kim & Jeon, 2018; Park, 2008; Ji and Lee, 2005

Despite the dominant negative effect of crowdedness on shopping satisfaction, social crowdedness basically has either a positive or negative effect on shopping satisfaction. For this reason, consumer characteristics have emerged as a moderating variable. Most representatively, a study on consumer conformity found that consumers who have a high level of conformity with others felt relatively more pleasure and excitement in socially crowded stores and showed a positive attitude toward stores when social crowdedness is high (Choo, 2014; Lim & Chun, 2015). Furthermore, by applying the consumer values, such as the happiness perspective and time perspective, this study aims to examine the moderating role of the view of happiness and time in the relationship between the effects of social crowdedness on shopping satisfaction.

2. Moderation Role of Happiness Perspective

Happiness is defined as a state of well-being and satisfaction, a pleasant and satisfying experience (Merriam Webster's College Dictionary, 2009). The literature on happiness says that the concept of happiness is subjective and can vary depending on personality (Gilbert, 2006), culture (Tsai et al., 2006), and age (Mogilner et al., 2011).

Studies on the diversity of happiness suggest that 'excite' and 'calm' are the prominent and representative positive feelings that make people aware of happiness. For this reason, the studies have divided happiness into 'exciting happiness' and 'calm happiness' (Mogilner et al., 2011a). The two different perspectives of happiness not only arouse different feelings but also affect consumers' behavior differently. For example, people with an exciting happiness perspective prefer passionate songs, and products that help them feel more excited (e.g., peppermint). In contrast, people with a calm happiness perspective prefer relaxing products (e.g., chamomile, mint) and calm songs (Mogilner et al., 2011).

Given that the happiness perspective affects consumers' preferences and behaviors, it is expected that the impact of the level of social crowdedness on shopping satisfaction in the era of COVID-19 will be moderated by the consumers' happiness perspective. Specifically, people who find happiness in peace prefer comfortable healing vacations to thrilling adventurous vacations (Kim et al., 2010). Accordingly, they want to be isolated adequately and avoid an environment where the social stimuli are excessive (Patterson & Hammit, 1990), and it may lead them to excessively avoid places that are full of people. However, people who seek happiness out of passion prefer an exciting adventure vacation to a relaxing healing vacation (Kim et al., 2010). They are predicted to enjoy shopping in highly crowded stores to find the excitement of high social crowdedness in shopping (Eroglu et al., 2005; Park, 2003). Therefore, despite COVID-19 and social distancing policies, they will be less affected by the atmosphere of social distancing and comparably prefer to shop in crowded places.

H2: The negative effect of social crowdedness on shopping satisfaction will be stronger (vs. weaker) among those with a calm (vs. exciting) happiness perspective.

3. Moderation Role of Time Perspective

Although we are literally living in time, the exact definition ("time is always around us") of it is still unclear and difficult to understand (Avci, 2013). Early studies on time have recognized the importance of time in the fundamental exploration of human beings and have long continued their studies (James, 1890). Time perspective, in particular, is an individual's view on the psychological past and future of a given time. Accordingly, the characteristics of time perspectives are very subjective and even have a significant influence on attitudes and decision-making.

In terms of time, decisions and behaviors in everyday life vary depending on how we view the past, present, and future (Stolarski et al., 2011). Zimbardo and Boyd (1999) generally presented five sub-dimensions of time perspectives, dividing the flow of time into the past, present, and future. For the past perspectives on time, past time can be perceived as either positively or negatively contingent on how the people see their past experience (past positive or past negative time perspective). In the case of present time perspectives, the present hedonic time perspective tends to pursue present pleasures without worrying about future dangers. In contrast, the present fatalistic time perspective believes in fate and thinks that the future will not change even though they struggle to do it. Therefore, people who have a present-fatalistic time perspective appear somewhat lethargic about the future. Finally, a future-oriented time perspective tends to spend time more faithfully to achieve future long-term goals.

Since the time perspectives show how people keep their stance on their lifetime, it is an important clue to infer people's attitudes and behaviors. Among the five-time perspectives presented by Zimbardo and Boyd (1999),

this study focuses on the two perspectives, the present-hedonic and present-fatalistic, to investigate their moderation role in the relationship between social crowdedness and shopping satisfaction. According to the former studies on time perspectives and consumer behavior, those with a present-hedonic time perspective are oriented toward present pleasures and thrills, and are impromptu and passionate (Zhang & Howell, 2011). They are challenged and intrigued by new stimuli and experiences, and above all, have pleasure-seeking thinking (Keough et al., 1999; Wills et al., 2001). On the other hand, people with a present-fatalistic time perspective are relatively lethargic and show high anxiety because they think they live in a fate that they cannot change (Zimbardo & Boyd, 1999).

In the literature on consumer theory, the degree of consumers' desire to explore information and interest in purchasing decisions depends on their values (Seo & Jung, 2000). In other words, 'shopping values' are divided into hedonistic and practical values. People engaged in hedonic shopping values are more interested in improvisational purchases than in cognitive exploration because they regard consumption as entertainment (Batra & Ahtola, 1991; Bloch & Richins, 1983). If this is the case, consumers with a present fatalistic perspective are introverted and sensitive, so they seek tranquility and differentials, and avoid pleasure. Thus, their purpose of shopping is more likely practical than pleasure-seeking (Bruck & Allen, 2003; Judge et al., 1999; Roccas et al., 2002; Zhang et al., 2013). High levels of social crowdedness are expected to cause difficulties in information exploration and even anger (Eroglu et al., 2005). It may decline the practical shopping value of people who have a present-fatalistic time perspective and lower shopping satisfaction. Accordingly, people with a present-fatalistic time perspective will feel more unpleasant in crowded places, especially in the era of COVID-19. However, unlike consumers who have a present-fatalistic time perspective, consumers with a present hedonic time perspective are expected to pursue pleasure rather than practicality. Therefore, they will feel less unpleasant even in the environment where many people are shopping in the store at the same time since the social crowdedness arouses excitement (Eroglu et al., 2005; Park, 2003).

H3: The negative effect of social crowdedness on shopping satisfaction will be stronger (vs. weaker) among those with a present-fatalistic (vs. present-hedonic) time perspective.

4. Graphical Model of Research

To examine the impact of social crowdedness on consumers' shopping satisfaction in the COVID-19 situation and whether happiness perspectives and time perspectives moderate the effect, the study designed two experiments. Specifically, this study expected that social crowdedness would lessen shopping satisfaction in general. Furthermore, this study predicted that the effect is more prominent among consumers with a calm happiness perspective or a present-fatalistic time perspective, while the effect will be attenuated for consumers with an exciting happiness perspective or a present hedonic time. The model of the research hypothesis is shown below.

III. Study 1

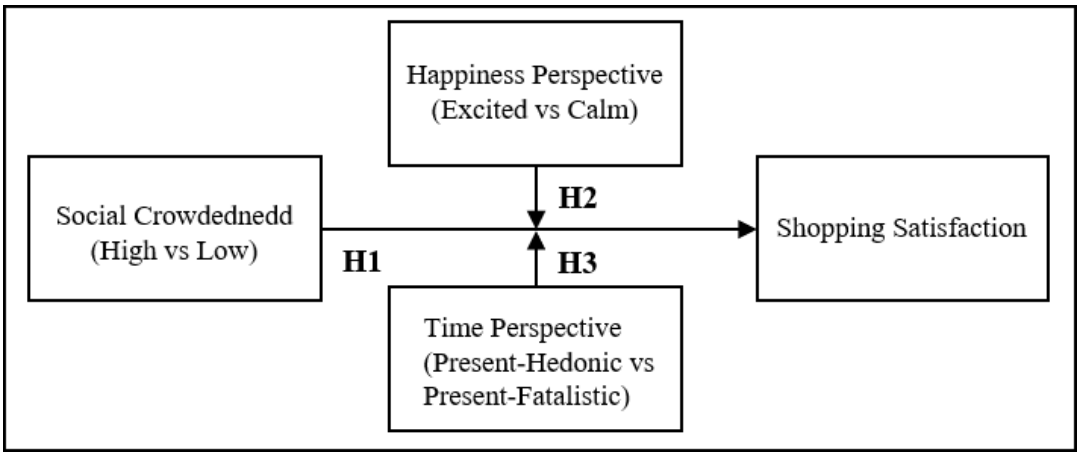
1. Method

1.1. Study Design

The first analysis investigates whether social crowdedness has an impact on consumers' shopping satisfaction, and further, whether the effect is moderated by their happiness perspective. The study recruited between-subjects factorial design (Social crowdedness: High vs. Low × Happiness perspective: Passion vs. Calm).

A total of 174 college students attending universities located in Seoul were recruited with convenience sampling. To enhance the reliability of the responses, participants were given coffee coupons as a gift for participating.

Fig. 1. The Research Model



1.2. Procedure

At the beginning of the study, researchers explained the precautions for the investigation to participants and distributed participants randomly under the conditions of social crowdedness. For the manipulation of social crowdedness, this study used the same process as former researches (Machleit et al., 2000; O'Guinn et al., 2015). All participants were given a mall picture as a stimulus, and the number of people in the picture differed depending on the conditions. In a high social crowdedness condition, many people are shopping in the mall, while only a few people are shopping in the store in a low social crowdedness condition. Participants were asked to imagine the situation where they are shopping in the mall in the picture.

After looking at the stimulus photo for a while, all participants were asked to report their expected shopping satisfaction and their perspective on happiness. In the study, happiness perspectives were not manipulated but measured because these perspectives are one of the lasting life values, and they chronically affect all choices we make. Finally, subjects were asked to answer social crowdedness manipulation check items and were then debriefed on the contents of the study.

1.3. Measurement

As the manipulation check between the social crowdedness conditions, researchers measured the four questions of perceived crowdedness used in the study of Machleit et al. (1994) on a seven-point scale ('the store seems to be busy with shoppers', 'the store seems to have a lot of shoppers', and 'the store seems to be crowded with shoppers'). The study used three (3) items for measuring shopping satisfaction, a dependent variable, as in Machleit et al. (2000): 'shopping at this store is likely to be enjoyable', 'shopping at this store will be satisfactory' and 'I want to revisit this store for shopping'. These items were averaged to create a composite measure of shopping satisfaction (α=.889). Finally, for the moderating variable, the study used a 10-point (1=exciting happiness scale, 10=peaceful happiness scale) single scale as in former researches (Mogilner et al., 2011; Park et al., 2020).

2. Result

2.1. Manipulation Check

Before the hypothesis test, a manipulation check of the experiment was conducted to

Table 2. The Means and Standard Deviations of Study Cells (DV: Shopping Satisfaction)

		Happiness Perspective		
		Exciting	Calm	
Social Crowding	High	M=4.296(SD=1.334) n=45	M=4.746(SD=1.103) n=46	M=4.524(SD=1.236) n=91
	Low	M=3.632(SD=1.285) n=38	M=2.985(SD=1.243) n=45	M=3.281(SD=1.296) n=83
		M=3.992(SD=1.346) n=83	M=3.875(SD=1.465) n=91	

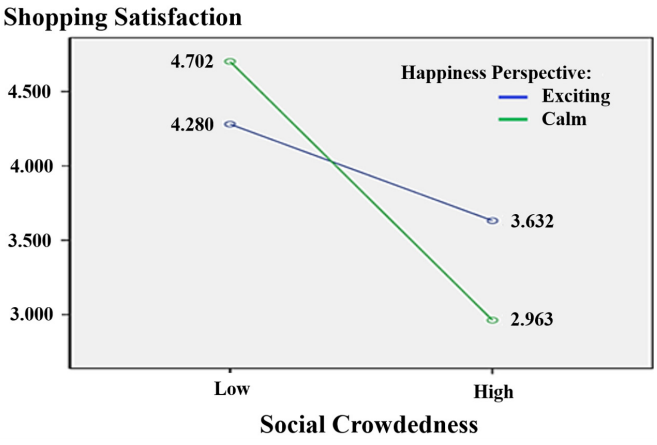
Notes: 1. Dependent Variable: Consumer's Shopping Satisfaction.
2. ( ) indicates standard deviations.

Table 3. The Result of ANOVA

Source		d.f.	Mean2	F-value	p
Main Effect	Social Crowding ①	1	63.619	41.272	.000
	Happiness Perspective ②	1	.417	.271	.604
Interaction Effect	① × ②	1	12.998	8.432	.004
Error		170	1.541		

Note: Dependent Variable: Consumer's Shopping Satisfaction.

Fig. 2. The Interaction Effect between Social Crowding and Happiness Perspective on the Consumer's Shopping Satisfaction



determine whether the experiment was performed as intended. A one-way analysis of variance (ANOVA) revealed a significant effect of experimental condition on participants' perceived social crowdedness ($t(154.546)=-26.972$, $p<0.001$). Specifically, participants reported that the place is more socially crowded in a condition where social crowdedness is high ($M=6.250(SD=.722)$) than low ($M=2.404(SD=1.131)$). Thus, it was confirmed that manipulating the level of social crowdedness in the store was successful. The happiness perspectives were divided into the exciting happiness group when the score is below five and the calm happiness group when the score is over six.

2.2. Hypothesis Test

To test the hypothesis that social crowdedness and subjects' happiness perspective affect shopping satisfaction, the study conducted a two-way ANOVA by setting the level of social crowdedness in the mall as an independent variable and the happiness perspective as a moderator. The average and standard deviation of shopping satisfaction for each group are shown below in Table 1 and Table 2.

The main effect of social crowdedness on shopping satisfaction was significant ($F(1,170)=41.272$, $p<0.001$, see Table 2). Specifically, participants in the high social crowdedness condition ($M=3.281(SD=1.296)$) showed less satisfaction than those in the low social crowdedness condition ($M=4.524(SD=1.236)$). Accordingly, Hypothesis 1 was supported.

Furthermore, the interaction effect between the social crowdedness and the happiness perspective on shopping satisfaction was statistically significant ($F(1,170)=8.432$, $p<0.01$, see Table 2). The effect of social crowdedness on shopping satisfaction was stronger when the participants had a calm happiness perspective rather than an exciting happiness perspective. In particular, the statistical difference between high and low social crowdedness was more drastic in a calm happiness perspective group ($t(89)=7.154$, $p<0.001$) than in an exciting happiness perspective group ($t(81)=2.300$, $p<0.05$). That is to say, when social crowdedness is low, those who have a calm happiness perspective ($M=4.746(SD=1.236)$) showed marginally significant higher shopping satisfaction than those who have an exciting happiness perspective ($M=4.296(SD=1.334)$, $t(89)=-1.756$, $p<0.1$). However, people with an exciting happiness perspective ($M=3.632(SD=1.285)$) showed significantly higher shopping satisfaction than those with a calm happiness perspective ($M=2.985(SD=1.243)$) in the case where social crowdedness is high ($t(81)=2.325$, $p<0.05$). Therefore, Hypothesis 2 was also supported, that the negative effect of social crowdedness on shopping satisfaction will be stronger (vs. weaker) among those with a calm (vs. exciting) happiness perspective.

IV. Study 2

1. Method

1.1. Study Design

To verify the effect of social crowdedness and participants' time perspectives on shopping satisfaction, the study recruited the same design as Study 1 except setting time perspectives instead of happiness perspectives as the moderator (Social crowdedness: High vs. Low × Time perspective: Present Hedonic vs. Present Fatalistic). Similar to Study 1, college students (n=189) attending universities in Seoul were recruited for Study 2, and they received a coffee coupon as a participation gift.

1.2. Procedure

The process of the study basically follows the same procedure of Study 1. All participants were distributed in each condition of social crowdedness and checked with the same stimuli (Machleit et al., 2000; O'Guinn et al., 2015) used in Study 1. Participants then answered expected shopping satisfaction items, time perspective questionnaires,

Table 4. The Means and Standard Deviations of Study Cells (DV: Shopping Satisfaction)

		Time Perspective		
		Present Hedonic	Present Fatalistic	
Social Crowding	High	M=4.123(SD=1.531) n=38	M=4.711(SD=1.142) n=38	M=4.417(SD=1.374) n=76
	Low	M=3.829(SD=.780) n=37	M=3.323(SD=1.413) n=31	M=3.598(SD=1.134) n=68
		M=3.978(SD=1.221) n=75	M=4.087(SD=1.440) n=69	

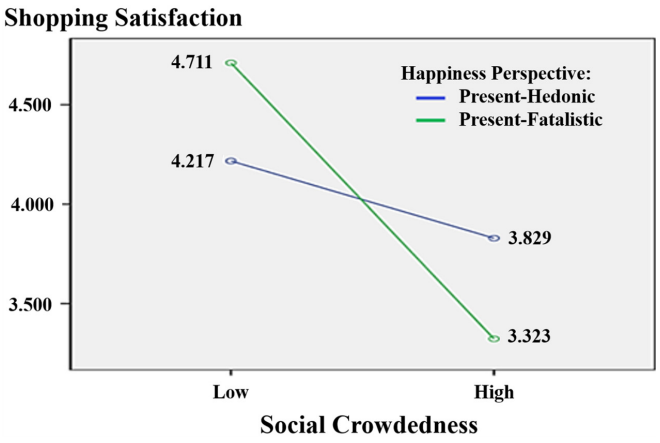
Notes: 1. Dependent Variable: Consumer's Shopping Satisfaction.
2. ( ) indicates standard deviations.

Table 5. The Result of ANOVA

Source		d.f.	Mean2	F-value	p
Main Effect	Social Crowding ①	1	25.272	16.317	.000
	Happiness Perspective ②	1	.059	.038	.845
Interaction Effect	① × ②	1	10.694	6.904	.010
Error		140	1.549		

Note: Dependent Variable: Consumer's Shopping Satisfaction.

Fig. 3. The Interaction Effect between Social Crowding and Time Perspective on the Consumer's Shopping Satisfaction



and manipulation checks for social crowdedness, in that order. Like the happiness perspectives, since the time perspectives are life values, this study did not manipulate time perspectives. After the experiment, researchers debriefed the contents of the study with the participants.

1.3. Measurement

The same items used for social crowdedness manipulation check and shopping satisfaction in Study 1 were also used in Study 2. In line with prior studies, the shopping satisfaction items were averaged to make a single indicator (α=0.855). To measure participants' time perspectives, the questionnaires made by Zimbardo et al. (1997) were recruited, particularly, the scales for present hedonic and fatalistic perspective.

2. Result

2.1. Manipulation Check

A one-way ANOVA revealed a significant effect of experimental condition on participants' perceived social crowdedness ($t(123.368)=-25.190$, $p<0.001$). Specifically, participants perceived a high social crowdedness in a high crowdedness condition (M=6.287(SD=.665)) than a low crowdedness condition (M=2.431(SD=1.134)). Considering people have all time perspectives, researchers deducted the time fatalistic perspective score from the time hedonic perspective score to construct time perspective conditions. Participants whose score was over zero (0) were regarded as having a dominant present hedonic time perspective, while participants who scored below zero (0) were considered to have a dominant present fatalistic time perspective. For the robustness of the study, participants (n=45) who scored exactly zero (0) were excluded from the hypothesis test, and thus a total of 144 responses were used.

2.2. Hypothesis Test

To check whether social crowdedness and participants' time perspectives affect shopping satisfaction, the study ran a two-way ANOVA by setting the level of social crowdedness and time perspectives as the independent variable and moderator, respectively. The averages and standard deviations of shopping satisfaction for each group are shown in Table 3 and Table 4 below.

As in Study 1, the main effect of social crowdedness on shopping satisfaction was found to be significant ($F(1,140)=16.317$, $p<0.001$, see Table 4). Participants in the high social crowdedness condition (M=3.598(SD=1.134)) showed less shopping satisfaction than those in the low social crowdedness condition (M=4.417(SD=1.374)). Accordingly, Hypothesis 1 was supported. The interaction effect between social crowdedness and time perspective on shopping satisfaction was statistically significant ($F(1,140)=6.611$, $p<0.05$, see Table 4). The effect of social crowdedness on shopping satisfaction was more substantial when the participants had a calm happiness perspective than an exciting happiness perspective. In particular, the statistical difference between high and low social crowdedness was significant only in the present-fatalistic time perspective group ($t(67)=4.514$, $p<0.001$), while not in the present-hedonic time perspective group ($p>0.1$). Furthermore, when social crowdedness is low, those who have a present-fatalistic time perspective (M=4.711(SD=1.142)) showed marginally significant higher shopping satisfaction than those with a present-hedonic time perspective (M=4.123(SD=1.531), $t(68.436)=-1.896$, $p<0.1$). However, when social crowdedness is high, people with present-hedonic time perspective (M=3.829(SD=.780)) showed marginally significantly higher shopping satisfaction than those with a present-fatalistic time perspective (M=3.323(SD=1.413), $t(44.850)=1.780$, $p<0.1$). Therefore, people who have a present-hedonic time perspective are less likely to avoid the situation where the shopping store is full of people than those with a present-fatalistic time perspective, although they all generally prefer to shop in the less crowded store. Consequently, Hypothesis 3 was supported.

V. General Discussion

Across two experiments, this study finds that the social crowdedness of the store negatively impacts shopping satisfaction in the era of COVID-19. Furthermore, the study also confirmed that the negative effect of social crowdedness was moderated by individual values, happiness perspectives, and time perspectives. Specifically, people who have an exciting happiness perspective or dominant present hedonic time perspective are comparably more satisfied if they visualize themselves shopping in a mall full of people. On the other hand, in a low social crowdedness situation, people who have a calm happiness perspective or dominant present fatalistic time perspective are found to be more satisfied.

Based on the results above, the study contributes to the literature in the area of social crowdedness and individual values, and is relevant for managers in charge of store management. The academic contributions of this study are as follows. First, this study found an empirical link between COVID-19 and consumers' offline shopping tendencies. Since we all live now in a world where COVID-19 has spread, it is expected that the effect of social crowdedness on shopping satisfaction will continue to be influenced by COVID-19 or social distancing policies. As expected, this study found that consumers feel less pleased in a mall full of many people, and therefore, their shopping satisfaction dropped. Since we are still figuring out how COVID-19 affects us generally, this study may give implications for researchers investigating the chronic effect of COVID-19. In particular, it is important to manage offline stores from a distribution management perspective (Brynjolfsson et al., 2013). Therefore, these research results have academic implications in examining the influence of COVID-19 on distribution channels.

Second, although research on social crowdedness has been conducted for a long time since the 1980s, there is mixed evidence for its effectiveness. Therefore, this study's findings have academic significance in that the consumer's individual values are considered to be the boundary condition in distinguishing consumers' reactions to social crowdedness. Individual values are a complex concept formed based on various integrated points of view (e.g., attitudes, learning, and memories). Accordingly, it can continuously influence preferences and tastes outside of the cognitive level (Gilbert, 2006; Mogilner et al., 2011; Stolarski et al., 2011; Kim et al., 2019; Park et al., 2020). While an empirical analysis lacks the relationship between individual values and shopping tendencies in a socially crowded environment, the present study applied these values, such as happiness and time perspectives, to social crowdedness. As this research found meaningful empirical results, it not only advances the literature on social crowdedness but also provides a foothold for follow-up studies. For example, further studies can investigate the relationship between social crowdedness and self-concept. Because self-concept is an organization in which values, goals, and ideals are dynamically synthesized, the individual's values directly influence its formation. Accordingly, an extended study may find an effect of self-concepts such as self-image and attachment type on the perception of social crowdedness.

Third, on the basis of the results suggested in this study, further research can elaborate consumer targeting strategies. In particular, the concept of individual perspectives of happiness and time is expected to promote derivative research on various topics related to marketing and brand strategy, such as shopping value and shopping experience value. Currently, offline stores are considered a venue for experiences and interactions with customers rather than a window for sales. Consumers feel practical and pleasure values in shopping in offline stores (Ahn & Lee, 2011). These experiential values in the shopping process positively affect store satisfaction (Hur et al., 2018). In addition, as long as Generation Z prefers to shop offline, it will be more critical in the future to stimulate consumers to do offline shopping and keep them constantly visiting stores.

This study provides practical implications regarding the store management plan of offline retailers as follows. Retail store managers play an important role in managing offline channels from a distribution management perspective. Therefore, what strategy they use with offline stores will

have an important impact on distribution channel management. In this vein, the results of this study provide important implications for retail store managers. Specifically, retail store managers should control the number of people in their shop not only for complying with government policies but also for the heightened shopping satisfaction. As the social atmosphere of social distancing has been prolonged, people feel suppressed and eager to release themselves from the policies. For this reason, many people have gathered in newly opened malls and some trendy places. Accordingly, the shop managers should control the maximum number of people in the shop for the long-term consumer management strategy.

The limitations of this study and suggestions for subsequent research are as follows. First, although this study found a significant statistical relationship between social crowdedness and shopping satisfaction in the era of COVID-19, this study has failed to capture how much the samples recalled either COVID-19 or social distancing policies while they are answering the questions. For more robust results, further studies can test the effect by manipulating the vividness of COVID-19 through priming the COVID-19 situation.

Furthermore, as this study found that COVID-19 has caused people to feel unpleasant toward crowded places, this study is expected to give an important stepping stone for studying the post-COVID era for future studies. As social distancing under COVID-19 continues, people are adapting to it on the one hand and expressing dissatisfaction with the intensive social distancing rules on the other hand. Therefore, it will be possible to examine whether people will avoid crowded places or enjoy visiting them again by verifying and comparing the results of this study after COVID-19 subsides in the future.

Second, this study was conducted through an experimental setting to enhance the internal validity, thereby a method of manipulating the social crowdedness through visual aids. Although this method was also adopted in previous studies (Huang et al., 2017; Machleit et al., 2000; O'Guinn et al., 2015), another experimental method should be considered for re-verifying the results of this study. For example, Huang et al. (2017) conducted a field survey of consumers who shop at a mart or conducted research by manipulating social crowdedness through controlling the actual number of people in the laboratory.

Lastly, the present study provided a shopping scenario for a very limited sample of college students. Due to the characteristics of the college student group, there may be individual differences in their relationship with the mall environment. Although this research used a mall to prevent potential confounding effects, future studies can use a direct product line as an experiment target and examine responses regarding the social crowdedness of the store. For example, the domestic cosmetic stores that conduct frequent discount marketing may induce the perception that they are on sale when there are many people in the store. Likewise, socially crowding cosmetic stores may lead to customers' positive reactions regardless of their happiness and time perspectives. In the case of shoe stores, crowdedness may give a negative impression to customers because of difficulty to try on the product. Therefore, future follow-up studies can suppress the sampling confounding effect by collecting various demographic samples or targeting multiple product lines by considering the realistic context.

References

Ahn, G. H., & Lee, H. N. (2011). The effect of perceived shopping value dimensions on attitude toward store, emotional response to store shopping, and store loyalty. *Asia Marketing Journal*, 12(4), 137-164.

Altman, I. (1975), *The environment and social behavior: Privacy, personal space, territory, and crowding.* Brookes.

Avci, S. (2013), Relations between self-regulation, future time perspective and the delay of gratification in university students. *Education*, *133*(4), 525-537.

Batra, R., & Ahtola, O. T. (1991). Measuring the hedonic and utilitarian sources of consumer attitudes. *Marketing Letters*, *2*(2), 159-170.

Baum, A., & Paulus, P. B. (1987). Crowding. In D. Stokols & I. Altman (eds.), *Handbook of environmental psychology* (pp. 533-570). Wiley.

Baum, A., & Greenberg, C. I. (1975). Waiting for a crowd: The behavioral and perceptual effects of anticipated crowding. *Journal of Personality & Social Psychology*, *32*(4), 671.

Bloch, P. H., & Richins, M. L. (1983). A theoretical model for the study of product importance perceptions. *Journal of Marketing*, *47*(3), 69-81.

Bruck, C. S., & Allen, T. D. (2003). The relationship between big five personality traits, negative affectivity, type a behavior, and work-family conflict. *Journal of Vocational Behavior*, *63*(3), 457-472.

Brynjolfsson, E., He, Y. J., & Rahman, M. S. (2013). Competing in the age of omni-channel retailing. *MIT Sloan Management Review*, *54*(4), 23-29.

Choo, M. A. (2013). Effect of retail store crowding on consumer conformity, shopping value and buying intention. *Kyung Young Nonchong*, *34*, 163-177.

Choo, M. A. (2014). Effects of store crowding on store attitude and behavioral intention: Based on adjustment effects of consumer susceptibility. *Journal of the Korea Institute of Information & Communication Engineering*, *18*(4), 965-972.

Eroglu, S. A., Machleit, K., & Barr, T. F. (2005). Perceived retail crowding and shopping satisfaction: The role of shopping values. *Journal of Business Research*, *58*(8), 1146-1153.

Gilbert, D. T. (2006). *Stumbling on happiness.* Knopf.

Graefe, A. R., Vaske, J. J., & Kuss, F. R. (1984). Social carrying capacity: An integration and synthesis of twenty years of research. *Leisure Sciences*, *6*(4), 395-431.

Hamilton, R., & Chernev, A. (2010). The Impact of product line extensions and consumer goals on the formation of price image. *Journal of Marketing Research*, *47*(1), 51-62.

Huang, X., Huang, Z., & Wyer, R. S., Jr. (2017). The influence of social crowding on brand attachment. *Journal of Consumer Research*, *44*(5), 1068-1084.

Hur, C., Yeo, C. K., & Kim, T. M. (2018). The influence of department store's attributes on consumer's shopping experience value: Focus on extrinsic value and intrinsic value. *Journal of Distribution & Management Research*, *21*(6), 173-182.

James, W. (1890). *The principles of psychology.* Henry Holt & Company.

Jeon, J. A., & Cho, I. H. (2012). The relationship among crowding, emotion and behavior intention in the family restaurant segment. *Journal of Tourism Sciences*, *36*(3), 213-231.

Ji, S. G., & Lee, S. G. (2005). The effects of in-store crowding on consumer emotions and behavioral intention. *Journal of Global Academy of Marketing Science*, *15*(3), 169-186.

Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability and career success across the life span. *Personnel Psychology*, *53*(3), 621-652.

Keough, K. A., Zimbardo, P. G., & Boyd, J. N. (1999). Who's smoking, drinking, and using drugs? Time perspective as a predictor of substance use. *Basic & Applied Social Psychology*, *21*(2), 149-164.

Kim, H., Park, K., & Schwarz, N. (2010). Will this trip really be exciting? The role of incidental emotions in product evaluation. *Journal of Consumer Research*, *36*(2), 983-991.

Kim, M. R., & Jeon, J. E. (2018). The effects of perceived retail crowding on attitude and social esteem: Focusing on brand concept and social connectedness. *Journal of Distribution & Management Research*, *21*(4), 51-60.

Kim, T. M., Huh, J. H., & Park, H. K. (2019). The influence of consumer time perspective on brand personality preference: The moderating effects of attachment style. *Journal of International Trade & Commerce*, *15*(6), 467-486.

Li, Y., Yao, J., & Chen, J. (2021). The negative effect of scarcity cues on consumer purchase decisions in the

hospitality industry during the COVID-19 pandemic. *International Journal of Hospitality Management*, *94*. https://doi.org/10.1016/j.ijhm.2020.102815

Lim, J. H., & Chun, D. Y. (2015). The impact of crowding and shopping emotion on shopping satisfaction: The moderating effects of shopper and store characteristics. *Journal of Channel & Retailing*, *20*(2), 223-246.

Machleit, K. A., Eroglu, S. A., & Mantel, S. P. (2000). Perceived retail crowding and shopping satisfaction: What modifies this relationship?. *Journal of Consumer Psychology*, *9*(1), 29-42.

Machleit, K. A., Kellaris, J. J., & Eroglu, S. A. (1994). Human versus spatial dimensions of crowding perceptions in retail environments: A note on their measurement and effect on shopper satisfaction. *Marketing Letters*, *5*(2), 183-194.

Merriam-Webster's Collegiate Dictionary (2009), *Springfield.* Merriam-Webster.

Mogilner, C., Aaker, J., & Kamvar, S. D. (2011). How happiness affects choice. *Journal of Consumer Research*, *39*(2), 429-443.

O'Guinn, T. C., Tanner, R. J., & Maeng, A. (2015). Turning to space: Social density, social class, and the value of things in stores. *Journal of Consumer Research*, *42*(2), 196-213.

Park, K. A. (2003). The effects of retail crowding on consumer emotions and shopping behaviors. *Journal of the Korean Society of Clothing & Textiles*, *27*(2), 261-269.

Park, S. Y. (2008). The relation among store crowding, shopping emotions and shopping value. *Journal of Distribution Science*, *6*(2), 61-79.

Park, H. K., Kim, T. M., & Huh, J. H. (2020). The influence of consumer's happiness perspective on brand personality preference: Moderating effects of attachment style. *Journal of CEO & Management Studies*, *23*(2), 117-136.

Patterson, M. E., & Hammitt, W. E. (1990). Backcountry encounter norms, actual reported encounters, and their relationship to wilderness solitude. *Journal of Leisure Research*, *22*(3), 259-275.

Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. (2002). The big five personality factors and personal values. *Personality & Social Psychology Bulletin*, *28*(6), 789-801.

Seo, S. M., & Jung, S. J. (2000). The effect of the level of density of shoppers and perceived crowdedness on the time spent in the shop. *Journal of Channel & Retailing*, *5*(1), 23-33.

Stolarski, M., Bitner, J., & Zimbardo, P. G. (2011). Time perspective, emotional intelligence and discounting of delayed awards. *Time & Society*, *20*(3), 346-363.

Sundstrom, E. D. (1977). Interpersonal behavior and the physical environment. In L. S. Wrightsman (Ed.), *Social psychology*. Brooks and Cole.

Tsai, J. L., Knutson, B. K., & Fung, H. H. (2006). Cultural variation in affect valuation. *Journal of Personality & Social Psychology*, *90*(2), 288-307.

Wang, D., Yao, J., & Martin, B. A. (2021). The effects of crowdedness and safety measures on restaurant patronage choices and perceptions in the COVID-19 pandemic. *International Journal of Hospitality Management*, *95*, 1-10. https://doi.org/10.1016/j.ijhm.2021.102910

Wills, T. A., Cleary, S., Filer, M., Shinar, O., Mariani, J., & Spera, K. (2001). Temperament and self-control related to early-onset substance use. *Prevention Science*, *2*, 145-163.

Zhang, J. W., & Howell, R. T. (2011). Do time perspectives predict unique variance in life satisfaction beyond personality traits?. *Personality & Individual Differences*, *50*(8), 1261-1266.

Zhang, J. W., Howell, R. T., & Stolarski, M. (2013). Comparing three methods to measure a balanced time perspective: The relationship between a balanced time perspective and subjective well-being. *Journal of Happiness Studies*, *14*(1), 169-184.

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality & Social Psychology*, *77*(6), 1271-1228.

Zimbardo, P. G., Keough, K. A., & Boyd, J. N. (1997). Present time perspective as a predictor of risky driving. *Personality & Individual Differences*, *23*(6), 1007-1023.

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Uzbek Migrant Workers in Korea: The Impact of Remittances on Uzbekistan Trade and Economic Growth

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ABSTRACT

Purpose – The purpose of this paper is to explore the impact of Uzbekistan migrant remittances to their origin country and suggest policy implications.
Design/Methodology/Approach – This paper reviews previous research. Based on the understanding of the status of and challenges to labor migrants, this paper examines the effects of remittances of labor migrants from Korea to Uzbekistan.
Findings – This paper draws some findings. Most migrants crossed the border for better nutrition for the family in the developing world. For Uzbek migrant workers in Korea, a majority are from rural areas of Uzbekistan. Migrant families need remittances for their poor households. In particular, household consumption, schooling, healthcare, vital necessities, expenditure on own and children's marriages, real estate, and other basic services are reliant on money from Korea to Uzbekistan by labor migrants.
Research Implications – Based on the findings of the paper, this paper gives implications that both the governments of Korea and Uzbekistan should acknowledge migrant problems and try to solve the challenges faced by Uzbek labor migrants. Additionally, this paper found that a better migration policy is necessary. Through a better migration policy, the data quality and quantity can be achieved for the future monitoring of migration. Organizations in charge need to perform more surveys or investigations with administrative support to households to publicize difficulties related to migrants or remittances. This paper also emphasizes the control of illegal migration and money transfers to reduce human trafficking and financial crimes by recording proper official remittance inflows. This paper will help researchers in the future find better immigration policies to protect labor migrants and to promote development of their origin countries.

Keywords: foreign labor, migrant, migrant worker, remittances, Uzbekistan, Uzbekistan-Korea relationship
JEL Classifications: F13, F22, F24

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I. Introduction

Despite difficulties of getting an exit visa from Uzbekistan during the rule of the senior government (Islam Karimov command) and entry visas to destination countries, the number of migrants has increased. The second president Shavkat Mirziyoev canceled government permission to go overseas from January 1, 20191, and started courageous international migrations. At the same time, he made steps forward for good opportunities for labor migration, and this "labor force constitutes 20 percent of the country's economically active population working abroad" (Sibagatulina, 2021) in Uzbekistan. The available survey data states that international migration and total remittance flows make important progress in minimizing poverty in the less wealthy Central Asian countries. The challenge for this is that an annual report on remittance inflows from Korea to Uzbekistan does not exist. Therefore, synthesis of multiple sources is used based on a direct report of migrants and their own experiences.

An "international migrant" is defined as any person that changed his or her country of usual residence. This research is concerned with labor migrants that crossed international borders for better earnings. A labor migrant2 is a person engaged to work to make money in a state where he is not a citizen. They are also known as foreign workers, worker migrants, or contractual workers. According to the International Monetary Fund (IMF), "total remittances" are defined as the sum of:

- personal remittances receivable;
- compensation of employees' receivable;
- capital transfers receivable from households;
- and social benefits receivable.

It may be said that remittances will increase receiving families' income and can help them to overcome poverty (Ratha, 2007). However, it is unclear whether remittances have a positive impact on economic growth or not. Some studies showed that remittances boost economic growth and reduce poverty. Adams and Page (2005) analyzed data on international migration, remittances, poverty and inequality from certain developing countries and found that international migration and remittances significantly lowered poverty in the developing world. Driffield and Jones (2013) examined whether foreign direct investment, official development assistance and migrant remittances would contribute to economic growth in developing countries or not, and found that all sources of foreign capital including foreign direct investment, official development assistance and migrant remittances had a positive impact on economic growth in developing countries. On the other hand, some studies found that increased consumption (Rempel & Loddell, 1978) and moral hazard of receiving families (Chami et al., 2005) generated by remittances would reduce economic growth of a country by discouraging labor supply (Chami et al., 2005) and increasing reliance on remittances (Kumar et al., 2018).

Some previous studies focused on Central Asian countries. Abduvaliev and Bustillo (2020) measured the effect of remittances on economic growth and poverty reduction among the former-Soviet countries including Uzbekistan. They found that remittances have a significant poverty reduction effect through increasing income and smoothing consumption levels. Imai et al. (2014) examined the effects of remittances on growth of GDP per capita of Asia and Pacific countries. They drew a result that remittances had both benefits and harm for economic growth. According to them, remittances are beneficial to economic growth although volatile inflows of remittances are harmful. They also found that remittances contributed to poverty reduction and could be a valuable complement to development efforts. Kumar et al. (2018) explored a correlation between remittances and financial development in the

1. On measures to further improve the passport system in the Republic of Uzbekistan, ID-131
2. IMO key migration terms

economic growth of Kyrgyzstan and Macedonia, both of which experienced increases in remittances over years. They found that remittances had a positive impact on the economic growth of both countries in the long term. However, remittances promoted economic growth of Kyrgyzstan, and in Macedonia, economic growth seemed to push remittances on the contrary. Cazachevici et al. (2020) estimated economic benefits of remittances exactly. According to them, it is generally agreed that remittances are an important financial source for low-income countries. However, there has been no consensus yet regarding the effect of remittances on economic growth. Based on this premise, they analyzed economic effects of remittances estimated in previous studies and drew a conclusion that remittances had positive effects on growth although being small. More importantly, they found regional differences of economic effects of remittances. According to them, remittances have growth-enhancing effects in Asian region but do not have those effects in Africa. Murodova (2018) found that international migration and remittances have a significant impact on poverty reduction in Tajikistan and Uzbekistan, although having small positive impact on reducing poverty in Kyrgyzstan. It also suggested that policymakers elaborate policies for poor emigrant workers and vulnerable groups, use the positive effect of remittances to support investments into entrepreneurship, healthcare, and education.

The main idea of this research is to analyze the migrant worker movement and remittance inflows from Korea to Uzbekistan. Personal remittances come from migrant workers that send money to a family living in the motherland. This paper will combine multiple sources, including the Uzbekistan public government dataset (Statistic Committee of Uzbekistan) and annual reports related to remittances and migration, the Agency of External Labor Migration of Uzbekistan's (AELMU) research papers as well as a Korean database (Statistics Korea), along with annual reports and data sets from the International Organization for Migration, Asian Development Bank (ADB), United Nation, World Bank, and others. The research will analyze economic gains and losses from remittances and the positive or negative impacts on local economic growth from growing year by year labor migration to Korea. The main purpose of this paper is to estimate the impact of Uzbek labor migration in Korea and money transactions on Uzbekistan's economic growth from 1991 to 2019.

II. Trade and Economic Cooperation between Korea and Uzbekistan

1. Uzbekistan's Economy

In the 1990s, Uzbekistan was considered one of the best-performing of all Soviet successor states, according to its real GDP level. However, that well-planned economy was recognized only as a success until 1996, as falling cotton prices caused external currency shortages began to occur (Tsereteli, 2018).

Outside Tashkent, other regions are still rural and agro-industrialized, and cotton, called "white gold", is a considerable source of external funds. However, in the last decade the government has been attracting FDI to reduce raw cotton exports and develop light industry to produce textile products.

Uzbekistan's financial sector is still in an early stage of progress, and this sector is bank based. The majority of banks are state-owned, while the National Bank of Uzbekistan (NBU) is specially controlled by the government. According to the Central Bank of Uzbekistan's (CBU) statistics, the NBU is the largest local bank, controlling 18.5% of the deposit and loan market shares in 2018 (Tadjibaeva, 2019). However, the second president announced new financial policies and made significant progress in financial liberation since 2017. Based on the research of previous scholars, financial inclusion and financial liberation can contribute to the country's faster development.

Uzbekistan has been achieving economic growth in recent years, with annual GDP growth of 4.4%, 5.3%, and 5.7%, respectively (World Bank, 2020a). The share of the agriculture, forestry and

fishing sectors in GDP has been decreasing, as it was 28.6% in 2017, 26.7% in 2018, and 24.6% in 2019 (World Bank, 2020b). Now, Uzbekistan is a low-middle-income country with a Gross Domestic Product (GDP) per capita of US$ 1,750.697 in 2020 (World Bank, 2020c). Uzbekistan is one of the leading cotton producers worldwide with $1.2 billion (2.6%) in cotton exports (Workman, n.d.).

The government of Uzbekistan keeps attracting foreign investment to develop the textile industry, which is a national key industry. Due to the lack of high-performance and modern technology, Uzbekistan's textile industry is only adapted to raw cotton production. However, in recent years the government supports exports of more textile products rather than raw cotton, and the results show that according to the State Statistic Committee there have emerged more than 7,000 textile enterprises (International Business Publications, 2018). Compared to previous years, Uzbekistan is making its way to export finished or semi-finished textile products rather than raw cotton by producing numerous textile products with the help of FDI from China, Turkey, and Korea.

In 2019, Uzbekistan's GDP was assessed at US$ 59.9 billion, growth of 5.71 percent over 2018 (World Bank, 2020d). Particularly, after 2005, the industry and service ratio of GVA (gross value added) has been rising more than agriculture (UNdata, 2021). The remittance annual growth tripled from 5.18 % to 14.75 % during the given years. There are no big changes for FDI and ODA indicators.

In addition, foreign exchange is an important factor in development. It also evaluates the strength of the local currency. After independence, the government tried to manage exchange rate controls tightly, leading to a multi-exchange rate economy by black markets. The local currency is now fully convertible at market rates. In different circumstances, this liberalization of exchange rate policy helps a fast transition to market economies.

When the Uzbekistan government struggled with currency problems, sources of foreign funds became more dependent on remittances, foreign direct and capital investment, foreign aid, and loans from abroad. Foreign capital from remittances remains an important factor in development

2. Korea-Uzbek Trade and Economic Cooperation

After the independence of Uzbekistan in 1991, in the next year in January, Korea and Uzbekistan opened embassies in Tashkent and Seoul. The starting point of closer cooperation between the two countries was when the Uzbekistan president was interested in Daewoo's Changwon auto plant during a visit. Then, an initial economic partnership, Uz – Daewoo, began to manufacture cars in the Asaka region. After Daewoo, other partnerships were made with 50:50 shareholding. Since then, Korea and its big companies (Chebol) have been a trustworthy and long-term planned partner of Uzbekistan. Not only in trade, but also other political, cultural, labor supply, and investment bilateral relations have been developed based on the Joint Declaration on strategic partnership signed in 2006, and the Joint Declaration on further development and deepening of the strategic partnership adopted in 2014. Moreover, Korean companies and businessmen have been attracted by the rich and diverse underground raw resources of Uzbekistan such as oil and gas, and various minerals as well as Uzbekistan's large market in Central Asia (UNDP Uzbekistan, 2014).

The contemporary connected alliance between the two countries and their people have been consistently strengthened. Since the first presidency, Uzbekistan and Korea have tried to keep economic and cultural-humanitarian relationships. The second president of Uzbekistan changed visa requirements, and more precisely listed visa-free countries. Since February 3rd, 2018, visiting Uzbekistan for some foreigners started to become more and more attractive.

Korea and Uzbekistan have given great attention to the textile industry via win-win cooperation. Favorable investment conditions for the textile industry attracted many Korean companies. At first, in April 1996, the Korean

Corporation "Daewoo International" founded "Daewoo Textile Fergana" to develop Uzbek textile productions of cotton fabric and yarn for about 100 million USD. Later, "Daewoo Textile Bukhara" also was founded. In 2014, the founder announced investment of 22 million USD in the two textile companies to expand production to 170 million USD by 2016, as well as 300 million USD by 2020.

Over the years, trade relations between Korea and Uzbekistan have grown rapidly. Lee (2005) found that 23 Uzbek – Korea joint ventures (Daewoo, Samsung, LG) among 464 large and medium sized joint ventures provided 34.7% of the whole product volume, which played a crucial role in both countries' trade markets. In 2019, there were 386 Uzbek-Korea joint ventures and 75 enterprises with 100% Korean capital. The creation of the Uzbek-Korea joint venture UzDaewooAuto in June 1994 is recognized as one a successful investment between UzAutosanoat and Korean GM Daewoo. The company produced renewed and modern car models and expanded the release. In Central Asia, Uzbekistan is the only country to manufacture cars and export these to neighboring countries. Korean companies have also invested in the financial sector of Uzbekistan to share its modern banking system and contribute to the development of the financial sector.

The Uzbek market represents a central area to connect Asia and Europe. In recent years, many Uzbekistan-Korea businesses are opening, along with investment or trade forums in both countries. In such forums, the two countries have the opportunity to sign many agreements. One is the agreement between the "Incheon" Free Economic Zone and "Angren" Free Economic Zone in April 2019. Korean experience will provide practical policy counsels to vitalize local FEZs in Uzbekistan. The government is expecting a concrete agreement for the development, management, and investment promotion between the countries.

According to the ambassador, the number of Korean enterprises in Uzbekistan was about 900 in 2020. There are not only socio-economic or trade partnerships but also educational partnerships with branches of Inha, Bucheon, Ajou, Yeoju Universities opening in Tashkent and International University in Fergana city. The construction of the "House of Korean Culture and Arts" in Tashkent is supports this friendship.

One of the most important things is that the economic roadmaps with Korea were signed during the visit of the president of Uzbekistan on November 22-25, 2017. These were updated to 2018 versions as an outcome of the Korean minister's visit in April 2018. They did more intergovernmental framework agreements, 18 interagency between various ministries and agencies, and contracts between state and private companies (Dadabaev, 2018). Up to date, Uzbekistan remains an important trading partner. In 2019, Korea was third (after China and Russia) in the Uzbekistan import market with 2.44 billion USD. Import value growth was 353 Million USD, which increased by 16.9 percent compared to the previous year (Observatory of Economic Complexity, n.d.).

III. Trends in Uzbek Migrant Worker Remittances

1. Labor Migrant Remittance Inflows in Uzbekistan

Since the collapse of the Soviet Union, there was internal migration to capital cities and Russia to seek jobs across borders because of the lack of employment opportunities in the local labor market. This affected economic factors; however, they became more prominent in the late 1990s. The previous government tried to regulate labor migration based on a strict law and migration policy, even if it was inactive. This led to illegal labor migration or human trafficking, and corruption in exit visa permission. On the contrary, the second government has acknowledged migration problems and sought a solution to the challenges faced by Uzbek labor migrants, who are playing an increasingly active and significant role in the country's development. There are around 2.5 million Uzbek migrants all over the world, which

is 20 percent of the country's economically active population (Sibagatulina, 2021).

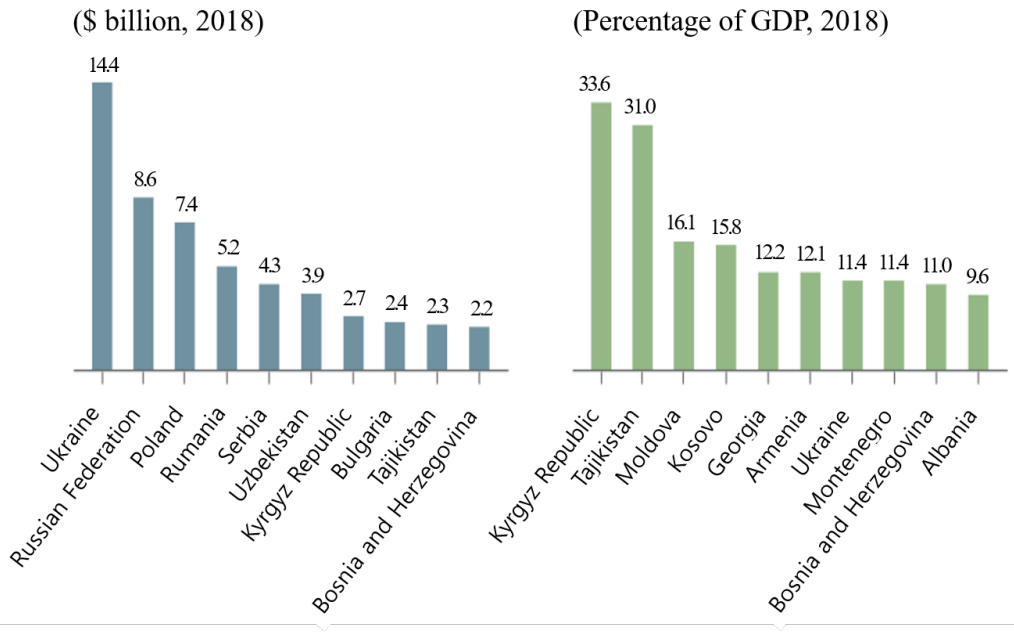
The starting point of labor immigration was the same as the independence of Uzbekistan. The government tightened borders for security, the protection of monopolized import-competing companies, and job creation after the collapse of the USSR. It pushed the unemployed population to go abroad to work to support their families. Over time, Uzbekistan became a labor supply for Russia, Ukraine, Kazakhstan, Turkey, and Korea, (Bondarenko, 2021).

Remittances are foreign capitals that make a large contribution to the balance of payment. The majority of developing countries try to gain foreign currency by attracting foreign investment or seeking foreign aid or ODA. In recent years, remittances exceed official development aid and have already overtaken FDI in LMICs when China was excluded (Global Knowledge Partnership on Migration and Development, 2019; World Bank, 2018, 2019a).

According to the migration and remittance data of the World Bank (Fig. 1), Uzbekistan was not the highest remittance receiver as a share of GDP. However, the total remittance stock of Uzbekistan from all countries (3.9 billion USD) was higher than the Kyrgyz Republic (2.7 billion USD) in 2018. Ukraine is the country that received the most remittances with a total of 14.4 billion USD in 2018.

According to annual World Bank reports, Kyrgyzstan and Tajikistan are first and second place as a percentage of GDP in Europe and Central Asian countries in 2018. This shows that external labor migration and money transactions play an influential role in the economic performance of these countries. Uzbekistan is less dependent on personal remittances, and received 15.1 % of GDP, which is almost the same as Kosovo (15.8 percent of GDP) in 2018 (World Bank, 2019b).

Fig. 1. Remittance Inflows to Europe and Central Asia in 2018



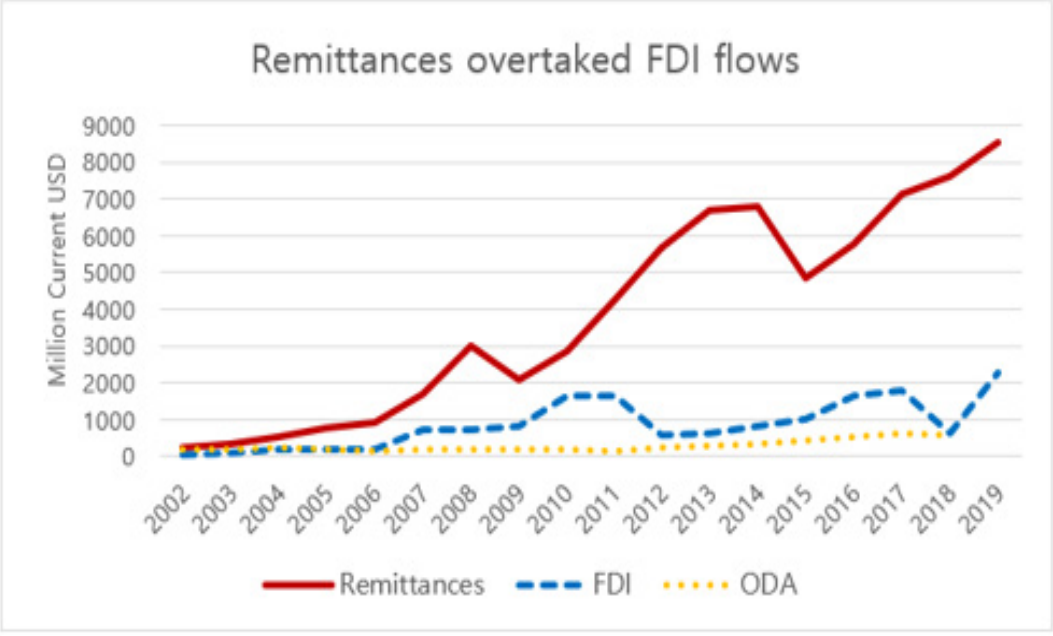
Source: World Bank (2019b).

Illegal money transfer methods are used by many migrant workers. However, in recent years, the government supports legal money transfers with the help of commission fee reduction. If countries can control illegal money transfers, this can help to reduce financial crimes and record proper official remittance inflows. External labor migrants, especially those in Russia, Ukraine, and Kazakhstan, are always concerned about sharp fluctuations in the exchange rate.

Despite lockdown policies, such as exit visa permission, the amount of international migration and the value of migrant remittances to Uzbekistan have increased, especially after the 2000s. Considering illegal transactions or man-to-man money remittances, the given statistic dataset might be low. However, according to the Central Bank of Uzbekistan in recent years (2019 and 2020), the volume of remittances has increased dramatically (Central Bank of Uzbekistan, 2021). The amount of remittances exceeds that of the export of gold. Although personal remittances from Russia decreased slightly in 2020 (-5.1%), those of Kazakhstan (8.3%), the United States (200%), Korea (210%), Turkey (28.7%), Israel (220%), and Sweden (79%) increased in 2020. Korea took the 4th place in terms remittance inflows to Uzbekistan. The trend is explained by the new presidency's stable exchange rate policies, lower overseas money transactions service fee, and reliable banking systems.

In Uzbekistan, the current immigration policy is key when remittances are running economic growth. This is because international worker migrant remittances inflows are a considerable source of external funds. According to Fig. 2, remittance inflows have already overtaken FDI as the biggest source of external financing since 2002 in Uzbekistan. It is approximately 4 times larger than the amount of FDI in Uzbekistan.

Fig. 2. Uzbekistan's External Capital Sources: FDI, Remittances, and ODA Inflows, 2002-2019



Sources: KNOMAD (2019), World Bank (2018, 2019a).

2. Positive and Negative Effects of Remittance in Uzbekistan

Most Central Asian migrant workers remit income to their family to support household consumption, send children to school, repay debt, and help families (mostly parents) access healthcare. The debt and loans are from the cost for migration to destination countries: Russia, Kazakhstan, and Korea (UNDP, 2015).

Many scholars have estimated the exchange rate flexibility relation between remittances and economic growth. One gave findings from 135 developing and transition countries in which a 1% rise in remittances grows GDP per capita by about 0.79% under a fixed exchange rate regime (Lartey, 2016). Korea, Japan, and Europe's smooth and safe exchange rate policy satisfy Uzbek workers, unlike CIS countries that depend on the Russian ruble or US dollar.

According to the ADB (2008) report, remittances have a short and long-term direct impact on poverty via an increase of recipient household consumption and gains. Remittances not only advance consumption but also move forward investment decisions. The economic assessment of ADB (2008) states that remittances have a key role in increasing the competitiveness of the national economy and open new paths toward micro, small, and medium-sized businesses in Central Asian countries. At the same time, Central Asian migration source countries have been experiencing social challenges following abnormal national pension service (NPS) and uncontrolled social protection for citizens. Migrant visa valid or working permission periods are not easy to extend, and these difficulties cause irregular migrant long-term stays in destination countries, weak communication with family, insufficient employment law, loss of health or migrant aging, divorces, and so on.

According to the primary data called L2CU (Listening to Citizens of Uzbekistan) that Seitz (2019) used, the fact that the Uzbek local labor market does not have enough jobs is the main reason for migrant movement. It turned out these remittances tend to relax household budgets in Uzbekistan. Remittances are also seen as a driving force for the day-to-day life of households in some war-affected countries like Tajikistan.

3. Uzbek Labor Migrant Remittances from Korea

Many years ago, Koreans also emigrated to other countries such as Saudi Arabia, the USA, and Germany. In the last 20 years, migrants have been coming to Korea for many reasons: working (high paid salary), studying, and living (Oh et al., 2012). Within 4 years, the number of total foreigners increased approximately 20% in Korea.

Since the independence of the Republic of Uzbekistan, the migration movement targeted Russia, Kazakhstan, and Turkey because they are visa-free countries for Uzbek citizens. In the last two decades, the population of Uzbekistan prefers to visit Korea because of high–paid work, and free accommodation and meals in contracted factories (Dadabaev & Soipov, 2020).

According to the Korea Migration Service, the number of total Uzbek migrant workers was 75,320 in 2019. However, the number of illegal migrant occupants was not included. The main matter is that nearly half of the total Uzbek migrants are non-professional labor migrants (E-9, H-2) at 34,190 people in 2019 in Korea. The main purpose of visiting Korea is to earn money, and in 2019 the average monthly salary for migrant workers stood at 2.31 million Korean won (approx. 2,000 USD) in Korea, while the average monthly nominal wage amounted to 2.23 million Uzbek sums (approx. 212 USD) in the same year. This is almost 10 times higher than an Uzbekistan worker's profit in a month domestically.

About 45% of Uzbek migrants hold non-professional working (E-9) visas and overseas Korean working (H-2) visas compared to other visa status. These two types of visa holders are almost half of the total amount of Uzbek migrants in Korea.

Uzbek migrant workers must pass Korean exams to get work permission with an E-9 visa as the first step. The exams consist of reading, listening, and skill tests. Only chosen successful

candidates can get employment contracts from Korean employers, then they will be able to apply for a Korean visa, buy tickets, and pay an international insurance premium. After coming to Korea, they can work 4 years and 10 months with E-9 and H-2 visas. When the 4 years and 10 months end, worker migrants must return to their homeland, but reentering Korea is possible if they pass Korean exams again. Many labor migrants do not return to the motherland because of losing time and aging. These issues lead to irregular migrants in Korea (Umarkulov, 2020).

While working in Korea with working visas E-9 and H-2, all international migrants have to pay taxes and insurance. There are national pension (NP), health insurance (HI), employment insurance (EI), and workers' compensation insurance (WCI) to be paid. According to Table 1, the major four SISs are explained by visa status, including E-9 and H-2 visas.

If a migrant wants to be covered by the EI (employed insurance) scheme, he/she must submit an application for EI-coverage with the migrant worker status prescribed in the Enforcement Regulations of the Employment Insurance Act, together with a copy of his/her Certificate of Alien Registration, to a job center within the jurisdiction (under the MOEL). Any foreigner or overseas Korean that has stayed in Korea for over six months is subject to mandatory subscription to health insurance (from July 16, 2019). National Health Insurance for foreigners has the same coverage as it does for Korean citizens. Moreover, Uzbekistan labor migrants do not pay NP (national pension), while other working visa holders (E-1~7 and F visas) do.

Table 1. Insurance Coverage for Foreign Migrants in Korea, 2019

Migrant workers' eligibility for coverage by 4 major SISs				
4 major SISs / Visa category	NP (national pension)	HI (health insurance)	EI (employment insurance)	WCI (workers' compensation insurance)
Industrial trainee (D-3)	X	○	X	○
General trainee (D-4)	X	○	X	○
Business supervisor (D-7)	△	○	△	○
Professional employment (E-5)	△	○	△	○
Non-professional employment (E-9)	○	○	△	○
Visiting and joining family (F-1)	X	○	△	○
Resident (F-2)	○	○		○
Overseas Koreans (F-4)	○	○	△	○
Permanent resident (F-5)	○	○		○
Working visit (H-2)	○	○	△	○

Notes: 1. O : mandatorily covered.
2. △: voluntarily covered or subject to the Principle of Reciprocity.
3. X : neither mandatorily covered nor voluntarily covered.

Source: Shin (2020).

Table 2. Challenges in Central Asia and Good International Practice Responses from IOM

Challenge	Best Practice Response
Limited information on legal status; risks of falling into irregularity, de-skilling.	Diaspora organizations and NGOs in destination countries reach out to migrants, providing legal advice and counselling, as well as cultural events
Weak incentives to maintain contact with home country, or community, or returning home. Many labor migrants seek to stay in destination country indefinitely.	Migrant resource centers in destination countries offer information on job opportunities at home (as well as abroad), and assistance with recognition of skills and qualifications. Bilateral social security agreements help ensure that employment and payroll taxes paid abroad are counted toward migrants' pension capital.
Insufficient flexibility in employment laws concerning migrant labor leads to widespread noncompliance.	Institutionalized frameworks for legally employing migrant workers (e.g., formal, licensed migrant recruitment agencies) with skills in demand are set up. Visa and work permit procedures are simplified (or waived) for seasonal workers or small-scale entrepreneurs engaged in local cross-border commerce.
Insufficient protection of migrant workers' rights, particularly concerning use and enforcement of employment contracts.	Legal and regulatory frameworks are constantly monitored to detect patterns of abuse, and when necessary, amended to address these patterns.
Underestimation of irregular labor migration.	Regularized seasonal (circular) migration schemes are offered for persons with established ties to the destination country. Planning for migration management is strengthened, inter alia by the regular compilation of labor demand and supply balances in sectors which rely heavily on migrant labor.
Irregular migration flows acquire long-term character, leading to problems of exclusion, discrimination, and corruption.	Sanctions intended to reduce irregularity: ☐ concentrate on dishonest employers and intermediaries/facilitators of irregular migration; and ☐ protect migrants' workplace rights (e.g., by enforcing employment contracts, ensuring timely payment of wages due, etc.)
Insufficient incentives (either positive or negative) for employers, migrants, or small-scale entrepreneurs to regularize their legal status.	Regularization schemes offer "visa over-stayers" or long-term immigrants simplified procedures to legalize their residency (when such is justified) Licensing and institutional development for employment companies (and NGOs) that can work with migrants, employers, diasporas, and government agencies in order to help formalize irregular migration flows.

Source: UNDP (2015).

IV. Impact of Remittances from Korea on Uzbekistan's Economic Growth

1. The Importance of Migration and Remittances to Uzbekistan Overall

1.1. Social Impact and Challenges

According to Uzbek statistic data, right after independence, around 3 percent of the total population moved to their parent's homeland such as Russia, Ukraine, and Belarus in 1992. At that time, the Uzbeki government lost educated and high-skilled human capital due to migration. The size of migration has been declining, and migrants that cross the border for temporary work and hosting countries have has changed to other high-paying countries. Labor migration from Uzbekistan to Korea has become a source of well-paid employment in recent decades.

Migrants living in Korea are subject to compulsory coverage of the National Pension Scheme, just like Korean citizens. In Uzbekistan, migrants do not pay NPS under E-9 (Non-professional Worker) or H-2 (visiting worker overseas Koreans) working visa status. However, foreign workers with E-7 (professional employment) or F-2 (resident) visas have must pay NPS as Koreans do. Within 5 years, they can get the NPS payment back when the origin country of NPS reaches minimum payment.

Uzbek labor workers work in factories, construction, and services. Even though working time in Korea is from 7 a.m. to 6 p.m. five days a week, many manufacturing companies usually give foreign workers overtime or holiday work. Some labor workers work days twice a week and nights twice a week. After one week they change. Large changes in work time are not good for health. For Uzbek migrants, automatic machines cause difficult adaptation to work or unfortunate accidents.

Trafficking in persons is another unsolved problem in migration. Local NGO Istiqbolli Avlod supports wide antitrafficking campaigns with the collaboration of governments and International Organizations for Migration (IOM) from 2011. However, in the case of Korea, there is only one Uzbek NGO, the World Association of Youth of Uzbekistan (WAYU), for students from 2019 and the Representative Office of the Agency for External Labor Migration at the Ministry of Employment and Labor Relations of the Republic of Uzbekistan in Gwangju (Republic of Korea) that supports labor migrants with E-8, E-9, or H-2 visa statuses from October 2020.

Such campaigns or legal frameworks for organizing worker migrants in destination counties assist good technical practices to encourage legal and safe migration, given the best practices shown in Table 2 worth accepting for migration in Korea from Uzbekistan. Both countries have been conducting bilateral social security agreements to promote safe migration behaviors. The representative office in Gwangju became a center for communication on developing the skills or qualifications of Uzbek workers and to find better opportunities to ensure workers lives during high-risk work in Korean factories.

1.2. Education Improvement

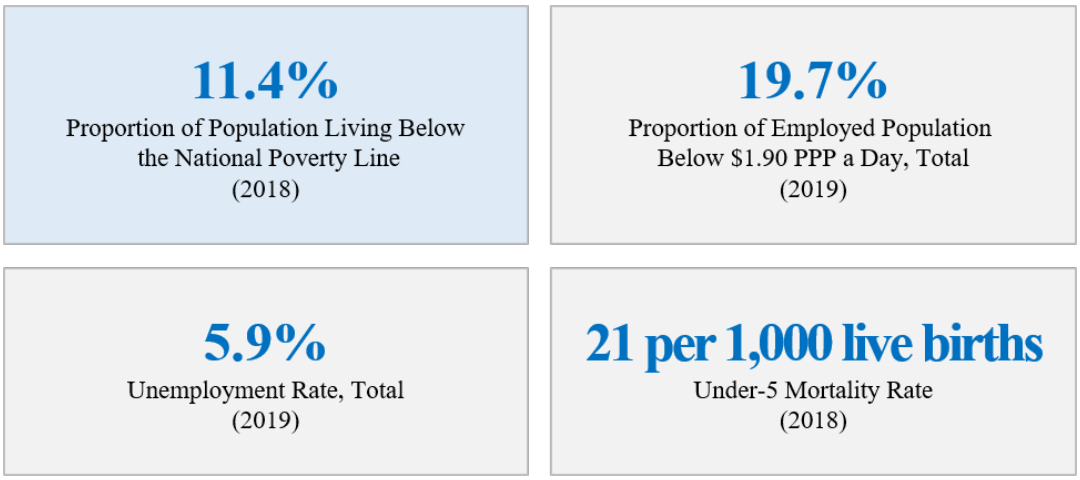
Education plays a crucial role in finding a job in Uzbekistan, and migrants have to earn money to afford their children's education by working abroad. Sometimes, young migrants choose to cross the border to earn money for their study, too. An ADB (2008) report stated that remittances help schooling and investment in human capital in Central Asia.

According to the Law of the Republic of Uzbekistan, primary and secondary education are mandatory and free for Uzbekistan citizens. Higher education is followed by undergraduate degrees and graduate degrees, for which entrance exams are very competitive and there are not enough universities. The tuition fee is remarkably costly at around 6 million Uzbek sums tuition fee (in USD 570) for one academic year in 2019, especially compared to the average monthly nominal wage of 2.23 million Uzbek sums (in USD 212) in the same year.

Labor migrants do not want children to become labor migrants without education. Therefore, migrant households invest some part of the remittances for schooling, preparation for the admission test, tuition fees, and so on. The spending of remittances for education might be not high as construction or buying cars, but 30 percent or more on average of received remittances (survey analysis) is spent on education improvement in Uzbekistan (Juraev, 2012).

Poverty (mainly food access) is measured by earnings and consumption as indicators. Income would be low in one family without migrant money transactions. It leads to less consumption and food insufficiency. In 2019, the average monthly nominal wage (excluding agricultural and small businesses) amounted to 2.23 million Uzbek sums, an increase of 27.5% compared to the corresponding period of 2018 (State Committee of The Republic of Uzbekistan on Statistics, 2019).

Fig. 3. Poverty Indicators in Uzbekistan, 2018 - 2019



Source: ADB (2020).

More precisely, according to the outcome of the analysis of Abduvaliev and Bustillo (2020), a 1 percent rise in remittance flows helps to reduce 2 percent of poverty (including Uzbekistan).

1.3. Poverty Reduction

Previous scholars found that remittances might be an influential poverty reduction factor. Recently Seitz (2019) explained that if the flow of remittances stops in Uzbekistan, the poverty rate would be expected to increase from 9.6 to 16.8 percent. According to ADB statistics, 11.4 % of the Uzbekistan population lived below the National Poverty Line (NPL) in 2018 (Fig. 3).

2. Remittance Advantages for Economic Growth

Labor migrants in Korea are from rural areas of Uzbekistan. This means that throughout the country, mostly rural areas are dependent on labor migrant remittances, and locals want to go abroad to earn money for their families (Kim, 2012).

Initially, immigrant families need remittances for the household. Food, household consumption, and other services are reliant on the money from Korea to Uzbekistan by labor migrants. Uzbek families are large families with many children and grandparents. Therefore, all migrant profits are expended mostly on food. In most countryside,

there is no public water access, and every house needs to build a cistern or well. All are impossible without migrant remittances.

Secondly, remittances from Korea are used for real estate such as the reconstruction of an old house, particularly a parent's house, or to build or buy a new housing. In the case of a man aged 34 that has been working in Korea since 2013, during the past 8 years, he sent money to rebuild his parent's house and to buy a new house where he will live with his family after going home.

Thirdly, remittances might be used for wedding expenditures. Labor migrants not only send money for his wedding expenses, but migrant must also help to cover the majority of wedding expenses of siblings, too.

Fourthly, most Uzbek migrant workers remit income to their families to repay debt. The debt and loans are from the expense of migration to Korea: money for flight tickets and the Korean language test (EPS-TOPIK).

Lastly, money transaction from Korea to Uzbekistan by labor migrants is used to invest in micro, small, and medium-sized businesses. In recent years, the Uzbekistan government has been trying to make a more favorable environment in which to invest migrant remittances in local businesses and the small manufacturing industry.

According to the given statistics of migrant workers (both non-professional and professional) from Uzbekistan in Korea, the amount of labor migrants has been increasing despite the difficulties of Korean language exams, work permission, and visa conditions. Along with an increase in the number of labor workers, the amount of remittances has also been increasing.

Previous studies and both countries' annual reports state that remittances from migrant workers in Korea have positive direct and indirect impacts on Uzbekistan development via the multiplier sector effect. Particularly, there existed macroeconomic findings related to the nexus between remittances from Korea and Uzbekistan's GDP, which is affected by indirect characters, growing demand from migrant households in various local fields.

Uzbek labor migrant remittances from Korea could be explained as a helper in quick economic recovery for the poor population of Uzbekistan. This is because a migrant's monthly salary in Korea is almost equal to the annual income of an ordinary worker in Uzbekistan.

Overall, migrant families need remittances for their households. In other words, mostly rural areas are dependent on labor migrant remittances and locals want to work abroad to feed their families. Findings show that Uzbek migrant remittances from Korea do impact Uzbekistan's economic development, and the main effect is additional demand in the local market for vital necessities, which is called the multiplier effect on economic growth via more consumption for several local sectors' combined products.

V. Conclusion

In this paper, research was focused on Uzbek worker migrants that came from Uzbekistan to Korea from 1991 to 2019. The total remittances of Uzbek worker migrants from the perspective of the recipient economy of Uzbekistan were investigated based on previous studies, both countries' annual reports, and some case studies.

For the most part, money transactions seem to be spent more for household consumption such as schooling, healthcare, food, and getting out of poverty rather than savings or investment by migrant family members. This says that most migrants crossed the border for better nutrition for family in the developing world.

There are many direct and indirect positive nexuses between remittances and development, particularly for economic development in countries of origin. This has been explained as a multiplier effect in which remittances run local businesses via commodity turnover, and these support economic or social development (Giuliano & Ruiz-Arranz, 2009; Juraev, 2012; Seitz, 2019).

For Uzbek labor migrants in Korea, a majority are from rural areas in Uzbekistan. It is common in rural areas that at least one family member is working in Korea with E-8, E-9, and H-2 working visas. Initially, migrant families need remittances

for poor households. This means that throughout the country, mostly rural areas are dependent on labor migrant remittances, and locals want to work abroad to feed their families. Findings show that Uzbek worker migrant remittances from Korea do impact Uzbekistan's economic development, and the main effect is additional demand in the local market for vital necessities, which is called the multiplier effect on economic growth via more consumption for several combined local sectors' products.

Findings state that incoming remittances from Korea in Uzbekistan boost household consumption for combined several local sectors. Increasing demand, active financial savings, small- and medium-sized business creation, and investment exert influence on GDP extension. There is a positive significance between remittances from Korea and economic growth in Uzbekistan. This nexus is explained by small changes in migrant households. Remittances from Korea support migrants' family members in meeting vital necessities, real estate, and expenditure on their own and children's marriage.

In the destination country (Korea), labor migrants suffer insufficient employment law and health issues, and they return to the home country in old age without any support related to the National Pension Service (NPS). The origin country (Uzbekistan) also faces uncontrolled social protection and a growth of divorces from migrations. As Adams (2003) explained, international migration does cause a brain drain; in recent years, skilled and high-educated Uzbek migrants prefer to live in Korea rather than return to Uzbekistan. Brain drain, in other words, is known as the fight for human capital, so the Uzbek government needs to develop new support to bring young people back to the country. Moreover, Uzbek migrant family consumption of non-tradable goods has been increasing due to foreign currency from Korea by migrants.

The new (second) government of Uzbekistan has acknowledged migrant problems in the origin country and destination countries, and the government is trying to solve the challenges faced by Uzbek labor migrants. Additionally, this paper also found that migrant remittances contribute positively to the region's development, and this means a better migration policy is necessary. Through a better migration policy, data quality and quantity can be achieved for the future monitoring of migration.

Organizations need to perform more surveys, investigations, and administrative support to households to publicize the difficulties related to migrants and remittances. This survey's outcomes will show existing problems migrant households are experiencing and can make a new policy for a better life of returning migrants in the future. Finally, in the Uzbekistan case, there is a research gap on the factors which impact economic growth, and how new knowledge on worker remittances will benefit future Uzbek economic performance.

The official international remittance inflow amount might be shown in smaller quantities, while illegal money transfer methods are usually used by many worker migrants. There are no exact numbers of labor migrants by country as well. If nations can control illegal migration and money transfers, this can help to reduce human trafficking, financial crimes, and record proper official remittance inflows. Migration-related research and proper official statistic data were insufficient for this paper, but this research paper used the latest available data to fill the research gap and support research acceptance for an Uzbekistan case study in the near future.

References

Abduvaliev, M., & Bustillo, R. (2020). Impact of remittances on economic growth and poverty reduction amongst CIS countries. *Post-Communist Economies, 32*(4), 525-546.

Adams, R. H., Jr. (2003). *International migration, remittances, and the brain drain: A study of 24 labor-exporting countries* (Policy Research Working Paper No. 3069). World Bank. https://openknowledge.

worldbank.org/bitstream/handle/10986/18161/multi0page.pdf?sequence=1&isAllowed=y

Adams, R. H., Jr., & Page, J. (2005). Do international migration and remittances reduce poverty in developing countries? *World Development, 33*(10), 1645-1669.

Asian Development Bank. (2008). *A study on international migrants' remittances in central Asia and south Caucasus: Country report on remittances of international migrants in Tajikistan.*

Asian Development Bank. (2020). *Basic Statistics 2020* (Brochure). https://www.adb.org/publications/basic-statistics-2020

Bondarenko, K. A. (2021). Labor migration from Uzbekistan: A family and community promoted big bang. *Regional Research of Russia*, *11*(2), 273-284.

Cazachevici, A., Havranek, T., & Horvath, R. (2020). Remittances and economic growth: A meta-analysis. *World Development, 134*(C).

Central Bank of Uzbekistan. (2021, April 2). *Personal remittance for 2018-2020.* Gazeta. https://www.gazeta.uz/ru/2021/04/02/transfers/

Chami, R., Fullenkamp, C., & Jahjah, S. (2005). Are immigrant remittance flows a source of capital for development?. *IMF Staff Papers, 52*(1), 55-81.

Dadabaev, T. (2018, December 11). *The last Asian frontier? A comparison of the economic cooperation agendas of China, Japan, and South Korea with Uzbekistan*. The Asan Forum. https://theasanforum.org/the-last-asian-frontier-a-comparison-of-the-economic-cooperation-agendas-of-china-japan-and-south-korea-with-uzbekistan/

Dadabaev, T., & Soipov, J. (2020). Craving jobs? Revisiting labor and educational migration from Uzbekistan to Japan and South Korea. *Acta Via Serica*, *5*(2), 111-140.

Driffield, N., & Jones, C. (2013). Impact of FDI, ODA and migrant remittances on economic growth in developing countries: A systems approach. *The European Journal of Development Research, 25*(2), 173-196.

Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics*, *90*, 144-152.

Global Knowledge Partnership on Migration and Development (KNOMAD). (2019). *Remittance inflows*. https://www.knomad.org/data/remittances

Imai, K. S., Gaiha, R., Ali, A., & Kaicker, N. (2014). Remittances, growth and poverty: New evidence from Asian countries. *Journal of Policy Modeling, 36*(3), 524-538.

International Business Publications. (2018). *Uzbekistan business intelligence report: Strategic information, opportunities, contacts*.

Juraev, A. (2012). *Labor migration from Uzbekistan: Social and economic impacts on local development* (Doctoral Dissertation). University of Trento. http://eprints-phd.biblio.unitn.it/805/

Kim, Y. J. (2012). Labor migration and remittances in Uzbekistan: The present state and socio-economic influences. *Russian Studies*, *22*(2), 199-233.

Kumar, R. R., Stauvermann, P. J., Patel, A., & Prasad, S. (2018). The effect of remittances on economic growth in Kyrgyzstan and Macedonia: Accounting for financial development. *International Migration, 56*(1), 95-126.

Lartey, E. K. K. (2016). *Exchange rate flexibility and the effect of remittances on economic growth* (Policy Research Working Paper No. 7932). World Bank. https://openknowledge.worldbank.org/bitstream/handle/10986/25835/WPS7932.pdf?sequence=1

Lee, B. (2005). Economic and cultural relations between Uzbekistan and Korea. *Journal of Korean Culture Studies, 32*, 367-377.

Murodova, S. (2018). Impact of remittances and international migration on poverty in central Asia: The cases of the Kyrgyz Republic, Tajikistan, and Uzbekistan. *Journal of Applied Economics and Business Research, 8*(1), 38-56.

Observatory of Economic Complexity (OEC). (n.d.). *Uzbekistan*. https://oec.world/en/profile/country/uzb?tradeScaleSelector2=tradeScale1

Oh, J. E., Kang, D. K., Shin, J. J. W., Lee, S. L., Lee, S. B., & Jung, K. S. (2012, January). *Migration profile of the Republic of Korea* (IOM MRTC Research Report Series No. 2011-01). IOM Migration Research and Training Centre. https://publications.iom.int/system/files/pdf/mp_korea.pdf

Ratha, D. (2007). Leveraging remittances for development. In J. Hollifield, P. Orrenius & T. Osang (Eds.), *Proceedings of the 2006 conference on migration, trade, and development* (pp. 173-185). Federal Reserve Bank of Dallas.

Rempel, H., & Lobdell, R. (1978). The role of urban-to-rural remittances in rural development. *Journal of Development Studies, 14*(3), 324-341.

Seitz, W. (2019). *International migration and household well-being: Evidence from Uzbekistan* (Policy Research Working Paper No. 8910). World Bank. https://openknowledge.worldbank.org/handle/10986/31975

Shin, Y. H. (2020, October 28). *Migrant workers' eligibility for coverage by 4 major SISs.* Yuhantax. https://blog.naver.com/yuhantax11/222129327664

Sibagatulina, Z. (2021, February 26). *Monumental shifts in Uzbek labour migration policy.* Prague Process. https://www.pragueprocess.eu/en/migration-observatory/publications/34-briefs/284-monumental-shifts-in-uzbek-labour-migration-policy

State Committee of the Republic of Uzbekistan on Statistics. (2019). *Quarterly reports, 2019*. Stat. https://www.stat.uz/uz/default/choraklik-natijalar/5709-choraklik-natijalar-2019

Tadjibaeva, D. (2019). *Small and medium-sized enterprise finance in Uzbekistan: Challenges and opportunities* (ADBI Working Paper Series No. 997). Asian Development Bank Institute. https://www.adb.org/publications/small-medium-sized-enterprise-finance-uzbekistan-challenges-opportunities

Tsereteli, M. (2018). *The economic modernization of Uzbekistan* (Silk Road Paper). Central Asia-Caucasus Institute and Silk Road Studies Program. https://isdp.eu/publication/economic-modernization-uzbekistan/

Umarkulov, K. (2020). External labor migration of Uzbekistan: Causes, problems and prospects. In C. J. Cho (Ed.), *Crisis and fragility: Economic impact of COVID-19 and policy responses* (pp. 313-324). Korea Institute for International Economic Policy.

UNdata. (2021). *Uzbekistan*. https://data.un.org/en/iso/uz.html

UNDP. (2015). *Labour migration, remittances, and human development in central Asia*. United Nations Development Programme Regional Bureau for Europe and the Commonwealth of Independent States.

UNDP Uzbekistan. (2014). *Invest in Uzbekistan*.

Workman, D. (n.d.). *Cotton exports by country*. World's Top Exports. https://www.worldstopexports.com/cotton-exports-by-country/

World Bank. (2018). *Net official development assistance received (current US$): Low & middle income*. https://data.worldbank.org/indicator/DT.ODA.ODAT.CD?locations=XO

World Bank. (2019a). *Foreign direct investment, net flows (BoP, current US$): Low & middle income*. https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?locations=XO

World Bank. (2019b). *Migration and remittances data*. https://www.worldbank.org/en/topic/migrationremittancesdiasporaissues/brief/migration-remittances-data

World Bank. (2020a). *GDP growth (annual %): Uzbekistan*. https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=UZ

World Bank. (2020b). *Agriculture, forestry, and fishing, value added (% of GDP): Uzbekistan*. https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=UZ

World Bank. (2020c). *GDP per capita (current US$): Uzbekistan*. https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=UZ

World Bank. (2020d). *GDP (current US$): Uzbekistan, GDP growth (annual %) - Uzbekistan*. https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=UZ

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Improvements in the Practice Application of UNCUECIC*

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ABSTRACT

Purpose – 'United Nations Convention on the Use of Electronic Communications in International Contracts' (UNCUECIC), established at the 60th UN General Assembly in 2005, is the most applicable law for securing legal certainty and practical predictability and is expected to remove legal obstacles in CBEC.
Design/Methodology/Approach – CBEC laws, current studies, UN and UNCITRAL periodical publications, and research by the Korea Ministry of Justice and Korea Customs Service are analyzed qualitatively, focusing on issues with the CLOUT Case and practical evidence from corporations in CBEC business.
Findings – The practical necessities of UNCUECIC are suggested by reviewing cases from UNCITRAL and CBEC corporations. First, UNCUECIC provides a legal certainty, removes legal obstacles and increases practical predictability. Second, the convention allows technological neutrality, accepting all forms of electronic communication to create, deliver, and store regardless of technology or media referring to 'Form of Freedom'. Third, it allows all forms of electronic communication with functional equivalence.
Research Implications – First, a certified electronic address satisfies the form requirement. Since the information system is vulnerable to the authenticity due to legal uncertainty, it can secure legal certainty and practical predictability in CBEC. Second, an interpretation like ISBP unifies practices and reduces risks in contracts. Also, it removes ambiguous clauses for dispatch and receipt. Therefore, it provides practical clearness, uniformity, and predictability Third, the effort of individuals, and corporations, and governments are strongly suggested. Training and technical support, currently focused on the improvement of export competency, should move to uniformed legal training, solving issues, and, as a consequence, increase practical predictability.

Keywords: CBEC, UNICTRIAL
JEL Classifications: F01, F13, K33

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I. Introduction

Due to the development of the Internet, exchanges in society, culture, and commerce have increased. Specifically, Cross Border (CBEC) where international trade mainly exists, electronic communication is widely used since parties are located in two different countries.

The worldwide volume of CBEC started at 2.38 trillion USD in 2017, increased to 3.53 trillion USD in 2019, and is expected to be 6.54 trillion USD in 2023 (UNICIDAD, 2020). In spite of COVID-19, the volume has been increasing constantly, and even the growth rate has increased. This reflects the fact that CBEC is rapidly developing with quick and easy online activity, such as social networking, using cell phones.

As CBEC grows in volume, uniform legal regulations have been demanded, and each country and organization has put efforts into an uniform law. This effort has led bilateral treaties like FTAs (Free Trade Agreement) and guidelines/model laws like the UNCITRAL Model Law on Electronic Commerce in 1996.

For an example, the UNCITRAL Model Law on Electronic Commerce, a law for the international sales of goods in 1980, can be applied to most international trade as well as CBEC. However, there have been issues with the possibility of legal dispute for both parties. Also, since it is a model law, it does not have legal binding. It has been a reference for legislation in each country and does not play a role as a legal regulation.

To solve this insufficiency in for CBEC, an official multilateral treaty was established at the 60th UN General Assembly in 2005. It was named the 'United Nations Convention on the Use of Electronic Communications in International Contracts' (UNCUECIC). The goal is to provide a solution for practical issues in electronic communication and promote the effective use of communication. Particularly, it is most applicable law for securing legal certainty and practical predictability in international trade, and is expected to play a role in removing legal obstacles that might arise in CBEC.

However, parties in CBEC have a low level of awareness of this uniform law and rely on courts to resolve legal issues or disputes.

In many cases, domestic laws are different in each country, and any governing law or treaty may be chosen one-sidedly in accordance with bargaining power. Also, due to a lack of legal information, it might lead to an unfair agreement. Legal training and services with government support can be used, but practically, it is a difficult to access an unfamiliar system in a situation requiring an immediate reaction.

In this study, necessities in the application of UNCUECIC, a uniform international agreement will be identified, and suggestions to solve practical issues will be provided for efficient CBEC with legal certainty and practical predictability.

In this study, CBEC laws, related current studies, UN and UNCITRAL periodical publications, and research by the Korea Ministry of Justice and Korea Customs Service are utilized and analyzed qualitatively, with a focus on practical issues with a CLOUT Case and practical evidence collected from corporations using CBEC.

With the collected data, the current status of CBEC is reviewed, practical issues arising in the application of UNCUECIC are identified, and suggestions for improvements are proposed. This study also introduces UNCUECIC in view of reducing imbalances between domestic and international e-commerce with a gap in laws, and securing the international bargaining power of each country, in which legal certainty and practical predictability are reviewed to propose practical suggestions for parties in CBEC.

II. Necessity of UNCUECIC in Practical Application?

1. Legal Uniformity

With the development of ICT and CBEC, the traditional contract has changed. A new CBEC environment has been created for convenient and effective online transactions. Since it occurs in virtual space beyond physical barriers, a uniform

international law system has been continuously demanded due to its internationality (UNCITRAL, 2007). In practice, CBEC has legal limitations in applying domestic law since it has transactions over barriers online. Specifically, if domestic law is applied, parties, transaction times, and transaction space are unlikely to be defined, and there is an incongruity between the current law and CBEC.

Therefore, UNCITRAL established UNCUECIC in 2005 to promote CBEC activities, and it was provided for practical use as a uniform international law. Unlike existing model laws, it is legally binding (Hong, 2015). According to the preamble, it highlights the legal uniformity, certainty and predictability:

"convinced that the adoption of uniform rules to remove obstacles to the use of electronic communications in international contracts, including obstacles that might result from the operation of existing international trade law instruments, would enhance legal certainty and commercial predictability for international contracts and help States gain access to modern trade routes…." (Ministry of Justice Korea, 2018)

It provides a general law for use in international contracts with electronic communication rather than use in a broader range of contracts, such as E-Transactions. Therefore, a harmonization of traditional contracts and related law can be expected, and it can be developed as an international law (Choi, 2009).

Moreover, UNCUECIC is not applied to any contract or transaction in one single country. In the case of a difference between domestic and international law, legal duality occurs and parties will have a burden in application. As a consequence, it will affect the promotion of CBEC.

With the expectation that CBEC will grow, the barrier between domestic and international trade will be eliminated, a necessity and demand for law application will arise. It can be expected that a new domestic law will be established based on UNCUECIC, leading to a harmonization between domestic and international law. (Chung, 2009)

A governing law is usually defined by a party which has more bargaining power (O, 2020), and a foreign country's laws are used for contract from time to time. On the other hand, for contract with a company with less bargaining power, the governing law has been designated with the Korean domestic law. This will be a burden for a company with less bargaining power, which should bear the time and cost for identifying and learning the other's domestic law with a legal uncertainty.

Therefore, with UNCUECIC, a reduction of the legal uncertainty and any following side effects will be observed, and regardless of superiority in bargaining power, both parties can have an equal contract.

2. Technological Neutrality

In the preamble, the basis of technological neutrality and functional equivalence principles are stated:

"Being of the opinion that uniform rules should respect the freedom of parties to choose appropriate media and technologies, taking account of the principles of technological neutrality and functional equivalence, to the extent that the means chosen by the parties comply with the purpose of the relevant rules of law…" (UNCITRAL, 2007).

Technological neutrality is defined as a mean of governing all situations where information is created, stored, and delivered in electronic communication, regardless of technology or medium. In this convention, it is implied that neutrality can be applied to delivery and storage of all forms of information without dependency on any particular type of technology (Mik, 2010).

Article 9.1 of UNCUECIC (UNCITRAL, 2007) states "Nothing in this Convention requires a communication or a contract to be made or evidenced in any particular form", which can be interpreted in that it does not require any particular form of electronic communication or contract based on the general principle of 'Freedom of Form'.

Also, it can be understood that two parties may use different forms for trade, and it does not force the form of electronic communication. Moreover, it accepts various forms, such as websites or email.

Technological neutrality also implies import-

ance in practice. In the CBEC, two parties may not have or use the same level or type of information system, and one may not meet the other's requirement due to a different system.

For an example, Company A, a Korean distributor of semiconductor equipment, is trying to make an electronic contract with Company B, a Polish B2B online electronic parts reseller. Company A, a small-medium enterprise, has a traditional method for contracts, offer, acceptance, and payment, and Company B has been making contracts through its own website. Due to less bargaining power, Company A cannot persist in its method and had to establish new internal regulation and management methods to accept the new method, and therefore the deal was dropped. In this case, two parties with different environments cannot participate in electronic communication or contracts, and this leads to uncertainty and hinders CBEC. However, according to UNCUECIC, Company A may communicate with paper, and Company B may provide electronic communication to enter this contract.

Another example is an electronic document or email. In a traditional contract, two parties should sign two original copies and keep one each. In contrast, in CBEC, all necessary documents such as sales contracts, invoices, and quotes are released in electronic form through an information system. However, in this convention, since it allows any form of communication, an e-mail containing the content of a contract or purchase order is effective by the technological neutrality principle and is accepted as communication for the contract.

Fig. 1. Bank Details Converted from Paper

KOREE

November 13, 2017

Dear Valued Business Partners,

Please be informed that Koree Ltd. is moving banking relationship to ING Bank Śląski SA. Because You pay Koree for invoices, credit invoices, warranties, we are sending new bank directions:

Effective, Tuesday, November 14, 2017, please transfer payments to:

Bank name:	ING Bank Śląski SA
Address:	34 Sokolska Street, 40-086 Katowice, Poland
SWIFT:	INGBPLPW
IBAN EUR:	PL18 1050 1025 1000 0090 3137 2460
IBAN USD:	PL17 1050 1025 1000 0090 3137 2478
IBAN CHF:	PL92 1050 1025 1000 0090 3137 2486

We strongly recommend to contact either Olga Strzelczyk (ostrzelczyk@koree.pl), or Elżbieta Grzelak (egrzelak@koree.pl) to confirm this change.

Thank You for updating your records.

Regards,

Leszek Grzelak
Vice President
Koree Ltd.

Koree Sp. z o.o.
ul. St. Bodycha 87
05-816 Michałowice
NIP: 527-24-20-753 REGON: 015601541

3. Functional Equivalence

This convention specifies rules for writing, signature, and originality in Articles 9.2~9.4 to maintain not only technological neutrality but also functional equivalence between electronic and written communication. According to Article 9.2, any information included in electronic communication should be accessible for subsequent reference, and in Article 9.3, a signature requirement is satisfied with a method for identification y and indication of the party's intention for the information in electronic communication (Park, 2019), or when electronic communication is appropriate in respect to its purpose (Oh, 2006) In Article 9.4, it is accepted as original when it is reliable as to the information in electronic communication, and is capable of being displayed when needed (Hong, 2015)

It shows that electronic communication and paper documents share the same properties, and this convention accepts functional equivalence between electronic and handwritten signatures. Also, the writing, signature, and originality requirement allows various electronic documents to have same value as paper documents.

To meet the writing requirement, "the information contained therein is accessible so as to be usable for subsequent reference" (Ministry of Justice, 2018).

In Fig. 1 are the bank details of a Polish electronic appliance reseller for a Korean importer to make a wire payment for a purchase order. This might simply be sent in the body of an email, but in the case of subsequent reference, it was sent out as an electronic document converted from a paper document with a handwritten signature to identify intention and originality. This is a notification to grant it equivalent value as an original, and since it will be accessible at any time, it can be used without any legal issue in practice.

In the signature requirement, signing on the paper to grant legal value has been the traditional method, but in CBEC, since a handwritten signature is not technically possible, electronic communication is granted for functional equivalence. To meet this requirement, identification, intention of the party, reliability, and its extent should be verified.

Fig. 2 is a quote email from an American supplier to a Korean semiconductor equipment manufacturer. At the bottom of the email, the name in charge, company name, address, contact number, website, and email address are stated, and it was sent from company email, showing reliability. It is the simplest way, and does not generate a legal issue.

In a traditional method, originality is generally secured by the storage of a paper document with a handwritten signature since a hard copy should be kept a certain period of time.

However, in CBEC, its environment is much different for originality and storage. For this difference, it is stated that electronic communication must be capable of being displayed when needed with flawless originality in Articles 9.4 and 9.5. In practice, if the originality and storage requirement of the traditional contract method applies to electronic communication, all transactions or communication will be stored physically on paper, and this will ruin the advantage of CBEC. (Chung, 2013)

Therefore, according to this convention, a method must meet the originality and storage requirement of electronic communication in a simple but legally flawless method. For an example, "Re:" is generated in the subject when parties communicate with email using a reply. This electronic communication is flawless without any changes or modifications. Since two parties have the same content, it is always accessible and can be displayed whenever needed. A contract can be conducted using the functional equivalence of this convention without any particular program or system. Also, the entire communication can be stored in a single file and is solid in terms of flawlessness and originality.

Another widespread electronic communication is the electronic document. Traditionally, there are e-mail, EDI, Telegram, Telex, and Telecopy. At present, however, it refers to a scan of a paper which cannot be changed or modified, and can be printed or displayed by electronic device or media since e-mail is widely used.

Fig. 3. Quotation in E-Mail Body

RELEK

Elsdorfer Weg 1
52399 Merzenich
Germany
www.relek.de

Hello Spencer,,
In reply to your inquiry of 09.Nov. 2020 we quote as follows:
DACRON-Lacingtape, line DB
roll: ea 457 Meter
color: natural
Type: 15DPTH
Price: 1 roll = 457 m EUR 104,00/ea roll

Delivery time: at once ex warehouse).
Terms of delivery: Our prices are qouted net warehouse Merzenich Germany.
Terms of payment: in advance to our bank acount.
We are looking forward to your valued order.

Best regards
Bruno Rueth

RELEK
Elsdorfer Weg 1
52399 Merzenich
GERMANY
Tel.: +49 2421 486 4495
Mobil: +49 171 750 2635
Mail: rueth@relek.de

Fig. 4. E-Mail with URL Links

Quotation for 55BRCX-520-JC5/2 (Qty: 5) from TOK HK Electronics Co., Limited (China) 2019-07-08 16:27

VIP Hong Kong Inventory Limited <info1@hkinventory.com>
<swk1983@naver.com>

Your Requirement:

Part Number	Desc	Brand	D/C	Qty
55BRCX-520-JC5/2		HAROWE		5

Membership Information of Sender:

Company Name	TOK HK Electronics Co., Limited
Email	sales1@tok-ic.com
Tel	8675528483387
Address	深圳市龙岗区坂田街道光雅园社区3巷11号606

View quotation list please click
http://www.hkinventory.com/public/EmailLog.asp?rpID=7946958key=c365e3d18ffd782d3aaa533edc658281ddaa9f25&email=swk1983%40naver%2Ecom

Receive daily summary only (Sample) please click
http://www.hkinventory.com/public/EmailLog_DisableForward.asp?rpID=7946958key=c365e3d18ffd782d3aaa533edc658281ddaa9f25&email=swk1983%40naver%2Ecom&Forward=0

Delete requirement at our website and stop receiving anymore, please click
http://www.hkinventory.com/public/delPublicRequire.asp?id=7946958validate=c1ea9dcdf4b9a2fa00ee37511fdbdde5df06305

Another example is a URL link connected to an information system in which all communication can be drafted, stored, and accessed. This can be used as electronic communication.

Fig. 4 is an e-mail containing a quotation from Company H, a semiconductor parts reseller in Hong Kong, to Company P, a Korean semiconductor equipment manufacturer. Using a URL link, the quote was shared without generating an electronic document. This is not only an email or electronic document, it is also a URL link that is accepted as electronic communication.

Therefore, businesses should be well prepared for contracts with overseas counter parties with consideration to the various types of electronic communication accepted in CBEC.

2. Recognition of Form Requirement

In this convention, there are three main requirements to be followed: writing, signature and originality. The writing requirement does not require any form, and accepts functional equivalence. No particular electronic or technological method is required, so any electronic method can be used.

However, as stated in Article 9.2, it must be accessible for later reference. Even though electronic communication has functional equivalence with paper, in practice, companies should choose one method in case of dispute.

In CLOUT Case No. 1196, an e-mail between two parties was submitted as proof, and the decision of the court was made based on it. However, the plaintiff argued that the email was not sufficient to prove because of the ownership of the email address, a reflection of the real situation and the instability and alterability of email (UNCITRAL Assembly, 2012).

The signature requirement is valid if the electronic communication is reliable for the purpose of the contract in the light of all circumstances, is used to identify the parties, and indicates the party's intention according to Article 9.3. It must be highlighted that a handwritten signature is not possible in the CBEC environment, and various electronic signature methods have legal validity and enforcement (UNCITRAL Assembly, 2016).

The originality of electronic communication should be always fully acknowledged. In Articles 9.4 and 9.5, flawless information, including electronic communication, should be guaranteed and the legal validity of its originality is accepted when the information can be displayed via various methods by a party utilizing the information. It must be kept during whole process, and must be accessible for future reference (UNCITRAL Assembly, 2019).

In the case of a dispute regarding form requirement, the requirement is recognized by the court as shown in CLOUT Case No. 1832, Case 1546, and Case No. 1196. Therefore, in practice, the requirement must be secured prior to contract as to possess the legal validity of electronic communication (Kim, 2018).

3. Recognition of Time of Dispatch and Receipt of Electronic Communication

The time of dispatch of electronic communication in the convention is when it leaves an information system under the control of the originator or the party that sent it on behalf of the originator, and if they share same information system, the electronic communication is delivered to the recipient. Generally, it is very rare to have an issue of dispatch of e-mail in practice (Hong, 2015). However, users should be cautious of a delay or failure to dispatch from 3rd party interference or an error.

The time of receipt is when an electronic communication becomes capable of being retrieved by the recipient at an electronic address designated by the recipient. A possible issue that should be considered is a spam mail filter in an information system.

In CLOUT Case No. 1680, a received electronic communication automatically was filtered and sent into a spam mail box, and the recipient was not able to retrieve it when needed (UNCITRAL Assembly, 2017). The court stated that even though the email was in a spam mail box, the electronic communication was received, and the time retrieval does not mean being read or opened. Therefore, in

practice, it is important to be aware that email sent to a spam mail box is accepted as received.

IV. Practical Suggestions for UNCUECIC

With a review of practical necessity and issues in UNCUECIC, it is important to perceive the legal requirements of various types, forms, time of dispatch, and receipt of electronic communication to avoid future disputes. However, disputes cannot be resolved only with effort from corporations. Legal and systematic improvements should follow. Here are the suggestions for the effective practical application and promotion of the convention.

1. Certified Electronic Address

To prevent any dispute regarding differences between UNCUECIC and domestic law for time of dispatch and receipt for electronic communications, one party should send notice of the dispatch to the other using a separate method, and for receipt, one party should check the other's dispatch. However, this makes work and hinders the usage of the convention.

In CBEC, a form at a level of the requirement by the convention should be follow for electronic communication. In Korea, according to electronic document law, a certified electronic signature and electronic address will satisfy the writing, signature, and originality requirements. The certified electronic address is an address registered according to Article 18.4 in the electronic document law of Korea consisting of letters and numbers to identify the sender or recipient of an electronic document.

The law on certified electronic address started with the "Basic Act of Electronic Documents and Electronic Commerce" established in 1999, certified electronic document storage was introduced in 2005, and validity and certification of the electronic document system followed in 2007. In 2012, certified electronic address and certified electronic document intermediary were introduced, and the certified electronic document storage was changed to the certified electronic document center. In 2020, the paper document disposal act, due to introduction of the electronic system, was established.

An electronic document with a certified electronic address is identifiable if it is dispatched, received, or opened for legal proof. Information converted from paper to electronic will be stored in the certified electronic document center and has a legal effect through the certified electronic document intermediary for its storage period. In other words, an electronic document distributed through the certified electronic address has same legal effect as certified mail.

Therefore, mail that is widely used might generate legal issues from proving dispatch and receipt and its vulnerability to counterfeiting, alternation, and security, but the certified electronic address can secure legal predictability from the identification of the sender and recipient, proof of dispatch and receipt, and a certification of distribution. For corporations, the use of the certified electronic address will be beneficial over a separate method.

2. Introduction of New Regulations for Publicized Electronic Communications

The environment of CBEC has dramatically changed and developed since the establishment of UNCUECIC in 2005. In CBEC, electronic communication has changed to paperless with mobile devices and an online platform for B2B CBEC.

Still, the traditional methods of electronic communication are used in every sector, and various methods are used in a single transaction.

In a B2B online shop, a series of CBEC functions such as signing up, searching, placing an order, and making a payment is provided, but since it is a transaction between two businesses, separate methods are still inevitably used.

For example, when a corporation makes a purchase on a foreign B2B platform, documentation or certifications are required according to the products purchased, and there might be hidden information not shown online.

Most corporations have placed orders online,

but communicate using electronic documents through email to share necessary information, and this activity still exists.

It is suggested that a new act regarding a public method should be introduced. Specifically, regulations regarding e-mail, which is irreplaceable, should be specified and provide legal uniformity and predictability to conform with the purpose of the convention in the case of a dispute in form requirement.

The prior works argue that the utilization of a certified electronic signature and address satisfy the form requirements (Jung, 2014), and e-mail is vulnerable to security and proof of dispatch and receipt for legal effect can be difficult to prove.

As seen in CLOUT cases, e-mail has issues with legal effect, and its legal predictability and uniformity are not secure since it depends on a court's decision. (Kim, 2018)

Therefore, with a new regulation for e-mail applying eased form requirements, any difficulties found in existing disputes will be eliminated.

With an inclusion of a filtering function, the time of receipt in a spam mail filter can be clear and available for future reference. The intentions of the sender and recipient can be identified clearly, and any possible dispute can be prevented since both parties can check. This will lead to an ideal electronic communication in practice.

3. Supplement for Practical Application

The purpose of UNCUECIC is to remove obstacles generated due to legal uncertainty using electronic communication in international trade, and promote international trade with a uniform law that improves legal certainty in CBEC.

However, since it, representing UNCITRAL like CISG, does not have an interpretation or guidebook, application of the convention as a uniformed law and its interpretations for use is difficult. Oh (2008) pointed out the lack of uniformed interpretation as a problem in the application of the convention and suggested a uniformed interpretation guidebook.

'International Standard Banking Practice for the Examination of Documentary under Documentary Credit, ISBP' for 'Uniform Customs and Practice for Documentary Credit, UCP) is an example. ISBP is a guidebook and supplement showing the effective application of UCP. In practice, it was drafted in hopes of reducing the possibility of a dispute in documentary credit by providing international standard banking practices for all fields (Seo, 2003).

ISBP was established by the ICC for UCP 500 in 2002 and was revised in 2007 and 2013 for UCP 600 (ICC, 2013). Even though it takes the role of manual of application in practice, it is not just supplementary. It codified the international standard banking practice regulated in the UCP, provided information for the precise use of UCP, and filled the gap between the general principle of the UCP and actual practice (Smith, 2002). ISBP and UCP are not separate laws, but are applied as one to the credit practice.

ISBP is not an enforced law. However, it is an international standard in credit practices according to UCP, and gives UCP legality, practical clearness, uniformity, and predictability by unifying banking practices.

Therefore, this convention needs a guide book for uniform interpretation similar to the ISBP. As seen in the previous cases, a dispute in practice arises due to uncertainty, and courts rules differently in each country. The guidebook will clarify principles in electronic contracts and the convention. Also, by preventing any possible risk and dispute in CBEC, it will promote CBEC and provide legal certainty and predictability corresponding to the purpose of the convention.

4. UNCUECIC in the Future

There are blueprints for UNCUECIC in the future based on the proposed suggestion.

4.1. Revision of Domestic Law

The proposed suggestions should fill out domestic law for UNCUECIC. In December, 2010, a revision in the basic electronic transaction act was pre-announced, but it has not proceeded due to differences in other domestic law related to

electronic transactions.

There is a discrepancy between UNCUECIC and the electronic document act based on the UN CBEC model law, and in the convention, there are new regulations that do not exist in the electronic document act. Therefore, to remove legal duality and fulfill the necessity of legal demand, the electronic document act should be supplemented and revised based on UNCUECIC.

Since discrepancies such as the time of dispatch and receipt, concept and effect of electronic communication, and form requirements are not clearly defined in domestic law, clarification is essential by accepting UNCUECIC.

4.2. Introducing a Training System

If domestic law is revised to accept the convention, a new training system is needed for using the revision in practice. Disputes and risks are occurred constantly, and the damage to both consumers and corporations are increasing as the volume of CBEC grows even though regulations and processes are taught internally.

It is obvious that CBEC activity of large corporations with professional manpower and infrastructure are capable of handling legal issues and damages, but most are SMEs and rarely are exposed to training on regulations and processes.

This will lead to not only damage in the market but also damage at a national level, where the dependency on international trade is high. Until now, the government has offered training and services focused on enhancing the competence of individual corporations and the promotion of international trade, but there has not been training on regulations, prevention of risk, and damage. Therefore, beside the current training for competence, a practical training system needs to be built for corporations and consumers in the CBEC market.

V. Conclusion

Current studies on the legal regulations and international treaty of CBEC focus on the application conditions of CISG, or case studies and dispute resolutions which propose revitalization suggestions for ODR by comparing UNCITRAL and EU ODR regulations. Current studies on UNCUECIC have been conducted as legal reviews comparing domestic law and the legislation of a new domestic law.

In this study, the practical necessities of UNCUECIC are suggested with a review of cases provided by UNCITRAL and CBEC corporations.

First, UNCUECIC provides legal certainty that any previous international agreement or law could not provide. Unlike the previous, this convention has legal binding, removes legal obstacles which may arise in the use of electronic communication, and increases legal certainty and practical predictability in international trade.

Second, this convention allows technological neutrality to accept any form of electronic communication to create, deliver, and store, regardless of the technology or media used. It provides the general principle of 'Form of Freedom' according to party autonomy and is not limited to the electronic communication parties have been or will be using for international contracts.

Third, by maintaining functional equivalence, this convention allows any electronic communication to have the same properties and validity as paper documents.

Based on these necessities, practical suggestions are proposed for improvements in the application of the convention. First, the certified electronic address will satisfy the form requirement of UNCUECIC and ease the legal burden on corporations. Information systems are vulnerable to identification, and this produces protection issues which affect rights due to legal uncertainty. Therefore, the certified electronic address, which can notify parties with status of dispatch and receipt and a certificate of distribution, can secure legal certainty and practical predictability to remove any obstacles in the use of electronic communication.

Second, providing an interpretation or guidebook like the ISBP will unify different practices and reduce risks. Also, it will remove

obstacles produced by legal uncertainty. Therefore, it will provide practical clearness, uniformity, and predictability.

Third, the efforts of individuals, corporations, and governments are strongly suggested. Training and technical support, currently focused on the improvement of export competency, should change focus to practical training targeting parties immediately interested and corporations with uniform legal training and solve issues, and as a consequence, increase practical predictability.

Even though this study suggests practical solutions to improve the application of UNCUECIC, there are limits.

The study scope is limited to Business to Business, which is relatively narrow. This study focuses on UNCUECIC. With the comparison of other countries' domestic laws and other UNCITRAL laws related to international trade, more reliable and efficient results may be drawn. Third, CLOUT cases are used for practical suggestions; however, more cases using international conventions in the B2B market exist. In future study corporations using electronic trade should be studied to find limits and issues in international conventions and suggestions that are identified in practice.

Lastly, domestic cases in this study are between foreign B2B sellers and domestic buyers. In future studies, domestic B2B sellers and foreign buyers should be analyzed to increase legal certainty and practical predictability more.

References

Choi, K. J. (2009). A study of the UN electronic communications convention. *Chung Ang Law Review*, *11*(4), 131-173. https://doi.org/10.21759/caulaw.2009.11.4.131

Chung, J. M. (2009). Reception in Korean Law of UNCITRAL convention on the use of electronic communication. *The Journal Comparative Private Law, 16*(2), 41-90. https://doi.org/10.22922/jcpl.16.2.200906.41

Chung, W. (2013). A study on the proposal for the revision of the framework act of the electronic documents and electronic commerce. *Kyung Hee Law Journal, 48*(4), 631-672.

Hong, S. M. (2015). Precautionary advice to companies in preparation for UN electronic contracts convention. *Kangwon Law Review, 44*, 877-899. https://doi.org/10.18215/kwlr.2015.44..877

ICC. (2013). *International Standard Banking Practice for the Examination of Documents* (ICC Publication No.745).

Jung, Y. H. (2014). A study of changes of legal principles and current status related to an e-commerce development. *Soongsil Law Review, 32*.

Kim, S. M. (2018). A study on the CLOUT case No. 1546 on the electronic communications convention. *IT & Law Review, 16*, 207-232.

Mik, E. (2010). Evaluating the impact of the UN convention on the use of electronic communications in international contracts on domestic contract law: The Singapore example. *Chinese (Taiwan) Yearbook of International Law and Affairs. 28,* 43-65.; *Research Collection School of Law*. https://ink.library.smu.edu.sg/sol_research/1070

Ministry of Justice. (2018). *United nations standards towards: The harmonization and modernization of international commercial law*. https://www.moj.go.kr

O, S. U. (2020). The incorporation of standard terms under the CISG and applicable law to an existence and validity of governing law clause. *Law Review, 20*(3), 633-658.

Oh, B. C. (2006). A comparative study on united national convention of electronic communications in international contract (UNCITRAL electronic contract convention) and its influence on Korean electronic transactions act. *Journal of Comparative Private Law,* 83-132.

Oh, S. C. (2008). A study on prerequisite for valid electronic contracts upon application of CUECIC under CISG. *Business Management Review, 41*(1), 193-212.

Park, J. W. (2019). *A study on CBEC status and implications*. KEIT Industrial Economy.

Seo, J. D. (2003). A study on the key-points of ISBP and some problems under its practical application. *The International Commerce & Law Review, 20*, 317-341.

Smith, D. R. (2002). Standard Banking Practice approved. *ICC DCINSIGHT, 8*(4).

UNCITAD. (2020). *UNCITAD Estimates of Global E-Commerce 2018, UNCTAD Technical Notes on ICT for Development No 15*. https://unctad.org/system/files/official-document/tn_unctad_ict4d15_en.pdf

UNCITRAL. (2007). *United nations convention on the use of electronic communications in international contracts*. https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/06-57452_ebook.pdf

<Case>

UNCITRAL Assembly. (2012). *Case Law on UNCITRAL Texts (CLOUT) A/CN.9/SER.C/ABSTRACTS/124*. http://www.uncitral.org/clout/clout/data/chn/clout_case_1196_leg-2965.html

UNCITRAL Assembly. (2016). *Case Law on UNCITRAL Texts (CLOUT) A/CN.9/SER.C/ABSTRACTS/165*. http://www.uncitral.org/clout/clout/data/aus/clout_case_1546_150515.html

UNCITRAL Assembly. (2017). *Case Law on UNCITRAL Texts (CLOUT) A/CN.9/SER.C/ABSTRACTS/181*. http://www.uncitral.org/clout/clout/data/aus/clout_case_1680_180912.html

UNCITRAL Assembly. (2019). *Case Law on UNCITRAL Texts (CLOUT) A/CN.9/SER.C/ABSTRACTS/200.* http://www.uncitral.org/clout/clout/data/aus/clout_case_1832_170615.html

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A Study on the Sources and Prevention of Trade Fraud in the Validity of a Bill of Lading and Letter of Credit

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ABSTRACT

Purpose – This paper identiies the source of trade fraud and provide solutions to prevent trade fraud by examining the legal and issuance requirements of a Switch Bill of Lading, the legal characteristics of a Bill of Lading that do not meet these legal requirements, and the relationship between the L/C payment method and liability of bonded area operator.

Design/Methodology/Approach – This study performed a literature review and analysis of Seoul Court Decision 2012GaHap516056 decided on August 23, 2013.

Findings – The results of this study are as follows. First, a Bill of Lading that does not meet the legal and issuance requirements of a Switch Bill of Lading is a validity of bill of lading, not a Switch of Bill of Lading. Second, when these two independent L/C payment methods are applied, source of trade fraud arises. Third, if the validity of bill of lading is linked to the two independent L/C payment methods and the liability of bonded area operator, imported cargo can be legally taken out of the bonded area. Fourth, the issuing bank and the negotiating bank can be victims of trade fraud if the validity of a bill of lading and two independent L/C payment methods are linked to the liability of bonded area operator.

Research Implications – In the case that validity of bill of lading and the two independent L/C payment methods are linked to the liability of a bonded area operator, the risk of an L/C payment at the issuing bank or the negotiating bank can be prevented if the issuing bank or the negotiating bank use a cargo item code number to access the national customs network and shipping port logistics information system.

Keywords: issuing bank, back to back L/C, bill of lading, negotiating bank, swich bill of lading, trade fraud, transferable L/C, uance L/C, validity of bill of lading

JEL Classifications: B27, F10, K12, K13

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I. Introduction

Trade transactions exist in various forms depending on the type of trade that is concluded. In the case of brokerage trade, there are cases in which brokers record trade documents differently so that an exporter and importer can continue to engage in trade transactions through brokers. In this case, the broker replaces shipping documents presented by the exporter with their own shipping documents so that the importer does not have information about the exporter and therefore, continues to make transactions through the broker.

The Switch bill of lading has started to replace the bill of lading already issued in these trade transactions. These switch bills of lading are bills of lading that are not specified in international regulations or commercial laws in Korea and are used by traders according to the situation of trade transactions.

As switch bill of lading are used in credit transactions involving two L/C transactions for one product transaction, trade fraud with switch bills of lading has frequently occurred. These trade frauds include traders that present switch bills of lading to the issuing bank that opened the second letter of credit to receive letter of credit payments.

In previous studies on switch bills of lading, Jung (2014) presented the legal nature of switch bill of lading based on the legal relationship of the bill of lading and analyzed what distinguished a legitimate switch bill of lading from an invalid switch bill of lading based on its compliance with the commercial law. He concluded that a legitimate switch bill of lading should be included in the category of bill of lading, and that an invalid switch bill of lading could not be regarded as a bill of lading. In his study regarding the risk of the illegal issuance of switch bills of lading. Park (2014) argued that the carrier should consider the credit of the applicant issuing the switch bill of lading and retrieve the original bill of lading with consideration of whether it is necessary to receive a written bill of lading.

Han and Pak (2017) stated that considering the legal problems of a switch B/L that arise from the diversification of international commerce, carriers should be held liable even if they receive a memorandum of damages from the applicant for a switch a bill of lading.

Lee and Lee (2021) presented the validity criteria of switch bills of lading and the precautions from the perspective of the issuer of the switch bill of lading and the final buyer in a study on legitimate switch bills of lading and precautions at the time of issuance. Trade fraud frequently occurrs in trade transactions in which one import and export goods and one transport cargo were combined with two independent L/C payment methods and two bills of lading (Korean Gwangju Scourt Decision, 2015a, 2015b; Korean Gwangju Scourt Decision, 2015; Korean Seoul High Court, 2015; Korean Seoul District Court Decision, 2013; Korean Seoul District Court Decision, 2017; Korean Supreme Court Decision, 2017).

Previous studies examined the legal nature of the switch bill of lading and the responsibility of the carrier from the standpoint of the carrier issuing the switch bill of lading but failed to present the issuance requirements and the conditions in which trade fraud was possible.

Therefore, this paper presents the legal and issuance requirements for a switch bill of lading and identifies the legal characteristics of a bill of lading that does not meet these legal and issuance requirements. This paper further explores how trade frauds occurs by looking at the relationship between the L/C payment method and the legal responsibility of the bonded area operator and suggest preventive measures that could be taken to prevent this source of trade fraud. Furthermore, this paper analyzes the precedents of the Seoul Central District Court, defines whether the bill of lading issued in such a transaction is a switch bill of lading, and identifies the problem that arises from a trade transaction in which one import and export product and one cargo are combined with two independent L/C payment methods and two bills of lading. Finally, the purpose of this study is to suggest implications for the issuing bank, the negotiating bank, the carrier, and the operator of the bonded area by identifying problems involving these transactions and how these problems lead to trade frauds.

II. Legal Relation of Traders of Switch B/L

1. Definition of Switch Bill of Lading and Requirements for Issuance

A switch Bill of Lading refers to a bill of lading issued by a carrier at the request of the shipper and is re-issued as requested by the shipper after acquiring the cargo. It is a bill of lading that has been recovered and reissued as requested by the shipper.

A switch bill of lading is issued for transferable L/C and back-to-back L/C transactions when the carrier makes changes to the quantity, port of shipment, consignee, shipper, and so on specified in the import and export contract after issuing the bill of lading.

For a switch bill of lading to become a valid bill of lading, it must meet the legal requirements of the bill of lading. If the legal requirements of the bill of lading are not met, the bill of lading has no legal effect.

Even if the switch bill of lading meets the legal requirements of the bill of lading, it should be regarded as a switch bill of lading only when the following issuance requirements are met.

First, the requester of the issuance of the switch bill of lading is a shipper or a bona fide holder that has signed a transportation contract with the carrier. Only shippers or bona fide holders that have signed a transportation contract with the carrier can request the issuance of switch bills of lading, and other parties cannot request the issuance of switch bills of lading. Second, the shipper or bona fide holder must return all previously issued bills of lading. Third, the issuer of the switch bill of lading must be the issuer of the existing bill of lading or a delegate of the issuer. They must recover all existing bills of lading and issue switch bills of lading. If the above issuance requirements are not met, it should be regarded as a validity of bill of lading, not a switch bill of lading.

2. Legal Relations between Parties Involved in Transactions between the Switch Bill of Lading and Validity of Bill of Lading

2.1. The Shipper and the Issuer of the Original Bill of Lading

The carrier takes over the cargo from the shipper at the request of the shipper, ships the cargo on the vessel of the main line, and issues a bill of lading containing the details of the cargo, quantity, port of shipment, and loading and unloading. The carrier is responsible for taking over the cargo or container from the shipper, confirming whether the cargo or container acquired is the cargo listed in the shipping request, issuing it to the shipper, and delivering it to the consignee at the destination where the cargo arrived. The carrier must issue a bill of lading after acquiring the cargo from the shipper and shipping it to the ship. If the cargo is falsely issued without shipping it to the vessel on the main line, he or she shall be liable for all illegal activities.

2.2. The Issuer of the Original Bill of Lading and the Switch Bill of Lading

Regarding the parties that can issue a bill of lading, Article 85 of the Korean Commercial Act states that a bill of lading can be issued by the carrier, captain, or agent of the carrier. In order for a carrier to engage in a maritime freight transport business, they must be registered with the Minister of Oceans and Fisheries in accordance with Article 24 of the Shipping Act. Only those registered with the Minister of Oceans and Fisheries are recognized as parties that can take over cargo transportation, and the shipper, consignee, and bona fide holder, who are parties to the transportation contract, are deemed liable and obligated as carriers.

According to Article 1 (1) of the Hamburg Rules, the carrier does not need to be the shipowner who owns the ship, but someone that has signed a

freight contract with the shipper in their own name. The issuer of the original bill of lading and the issuer of the switch bill of lading shall be the same carrier or a delegate of the original bill of lading, who has the right to issue the switch bill of lading. The issuer of the original bill of lading or the issuer of the switch bill of lading shall issue the switch bill of lading after collecting all the issued bills of lading and bear all legal liability arising from not doing so. If the shipper receives a memorandum of responsibility from the original bill of lading and issues a switch bill of lading without collecting all the original bills of lading, all responsibility lies with the issuer of the original bill of lading and the switch bill of lading. The issuer of the switch bill of lading acts a legal delegate or a representative for the issuance of a switch bill of lading from the original bill of lading issuer and must collect all switch bill of lading issued from the requester for issuance of the switch bill of lading. If a third party who has no delegation or representative relationship with the issuer of the original bill of lading issues a switch bill of lading, they shall be liable for all illegal activities.

2.3. The Issuer of the Original Bill of Lading and the Issuer of Validity of Bill of Lading

If a third party with no delegation or representative relationship with the issuer of the original bill of lading issues a bill of lading, the bill of lading shall be regarded as a validity of bill of lading, not a switch bill of lading. Since the issuer of the public bill of lading has issued the bill of lading illegally, he/she shall be liable for all illegal acts (Wilson, 2010). In the case of a validity of bill of lading, the original bill of lading and the validity of bill of lading are independent one bill of lading, and the issuer of the original bill of lading is not responsible for the issuance of the validity of bill of lading.

2.4. The Issuer of the Original Bill of Lading, the Issuer of the Switch Bill of Lading, and the Consignee of the Original Bill of Lading

The issuer of the original bill of lading or the issuer of the switch bill of lading shall collect all original bills of lading issued at the request of the consignee of the original bill of lading and if issued at the request of a third party, they shall be liable for all illegal activities.

2.5. The Issuer of the Switch Bill of Lading and the Bona Fide Holder of the Switch Bill of Lading

The issuer of the original bill of lading and the issuer of the switch bill of lading shall jointly bear all responsibilities and obligations arising from the switch bill of lading with the bona fide holder of the switch bill of lading. The bona fide holder of the switch bill of lading would believeS that the switch bill of lading was issued by the issuer of the original bill of lading or a representative delegate before obtaining the switch bill of lading. The contents of the switch bill of lading would then be used as presumptive evidence (Mariam, 2019).

2.6. The Issuer of the Public Bill of Lading and the Bona Fide Holder of the Validity of Bill of Lading

The issuer of public bills of lading shall be liable for default and torts to the bona fide holders of the validity of bill of lading. In the event that a bill of lading is issued with necessary information on the bill of lading, such as quantity, cargo, carrier, port of loading, and so on without taking over the freight, the bill of lading indicating that the goods have been shipped or accepted for shipment and signed by a person that has been granted the explicit, implied, or expressive right to sign the bill of lading, it is regarded as conclusive evidence that the issuer of the validity of bill of lading has shipped or acquired the cargo (Choi, 2007).

III. Analysis of the Seoul Court Decision

1. An Overview of the Event (Korean Seoul Court Decision, 2012)

Company A in Korea has decided to import scrap metal from Yokohama Shoji Company in Japan. Company A asked Company B for brokerage trade in which Company B imports scrap metal from Yokohama Shoji Company and sells it to Company A, to which Company B agreed. Both Company A and Company B are domestic companies, so Company C, a local subsidiary of Company B in Vietnam, participated in the transaction because it is impossible to trade an L/C.

Company A signed an import sales contract from Company C to import scrap metal and requested domestic bank D to open an irrevocable transferable L/C with Company C as a beneficiary under the import sales contract. Bank D agreed to open an irrevocable transferable currency L/C with Company C as a beneficiary.

Company C transferred the letter of credit to Company B, and Company B became the beneficiary of the letter of credit (the first letter of credit). Company B signed an import and sale contract for scrap metal with Japan's Yokohama Shoji Company and opened a usance letter of credit (second letter of credit) with domestic bank E that made Yokohama Shoji Company a beneficiary. Yokohama Shoji Company shipped scrap metal and the carrier issued a bill of lading (the first bill of lading) in which the shipper was a Japanese scrap metal exporter, the consignees were Company B and the second bank issuing the letter of credit, and the notice point was Company B. Yokohama Shoji Company issued shipping documents and drafts, requested Japan's bank F to purchase them, and send them to bank E to pay the L/C. Bank E paid for the letter of credit and delivered the bill of lading (the first bill of lading) received from Japan's Bank F to Company B.

Company B requested the issuance of a switch bill of lading (second bill of lading) requested by the L/C to transportation Company G, and Company G issued the switch bill of lading at the request of Company B and delivered it to Company B. Company B requested the purchase of the first letter of credit by presenting the switch bill of lading to the domestic bank H and received the payment for the letter of credit. Bank D filed a lawsuit against Company B and Company G when it failed to recover the payment of the L/C from Company A.

2. Legal Interpretation of the Seoul Central District Court

2.1. Issuer of Switch Bill of Lading

The Seoul Central District Court believes that switch bills of lading must have the original legal nature of the bill of lading in order for them to meet legal requirements, and that anyone who receives them cannot issue switch bills of lading and only those that meet the factor securities may do so.

2.2. Permissible Range of the Switch Bill of Lading

The Seoul Central District Court saw that switch bills of lading are issued for various reasons and that there are no laws or agreements limiting the purpose of issuance, and that issuance of switch bills of lading is not allowed to deceive interested parties. As a security that satisfies the claim for delivery goods, a switch bill of lading must meet the legal requirements in order to become an important collateral for the negotiating bank or issuing bank that paid the L/C. They deemed that switch bill of lading that do not meet these legal requirements are not permitted for lacking collateral function. Therefore, Company B and Company G decided to compensate domestic bank D for damages caused by the falsely issued switch bills of lading.

2.3. Statement Specified in the Transferable Letter of Credit

In the transferable L/C, the phrases "LATE PRESENTATION AFTER 21 DAYS FROM B/L DATE SHALL BE ACCEPTED and THIRD PARTY B/LAND DOCUTES ARE ACCEPTABLE" were written.

Company B argued that these phrases admit that a third party other than the beneficiary of the

L/C allows a bill of lading listed as the shipper because it already knows that it takes more than 21 days to present the shipping documents when the bank opens the L/C.

In response, the Seoul Central District Court stipulated that shipping documents should be presented by beneficiaries or their agents not later than 21 days after shipment and should not be presented later than the expiration date of the letter of credit in any case. Therefore, the reason for limiting the document presentation date to within 21 days after shipment is that if the cargo arrives at the destination port before the shipping document, the buyer will not be able to take over the cargo until the shipping document arrives.

The issuing bank assumed that the buyer would bear the costs of storage fees incurred due to the delay in the acquisition of cargo and that there would be circumstances to delay the billing but judged that it could not be expected that a person unrelated to the specific transaction structure or carrier would generate a second bill of lading. Such a judgment seems to be justified.

According to Article 14 K of UCP 600 and Article 21 C of ISBP, the phrase third party bill of lading and document permission means that all documents, including invoices, can be issued by a party other than the beneficiary, where the third party can not be deemed to have anything to do with the cargo. A third party means a person that is not the consignee, and the person that issued the bill of lading is not included in the scope of the third party, so a person other than the carrier that transported the cargo cannot be marked as the carrier.

2.4. Issuer of a Bill of Lading

Article 14(l) of UCP 600 states that if the transport document meets the requirements of Articles 19, 20, 21, 23, and 24 of this Regulation, the transport documents may be issued by anyone other than the carrier, carrier owner, captain, or charterer. However, they do not prescribe the conditions as to how these documents must be signed, the qualifications of the signatory, and who can issue them.

From the standpoint of reviewing shipping documents and deciding whether to purchase them, these regulations are limited to those that uniformly determine whether shipping documents are defective and directly determine the validity conditions of shipping documents, preventing no party related to the shipment from issuing a bill of lading. This legal interpretation is considered valid. If any party that has nothing to do with the shipment can issue a bill of lading and makes a legal interpretation, it denies the basis of the trade transaction.

3. Problems with the Legal Interpretation of the Seoul Central District Court

The Seoul Central District Court believes that if the original bill of lading is not recovered and the switch bill of lading is issued, one of the original bills of lading or the holder of the bill of lading is at risk of losing the right to the shipment and that switch bill of lading must be issued in exchange for the original bill of lading. The carrier that issued the second bill of lading, believing that the switch bill of lading should be issued in exchange for the original bill of lading, is neither a party that signed a transportation contract with Japan's Yokohama Shoji Company, which exported scrap metal, nor has an interest with the carrier. The legal interpretation was made that there was no view that the issuer of the first bill of lading was involved in the issuance of the second bill of lading.

They judged that the second bill of lading was marked as a switch bill of lading, and the second bill of lading that did not meet the legal requirements of the switch bill of lading was interpreted legally as if it were recognized as a switch bill of lading. Since the second bill of lading did not meet the legal requirements of the switch bill of lading, it could not be interpreted legally as a switch bill of lading and must be interpreted legally as a validity of bill of lading.

A validity of bill of lading refers to a bill of lading issued by a carrier without loading the cargo on the vessel after taking the cargo from the shipper or his agent (Choi, & Cheong, 2015).

A validity of bill of lading is a bill of lading that does not meet the legal requirements of the bill of lading and is fraudulently issued by the shipper in collusion with the carrier.

Therefore, Company B conspired with Company G to issue a bill of lading by fraud, and the second bill of lading corresponds to a validity of bill of lading, not a switch bill of lading, and must be legally interpreted as a public bill of lading.

4. Implications of Case Analysis

4.1. Purpose of Switch Bill of Lading

A switch bill of lading was used for the purpose of procuring import payments, unlike the existing purpose of use. In this precedent, traders used switch bills of lading for the purpose of securing import payments. Switch bills of lading are used in various ways depending on the purpose of use by traders (Wilson, 2010).

4.2. Implications for the Issuing Bank and the Negotiating Bank

4.2.1. The Transaction Relationship between the Switch Bill of Lading and the Transferable Letter of Credit

At the request of Company A, Bank D opened a transferable letter of credit with Company C, and Company C asked Bank H to transfer the new request to Company B, and Bank H transferred the letter of credit to Company B. In accordance with Article 38 of the Unification Rules of an L/C, the transfer bank becomes a negotiating bank or an issuing bank. Therefore, it is believed that Bank H became a transfer bank as a negotiating bank for the transferable L/C and transferred L/C to Company B.

When Company B requests the carrier to transport the cargo, the carrier takes over the cargo and ships it, issues a bill of lading to Company B, and Company B issues a bill of exchange along with the shipping documents to ask Bank H to purchase it. At this time, Company C may request Bank H to purchase the commercial invoice issued by Company B by replacing it with the commercial invoice issued by Company B. Company C may return all of the bill of lading requested by Company B to the carrier that issued the bill of lading, receive a new switch bill of lading, and request the purchase from Bank H. Therefore, Bank H can know whether the issuer of the bill of lading presented by Company B and the issuer of the switch bill of lading presented by Company C are the same person, and if it is not the same person, it will refuse to purchase.

Bank H knows the contents of the bill of lading presented by Company B and the switch bill of lading presented by Company C. Since we know who the carrier of the bill of lading presented by Company B is, we can examine whether the carrier of the switch bill of lading presented by Company C is the same person or a representative delegate. If the carrier of the switch bill of lading proposed by Company C is not the same person or is not a delegation or agent, the purchase will be refused. Therefore, in transferable L/C transactions, the transferable L/C purchase bank can examine the defects in the switch bills of lading issued in transferable L/C transactions.

In a transferable L/C transaction, the transferable L/C purchase bank is authorized to review the defects of the switch bill of lading and refuse to purchase them, thereby eliminating the risk of payment of an L/C by the transferable L/C bank (Harfield, 1974). It is not known whether the switch bill of lading received from the transferable L/C negotiating bank was issued by a legitimate carrier. If the proposed switch bill of lading meets the contents of the transferable letter of credit, the L/C payment will be paid to the transferable L/C purchase bank. Therefore, the transferable L/C negotiating bank shall be fully responsible for the risks arising from the purchase without checking whether the issuer of the bill of lading presented by Company B or that the switch bill of lading presented by Company C is the same person or by a representative delegate.

As such, due to the transferable L/C transaction structure, the issuing bank of the transferable letter of credit cannot know whether the issuer of the switch bill of lading presented by the

negotiating bank is the issuer of the bill of lading presented by Company B. In the case of a switch bill of lading issued by a third party other than an authorized representative, the transferable letter of lading cannot be determined whether the switch was issued by a legitimate issuer unless the issuing bank examines it. (Gutteridage & Megrah, 1984). Therefore, since the negotiating bank of the transferable letter of credit also serves as the transfer bank, it can review the bill of lading presented by Company B and the switch bill of lading presented by Company C.

4.2.2. Transaction Relationship between the First Letter of Credit and the Second Letter of Credit

The first letter of credit and the second letter of credit are used for the transaction of two independent products. A company exports raw materials, parts, and semi-finished products to overseas companies, produces finished goods from raw materials, parts, and semi-finished products imported by overseas companies, and exports them to imported companies.

Buyers that import raw materials, parts, and semi-finished products request their bank to open an import letter of credit, while the issuing bank opens a letter of credit with overseas sellers that export raw materials, parts, and semi-finished products as beneficiaries. The seller produces export goods and requests transportation from a carrier, and the carrier takes over the export goods from the seller, loads them onto thefinal vessel and issues a bill of lading. When the seller requests the negotiating bank to purchase the shipping documents and drafts, the negotiating bank sends the shipping documents and drafts to the issuing bank, and the issuing bank delivers the shipping documents and drafts to the buyer, ending the L/C transaction.

Overseas sellers that export raw materials, parts and semi-finished products ask their trading bank to open an import letter of credit to import finished products, and the bank opens a letter of credit with the seller of the finished product as a beneficiary. If the seller of the finished product requests the carrier to transport the finished product, the carrier takes over the finished product and issues a bill of lading, and the seller of the finished product requests the negotiating bank to purchase the shipping documents and drafts. When the negotiating bank sends shipping documents and drafts to the bank that opens the finished product, and the issuing bank delivers the shipping documents to the buyer of the finished product and recovers the import price, the transaction ends. Transactions of the first and second letters of credit are mutually independent transactions and have no effect on the following.

4.2.3. Transactions between the Switch Bill of Lading and the First Letter of Credit and the Second Letter of Credit

Although this example uses a transferable letter of credit transaction, the switch bill of lading is not issued in the transferable letter of credit transaction structure described above but is issued in a transaction that combines two different letter of credit transactions. Company B, the beneficiary of the transferable letter of credit, entered an import contract with Japan's Yokohama Shoji Company, from which Company A wanted to import, and Company B opened a usance letter of credit with Yokohama Shoji Company as the beneficiary to domestic bank E. A trade transaction structure was adopted in which transferable letters of credit and usance letters of credit were combined for a single import and export transaction for a product and to transport cargo.

Two bills of lading in one import and export product transaction are required – the bill of lading required by the transferable letter of credit and the bill of lading required by the usance letter of the credit transaction. The bill of lading requested in the letter of credit was delivered to Company B by Japan's Yokohama Shoji Company, the seller, and the carrier took over the scrap metal and shipped it to the main ship. If all of the first bills of lading acquired by Company B are returned to the issuer of the first bill of lading and a new switch bill of lading (second bill of lading) requested by the transferable letter of credit is issued, it will end

without any legal defects. Bank H will examine the contents of the bill of lading required by the transferable letter of credit. If Company C replaced the switch bill of lading presented by Company B with another bill of lading, Bank H may know whether the issuer of the bill of lading presented by Company C is the same as the issuer of the switch bill of lading presented by Company B.

However, Company B did not request the carrier, the first issuer of the bill of lading, to issue a switch bill of lading, but obtained a bill of lading from a third party that had no delegated or representative relationship with the carrier, and purchased the transferable letter of credit from the negotiating bank, Bank H. Company B replaced the bill of lading of the due letter of credit with the bill of lading of the transferable letter of credit issued by a third party and decided to purchase it at Bank H. Because transferable L/C and usance L/C are independent transactions, Bank H cannot know whether the bill of lading required by usance L/C was issued by the carrier that issued the bill of lading required by usance L/C.

4.2.4. The Possibility of Other Trade Fraud Occurring in the Transaction of the Validity of Bill of Lading and the First and Second Letters of Credit.

The trade payment method in which different letter-of-credit payment methods are grafted in a single export/import cargo transaction caused institutional defects that could lead to trade fraud due to the characteristics of the letter-of-credit payment method.

In this case, the usance L/C issuing bank opens a letter of credit to Yokohama Shoji Company in Japan as a beneficiary, receives the shipping documents and a bill of lading from the negotiating bank in Japan, and delivers the bill of lading to Company B when Company B accepts the draft. Company B must pay the bank that opens the L/C by the expiration date of the bill. It is not known whether Company B paid the bill on the due date.

Company B exports scrap imported from Japan's Yokohama Shoji Company to Company C, receives a bill of lading requested by a transferable L/C from a third party who transported scrap metal in Japan, and requests the bank to purchase it. It is not known whether the bill of lading presented was issued by the carrier that transported scrap metal from Japan. It is a structure in which it is impossible to examine whether the bill of lading presented by the negotiating bank was issued by the carrier that transported scrap metal from Japan.

Accordingly, if the negotiating bank purchases the bill of lading and presents it to the issuing bank of the transferable letter of credit to request payment of the amount of the letter of credit, the issuing bank of the transferable letter of lading meets the conditions for the transferable letter of lading. It must be delivered to Company A and the payment for the letter of credit must be received, but if not received by Company A, the payment of the letter of credit cannot be recovered.

The bank that opens the transferable L/C faces the risk of trade settlement that cannot recover the L/C payment. When one import and export product and one shipment are made into two different L/C payment methods and one bill of lading, there is a gap in the L/C payment due to the characteristics of the L/C payment method, and trade fraud occurs.

If Company B takes over the bill due from the bank that opens the due bill and pays the due bill on the due date, there is no risk of paying the trade bill, but if Company B does not pay the due bill, the due L/C bank may face the risk of not recovering the due bill. The issuing bank must have a security right on the imported scrap, of which has already been disposed of. Therefore, the bank issuing the letter of credit is exposed to the risk of incurring all the losses if it fails to collect the bill on the maturity date of the due date.

4.2.5. Bank of Purchase of Validity of Bill of Lading

If the beneficiary of the L/C acquires the L/C and colludes with the carrier that does not ship the cargo to purchase a public bill of lading issued by fraud, the negotiating bank may face the risk of not being able to collect the L/C from the issuing bank.

4.3. Implications for the Issuer of the Bill of Lading

4.3.1. Issuer of the Switch Bill of Lading

While the issuer of a switch bill of lading can only be issued by a person authorized or acting on behalf of the issuer of the original bill of lading, a bill of lading issued by such person can be considered a valid switch bill of lading and can be legally protected. A bill of lading issued by a person without bill of lading is regarded as a validity of bill of lading, not a switch bill of lading, and is liable for tortuous acts(Guest, 2002).

4.3.2. Issuer of a Validity of Bill of Lading

The first bill of lading and the second bill of lading are issued by independent transportation in two independent cargo transportations. In order to issue the first bill of lading, the issuer of the first bill of lading must enter into a transport contract with the shipper that requested the issuance of the first bill of lading, take over the cargo, and load it on the vessel or the main ship. The issuer of the second bill of lading should be the same as above. The issuer of the first bill of lading and the issuer of the second bill of lading are mutually independent carriers and are only responsible for the bill of lading issued by themselves.

4.4. Implications for the Legal Liability of the Bonded Area Operator

All imported cargo imported into Korea must obtain an import declaration certificate by completing the import customs clearance procedure. The taxpayer or his agent must perform the import customs clearance procedures specified in the Customs Act to obtain a certificate of import declaration. The taxpayer or his agent must present all documents specified in the Customs Act to the Customs Service, which includes a copy of the bill of lading. When a taxpayer or his agent presents other documents containing a copy of the bill of lading to the Customs and receives an import declaration certificate, the buyer pays the customs duties of the imported cargo and asks the bonded area operator to take over the cargo.

The operator of the bonded area shall receive a cargo delivery order issued by the issuer of the bill of lading THAT transported the cargo and deliver the cargo to the buyer. Otherwise, the bonded area operator must be liable for all illegal activities. In this case, how the imported scrap metal was delivered from the operator of the bonded area through the import customs clearance process. In two independent L/C payment methods, one import and export goods and one shipment were already paid for by L/C after scrap metal was taken out of the bonded area. In this case, Company B imports scrap metal from Japan and resells it to Company A. It seems that Company B received a bill of lading issued by a carrier that transported the scrap metal from Japan, completed import customs clearance with this bill of lading, presented a bill of lading to the agent at the destination of the scrap carrier, presented it to the bonded area operator, and delivered it to Company A.

The bonded area operator is not responsible for the delivery of the scrap metal after receiving the delivery instructions issued by the scrap metal carrier's agent. Therefore, the bonded area operator can exercise the security right of the issuing bank by having the issuing bank keep the imported cargo secured by the issuing bank. This legal responsibility given to the operator of the bonded area is useless in two independent L/C settlement methods, one for an import and export goods and one for transport. Trade fraud with these methods occurs frequently.

4.5. Implications for the Parties to the Trade Transaction

4.5.1. The Structure and Trade Fraud between the Four Parties

This case is a four-party trade transaction, and it is a trade fraud using loopholes in the letter of credit payment method that occurs due to the characteristics of the letter of credit payment method.

Looking at the existing trade frauds, most of

the frauds was those in which the seller colluded with the carrier to forge a bill of lading or to obtain a falsely issued export product, but to take the export payment through the negotiating bank and go into hiding. This trade fraud has evolved into a trade fraud targeting the issuing bank or the negotiating bank by an importer colluding with an intermediary or carrier. The characteristics of the letter of credit settlement method have played a major role in the evolution of such trade fraud, and it was the cause of the occurrence of trade fraud.

4.5.2. The Party Involved in Trade Fraud

In this case, Company A, Company B, Company C, and Company G planned a trade fraud by collusion, but Company A monopolized the benefits of trade fraud. Therefore, although Company A is the main culprit of trade fraud, in a transaction in which two letter of credit settlement methods and two bills of lading are issued for one transaction of import and export goods, Company A is not a party to the fraud, but Company B and Company G. Company B and Company G are expected to bear all liability for trade fraud.

5. Measures to Prevent Trade Fraud

5.1. Obtaining the Cargo Management Number and Cargo Item Code Number of the Issuing Bank and the Negotiating Bank

As seen in this case, as two independent L/C settlement methods and bills of lading were used in one transaction for the import and export goods, the issuing bank or the negotiating bank had no knowledge on the whereabouts of the imported goods, so they become victims of trade fraud.

In such a transaction, the imported cargo is already taken out before the issuing bank, or the negotiating bank performs the letter of credit payment service according to due process. In the letter of credit settlement method, the bill of lading is usually issued as a directed bill of lading, and the issuing bank or the negotiating bank becomes the consignee and bona fide bearer. Therefore, when the issuing bank or negotiating bank receives the bill of lading, the cargo control number and the cargo item code number are required to be written on the bill of lading. If one can check if it has already been shipped out, they will be able to prevent trade fraud.

The Korea Customs Service or Port operates the National Customs Comprehensive Information Network and the Shipping Port Logistics Information System to manage the movement of imported cargo. Accordingly, imported shippers can access the National Customs Comprehensive Information Network and the Cargo Item Code Number to check the customs clearance and storage status of cargo. Since the issuing bank or negotiating bank is also a consignee and a bona fide holder, a system or practice should be introduced to check the customs clearance and storage status of the cargo by assigning a cargo management number and cargo item code number to the importer.

5.2. Establishment of a Bank's Trade Fraud Sharing System

As discussed above, trade fraud targeting the issuing bank, or the negotiating bank is rapidly evolving. The trade fraud in this case occurred several times to the same bank by the same method, but the buyer was scammed by the same method because trade fraud was not shared with the same bank. If the first trade fraud had been shared, the trade fraud would not have recurred. It is hard to understand why the current banking information system could not share information on this trade fraud. Banks should establish a trade fraud information sharing system to prevent trade fraud by quickly sharing information on trade fraud.

IV. Summary and Conclusion

Trade fraud frequently occurred in transactions between four parties in which one import and export item combines two independent L/C payment methods and two independent bills of lading. Therefore, research is needed to identify

the source of such trade fraud and prevent it.

Existing previous studies and courts conducted legal analysis and interpretation of validity bill of lading as switch bills of lading. However, this study presented the legal requirements and issuance requirements of switch bills of lading, stating that a bill of lading that do not meet these legal requirements is validity bill of lading, not a switch bill of lading. Based on these laws, legal analysis of transaction relations was conducted between shippers, original bill of lading issuers, original bill of lading issuers and switch bill of lading issuers, original bill of lading issuers, switch bill of lading issuers and consignee, switch bill of lading issuers and switch bill of lading holders. Based on the legal analysis of Seoul Central District Court, the legal interpretation was clarified from the perspective of the issuer of the switched bill of lading, the allowable range of the switched bill of lading, the wording specified in the transferable L/C, and the issuer of the bill of lading. Through the legal interpretation of the Seoul Central District Court, the switch bill of lading was linked to the transferable L/C payment method and two independent L/C payment methods, resulting in legal compliance with the bonded zone operation laws. This paper pointed out the problem that the Seoul Central District Court legally interprets bills of lading that do not meet the legal requirements and issuance requirements of bills of lading as switched bills of lading and presented the legal principle of legal interpretation as validity bills of lading.

The implications of the decision of the Seoul Central District Court were presented as legal responsibilities regarding the purpose of use of the switch letter of lading, the transaction relationship between the switch bill of lading and the transferable letter of credit, the transaction relationship between the first letter of credit and the second letter of credit, the transaction between the switch bill of lading and the first letter of credit and the second letter of credit, the possibility of other trade fraud in the transaction of securities and the first and second letters of credit, the purchasing bank of the validity bills of lading, the issuer of the switch bills of lading, the issuer of the validity bills of lading, and the operator of the bonded area. The legal regulations of bonded areas derive that one import and export article, and one transport cargo are useless in two independent L/C payment methods, resulting in frequent trade fraud. Trade fraud using loopholes in the L/C payment method caused by the characteristics of the L/C payment method in the four-way trade transaction structure was conspired by importers, brokers, and carriers.

In order to prevent such trade fraud, this paper proposed a system or practice that requires the opening bank or purchasing bank to give the cargo management number and cargo item code number assigned to the importing shipper, and the establishment of a bank's trade fraud sharing system. In one import and export transaction where two independent L/C payment methods and a validity bill of lading are used, import cargo is already taken out before the opening bank or purchasing bank performs the L/C payment business in accordance with due process. There is a need for a system or legal regulation that allows the opening bank or the purchasing bank to know the cargo transport number granted by the sea carrier to the shipper before paying the L/C. Trade fraud can be prevented by allowing the opening bank or purchasing bank to check whether the imported cargo has already been taken out of the bonded area with the freight forwarding number before paying the L/C.

Unlike before, the current trade fraud method is tricky and complicated, making it difficult to recognize. However, if you know the information about these trade frauds, you can easily find the pitfalls of trade fraud in complex trade transactions. Unfortunately, this trade fraud method is not shared in the payment banking system, so it is often not known even if the same buyer commits a trade fraud against the same bank. Banks should establish a trade fraud information sharing system to prevent trade fraud by quickly sharing information on trade fraud that has not been experienced before.

It is hoped that the trade fraud measures proposed in this paper will contribute to preventing trade fraud.

References

Choi, D. S., & Cheong, Y. S. (2015). A study on Korean suprime court's precedents related to bill of lading issued by the carriers without receipt of the goods (Case No. 2006Da47585). *The Journal of Korea Maritime Law Association 37*(1), 157-182.

Choi, J. H. (2007). Validity of a bill of lading issued without receipt or shipment of cargo. *The Journal of Korea Maritime Law Association, 29*(1), 129-166.

Guest, A. G. (2002). *Benjamin's sale of goods* (16th ed.). Sweet & Maxwell, 18-24.

Gutteridage, H. G., & Megrah, M. (1984). *The law of banker's commercial credits*. Europa Publication Limited, 110-112.

Han, N. H., & Pak, J. M. (2017). A study on the legal problem of switch B/L according to the diversification of international commercial transaction. *Journal of International Trade and Insurance, 8*(1), 119-162.

Harfield, H. (1974). *Bank credits and acceptances*. Ronald Press, 41-42.

Jung, G. Y. (2014). A study on the legal characteristic and effect of switch bill of lading. *Sungkyunkwan Law Review. 26*(1), 1-32.

Lee, J. S., & Lee, O. Y. (2021). A study on the precautions of issuance and criteria of leagal switch bill of lading. *International Commerce and Information Review, 23*(1), 251-269.

Mariam, G. (2019). *Managing the Risks of Witch Bills of Lading* (NUS Law Working Paper No. 11). QueenMary University of London. 1-34.

Park, S. W. (2014). Illegal issuing practices of switch bill of lading and precautions against their potential risks. *International Commerce and Information Review, 14*(2), 389-409.

Wilson, J. F. (2010). *Carrige of goods by sea* (7th ed.). Pearson Longman, 142.

< Case >

Gwangju Scourt Decision 2013GoHap453 decided on Mayt. 22, 2015a.

Gwangju Scourt Decision 2013GoHap600 decided on Mayt. 22, 2015b.

Korean Seoul Court Decision 2012GaHap516056 decided on August. 23, 2013.

Korean Seoul District Court Decision 2013GaHap522461 decided on September. 19, 2017.

Korean Seoul District Court Decision 2012GaHap52819 decided on August. 23, 2013.

Korean Seoul High Court Decision 2013Na2020753 decided on August. 25, 2015.

Korean Supreme Court Decision 2017Da21776 decided on November. 14, 2017.

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Does Inflation Targeting Policy Matter for Inflation Performance?

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ABSTRACT

Purpose – Inflation targeting (IT) is a practice that central banks around the world began to adopt as early as 1990. Due to the high accountability and high transparency of central banks under IT policy, the practice expected that inflation targets would have better inflation performance. In this study, it is explored whether inflation targeting policy has positive effects on inflation performance, focusing on inflation persistence. Also, it is explored whether the behavior of inflation rates overshooting or undershooting a target range (or a tolerance band around a target level) is asymmetric.

Design/Methodology/Approach – An autoregressive (AR) model is adapted with a self-exciting threshold autoregressive (TAR) model to study inflation persistence before and after inflation targeting was adopted, respectively. To address issues that events unrelated to inflation targeting policy could explain the findings, counterfactual exercises for non- inflation target are conducted.

Findings – It was found that inflation target, particularly developed inflation target, have experienced a decrease in inflation persistence after implanting inflation targeting. Also, there is limited evidence on the asymmetrical behavior of inflation rates between overshooting and undershooting an inflation target range, or tolerance band, around a target level.

Research Implications – The findings in this study support the positive effect of IT policy on inflation performance. In particular, it is stronger for developed inflation target than less developed inflation target. In addition, the findings support that most central banks do not show asymmetrical responses to inflation rates between overshooting and undershooting a target range or tolerance band around a target level.

Keywords: inflation performance, inflation targeting, threshold autoregressive model
JEL Classifications: E31, E52, E58

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I. Introduction

Inflation targeting is a practice that central banks around the world began to adopt as early as 1990. New Zealand was the first adopter. Since then, seventy three more countries, developed and developing alike, have adopted inflation targeting as monetary framework. Inflation targeting policy was expected to lead to success on three counts: (1) a decline in the level of inflation, (2) a reduction in the volatility of inflation, and (3) a decline in inflation persistence as a central bank publicly announced its commitment to a target for inflation. Under this regime, inflation expectations would anchor around the target, further raising the probability that inflation targeting would be successful. However, studies are divided over whether the three outcomes have been realized.

At about the same time that inflation targeting began to gain traction in the 1990s, a worldwide era of disinflation commenced. World average inflation over the period 1970-89 was approximately 15%, and median inflation approximately 10%. In the subsequent two decades, world inflation averaged approximately 12%, and median inflation was approximately 6%[1]. Despite wide variation in country by country experience with inflation, there has been a general decline in inflation over these two periods, with higher income countries experiencing declines in inflation earlier than others. Explanations for the decline in inflation included globalization, which fostered competition and deregulation and led to greater wage and price flexibility, advances in technology which generated productivity gains, and counter-inflationary monetary policy adoption borne out of an era of relatively high inflation. Rogoff (2003) discusses factors underlying the global disinflation that began in the 1990s. These explanations leave room to doubt whether any record of inflation success by inflation targeting adopters can be attributed to the new monetary framework.

Studies of inflation targeting find heterogeneity in the inflation experience for inflation targets and non- inflation targets. Some inflation targets saw no significant impact of targeting inflation success metrics, while many non-inflation targets had experiences similar to successful inflation targets. The studies vary by country, time period studied, and techniques used. Some studies focus on countries in Europe or Asia; others focus on countries by income status. Alternative techniques based on a linear autoregressive model have been used, including propensity score matching, median unbiased estimation, and panel estimation. Autoregressive models with structural breaks and smooth transition non-linear models have also been estimated. However, there are few studies of inflation targeting to my knowledge that examine inflation persistence using a model that allows for threshold non-linearity at a targeted inflation range or tolerance band[2] around a target level.

This paper utilizes a threshold autoregressive (TAR) model to study the period of inflation targeting. This model is particularly apt for inflation targets. Gregoriou and Kontonikas (2006) estimated a logistic and exponential smoothed transition autoregressive model for deviations of the inflation rate from the point target. The inflation target ranges are not considered in their study. Generally, inflation targets state a range (or tolerance band around a target level)[3] within which the inflation target resides. When the inflation rate is outside the range, more aggressive monetary

1. World average inflation measures are based on inflation rates averaged over 100 countries using data from the IMF.
2. There are many studies using a TAR model; however, most (Lim, 2018, 2020; Obstfeld & Taylor, 1997; Zussman, 2002) use a TAR to estimate trade costs from price differentials across countries. Lim (2021) used a TAR model to see the effects of Inflation Targeting on reducing inflation persistence in South Korea. However, she only focused on the effect of Inflation Targeting in South Korea, unlike this study.
3. There are three ways of setting an inflation target: a point target, a target range and a point target with a tolerance band. In general, it is difficult for a central bank to keep a point target, and thus a central bank sets a target range, or allows a tolerance band around a point target level. This study focuses on inflation targets setting the inflation target as a target range or point target with a tolerance band.

policy is pursued than when inside the range; at the same time, the impact of anchored expectations is operative. This study focuses primarily on inflation persistence, an issue raised in Benati (2008) in the debate over the effect of changes in monetary regimes. Using a select sample of inflation targets, this paper compares estimates of inflation persistence from a TAR model over the inflation targeting sample to estimates of persistence from a linear autoregressive model for the period prior to the adoption of inflation targeting. It further examines differences in inflation persistence across level of development. To address issues raised that events unrelated to inflation targeting policy could explain the findings, seven non-inflation targets similar to the set of inflation targets in terms of income per capita and data availability (See Appendix Table A) are included. In addition, it is expected that inflation rates are less persistent when inflation rates overshoot rather than undershoot the target range (tolerance band) since central banks have a tendency to focus more on other things, such as a stable outcome over inflation when inflation rates stay low. Therefore, it is tested whether inflation persistence is asymmetric between inflation rates, overshooting and undershooting a target range (tolerance band) to see a central bank asymmetrical response.

It was found that in countries where central banks adopted inflation targeting, measures of inflation performance improved. Specifically, there was a more positive effect on developed inflation targets than less developed inflation targets. However, non-inflation targets did not show an improvement in inflation performance regardless of whether they were developed countries or less developed countries after the break date of 2000. Also, limited evidence of a central bank asymmetrical response to inflation rates between overshooting and undershooting a target range was found.

In Section II, inflation targeting and relevant literature are discussed. In Section III, the data and the set of countries are introduced. Also, a descriptive analysis of inflation rates among inflation targets and a group of non-inflation targets is provided. In Section IV, inflation persistence is estimated using two empirical models depending on whether a country targets an inflation rate, and whether inflation rates overshoot or undershoot a target range. In addition, measures of inflation persistence before and after eight inflation targets adopt inflation targeting are reported, and from a counterfactual exercise for seven non-inflation targets where a break-date of 2000 is imposed. Section V concludes.

II. Inflation Targeting and Relevant Literature

In the 1960s, Friedman (1968) and Phelps (1968) argued that there was no long-run trade-off between inflation and output. The acceptance of this view prompted some central banks to publicly commit to a medium-term goal of price stability as a pathway to lower inflation, which is called Inflation Targeting (hereafter, IT). Under this framework, the central bank commits to keep the inflation rate within a tolerance band around an inflation rate objective[1]. Further, the targeted inflation rate is determined based on current and projected future economic conditions. This framework gives central banks the discretion to react to shocks, and allows for deviations from the goal in the short run.

Two features that distinguish inflation targeting frameworks from other monetary policy frameworks are high transparency and high accountability. Central banks that have adopted IT policy frequently communicate with the

4. According to The Centre for Central Banking Studies Handbook No.29 “State of the Art of Inflation Targeting-201” published by the Bank of England, most industrialized countries have inflation targets of 1%-3%. Some non-industrialized countries also have inflation targets in this range: 2% in Peru, 2% in the Czech Republic, and 2.5% in Poland. One country has a target above 5%; Ghana's target rate is 8.7%.

government and with the public. Central banks publish The Inflation Report, which contains information on the stated goals of a central bank along with the limitations of policy. The Inflation Report presents numerical values of inflation targets, why central banks chose the targeted inflation rate, how the inflation target can be achieved under current economic conditions, and reasons why the actual inflation rate deviates from the target (Bernanke et al., 1999). Such transparency is expected to make it easier for a central bank to move the inflation rate toward its goal faster, and to keep it within a targeted range once the goal is achieved. Because IT policy increases transparency, it is also expected to increase the accountability of a central bank[5]. IT policy is thus expected to reduce the level and volatility of inflation.

IT policy may also reduce the persistence of inflation. Mishkin (2007) argued that inflation expectations were a key driver of inflation dynamics, and that the pursuit of more aggressive monetary policy to maintain an inflation goal may help anchor the public's expectation of inflation[6]. Yigit (2010) argued that when inflation expectations are more heterogeneous, inflation exhibits longer memory. Because inflation targets are operationally independent from the government, monetary policy actions are more credible[7]. Thus, operational independence may make inflation expectations less diffuse. If IT policy helps to anchor the public's inflation expectation around the point target, the public may be less likely to react to temporary shocks to inflation, leading to lower inflation persistence under IT policy[8].

The effect of IT policy on inflation performance, however, is not settled in the real world. Corbo et al. (2001), Levin et al. (2004), Neumann and Von Hagen (2002), and Pétursson (2004) found that IT policy reduced the level and volatility of inflation for inflation targets. However, Ball and Sheridan (2004), Brito and Bystedt (2010), and Lin and Ye (2007) found little effect among inflation targets.

Several studies (Canarella & Miller, 2017; Lin & Ye, 2007, 2009) found differential effects of IT policy on inflation performance among developed and less developed countries. Specifically, the effects of IT policy on inflation persistence among developed inflation targeters were comparatively clear. Baxa et al. (2014), Bratsiotis et al. (2015), Canarella and Miller (2017), and Siklos (1999) found that after IT policy, inflation was less persistent among developed inflation targets: New Zealand, Canada, U.K. Sweden, Australia, and Finland. In contrast, the results were less clear among less developed inflation targets. Siklos (2008) found a decline in inflation persistence for Chile, Mexico, Hungary, and the Czech Republic, out of thirteen less developed inflation targeters. Capistrán and Ramos-Francia (2009) reported that IT policy had positive effects on a decline in inflation persistence for a few less developed inflation targeters, Brazil and Mexico, but more persistent inflation for Chile and Peru in Latin America. Filardo and Genberg (2010) found more persistent inflation for Thailand, the Philippines, and Indonesia after they adopted IT policy. However, Canarella and Miller (2017) found no decline in inflation persistence after IT policy among less developed inflation targets.

In general, inflation targets set an inflation

5. See Hammond (2012) for more detail on accountability and transparency. Bernanke and Mishikin (1997) noted that New Zealand had the strongest accountability of any central bank because the government has the right to dismiss the Reserve Bank's governor if the inflation target is not achieved.
6. Crowe (2010), Levin et al. (2004), Siklos (1999), and Yigit (2010) found evidence supporting greater convergence of inflation expectations around the inflation target after IT policy.
7. According to Hammond (2012), "operational independence" is distinct from "goal independence", and legitimizes central bank independence. Goal independence is when a central bank sets an inflation goal without consultation with the government. Not all inflation targets have goal independence.
8. Bratsiotis et al. (2015) introduced a theoretical model to explain how IT policy reduced inflation persistence.

target goal with a tolerance band (e.g. 2%±1%) as it is not easy for a central bank to meet a target point. A few previous studies on IT policy (Akdogan, 2015; Martin & Milas, 2004; Ruge-Murcia, 2003) investigated the asymmetric behavior of inflation around a target range. That is to say, they found that inflation was less persistent when it was overshooting rather than undershooting a target range, and this suggests that a central bank reacts more aggressively to the inflation rate when it is overshooting a target range, and this may result when a central bank has high accountability and high transparency under IT policy.

III. Data and Descriptive Analysis

As of January 2021, there were around seventy-three inflation targeters since New Zealand adopted IT policy in 1990[1]. To explore whether inflation targeting has positive effects on inflation performance, I apply two approaches: First, I compare the inflation performance between pre- and post-IT policy among inflation targeting countries. Second, inflation targeting countries are compared with non-inflation targeting countries. In order to achieve a reasonable sample size on either side of IT-adoption date, a set of countries that adopted inflation targeting between 1997 and 2002 were selected[10]. The country set thus includes four developed inflation targeters, Iceland, Israel, South Korea, and Norway, and four less developed inflation targeters: Peru, South Africa, Thailand, and Mexico.

Table 1 lists the IT policy effective dates and each inflation target's inflation target level. While most inflation targets set an inflation target within a tolerance band, Iceland and Norway set a point target level without a tolerance band, explicitly. In practice, both countries allow the inflation rate to move around a target level (2.5%) with ±1% tolerance band. Inflation targeters such as Israel and South Africa announce a target range of 3% − 6%, and 1%− 3%, respectively, without stating a point target.

Table 1. IT Policy Effective Dates and Target Level

IT Policy Effective Dates and Target Rates					
Developed Inflation Targeters	Effective Year	Target level	Less Developed Inflation Targeters	Effective Year	Target level
Iceland	2001.3	2.5% (±1%)	Mexico	2001.1	3% ± 1%
Korea	1998.4	3%±1%	South Africa	2000.2	3% ~ 6%
Norway	2001.3	2.5% (±1%)	Thailand	2000.5	3% ± 1.5%
Israel	1997.6	1% ~ 3%	Peru	2002.1	2% ± 1%

Source: Hammond (2012).

9. The actual date New Zealand adopted inflation targeting was in December in 1989; however, generally, the effective year is reported in 1990, not 1989.
10. In this study, the sample periods are from January 1990 to December 2020. To compare pre-and post- IT policy, the middle point of the sample periods, 2005, might be better to choose the year that IT policy adopted to have enough and fair number of observation for each period; however, according to The Centre for Central Banking Studies Handbook No.29 "State of the Art of Inflation Targeting-2012" published by the Bank of England (see page 7), those who countries adopted inflation targeting around 2005 are developing countries. To include some developed inflation targeting countries, I chose the beginning year of post- IT policy is between 1997 and 2002.

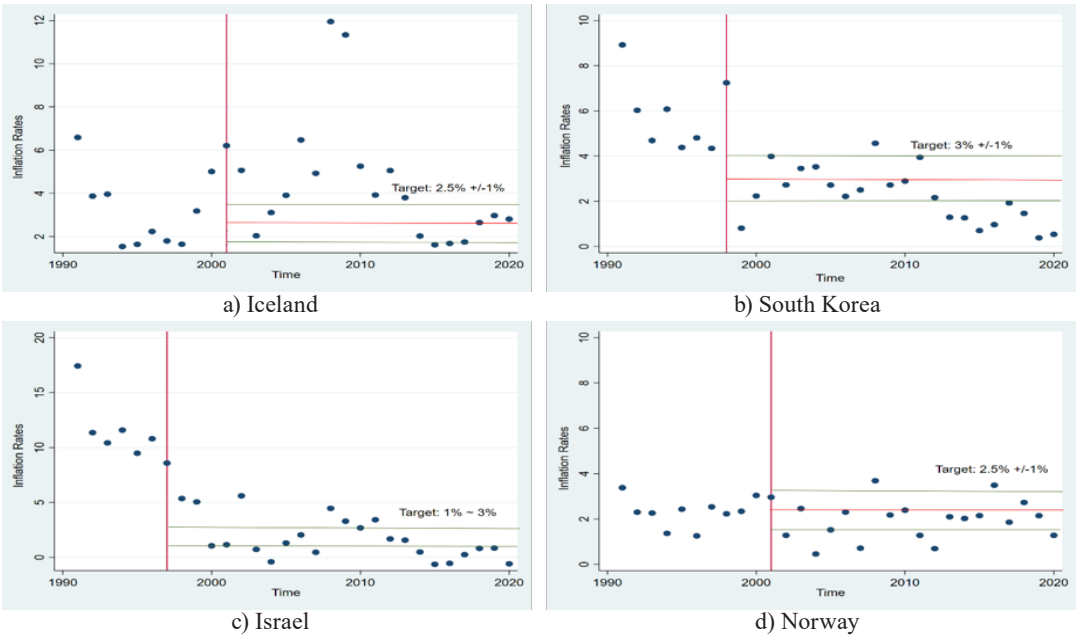
To address issues that have arisen about events unrelated to the adoption of inflation targeting but that could explain the findings, seven non-inflation targets are included in this study, and a counterfactual break date at 2000 was set, the date associated with the middle point of the IT effective year among the eight inflation targeters.

The choice of countries for the counterfactual exercises is not easy. That is because conclusions about the "treatment effect" (i.e. inflation targeting) necessarily depend on the characteristics of the untreated group. In cross-country time series studies like this study, the "treatment" can occur at different points in time and across different countries, making it difficult to attribute any results to the "treatment" alone. Moreover, there is a need to consider the availability of data prior to the counterfactual break dates (i.e. 2000) tested. With these issues in mind, countries that are similar in terms of income per capita and inflation experience to the set of inflation targets were chosen, and that have a sufficient number of observations on either side of a counterfactual break-date. To compare inflation targets, I select Denmark, Switzerland, Austria, and Singapore as the developed countries, and the less developed countries are Fiji, Gabon, and Grenada.

Inflation rates are constructed from monthly data on the consumer price index (CPI) from the IMF's International Financial Statistics. The sample period covers January 1990 - December 2020. Because inflation rate goals are expressed on an annualized basis, monthly CPI data was transformed into annualized inflation rates using the natural logarithm of the first difference in the CPI as below.

$$\pi_t = 1200 \times \{\ln(CPI_t) - \ln(CPI_{t-1})\}$$

Fig. 1. The Change in the Level of Inflation Rates for Developed IT Nations

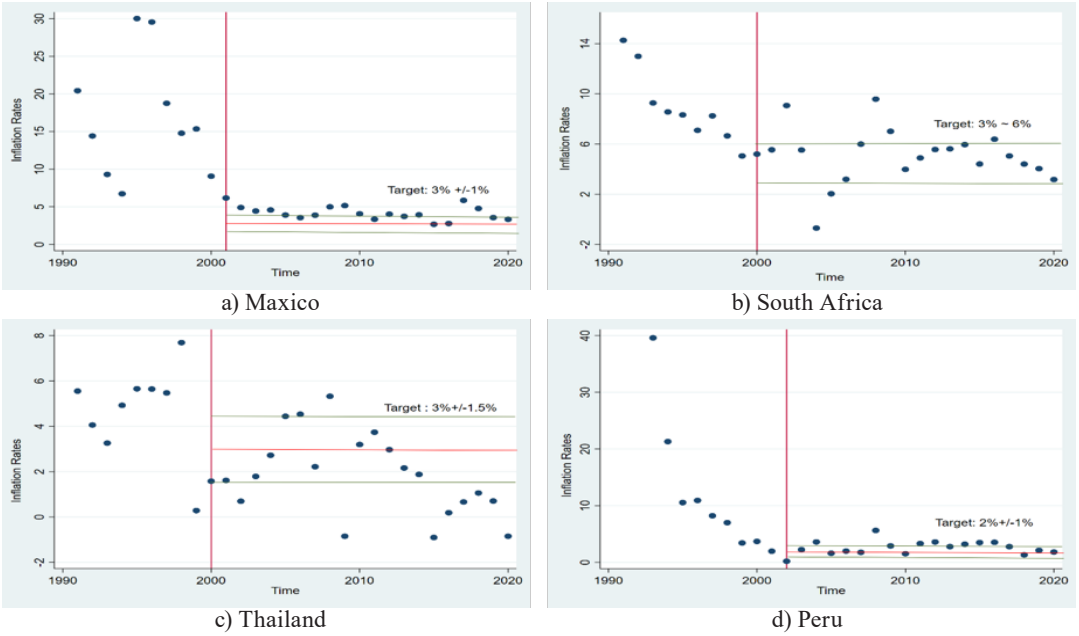


a) Iceland b) South Korea

c) Israel d) Norway

Note: The red line displays the effective year of an IT policy.

Fig. 2. The Change in the Level of Inflation Rates for Less Developed IT Nations



a) Maxico b) South Africa

c) Thailand d) Peru

Note: The red line displays the effective year of an IT policy.

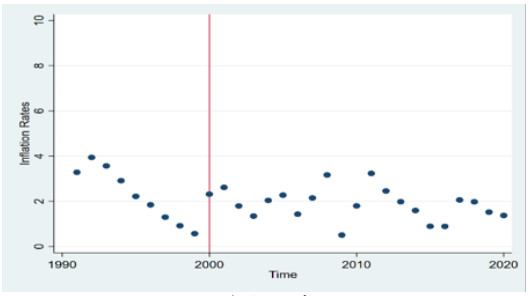
1. The Effects of IT Policy on the Level of Inflation Rates

Fig. 1 shows the experience with inflation rates before and after the adoption of inflation targeting for four developed IT nations. The figures in Fig. 1 provide anecdotal support for the idea that inflation targeting has reduced the level of inflation rates. For most developed nations, inflation rates have declined and reached the tolerance band set by central banks.

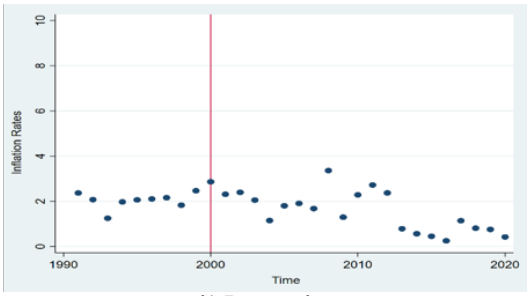
Fig. 2 shows the experience with inflation rates before and after IT policy was implemented for four less developed nations. These figures in Fig. 2 also lend support to the idea that inflation targeting has brought inflation rates down with little movement outside the target range. Fig. 3 and Fig. 4 show the inflation experience of the non-inflation targeters. Regardless of whether they are developed or developing countries, the level of inflation rates has been reduced over time. Fig. 1 to Fig. 4 show that the level of inflation rates has decreased over time, regardless of whether countries are inflation targeters or non-inflation targeters, and thus Fig. 1 to Fig. 4 question the positive effect of IT policy on reducing the level of inflation rates.

Table 2 reports the average level of inflation rates among inflation targets for both pre-and post-IT policy, and among non-inflation targeters for both pre-and post-2000. It was found that six inflation targets showed a statistically significant decline in average inflation rates at the significance level of 1 % after IT policy began; however, most non-inflation targeters, but only one non-inflation targeter (i.e. Switzerland), did not show a statistically significant decline in average level inflation rates for the post counterfactual year, 2000. This implies that even though a decrease in the level of inflation rates is a global phenomenon after 1990, the positive effect of IT policy on reducing the level of inflation rates among IT targeters cannot be overlooked.

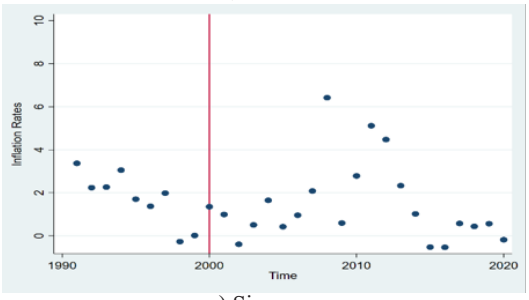
Fig. 3. The Change in the Level of Inflation Rates for Developed Non-IT Nations



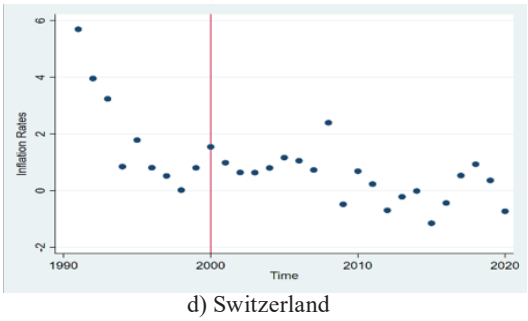
a) Austria



b) Denmark



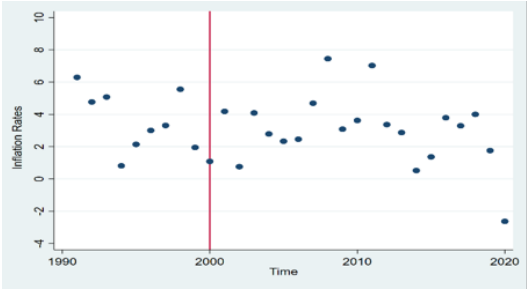
c) Singapore



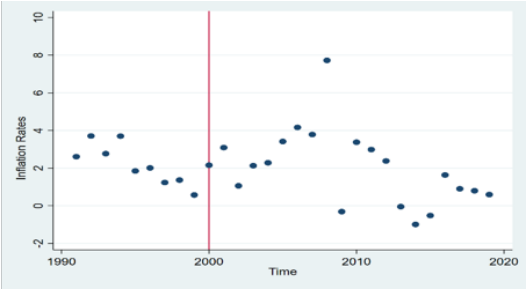
d) Switzerland

Note: The red line displays the break year (2000).

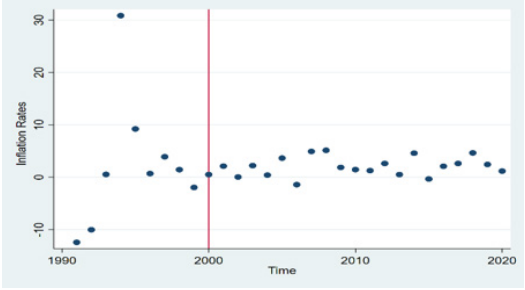
Fig. 4. The Change in the Level of Inflation Rates for Less Developed Non-IT Nations



a) Fiji



b) Grenada



c) Cabon

Note: The red line displays the break year (2000).

Table 2. Change in Average of Inflation Rates (Inflation vs Non-Inflation Targeting Nations)

Level of Development		Inflation Targets				No Inflation Targets		
		pre-IT	post-IT	*t- statistics* †		pre-2000	post-2000	*t- statistics* †
Developed Countries	Iceland	3.14	4.43	-1.29	Austria	2.28	1.88	1.16
	Korea	5.61	2.45	4.61***	Demark	2.03	1.59	1.40
	Norway	2.23	2.03	0.61	Singapore	1.74	1.46	0.42
	Israel	11.83	2.02	8.79***	Switzerland	1.96	0.43	3.09***
Less Developed Countries	Mexico	17.71	4.42	7.49***	Grenada	2.20	2.03	0.24
	South Africa	8.94	5.05	4.01***	Gabon	2.46	2.02	0.16
	Thailand	4.72	1.85	3.87***	Fiji	3.66	2.95	0.85
	Peru	11.84	2.59	3.42***				

Notes: 1. H_o †: $ave\ \boldsymbol{\pi}_t^{pre\text{-}IT} = ave\ \boldsymbol{\pi}_t^{post\text{-}IT}$, where $ave\ \boldsymbol{\pi}_t$ is the average inflation rate.
2. ***p<0.01, **p<0.05, *p<0.1.

Table 3. Change in the Volatility of Inflation Rates (IT vs Non-IT)

Level of Development		Inflation Targets				No Inflation Targets		
		pre-IT	post-IT	*F- statistics* †		pre-2000	post-2000	*F- statistics* †
Developed Countries	Iceland	1.71	2.88	0.35	Austria	1.21	0.70	3.04**
	Korea	1.63	1.58	1.07	Demark	0.35	0.91	0.15
	Norway	0.63	0.89	0.51	Singapore	1.23	1.87	0.43
	Israel	2.83	2.35	1.45	Switzerland	1.91	0.85	5.12***
Developing Countries	Mexico	8.03	1.40	33.06***	Grenada	1.09	2.02	0.29
	South Africa	2.95	2.20	1.79	Gabon	12.54	1.81	48.23***
	Thailand	2.06	1.78	1.35	Fiji	1.86	2.18	0.73
	Peru	11.91	1.19	100.14***				

Notes: 1. H_o †: $ave\ \boldsymbol{\pi}_t^{pre\text{-}IT} = ave\ \boldsymbol{\pi}_t^{post\text{-}IT}$, where $ave\ \boldsymbol{\pi}_t$ is the volatility of inflation rate.
2. ***p<0.01, **p<0.05, *p<0.1.

2. The Effects of IT Policy on the Volatility of Inflation Rates

Next, whether inflation rate volatility declined after the adoption date of IT policy for inflation and non-inflation targeting nations is explored. Table 3 reports the results. The volatility of the inflation rates for Mexico and Peru among the eight inflation targets has had a statistically significant decline at the significance level of 1%, and Austria, Switzerland, and Gabon, among seven non-inflation targets, experienced a statistically significant decline in inflation volatility at the significance level of 5% , 1% and 1%, respectively. In some cases, whether they targeted inflation or not, the reductions in volatility were sizable. These results raise the possibility that there are alternative explanations (i.e. global phenomena) for the decline in inflation rate volatility found among the IT nations.

IV. Empirical Model and Results

Attention is now turned to measures of inflation persistence. Inflation persistence is a measure of the sum of the impact of a white noise shock to inflation k periods ago on current inflation. It is also referred to as the "memory" of a series. Estimates of inflation persistence derive from running a linear auto-regression of the form as below.

$$\pi_t = \alpha + \rho_1\pi_{t-1} + \rho_2\pi_{t-2}, \ldots, \rho_k\pi_{t-k} + \varepsilon_t \quad (1)$$

Where $\boldsymbol{\pi}_t$ measures the natural logarithm of the first difference in the CPI, on an annualized basis, α is a constant, $\boldsymbol{\pi}_{t\text{-}k}$ is the k th lag of the inflation rate, and ε_t is the error term. In this specification, $\sum_{i=1}^{k}\rho_i$ is a measure of inflation persistence[11].

Higher measures of persistence imply that the inflation rate will spend a longer time away from its mean. Persistence is also, therefore, a measure of the speed of reversion to the mean. The inflation rates of countries with central banks that adopt a monetary framework with inflation targeting are hypothesized to exhibit lower persistence and faster speeds of mean reversion after inflation targeting has commenced.

A corollary is that inflation targets will have a better record of inflation performance than non-inflation targeting nations after inflation targeting. To test these hypotheses, two models are estimated: a linear autoregressive (AR) model for periods and countries where inflation targeting is not practiced, and a threshold autoregressive (TAR) model when inflation targeting is practiced.

1. Inflation Persistence among IT Nations before IT Policy: The AR(k) model

The study begins by estimating measures of inflation persistence in the period before an IT policy when no target is in force. Inflation rates are modeled for the pre-IT policy period, using the autoregressive (AR (k)) linear specification of equation (1), re-parameterized as:

$$\pi_t = \alpha + \gamma\pi_{t-1} + \sum_{i=1}^{k-1}\phi_i\Delta\pi_{t-i} + \epsilon_t \quad (2)$$

In this re-parameterization of equation (1), $\gamma = \sum_{i=1}^{k}\rho_i$ is the sum of the k lag's impact on inflation at time t[12]. The coefficient estimate $\hat{\gamma}$ captures the degree of persistence in the inflation rate toward the mean inflation rate, $\hat{\alpha}$. Lower values of $\hat{\gamma}$ imply lower measures of persistence and faster speeds of reversion to the mean inflation rate.

11. k is the lag length selected to whiten ε_t.
12. The ADF unit root test results show that $\boldsymbol{\pi}_t$ is stationary across all countries for pre-and post IT policy.

2. Inflation Persistence among IT Nations after IT Policy: The Threshold Autoregressive (TAR (k, d)) Model

For the period after the adoption of an IT policy, inflation rates are modeled using a self-exciting threshold autoregressive (TAR) model. With inflation targeting, the thresholds in the TAR model are explicit[13]. They are the upper and lower limits of a targeted inflation range around a target level set by the central bank. This paper defines these thresholds as [π^{min}, π^{max}]. It is assumed that inflation persistence is symmetric above π^{max} and below π^{min}(Sarno et al., 2004). When $\pi_t$is above π^{max} or below π^{min}, the inflation rate is in the "outer regime". By assuming symmetry in the behavior of $\pi_t$above π^{max} and below π^{min}, the two outer regimes can be treated as a single "outer regime."

In a self-exciting TAR model, the assignment of π_t to the outer (and inner) regime is based on an indicator function that determines the regime. The "self-exciting" aspect of the TAR model arises because the indicator function bases regime assignment on a d-period lag of π_t (discussed below) relative to the thresholds. In the outer regime, if the indicator function satisfies I ($\pi_{t-d} > \pi^{max}$or $\pi_{t-d} < \pi^{min}$) = I(·) = 1, then π_t is assigned to the outer regime. When the condition is not satisfied, I(·) = 0 and π_t is assigned to the inner regime.

TAR (*k,d*) model in this study is specified as follows:

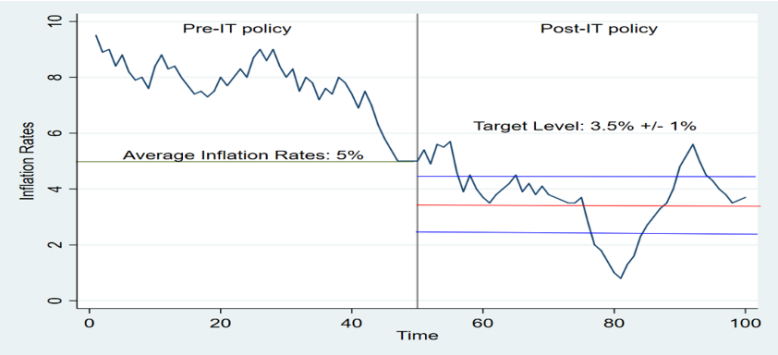
The non-linearity of the TAR model arises

$$\pi_t = \alpha + \left[\beta^{in}\pi_{t-1} + \sum_{i=1}^{k-1}\varphi_i^{in}\pi_{t-i}\right](1 - I(\cdot)) + \left[\beta^{out}\pi_{t-1} + \sum_{i=1}^{k-1}\varphi_i^{out}\pi_{t-i}\right]I(\cdot) + \varepsilon_t \quad (3)$$

because the persistence of inflation depends on whether the inflation rate is in the outer regime or inner regime, giving rise to two estimates: $\hat{\beta}^{in}$ and $\hat{\beta}^{out}$ [14]. The coefficient estimate $\hat{\beta}^{out}$ gives a measure of persistence when inflation resides outside an inflation target range.

Fig. 5 gives a stylized picture of how IT policy is expected to affect level, volatility, and persistence in the inflation rate.

Fig. 5. Inflation Persistence (Pre-IT vs Post-IT Policy)



13. TAR models also allow for unknown thresholds, in which case the thresholds are identified by a grid search (See Hansen, 2017 for more detail).
14. The difference between these two estimates is not the main focus in this study. However, it is expected that when inflation resides inside the targeted range, the speed of the mean reversion will be faster: $\hat{\beta}^{in} < \hat{\beta}^{out}$, or white noise.

It is expected that under IT policy, a central bank would react more aggressively to move inflation rates back to a target range when the inflation rate is in the outer regime. Then, persistence in inflation rates in the outer regime will be reduced after the adoption of an IT policy. Therefore, it is hypothesized that estimates of $\hat{\beta}^{out}$ from equation (3) will be less than estimates of $\hat{\gamma}$ from equation (2).

TAR estimation proceeds in several steps. First, the lag length, k, in equation (3) must be determined prior to estimating the model. Then, the "delay parameter", d, and the threshold values, both required for the indicator function, must be established. Because the delay parameter is unknown, a grid search over d is done[15]. Since the upper and lower values of an inflation target range provide the threshold values, no grid search is necessary as the threshold values are imposed. For each d, the identified TAR (k, d) model is tested against the null of a linear AR (k) model estimated over the same sample period[16]. Selection criteria for the best fit TAR (k, d) model are based on a sup-Wald test statistic. The steps below outline TAR (k, d) estimation:

(a) Pre-determine the lag-length k for the TAR (k, d) model in equation (3) using the Akaike Information Criterion (AIC), and set it the same for the null AR (k) model in equation (2).

(b) Estimate the null AR (k) model in equation (2) using k from Step 1 over the post-IT policy sample period. Save the sum of squared residuals, $\bar{\sigma}^2 = \frac{1}{T}\sum_{t=1}^{T} \hat{\varepsilon}_t^{\,2}$.

(c) Estimate the TAR (k, d) model in equation (3) with the imposed thresholds from a inflation target range over each d =1, 2, ..., k for the post-IT Policy sample period. Save the sum of squared residuals for each iteration of d as $\hat{\sigma}^2(\hat{d}) = \frac{1}{T}\sum_{t=1}^{T} \hat{\varepsilon}_t\,(\hat{d})^2$

(d) Choose d that minimizes the sum of squared residuals $\hat{\sigma}^2(d)$ from equation (3) as $\hat{d} = argmin\, \hat{\sigma}^2(d)$

(e) Construct the sup-Wald test statistic, sup-$W_T = T[\frac{\bar{\sigma}^2 - \hat{\sigma}^2(\hat{d})}{\hat{\sigma}^2(\hat{d})}]$, where T is the sample size.

(f) Based on sup-W_T , test whether the null AR(k) model for the post-IT policy sample period yields a better fit than the alternative TAR (k, d) model over the post-IT policy sample period. If it is rejected, the TAR (k, d) model provides a better fit for $\boldsymbol{\pi}_t$.

3. Results

3.1. Inflation Persistence for Pre- vs Post-IT

Table 4 reports inflation persistence estimates from equation (2) before the adoption of IT policy and from equation (3) after the adoption of IT policy for developed and less developed IT nations. Also reported is the sup-W_T statistic for model fit in the post-IT sample period. An F-test for differences in inflation persistence before and after inflation targeting – $\hat{\gamma} = \hat{\beta}^{out}$ – is also reported.

From Table 4, it was found that the estimated average level of inflation rates for post-IT policy was reduced, except for Iceland, and the estimated average level of inflation rates for most inflation targets stayed in the target ranges. This suggests that most central banks with inflation targets met the inflation target. Second, the inflation persistence for other developed IT nations, other than Iceland, has been reduced after IT policy. That is, inflation persistence was reduced at the

15. The grid search over d is constrained by $1 \leq d \leq k$.

16. Hansen (1996, 1999) argued that in a TAR model with an unknown threshold, the distribution for the Wald test was non-standard and must be bootstrapped. Because the thresholds are pre-determined by the upper and lower levels of an inflation target range, the nuisance parameter problem in estimating the TAR model does not arise. Therefore, it is not bootstraped.

significance level of 1% for South Korea and Israel, and at the significance level of 10% for Norway. However, for less developed IT nations, inflation persistence for countries other than Mexico was not reduced, and statistically significant after IT policy. These findings indicate that IT policy may have stronger positive influences on reducing inflation persistence for developed nations than for less developed nations.

Table 4. Inflation Persistence for Pre- vs Post-IT

	Country	Pre-IT obs	p	$\hat{\alpha}$	$\hat{\gamma}$	R^2	Post-IT Out obs	p/d	$\widehat{\beta_0}$	$\widehat{\beta}^{out}$	R^2	$up-W^{\dagger}_{Test}$	F − test‡
Developed Inflation Targeting Nations	Iceland	129	1	2.33***	0.27***	0.08	200	1/1	3.12***	0.30**	0.09	0.02	0.04
	Norway	129	2	2.99***	-0.24*	0.04	246	1/1	1.82***	0.02	0.04	0.87	3.28*
	Israel	88	1	6.60***	0.45***	0.20	215	1/1	0.93***	0.36***	0.15	1.08	6.91***
	South Korea	96	2	4.45***	0.26*	0.27	237	3/1	2.65***	-0.11	0.18	4.76***	7.86***
Less Developed Inflation Targeting Nations	South Africa	144	3	3.84***	0.54***	0.15	174	1	2.75***	0.41***	0.18	0.93	0.87
	Mexico	131	2	3.50***	0.79***	0.70	202	1	2.26***	0.43***	0.18	0.77	17.33***
	Thailand	123	1	3.44***	0.23***	0.05	178	1	1.23***	0.31***	0.10	0.01	0.62
	Peru	143	1	27.27***	0.44	0.22	237	1	2.03***	0.23***	0.05	0.29	0.34

Notes: 1. $H_o{}^{\dagger}$: *AR*(*K*) *is better fit for TAR* (*k,d*).
2. $H_0^{\ddagger}$: $\hat{\gamma} = \hat{\beta}^{out}$
3. ***p<0.01, **p<0.05, *p<0.1.

However, debates over the benefits of inflation targeting counterclaim that any reductions in the level, volatility, or the persistence of inflation are an artifact of globalization and its attendant effects, or a general anti-inflation attitude among central banks. Indeed, the prevailing persistent view attributed to Lucas (1976) is that inflation is structural; monetary frameworks are impotent at influencing the dynamics of structurally-caused inflation.

For these reasons, a counterfactual exercise is undertaken to examine inflation persistence among seven countries that have not adopted inflation targeting. The purpose of the counterfactual exercise is to address the issue that, independent of inflation targeting, inflation dynamics changed after the early-mid 1990s. Most inflation targeting nations in Table 4 adopted IT policy between 1997 and 2002. If non-inflation targeting nations exhibit a decline in inflation persistence between 1997 and 2002, the evidence of inflation targeting's impact on inflation persistence reported in Table

4 becomes more questionable. In undertaking a counterfactual, there are no "pre- and post-IT policy" periods to study. Therefore, a break date of 2000 – the middle point between 1997 and 2002 is artificially imposed. The study then estimates equation (2) for the seven non-inflation targeting nations both pre- and post- break-date, and for the sample after the break-date, and investigates whether inflation persistence among non-inflation targeting nations is lower after the counterfactual break date[17].

The null hypothesis $\hat{\gamma}^{pre-2000} = \hat{\gamma}^{post-2000}$ is tested; if the null hypothesis is rejected, there is evidence that inflation persistence changed. It is then asked if $|\hat{\gamma}^{post-2000}| < |\hat{\gamma}^{pre-2000}|$ [18].

As shown in Table 5, like IT nations, the estimated average inflation rate for non-inflation targeting nations other than Austria and Gabon have reduced after 2000, which indicates that average inflation rates have been reduced over time, regardless of whether they targeted inflation. Among the seven non-inflation targeting nations, Denmark, Fiji, and Gabon did not show different inflation persistence pre– and post- 2000, which is statistically significant. Even though Switzerland, Austria, Singapore, and Grenada experienced differences in inflation persistence pre- and post- 2000, again statistically and significantly, their inflation persistence has increased, and not decreased[19].

The results in Table 5 also support the positive effects of IT policy on reducing inflation persistence among IT nations as non-IT nations' inflation persistence has increased after 2000. In addition, this shows that its effects are stronger for developed inflation targets than those less developed. This implies that the central banks of developed inflation targeting nations take actions more quickly on economic shocks, resulting in deviating actual inflation rates from the target of inflation rates than those less developed. That is, IT policy has stronger positive effects on reducing inflation persistence for developed than less developed nations.

3.2. Inflation Persistence for Above and Below a Target Range (or a Tolerance Band) for Post –IT policy

Considering the purpose of inflation targeting policy, inflation rates undershooting the inflation target may not have a negative influence on the credibility of inflation-targeting central banks as much as inflation rates overshooting the target. Also, generally, central banks do have a tendency of focusing more on other objectives, such as stability of outcome, than inflation when inflation rates stay at a low level. Accordingly, inflation-targeting central banks react more quickly to deviated actual inflation rates from an upper target

17. This is equivalent to estimating equation (2) for the full-sample and includes an intercept dummy and dummy variables interacting with all explanatory variables.
18. In the context of inflation targeting, meaningful persistence measures after the adoption of inflation targeting policy are restricted to the range $-1 < \hat{\gamma}^{post-2000} < 1 \rightarrow |\hat{\gamma}^{post-2000}| < 1$. If $|\hat{\gamma}^{post-2000}|$ is outside the range, then inflation contains a unit root $-|\hat{\gamma}^{post-2000}| = 1$ – or an explosive root – $|\hat{\gamma}^{post-2000}| > 1$. In these cases, π_t exhibits no mean reversion. Furthermore, the sign of $\hat{\gamma}^{pre\ or\ post-2000}$ determines whether the path of mean reversion in π_t is steady and smooth or a dampening cycle. If $0 < \hat{\gamma}^{pre\ or\ post-2000} < 1$, the path of mean reversion is a smooth decline of π_t toward its mean.

    If $-1 < \hat{\gamma}^{pre\ or\ post-2000} < 0$, then the path towards mean reversion is oscillating with an amplitude that dies out over time. In either case, the absolute value of $\hat{\gamma}^{pre\ or\ post-2000}$ determines the speed of mean reversion (and corresponding half-life).
19. The same thing was tested using two different break years, 1997 (earliest IT policy adoption year) and 2002 (latest IT policy adoption year), and the results are the similar to the results in Table 5. These are not shown here; however, if requested, it can be provided.

Table 5. Change in Inflation Persistence, Pre- vs Post-2000

	Country	Pre-2000					Post-2000					F − test†
		obs	p	$\hat{\alpha}$	$\hat{\gamma}^{pre-2000}$	R^2	obs	p	$\hat{\alpha}$	$\hat{\gamma}^{pre-2000}$	R^2	
Developed Countries	Denmark	116	3	2.84***	-0.34**	0.17	260	3	1.74***	-0.11	0.04	1.37
	Switzerland	118	1	1.82***	0.11	0.02	260	3	0.58***	-0.37***	0.29	15.01***
	Austria	117	2	2.31***	0.02	0.19	260	4	3.08***	-0.62***	0.20	12.67***
	Singapore	115	1	1.88***	-0.08	0.01	260	3	1.15***	0.24**	0.19	3.88**
Less Developed Countries	Fiji	118	1	3.32***	0.08	0.01	260	4	3.27***	-0.13	0.03	2.58
	Gabon	118	1	1.67***	0.25	0.06	255	1	2.14***	-0.04	0.02	2.43
	Grenada	118	1	2.26***	0.03	0.01	246	2	1.16***	0.35***	0.07	8.63***

Notes: 1. $H_0^{\dagger}$: $\hat{\gamma}^{pre-2000} = \hat{\gamma}^{post-2000}$
2. ***p<0.01, **p<0.05, *p<0.1.

level than from a lower target level. That is, central banks more aggressively react to deviated actual inflation rates from an upper level than from a lower level. To see this, it was tested whether inflation persistence between deviated actual inflation rates from an upper target level and from a lower target level would be different. Specifically, it was tested whether inflation persistence for deviated actual inflation rates from an upper target level would be less than from a lower target level. In Table 1, inflation targeting nations other than Iceland and Norway set an inflation target, a certain point with a tolerance band. Therefore, as mentioned before, a tolerance band was arbitrarily set at ± 1% of its inflation target level to test whether there is asymmetric behavior in inflation rates between an upper and lower target level.

Table 6 displays the results from testing whether inflation persistence was different between overshooting and undershooting a target range. Most IT nations in Table 6 did not show asymmetric inflation persistence between overshooting and undershooting a tolerance band. However, it was found that both Peru and Iceland had different inflation persistence between overshooting and undershooting a target range at the significance level of 1%. Also, the inflation rate is less persistent when actual inflation rates overshoot rather than undershoot a target range, which implies that the central banks of Peru and Iceland react more aggressively and quickly to actual inflation rates deviating from the upper level than from the lower level of a target range.

V. Conclusion

Inflation targeting policy is a relatively new monetary framework that has spurred interest among scholars and policymakers since it was first adopted in 1990 by New Zealand. Two features of inflation targeting policy, high transparency and high accountability, are expected to deliver lower inflation, less volatility, and faster reversion to the targeted inflation rate. Many studies, beginning in the late 1990s, have investigated inflation outcomes for adopters. It is fair to say that the conclusions are mixed and the debate vigorous over whether the benefits have materialized, or are an artifact of worldwide structural disinflation. This study contributes to the debate by (1) studying a select set of countries, (2) using the most up-to-date data available, and (3) estimating a model that allows

Table 6. Asymmetric Behavior of Inflation Persistence

		p	$\hat{\beta}^{upper}$	$\hat{\beta}^{lower}$	R^2	$F-test^{\dagger}$
Less Developed IT Nations	South Africa	1	0.14	0.49***	0.18	2.55
	Mexico	1	0.16	0.08	0.22	0.20
	Thailand	1	0.43*	0.23	0.05	0.56
	Peru	1	-0.17	0.38**	0.22	6.14***
	Iceland	1	-0.47***	0.76***	0.08	27.60***
Developed IT Nations	South Korea	3	-0.10	-0.31**	0.12	1.13
	Norway	1	0.01	-0.02	0.1	0.02
	Israel	1	0.21	0.47***	0.16	1.54

Notes: 1. $H_0^{\dagger}$: $\hat{\beta}^{lower} = \hat{\beta}^{upper}$

2. ***p<0.01, **p<0.05, *p<0.1.

for thresholds based on an inflation range around a target level prescribed by the central bank of each country.

Specifically, this study includes eight IT nations with a counterfactual exercise. For the counterfactual exercise, seven non-IT nations with incomes per capita similar to the set of IT nations were chosen. The data extends from January 1990 - December 2020. Then study investigated the impact of inflation targeting policy on inflation persistence by estimating a non-linear threshold autoregressive model for the post-inflation targeting period, and a linear autoregressive model for the pre-inflation targeting period.

Using the TAR model, evidence was found that inflation targeting policy brought about declines in inflation persistence, especially for developed inflation targets that are statistically significant when compared to persistence measures prior to inflation targeting. However, these results could have alternative explanations. Therefore, a counterfactual exercise was conducted using non-IT nations to see if they showed a decline in persistence around the time that inflation targeting was adopted. For non- IT nations, no evidence that inflation persistence declined after 2000 was found, which is an imposed break-date of a middle point among the IT effective year of eight IT nations in this study. In addition, it was found that inflation rates for only two, Peru and Iceland, were less persistent when overshooting rather than undershooting a target range. This implies that central banks for these two countries react more aggressively and quickly to overshooting inflation rates than undershooting. However, no evidence was found on asymmetrical central bank responses to inflation rates between overshooting and undershooting for most IT nations in this study.

This study concludes that the practice of inflation targeting has brought gains in inflation performance-lower level of inflation rates and less inflation persistence. Also, although a few inflation targeting central banks react more aggressively to overshooting than undershooting a target range, most inflation targeting central banks did not show asymmetrical action to inflation rates overshooting or undershooting a target range in this study. This implies that most inflation targeting central banks in this study focused on whether deviated inflation rates from a target range move back to the target

regardless of whether inflation rates overshoot or undershoot.

The effect of a monetary policy on a country would be affected by various uncertainties that the country faces. Covid-19 pandemic is one example. During the COVID-19 pandemic, many countries have been experiencing high inflation. Considering the findings in this study, inflation targeting might play an important role in keeping price stability during COVID-19. Actually, some inflation targeting central banks (e.g. South Korea) have started to increase interest rates to move the deviated inflation rate from back to the target. It would be interesting to see the effect of inflation targeting on inflation performance by comparing inflation targeting countries and non-inflation targeting countries during COVID-19 pandemic. This will be left for future study.

References

Akdoğan, K. (2015). Asymmetric behaviour of inflation around the target in inflation-targeting countries. *Scottish Journal of Political Economy*, *62*(5), 486-504. https://doi.org/10.1111/sjpe.12089

Benati, L. (2008). Investigating inflation persistence across monetary regimes. *The Quarterly Journal of Economics*, *123*(3), 1005-1060. https://doi.org/10.1162/qjec.2008.123.3.1005

Bernanke, B. S., Laubach, T., Mishkin, F. S., & Posen, A. S. (1999). *Inflation targeting*. Princeton University Press.

Bernanke, B. S., & Mishkin, F. S. (1997). Inflation targeting: A new framework for monetary policy?. *Journal of Economic Perspectives*, *11*(2), 97-116. https://doi.org/ 10.1257/jep.11.2.97

Ball, L., & Sheridan, N. (2007). *Does inflation targeting matter?*. University of Chicago Press.

Brito, R. D., & Bystedt, B. (2010). Inflation targeting in emerging economies: Panel evidence. *Journal of Development Economics*, *91*(2), 198-210. https://doi.org/10.1016/j.jdeveco.2009.09.010

Baxa, J., Horváth, R., & Vašíček, B. (2014). How does monetary policy change? Evidence on inflation-targeting countries. *Macroeconomic Dynamics*, *18*(3), 593-630. https://doi.org/10.1017/S1365100512000545

Bratsiotis, G. J., Madsen, J., & Martin, C. (2015). Inflation targeting and inflation persistence. *Economic and Political Studies*, *3*(1), 3-17. https://doi.org/10.1080/20954816.2015.11673835

Canarella, G., & Miller, S. M. (2017). Inflation targeting and inflation persistence: New evidence from fractional integration and cointegration. *Journal of Economics and Business*, *92*, 45-62. https://doi.org/10.1016/j.jeconbus.2017.05.002

Capistrán, C., & Ramos-Francia, M. (2010). Does inflation targeting affect the dispersion of inflation expectations?. *Journal of Money, Credit and Banking*, *42*(1), 113-134. https://doi.org/10.1111/j.1538-4616.2009.00280.x

Corbo, V., Landerretche, O., & Schmidt-Hebbel, K. (2001). Assessing inflation targeting after a decade of world experience. *International Journal of Finance & Economics*, *6*(4), 343-368. https://doi.org/10.1002/ijfe.165

Crowe, C. (2010). Testing the transparency benefits of inflation targeting: Evidence from private sector forecasts. *Journal of Monetary Economics, 57*(2), 226-232. https://doi.org/10.1016/j.jmoneco.2009.12.003

Friedman, M. (1968). The role of monetary policy. *The American Economic Review*, *58*(1), 1-17. https://doi.org/10.1007/978-1-349-24002-9_11

Filardo, A., & Genberg, H. (2010). *Targeting inflation in Asia and the Pacific: Lessons from the recent past.* (Papers No. 52), Bank for International Settlements (BIS), 251-273. https://www.bis.org/publ/bppdf/bispap52.pdf?noframes=1#page=263

Gregoriou, A., & Kontonikas, A. (2006). Inflation targeting and the stationarity of inflation: New results from

an ESTAR unit root test. *Bulletin of Economic Research*, *58*(4), 309-322. https://doi.org/10.1111/j.0307-3378.2006.00246.x

Hammond, G. (2012). *State of the art of inflation targeting* (4th ed.). Bank of England. https://ideas.repec.org/b/ccb/hbooks/29.html

Hansen, B. E. (1996). Inference in TAR models. *Studies in Nonlinear Dynamics and Econometrics*, *2*(1), 1-14. https://www.bc.edu/content/dam/files/schools/cas_sites/economics/pdf/workingpapers/wp325.pdf

Hansen, B. E. (1999). Testing for linearity. *Journal of Economic Surveys*, *13*(5), 551-576. https://doi.org/10.1111/1467-6419.00098

Hansen, B. E. (2017). Regression kink with an unknown threshold. *Journal of Business & Economic Statistics, 35*(2), 228-240. https://doi.org/10.1080/07350015.2015.1073595

Levin, A. T., Natalucci, F. M., & Piger, J. M. (2004). The macroeconomic effects of inflation targeting. *Review-Federal Reserve Bank of Saint Louis*, *86*(4), 51-80. https://files.stlouisfed.org/files/htdocs/publications/review/04/07/LevinNatalucciPiger.pdf

Lim, E. S. (2018). The effect of FTAs on trade costs: Evidence from South Korea's FTA. *Journal of International Trade & Commerce*, *14*(3), 215-239. https://dx.doi.org/10.16980/jitc.14.3.201806.215

Lim, E. S. (2020). A study on the factors affecting trade costs between South Korea and its trading partners. *Journal of International Trade & Commerce*, *16*(3), 59-76. https://dx.doi.org/10.16980/jitc.16.3.202006.59

Lim, E. S. (2021). The effect of inflation targeting policy on price stability in South Korea, utilizing threshold autoregressive model. *Journal of International Trade & Commerce*, *17*(4), 277-293. https://dx.doi.org/10.16980/jitc.17.4.202108.277

Lin, S., & Ye, H. (2007). Does inflation targeting really make a difference? Evaluating the treatment effect of inflation targeting in seven industrial countries. *Journal of Monetary Economics*, *54*(8), 2521-2533. https://doi.org/10.1016/j.jmoneco.2007.06.017

Lin, S., & Ye, H. (2009). Does inflation targeting make a difference in developing countries?. *Journal of Development Economics*, *89*(1), 118-123. https://doi.org/10.1016/j.jdeveco.2008.04.006

Lucas, R. E., Jr. (1976). Econometric policy evaluation: A critique. *Carnegie-Rochester Conference Series on Public Policy, 1*(1), 19-46. https://doi.org/10.1016/S0167-2231(76)80003-6

Mishkin, F. S. (2007). Inflation dynamics. *International Finance*, *10*(3), 317-334. https://doi.org/10.1111/j.1468-2362.2007.00205.x

Martin, C., & Milas, C. (2004). Modelling monetary policy: Inflation targeting in practice. *Economica*, *71*(282), 209-221. https://doi.org/10.1111/j.0013-0427.2004.00366.x

Neumann, M. J., & Von Hagen, J (2002). *Does inflation targeting matter?* (Working Paper No. B 01-2002), Centre for European Integration Research, University of Bonn, 1-34. http://hdl.handle.net/10419/39465

Obstfeld, M., & Taylor, A. M. (1997). Nonlinear aspects of goods market arbitrage and adjustment: Heckscher's commodity points revisited. *Journal of the Japanese and International Economies*, *11*(4), 441-479. https://doi.org/10.1006/jjie.1997.0385

Pétursson, T. G. (2004). *The effects of inflation targeting on macroeconomic performance* (Working Paper No. 23), Central Bank of Iceland Economic Department, 1-36. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.492.2586&rep=rep1&type=pdf

Phelps, E. S. (1968). Money-wage dynamics and labor-market equilibrium. *Journal of Political Economy (Part 2)*, *76*(4), 678-711. https://doi.org/10.1086/259438

Rogoff, K. (2003). Globalization and global disinflation. *Economic Review, 88*(4), 45-78. https://EconPapers.repec.org/RePEc:fip:fedker:y:2003:i:qiv:p:45-78:n:v.88no.4

Ruge-Murcia, F. J. (2003). Inflation targeting under asymmetric preferences. *Journal of Money, Credit and Banking*, *35*(5), 763-785. https://www.jstor.org/stable/3649827

Siklos, P. L. (1999). Inflation-target design: Changing inflation performance and persistence in industrial countries. *Federal Reserve Bank of St. Louis Review*, *81*(2) 46-58. https://files.stlouisfed.org/files/htdocs/publications/review/99/03/9903ps.pdf

Siklos, P. L. (2008). Inflation targeting around the world. *Emerging Markets Finance and Trad*e, *44*(6), 17-37. https://doi.org/10.2753/REE1540-496X440602

Sarno, L., Taylor, M. P., & Chowdhury, I. (2004). Nonlinear dynamics in deviations from the law of one price: A broad-based empirical study. *Journal of International Money and Finance*, *23*(1), 1-25. https://doi.org/10.1016/j.jimonfin.2003.10.004

World Bank. (2020). GNI per capita. https://data.worldbank.org

Yigit, T. M. (2010). Inflation targeting: An indirect approach to assess the direct impact. *Journal of International Money and Finance*, *29*(7), 1357-1368. https://doi.org/10.1016/j.jimonfin.2010.05.004

Zussman, A. (2002). *The limits of arbitrage: Trading frictions and deviations from purchasing power parity* (SIEPR Discussion Paper No. 02-12), Stanford University, 89. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.581.7513&rep=rep1&type=pdf

Appendix

Table A. Inflation Targeters vs Non Inflation Targeters

Inflation Targeters			
Developed Countries	GNI per capita	Developing Countries	GNI per capita
Iceland	$72,930 (2019)	Peru	$6010(2020)
South Korea	$32,480(2020)	Thailand	$7050(2020)
Israel	$ 43,070(2019)	Mexico	$8040(2020)
Norway	$78,250(2020)	South Africa	$5410(2020)
Non-Inflation Targeters			
Developed Countries	GNI per capita	Developing Countries	GNI per capita
Denmark	$62,720 (2020)	Fiji	4,720 (2020)
Switzerland	$87,950 (2019)	Gabon	6,970 (2020)
Austria	$51,440 (2020)	Grenada	8,740 (2020)
Singapore	$54,920 (2020)	Belize	$ 3,970 (2020)

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The Impact of COVID-19 on the World Economy

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ABSTRACT

Purpose – The coronavirus, which appeared in Wuhan, China in late 2019, has had immense ramifications on the global community. This paper undertakes to identify the economic impact of COVID-19, which has spread as a global pandemic, on the global economy and international trade.
Design/Methodology/Approach – Using a global, multisector, computable-general-equilibrium model, this paper attempts to assess the potential economic impacts of COVID-19. The baseline scenario was set up using the World Bank's macroeconomic data, such as real GDP, population, labor, and capital from 2015 to 2019, to calculate future estimates. Policy scenarios were established by (1) drops in employment rate (0.4~8.8%) of the analyzed countries, (2) a 5% increase in trade costs, (3) an 8.3% decrease in income reduction, and (4) lastly, a 50% fall of income in affected services industries.
Findings – Results show that the GDP of all countries, including the United States and China, contracted, demonstrating that COVID-19 is not only limited to a specific country but also negatively affects the economic growth of all countries. Regarding international trade, exports and imports of all countries have declined due to the increase in trade costs resulting from COVID-19. However, in terms of the trade balance, each country exhibits slightly different patterns. Some countries, such as the United States, ran a trade surplus and others recorded a trade deficit. Although aggregate exports and imports around the world declined, the reason some countries recorded a trade surplus was that imports declined more than exports did, so it would be reasonable to view it as a 'trade surplus in an economic recession'.
Research Implications – Analytical results imply that the COVID-19 pandemic is not limited to a specific region and has a negative impact on countries around the world, signifying that the only way to lessen economic damage is to surmount COVID-19 as soon as possible.

Keywords: CGE (Computable General Equilibrium) model, COVID-19 pandemic, economic growth, economic welfare, international trade
JEL Classifications: C68, F17, I15, L80

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I. Introduction

The Coronavirus, which started in Wuhan, China in late 2019, has spread like wildfire and has enormously impacted the world. As of May 31, 2021, at the time of writing, the number of confirmed cases worldwide has reached over 170 million, and the death toll has exceeded 3.5 million. According to Worldometer and CSSEGISandData/COVID-19, around 500,000 cases and 11,000 deaths are reported every day (Worldometer, 2021; Github, 2021). Among them, the U.S. ranked first out of 221 countries with about 34 million confirmed cases and nearly 600,000 deaths, followed by India ranking second with 28 million confirmed cases and 330,000 deaths.

It was reported that the new variant of the COVID-19 virus recently identified in India spreads much faster and has a higher mortality rate (Schraer, 2021). Brazil ranks third, reporting 16.5 million cases and 460,000 deaths. In the order of the cumulative number of confirmed cases, Brazil is followed by France, Turkey, Russia, the UK, and Italy, respectively (Worldometer, 2021). At the end of 2020, the number of new confirmed cases reached about 600-700,000, but the number of new infections showed a decreasing trend due to the start of vaccination and strong lockdown measures. From the end of April to the beginning of May, however, it soared to about 900,000 and then decreased to about 500,000. This downward trend may be reversed at any time if unexpected developments arise.

In January 2021, the IMF and the World Bank (IBRD) released the World Economic Outlook update and the Global Economic Prospects, respectively. In their reports, the IMF estimated a 3.5% decrease in global economic growth due to COVID-19 while the IBRD estimated a decrease of 4.3% (World Bank, 2021a; IMF, 2021a). However, in April of this year, the IMF predicted a faster-than-expected recovery in the World Economic Outlook update due to unprecedented policy responses from each country (distribution and expansion of vaccines and treatments, active economic stimulus measures), adjusting global economic growth forecast upward by 0.5%p to 6.0%. Although GDP exceeded expectations in the second half of last year, it is still expected to fall short of the pre-COVID growth path, and economic recovery will be uneven by country. The IMF also suggested that continuing economic and other support measures until the global economy returns to normal, securing financial resources for the health sector, and strengthening international cooperation to improve access to vaccines in all countries will be necessary (World Bank, 2021a; IMF, 2021b). Compared to last year, the global economic outlook for this year and responses to COVID-19 are improving in many aspects, but countries worldwide are still struggling. In particular, the COVID-19 pandemic is unlikely to end this year. Recently, the WHO also predicted that neutralizing COVID-19 would be difficult within this year (Davey, 2021).

Much of the economic impact of infectious diseases like COVID-19 is the cost incurred in the provision of comprehensive health care policies for preventing the spread of contagion and treating confirmed cases (Brahmbhatt & Dutta, 2008). For example, to mitigate and ultimately eradicate the spread of the virus, health authorities can implement measures such as social distancing, curtailing the operating hours of businesses, limiting the size and number of gatherings, and, in severe cases, limiting the movement of the general public. They can also restrict daily life through the prohibition of face-to-face worship at churches on weekends, suspension of private cram schools and face-to-face education in elementary, middle, high schools and universities, and temporarily closing multipurpose facilities such as movie theaters and sports stadiums. Individuals confirmed as infected are prohibited from working, resulting in not only lost income but also enduring physical and mental pain while undergoing treatment. When expanded to cross-border transactions, COVID-19 also affects business trips, restricting the movement of goods and people, tourism and travel, and trade between countries. Moreover, the economic impact is expected to be greater because many self-employed are engaged in highly vulnerable sectors such as accommodation & food, travel

and tourism, and recreation and leisure-related activities.

Then, what is the economic impact of COVID-19 on the world? This study was undertaken to answer this question and identify short-term impacts based on actual data. In other words, the purpose of this study is to quantitatively estimate the impacts of the COVID-19 pandemic on the global economy and international trade and derive implications accordingly.

The remainder of this paper is organized as follows: Section 2 reviews previous studies that analyzed the impact of COVID-19 and other infectious diseases on the economy. Section 3 presents the data, research model, and scenarios necessary for empirical analysis, and Section 4 discusses the analytical results. Finally, the conclusions and limitations of the study are summarized in Section 5.

II. Literature Review

Several studies have estimated the economic impact of infectious diseases such as COVID-19. Among them, Bloom et al. (2005) and Burns et al. (2006) analyzed the economic ripple effect of the Avian flu. Bloom et al. (2005) analyzed the economic ramifications of Avian flu mutations infecting humans using the Macroeconomic model (Oxford Economic Forecasting model, OEF). While devising scenarios based on past experiences such as Avian flu and SARS, they predicted that bird flu would slow or even halt economic growth in Asian countries in the short term and especially would significantly impact trade. In the long run, economic growth was expected to slow, and poverty increased.

Burns et al. (2006), referring to the report of the World Bank's June 2006 edition of the Global Development Finance, assessed the economic impact of the three types of transmission of avian flu among birds, the zoonotic transmission of Avian flu to humans, and subsequent human-to-human transmission. In each case, it was predicted that GDP would decrease by -0.1%, -0.7% ~ -4.8%, and -3.1%, respectively, and, as in the case of Vietnam, they suggested that preventive measures against the spread of bird flu be effective.

In addition to the Avian flu, studies on other infectious diseases such as SARS and Ebola were undertaken by Lee and McKibbin (2004) and Evans et al. (2014). Lee and McKibbin (2004) analyzed the ripple effect of Severe Acute Respiratory Syndrome (SARS) on the global economy using the G-Cubed (Asia Pacific) model. Most previous studies focused on medical expenses due to infectious disease-related prevention and treatment and the income reduction due to morbidity and mortality. However, this study found that the greatest cost of SARS was the change in spending behavior by households and firms, meaning reduced household consumption and concomitantly reduced investments by companies.

Evans et al. (2014) analyzed the impact of Ebola on West African countries, including Liberia, Sierra Leone, and Guinea. Based on moderate and high Ebola scenarios, the GDP of West African countries was predicted to decrease by -0.3% to -2.4%. Blocking Ebola transmission, patient treatment, and community reconstruction were suggested as top priorities.

Studies on another type of infectious disease, influenza pandemics, were also conducted by McKibbin and Sidorenko (2006), Dixon et al. (2010), Prager et al. (2017), among others. McKibbin and Sidorenko (2006) used the Asia Pacific G-Cubed (APG-Cubed) model involving selected countries and regions to analyze the economic impact of pandemic influenza by setting four (mild, moderate, severe, and ultra) scenarios. Even the mildest scenario predicted a combined GDP decline of about USD 330 billion (-0.8%). In the worst-case scenario, more than 142.2 million fatalities and a GDP loss of USD 4.4 trillion were projected.

Dixon et al. (2010) analyzed the impact of the H1N1 epidemic on the U.S. economy using a dynamic CGE model on a quarterly basis, reflecting the infectious disease's short-term nature. In the peak quarter, they projected a decrease of -2.6% and an annual average of -1.6% in GDP. Considering the demand side, such as

international travel and tourism, and leisure activities, is much more sensitive to epidemics than the supply side, they suggested the need for a policy to boost demand.

Prager et al. (2017) analyzed the impact of pandemic influenza on the U.S. economy depending on the severity of the pandemic and the presence/absence of vaccinations. In the absence of avoidance and resilience effects, it was estimated that the loss would be about USD 25.4 billion. Still, the loss could be reduced to USD 19.9 billion if a vaccine were available. When behavioral and resilience factors were considered, the loss would be much larger, reaching GDP losses of USD 45.3 billion without vaccination and USD 34.4 billion with vaccination.

The latest studies related to COVID-19 include Duan et al. (2021), Beckman and Countryman (2021), Pham et al. (2021), OECD (2020), S&P (2020), McKibbin and Fernando (2020), Orlik et al. (2020), Maliszewska et al. (2020), and Walmsley et al. (2020).

Duan et al. (2021) used a quarterly CGE model to analyze the impact of the COVID-19 pandemic on the Chinese economy and its industries. It was estimated that in 2020, China's GDP would decrease by 1.2% and consumption and investment would decrease by 1.9%, and 0.2%, respectively. By industrial levels, the service industry was hit hardest, particularly accommodation and food, entertainment, and wholesale-retail services were predicted to lose up to 5.6% of output. They emphasized the importance of policies to prevent and control the COVID-19 pandemic and restore economic activity.

Unlike other studies that mainly focused on tourism and related service industries, Beckman and Countryman (2021) presented intriguing analytical results that the decline in food away from home (FAFH) expenditures had a significant effect on the US's GDP. Nevertheless, the impact on the non-agricultural sector was still three times greater than on agricultural production and trade.

Pham et al. (2021) analyzed the impact of inbound tourism on the Australian economy in the aftermath of the COVID-19 pandemic. The analytical results suggested that strong support from the government was necessary because COVID-19 was having a negative impact not only on the tourism industry itself but also on many other industries that delivered spillover benefits for the Australian economy.

OECD (2020) presupposed that accurately quantifying the impact of COVID-19 prevention measures on GDP would be challenging. Also, government measures to stop the spread of the virus would lead to a temporary closure of businesses, restrictions on tourism and travel, and individual movement. As a result, it was predicted that output, household consumption, corporate investment, and international trade would decrease, and annual GDP growth was estimated to be reduced to between -2% and -6%.

S&P (2020) assessed COVID-19 as a "high" risk to credit in the Asia-Pacific region. If it were not halted beyond its peak in March 2020, it would progress into a much accelerated and pervasive pandemic, resulting in more casualties, more economic damage, and higher credit costs. It was predicted a decrease of 0.7% GDP in China and a loss of 0.3% to the global GDP.

McKibbin and Fernando (2020), estimating the coronavirus's economic impact under seven scenarios, predicted GDP declines ranging from a minimum of 0.1% to a maximum of 9.9%. They suggested that central banks and ministries of finance should implement active monetary and fiscal policies, respectively, in the short term. In the mid to long term, public health care systems should be improved through significant investment. It also emphasized the role of the public health care system as driving economic growth and improving the quality of life.

Orlik et al. (2020) analyzed the impact on the global economy by constructing four scenarios: current status of coronavirus infection in China, spread of the virus to other countries, estimates of damage to the global supply chain, and global pandemic. They predicted a loss of GDP of at least 0.1% to a maximum of 4.8%, warning that there could be a loss of $2.7 trillion worldwide.

Maliszewska et al. (2020), analyzing the impact of coronavirus on GDP and trade worldwide, estimated that GDP would decrease by -1.8%

to -2.5%. They also added that the longer the protection measures lasted, the lower GDP would be, possibly up to -4%. Predicting that the domestic service industry, in particular the travel and tourism industries, would be hit hard, they suggested that support for developing countries was imperative.

Walmsley et al. (2020) analyzed the impact on the US and Chinese economies of mandatory business closures to block the transmission of COVID-19. In the US, a decrease in GDP between -20.3% and -44.6%, and China, a reduction of between -4.0% and -8.3% were projected. Employment and economic welfare would also decrease on a similar scale.

In summarizing the previous studies above, estimating the impact of COVID-19 on the economy reveals similar results. Although there are differences in methodologies, the characteristics of a virus, the availability of related data, and future scenarios, the analytical results are generally in alignment. In other words, COVID-19 negatively impacts the economy in any event; only the magnitude of the damage varies depending on the scenarios. Therefore, considering the analytical results of the preceding studies above, this study attempts to estimate the impact of COVID-19 on the global economy and international trade.

III. Methodology

1. The CGE Model and Data

A multi-region, multi-sector CGE model is used in this study to make a quantitative assessment of the potential economic effects of the COVID-19 pandemic on the world economy. A CGE model can be defined as a system of non-linear simultaneous equations describing the constrained optimization of behaviors of economic agents such as producers, consumers, exporters, importers, savers, investors, government, etc. (Ko, 1993). Considering not only the interactions of regions in the model through trade in goods and services between regions, but also the interdependence of all industries of an economy as a whole by using a multi-region, multi-sector CGE model is possible because the database of a global CGE model is a social accounting matrix (SAM) comprising input-output (I-O) tables and national income and product account (NIPA) data of the regions, and the regions of the SAM are interconnected with the data on trade in goods and services .

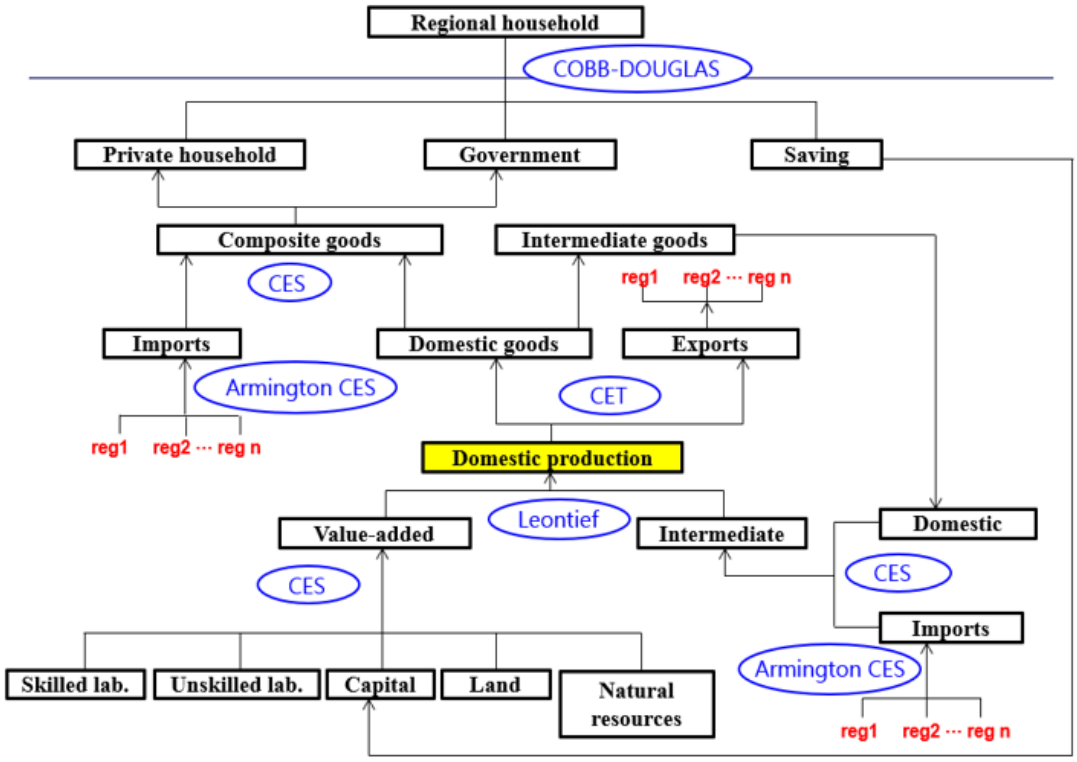
The standard GTAP model version 7 (Corong et al., 2017) used in this study has solid micro-foundations that are theoretically transparent. As seen in Fig. 1, each regional economy includes economic agents, such as a representative regional household, private households, producers and government. It is assumed that a representative regional household receives factor income from firms and collects taxes and that it spends its income on private consumption through private households and government consumption through government administration and saves to maximize its utility according to a Cobb-Douglas utility function.

Private households are assumed to maximize their utility by consuming domestically produced and imported goods and services through the Constant Difference in Elasticity (CDE) function and firms are assumed to maximize profits by supplying output to both domestic and world markets in response to market prices in commodity and factor markets under the constraint of production technology. The government purchases domestically produced and imported goods and services, based on a Cobb-Douglas aggregation function. Production structures are represented by a nested production function consisting of Leontief and Constant Elasticity of Substitution (CES) functions[1].

Product differentiation between domestic goods and imports, and imports by region of origin

1. All the equations of the model used in this paper are described in a separated file for referees of this paper, which is not attached to this paper because of the limited number of pages of this paper.

Fig. 1. The Structure of the CGE Model



allows for intra-industry trade, that is, two-way trade in each product category, depending on the ease of substitution between products from different regions (Armington, 1969).

Within each region, the model solves for commodity and factor prices that equate demand and supply in all commodity and factor markets. The model also solves for world prices, equating demand for imports and supply of exports by sector across the world economy. For each region, the model specifies an equilibrium relationship between the balance of trade and the real exchange rate that measures the average price of traded goods relative to the average price of domestically produced goods sold in the domestic market (Ko and Ha, 2020).

The model is applied to a dataset of 11 countries/regions and 21 sectors based on the GTAP database version 10A[2]. As the base year of the version 10A database is 2014, this study also utilized World Bank data (World Bank, 2021b) from 2015 to 2019 to update the database to reflect the current situation to the greatest extent possible. This database includes 141 regions of the world, and each region has 65 sectors. For the purpose of this research, the 141 regions are aggregated into 11 countries/regions, and 65 sectors into 21 sectors, as shown in Table 1.

2. This paper's author has contributed the Korean I-O tables to the GTAP database versions 5, 6, 7, 9, and 10 (Ko & Cheong, 2002; Ko, 2006, 2008, 2015, 2019).

Table 1. Classification of Country/Regions and Industry

	Country/Regions	Industry
1	USA	Agriculture
2	China	Textile & apparel
3	EU	Petrochemicals
4	Japan	Iron & steel
5	Korea	Motor & parts
6	ASEAN	Electronics
7	India	Machinery
8	Brazil	Pharmaceuticals
9	Russia	Other Manufactures
10	UK	Public Utilities & Public Services
11	Rest of World (ROW)	ICT
12		Financial & Insurance Service
13		Real Estate
14		Construction
15		Wholesale
16		Accommodation & Food
17		Transport (Land, Water, Air transport)
18		Recreation & Culture
19		Education
20		Human health & social work
21		Other Services

Source: Authors' classification using GTAP Data Base Version 10 of Aguiar et al. (2019).

2. Scenarios

The baseline scenario was established using the World Bank's macroeconomic data such as real GDP, population, labor, and capital from 2015 to 2019 to calculate future estimates. Using these macroeconomic projections, the baseline scenario reflects the global economy without COVID-19, while the policy scenario is applied to empirically quantify the potential global economic effects of COVID-19 in the short term. Therefore, the difference in simulation results between the baseline scenario and the policy scenarios describes the effects of COVID-19.

The policy scenarios were set up through four transmission channels. First, to reflect the decrease in the employment rate in each country due to COVID-19, the 2020~2021 unemployment rates of the analyzed countries were used. In other words, changes in the unemployment rate at the end of March or April 2021, depending on the availability of the data, compared to the beginning of the year (January 2020) were reflected. The study by Maliszewska et al. (2020) applied a uniform employment rate of -3%. In contrast, this paper uses actual changes in each country's unemployment rate to reflect the actual situation of each country to the greatest extent possible. Therefore, the numbers adjusted for each country's unemployment rate and reflected in the model are as follows in Table 2.

Second, trade cost was set to increase due to infectious diseases such as COVID-19. According to previous studies (Evans et al., 2014; Maliszewska et al., 2020; Thorpe & Loughridge, 2020), the increase in trade cost was estimated to be 5-25%. Evans et al. (2014) projected a 10% increase in trade costs due to the Ebola outbreak, and Maliszewska et al. (2020) estimated a rise of 25% in trade costs due to the COVID-19 pandemic. Thorpe and Loughridge (2020) predicted a 5% rise in trade costs, replaced by a decrease in logistical efficiency, for goods and personnel movement, tourism, education, and leisure. In this study, trade cost was set to decrease by 5% by referring to Thorpe and Loughridge (2020)'s research results.

Third, it is also assumed that household income would decrease due to unemployment caused by COVID-19 by referring to the ILO's recently released data (ILO, 2021a/ILO, 2021b) presented in Table 3.

Fourth, to halt the spread of infectious diseases, countries sometimes take preventive measures to restrict the movement of people and goods. As a result of these measures, in particular, service sectors such as international travel and tourism, food and accommodation, transport, recreation and leisure activities, and culture-entertainment, etc. are expected to suffer inordinately and significantly. A report from the World Travel Tourism Council (2021) also revealed that relevant industry employment in the Asia-Pacific region and travel and tourism income declined 18.5% and 49.1%, respectively. Therefore, the income of these service sectors was set to decrease by 50%.

Table 2. Drops in Employment Rate of Each Country and Region (Unit: %)

Country/region	Policy Scenario 1	Policy Scenario 2
USA	-2.6	-5.2
China	-0.9	-1.8
EU	-1.2	-2.4
Japan	-0.7	-1.4
Korea	-1.5	-3.0
ASEAN	-5.7	-11.4
India	-3.0	-6.0
Brazil	-3.5	-7.0
Russia	-1.7	-3.4
UK	-0.4	-0.8
Rest of World	-8.8	-17.6

Sources: Trading Economics (2021).

Through the transmission channels above[3], this study examines the overall impact on the global economies caused by COVID-19, and this is scenario 1. Scenario 2 was set to double the impact of scenario 1, assuming that the situation worsens rather than it is contained. Table 3 below summarizes the scenarios to be implemented in this study.

Table 3. Policy Scenarios

	Scenario 1	Scenario 2
Fall in employment	Percent changes in each country, as shown in Table 2	Double those of Scenario 1
Trade costs	-5%	-10%
Income reduction	-8.3%	-16.6%
Affected service industries	-50%	-90%

IV. Simulation Results

The analytical scenarios of this study have been designed by reflecting changes in the actual unemployment rate in each country from January 2020 to March/April 2021, increase in trade costs (reduction in logistical efficiency), and decrease in household income due to COVID-19, which was widely reported to have emerged in Wuhan, China in late 2019.

Table 4 presents the impact of COVID-19 on real GDP, indicating that the real GDP of all countries around the world, including the United States and China, has contracted. As such, the aftermath of COVID-19 is not limited to some countries, but it has a negative impact on all countries. In countries such as China, Japan, Russia, and the UK, the damage was relatively small compared to other countries. These countries have in common that the increase in the unemployment rate (decrease in jobs) was relatively low compared to other countries, contributing to a relatively small decrease in GDP.

3. To capture the impact of the drop in the employment rate, the household income reduction, measures to restrict the movement of people and goods as a result of the Covid-19 pandemic, we reduced the production of the affected sectors, using an expedient device known as a "phantom tax" to raise prices and lower final demand. This was done in several iterations to take account of the indirect effects of affected sectors on other sectors. The taxes are set at a level that results in a decrease in output, reflecting the policy scenarios. It is a "phantom" because the "taxes" are implicitly returned to businesses as revenue increases linked with the higher price; essentially, business customers (both other businesses and consumers) cover this revenue by increasing their expenditures at the higher price with no effect on government revenues (Walmsley et al., 2020).

Table 4. Impact on Real GDP (Unit: Percent Change)

Country/region	Scenario 1	Scenario 2
USA	-3.19	-6.34
China	-2.51	-4.89
ASEAN	-7.49	-14.87
Korea	-3.79	-7.55
Japan	-1.6	-3.21
India	-3.86	-7.71
EU_27	-3.42	-6.88
Brazil	-1.88	-3.76
Russia	-1.94	-3.89
UK	-1.88	-3.78
Rest of World	-6.23	-12.49

Table 5. Impact on Economic Welfare (Unit: US$ Billion)

Country/region	Scenario 1	Scenario 2
USA	-544.96	-1,090.67
China	-254.18	-483.7
ASEAN	-173.29	-350.59
Korea	-59.81	-115.71
Japan	-78.67	-152.59
India	-67.34	-132.83
EU_27	-547.45	-1114.04
Brazil	-47.56	-92.12
Russia	-46.74	-91.1
UK	-64.23	-125.39
Rest of World	-1,014.86	-2,043.95

The impact on welfare, in terms of equivalent variation (EV) denoted by USD billion, shows a similar trend with GDP (See Table 5). China saw a decline of approximately USD 254.2 billion, Japan (USD 78.7 billion) with a relatively minor decline in employment, the UK (about USD 64.2 billion), and Russia (about USD 46.7 billion) trailing behind. On the other hand, the USA recorded about USD 545 billion welfare loss, the EU_27 (about USD 547 billion), and the ROW (about USD 1,015 billion). In the case of Scenario 2, almost all countries recorded about twice as much welfare loss compared to Scenario 1. In scenario 2, for which it is assumed that the situation will be much worse than scenario 1, almost all countries undergo a GDP decrease about twice as much as that of scenario 1. This seems to reflect the exact doubling of the magnitude of the policy scenario of the COVID-19 pandemic. In other words, the longer the current situation persists, the greater the damage will be.

Regarding the impact of each scenario on international trade (exports and imports) and the trade balance (See Tables 6-8), Table 6 reflects the impact of the COVID-19 pandemic on each country's export volume, and export volume of all countries around the world declined. Among them, China (-17.13%) and India (-15.66%) showed the largest decline in exports, followed by ASEAN countries (-12.93%) and the United States (-11.82%). In Scenario 2, which doubled the shock, almost all countries exhibited a twofold decline in exports.

Table 6. Impact on Export Volume (Unit: Percent Change)

Country/region	Scenario 1	Scenario 2
USA	-11.82	-20.46
China	-17.13	-32.78
ASEAN	-12.93	-23.8
Korea	-7.55	-14.12
Japan	-9.57	-17.97
India	-15.66	-29.59
EU_27	-5.31	-9.14
Brazil	-9.66	-17.8
Russia	-7.01	-13.07
UK	-8.33	-14.89
Rest of World	-10.66	-18.92

Table 7. Impact on Import Volume (Unit: Percent Change)

Country/region	Scenario 1	Scenario 2
USA	-13.78	-25.87
China	-9.86	-17.05
ASEAN	-11.67	-21.66
Korea	-8.95	-16.32
Japan	-7.93	-14.07
India	-6.32	-10.6
EU_27	-8.09	-14.71
Brazil	-7.49	-12.38
Russia	-7.78	-13.31
UK	-8.43	-14.81
Rest of World	-11.74	-21.65

Table 7 shows the percent change in import volume of each country due to the COVID-19 outbreak. Similar to exports, they all showed a decreasing trend. However, there are slight differences between countries. In Scenario 1, the United States (-13.78%) and ASEAN (-11.67%) showed the most significant decline in imports, and the ROW (-11.74%) also showed a relatively large drop in imports.

Table 8 presents the trade balance of each country. Although exports and imports of every country globally contracted due to the COVID-19 pandemic, trade balances reflected different patterns depending on economic circumstance. The USA, Korea, EU_27, UK, and the ROW experienced trade surpluses, while the remaining countries ran trade deficits. Countries with trade surpluses should be viewed as so-called "trade surplus in an economic recession" that results from a sharp decrease in imports rather than an increase in exports. In other words, COVID-19 had a negative impact on both exports and imports, but it is a phenomenon that occurred because imports declined more significantly than exports. In Scenario 1, the US recorded a trade surplus of USD 100 billion and the EU_27 about USD 157 billion, while China posted a deficit of about USD 232 billion. In Scenario 2, although there was a slight difference between countries, it almost doubled.

When looking at the terms of trade (Table 9), which is defined as the ratio of export prices to import prices, there are mixed (positive and negative) effects, just like the trade balance. For example, the terms of trade improved in the US, China, ASEAN, India, Brazil, and the ROW, while the remaining countries showed deteriorated terms of trade. An improvement in terms of trade means an increase in real purchasing power, which indicates that the amount of goods that can be imported through the sale of one unit of goods increases.

The US and ROW reflected a trade surplus with

Table 8. Impact on in Trade Balance (Unit: US$ Billion)

Country/region	Scenario 1	Scenario 2
USA	100.06	221.82
China	-232.77	-491.36
ASEAN	-9.99	-20.69
Korea	0.46	1.21
Japan	-18.36	-37.99
India	-34.12	-71.55
EU_27	157.46	305.08
Brazil	-11.2	-23.1
Russia	-9.64	-20.88
UK	4.61	8.24
Rest of World	53.49	129.2

Table 9. Terms of Trade (Unit: Percent Change)

Country/region	Scenario 1	Scenario 2
USA	1.00	1.46
China	1.02	2.75
ASEAN	0.56	0.83
Korea	-1.19	-1.83
Japan	-0.41	-0.28
India	2.41	5.23
EU_27	-0.53	-1.14
Brazil	0.26	1.61
Russia	-1.61	-2.33
UK	-0.76	-1.23
Rest of World	0.01	-0.12

improvement in the terms of trade. Korea, UK, and EU had trade surpluses, but their terms of trade deteriorated. Countries such as China, ASEAN, India, and Brazil showed trade deficits, but their terms of trade improved. As a result, it can be said that COVID-19 had a different impact on the trade of each country, while simultaneously, the US and ROW showed relatively positive results in terms of trade compared to other countries.

When looking at the output by sector of each country (Appendix 1), there was a decrease in all industrial sectors in almost all countries analyzed. When comparing manufacturing and service industries, it was found that the overall output of the service industry decreased more significantly than that of the manufacturing industry. In particular, the decrease in the service industry output was common to all countries except China. Among some services, construction showed a relatively significant decrease in the US, ASEAN, EU_27, and ROW. In the case of transportation services, output relatively more decreased in ASEAN, EU_27, and ROW than in other countries.

The overall output of accommodation and food, travel and tourism, recreation and leisure activities, which were expected to be hit harder due to COVID-19, showed a decline except for China. In the case of Korea, Japan, and EU, in particular, the output of service industries (accommodation and food, travel and tourism, recreation and leisure activities) with a relatively high proportion of self-employed workers reflected a significant decline, which is expected to impact these self-employed workers severely. In Scenario 2 (Appendix 2), the rate of increase was also approximately doubled.

V. Conclusion

The coronavirus that emerged in China in late 2019 and spread around the world has inflicted considerable economic damage on the world. Therefore, this study has endeavored to identify the impact of COVID-19 on the global economy and international trade and draw implications accordingly.

The simulation results show that the real GDP of all countries worldwide, including the United States and China, fell. In other words, COVID-19 is not only limited to specific countries but also is negatively affecting the economic growth of all countries. Among them, the decline in real GDP was larger in ASEAN (-7.49%) and the ROW (-6.23%), which showed a relatively large decrease in the employment rate. To boost employment, overcoming the COVID-19 pandemic as soon as possible may be the only solution that can minimize the economic damage.

Regarding the impact on international trade, export and import volumes of all countries around the world were on the decline. It seems that both exports and imports have been negatively affected because of the increase in trade costs and a decrease in logistics efficiency due to COVID-19. In the case of exports, large-population countries with relatively low per capita GDP, such as China (-17.13%), India (-15.66%), and ASEAN (-12.93%), recorded a relatively significant decrease. In terms of imports, the United States (-13.78%) and ASEAN (-11.67%) showed relatively large declines.

From the perspective of the trade balance, however, each country showed slight differences. The US, Korea, EU_27, UK, and ROW recorded a trade surplus, while the remaining countries recorded a trade deficit. These countries recorded a trade surplus despite the decline in both exports and imports of countries around the world because imports more significantly decreased than exports. Therefore, they seem to have run a “trade surplus in an economic recession”, as the imports decreased more than exports did.

Just like the trade balance, the terms of trade showed a wide variation for each country. The terms of trade of the US, China, ASEAN, India, Brazil, and ROW have improved, while other remaining countries have deteriorated. As a result, it can be said that COVID-19 had a different impact on each country's trade, and the US and ROW showed relatively positive outcomes concerning trade compared to other countries.

When looking at the output by sector of each country, there was a decrease in all industrial sectors of almost all countries analyzed. In particular, when manufacturing and service

industries were compared, the service industry's overall production significantly decreased compared to the manufacturing industry. Also, the decrease in the service industry output was common to all countries except China. Each country's unemployment data was used in the model to reflect reality. The gap in unemployment between analyzed countries seems to be the leading cause for different impacts, and the shock response to the fall in employment appears to be different depending on the economic and industrial structure of each country, suggesting that job security and maintenance can have a significant impact on output by industry. In addition, the overall output of accommodation and food, travel and tourism, recreation, leisure, and cultural activities, which are expected to be hit harder than other industries, decreased everywhere except in China. In Korea, Japan, and the EU, where the proportion of self-employed workers is relatively high, service industry output decreased significantly, and the damage to those in the service industry is likely to be substantial.

These empirical results imply that the COVID-19 pandemic is not limited to a specific region and has a negative impact on countries around the world, suggesting that the only way to minimize economic damage is to overcome COVID-19 as soon as possible. In particular, the increase in unemployment caused by COVID-19 seems to have caused the most damage of all the factors hypothesized, suggesting that securing and maintaining jobs is one of the most important policy priorities for sustaining national economies.

As the unemployment rate rises due to COVID-19, household income falls and consumption expenditure declines, creating a vicious cycle in which output decreases. Accordingly, devising support measures for maintaining employment is crucial. Also, policy measures to extend and/or expand unemployment benefits for households currently suffering from unemployment are worth considering. In particular, it is found that COVID-19 has dealt a severe blow to services compared to manufacturing. The fact that service industry workers seem to have been hit harder implies the need for customized policy responses.

In order for the global economy to grow sustainably, especially during the current COVID-19 pandemic, effective cooperation from governments worldwide is required. However, COVID-19 is unlikely to subside within this year. Therefore, as with the IMF's policy recommendations (IMF, 2021b), there is a need to continue policy support until the economic activity of each country returns to normal. Also, international cooperation should be further strengthened to improve the accessibility of vaccines in all countries so that COVID-19 can be overcome as quickly as possible.

There are several cautionary points in interpreting the results of this study. First, each country's unemployment data was used to reflect the reality to the greatest extent possible in the model. However, due to the wide variation in the unemployment rates between countries, the empirical results might be different from the statistics that are being aggregated in reality or will be aggregated in the future. That is, if the unemployment rate were used uniformly as in some previous studies (Maliszewska et al., 2020), the reality would not be adequately reflected, so actual unemployment data was used in this study.

Second, the effects of government countermeasures such as active fiscal policies or massive pandemic relief programs were not included. Moreover, when considering that consumer desire to spend is still limited even though the demand for the delivery service has significantly increased due to restrictions on direct interpersonal contact and that the effects of vaccines and cures have not yet been reflected, the empirical results will be positively changed.

Third, the impact of quarantine measures by the governments was not considered in the analysis. In addition to activities to block coronavirus transmission, such as social distancing and wearing masks, quarantine measures include medical care such as self-isolation, using temporary treatment centers, and treatment for severely ill patients. Such quarantine activities could negatively impact the economy. Therefore, the effects of each country's economic stimulus measures and vaccination and quarantine activities are left for follow-up studies.

References

Aguiar, A., Chepeliev, M., Corong, E. L., McDougall, R., & Van der Mensbrugghe, D. (2019). The GTAP data base: Version 10. *Journal for Global Economic Analysis, 4*(1), 1-27. https://doi.org/10.21642/JGEA.040101AF

Armington, P. S. (1969). A theory of demand for products distinguished by place of production. *International Monetary Fund Staff Paper*, *16*(1), 159-178. https://www.elibrary.imf.org/view/journals/024/1969/001/article-A007-en.xml

Beckman, J., & Countryman, A. M. (2021). The importance of agriculture in the economy: Impacts from COVID-19. *American Journal of Agricultural Economics, 103*(5), 1-17. https://doi.org/10.1111/ajae.12212

Bloom, E., Wit, V. de, & Carangal-San Jose, M. J. (2005). *Potential economic impact of an avian flu pandemic on Asia* (ERD Policy Brief No.42). Asian Development Bank. https://www.adb.org/sites/default/files/publication/28082/pb042.pdf

Brahmbhatt, M., & Datta, A. (2008). *On SARS type economic effects during infectious disease outbreaks* (Policy Research Working Paper No. 4466). World Bank. https://openknowledge.worldbank.org/bitstream/handle/10986/6440/wps4466.pdf?sequence=1&isAllowed=y

Burns, A., Van der Mensbrugghe, D., & Timmer, H. (2006). *Evaluating the economic consequences of avian influenza.* World Bank. http://documents1.worldbank.org/curated/zh/977141468158986545/pdf/474170WP0Evalu101PUBLIC10Box334133B.pdf

Corong, E., Hertel, T. W., McDougall, R., Tsigas, M. E., & Van der Mensbrugghe, D. (2017). The standard GTAP model, version 7. *Journal for Global Economic Analysis*, *2*(1), 1-119. https://doi.org/10.21642/JGEA.020101AF

Github. (2021*). COVID-19 data repository by the center for systems science and engineering (CSSE) at Johns Hopkins University.* https://github.com/CSSEGISandData/COVID-19

Davey, M. (2021, Mar 2). *Coronavirus crisis unlikely to be over by the end of the year, WHO warns*. The Guardian. https://www.theguardian.com/world/2021/mar/02/coronavirus-crisis-unlikely-to-be-over-by-the-end-of-the-year-who-warns

Dixon, P., Rimmer, M., Lee, B., Rose, A., & Verikios, G. (2010). Effects on the U.S. of an H1N1 epidemic: Analysis with a quarterly CGE model. *Journal of Homeland Security and Emergency Management*, *7*(1), 1-17. https://doi.org/10.2202/1547-7355.1769

Duan, H., Bao, Q., Tian, K., Wang, S., Yang, C., & Cai, Z. (2021). The hit of the novel coronavirus outbreak to China's economy. *China Economic Review*, *67*. https://doi.org/10.1016/j.chieco.2021.101606

Evans, D. K., Ferreira, F., Lofgren, H., Maliszewska, M., Over, M., & Cruz, M. (2014). *Estimating the economic impact of the ebola epidemic: Evidence from computable general equilibrium models*. GTAP. https://www.gtap.agecon.purdue.edu/resources/download/7591.pdf

International Labour Organization. (2021a, January 25). *ILO monitor: COVID-19 and the world of work. Seventh edition: Updated estimates and analysis*. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/briefingnote/wcms_767028.pdf

International Labour Organization. (2021b, April 17). *COVID-19 and labour statistics*. ILOSTAT. https://ilostat.ilo.org/topics/covid-%2019/#elementor-toc__heading-anchor-0

International Monetary Fund. (2021a, January). *World economic outlook update*. https://www.imf.org/en/Publications/WEO/Issues/2021/01/26/2021-world-economic-outlook-update

International Monetary Fund. (2021b, April). *World economic outlook*. https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021

Ko, J. H. (1993). Economic analysis of energy and national economy based on general equilibrium models. European Higher Education Diplomas (*Europäische Hochschulschriften), 1420*. https://www.peterlang.

com/document/1081616

Ko, J. H., & Cheong, I. K. (2002, March 21). *GTAP 5 data base documentation: Chapter 11.E, Korea.* Center for Global Trade Analysis. https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=751

Ko, J. H. (2006, February 26). *GTAP 6 data base documentation: Chapter 11.D, Korea.* Center for Global Trade Analysis. https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=1806

Ko, J. H. (2008, September 26). *GTAP 7 data base documentation: Chapter 7.I-O Table, Korea.* Center for Global Trade Analysis. https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2861

Ko, J. H. (2015, June 2). *GTAP 9 data base documentation: Chapter 7.K, Korea.* Center for Global Trade Analysis. https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=4828

Ko, J. H. (2019, October 31). *GTAP 10 Data Base Documentation: Chapter 7.K, Korea.* Center for Global Trade Analysis. https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=5955

Ko, J. H., & Ha, J. W. (2020). RCEP and its impact on the global economy: A CGE approach. *Humanities and Social Sciences Research, 21*(1), 355-377. https://doi.org/10.15818/ihss.2020.21.1.355

Lee, J. W., & McKibbin, W. J. (2004). *Globalization and disease: The case of SARS* (Brookings Discussion Papers in International Economics No. 156). Brookinds. https://www.brookings.edu/wp-content/uploads/2016/06/20040203-1.pdf

Maliszewska, M., Mattoo, A., & Van der Mensbrugghe, D. (2020). *The potential impact of COVID-19 on GDP and trade: A preliminary assessment* (Policy Research Working Paper No. 9211). World Bank. https://openknowledge.worldbank.org/bitstream/handle/10986/33605/The-Potential-Impact-of-COVID-19-on-GDP-and-Trade-A-Preliminary-Assessment.pdf?sequence=1&isAllowed=y

McKibbin, W. J., & Sidorenko, A. A. (2006). *Global macroeconomic consequences of pandemic influenza.* Centre for Applied Macroeconomic Analysis (CAMA). https://cama.crawford.anu.edu.au/pdf/working-papers/2006/262006.pdf

McKibbin, W. J., & Fernando, R. (2020). *The global macroeconomic impacts of COVID-19: Seven scenarios* (CAMA Working Paper No. 19/2020). SSRN. http://dx.doi.org/10.2139/ssrn.3547729

OECD. (2020, March 2). *Coronavirus: The world economy at risk.* http://www.oecd.org/berlin/publikationen/Interim-Economic-Assessment-2-March-2020.pdf

Orlik, T., Rush, J., Cousin, M., & Hong, J. S. (2020, March 7). *Coronavirus could cost the global economy $2.7 trillion. Here's how.* Bloomberg. https://www.bloomberg.com/graphics/2020-coronavirus-pandemic-global-economic-risk/

Pham, T. D., Dwyer, L., Sua, J.-J., & Ngo, T. (2021). COVID-19 impacts of inbound tourism on Australian economy. *Annals of Tourism Research, 88*, 103-179. https://doi.org/10.1016/j.annals.2021.103179

Prager, F., Wei, D., & Rose, A. (2017). Total economic consequences of an influenza outbreak in the united states. *Risk Analysis*, *37*(1), 4-19. https://doi.org/10.1111/risa.12625

Schraer, R. (2021, June 7). Covid Indian variant: Where is it, how does it spread and is it more infectious?. *BBC News*. https://www.bbc.com/news/health-57157496

Standard & Poor's Global (S&P). (2020, February 11). *Global credit conditions: Coronavirus casts shadow over credit outlook.* https://www.spglobal.com/ratings/en/research/pdf-articles/200211-global-credit-conditions-coronavirus-casts-shadow-over-credit-outlook

Thorpe, J., & Loughridge, J. (2020, March). *The possible economic consequences of a novel coronavirus (COVID-19) pandemic*. PWC. https://www.pwc.com.au/publications/australia-matters/economic-consequences-coronavirus-COVID-19-pandemic.pdf

Trading Economics. (2021, March 1). *Unemployment rate/world*, https://tradingeconomics.com/country-list/unemployment-rate?continent=world

Walmsley, T. L., Rose, A., & Wei, D. (2020). Impacts on the U.S. macroeconomy of mandatory business closures in response to the COVID-19 pandemic. *Applied Economics Letters, 28*(15), 1293-1300.

https://doi.org/10.1080/13504851.2020.1809626
Worldometer. (2021, May 30). *COVID-19 coronavirus pandemic*. https://www.worldometers.info/coronavirus/
World Bank. (2021a, January 5). *Global economic prospects*. https://openknowledge.worldbank.org/handle/10986/34710
World Bank. (2021b, February 10). *World development indicators*. https://databank.worldbank.org/source/world-development-indicators
World Travel Tourism Council. (2021, April 25). *Economic impact reports*. https://wttc.org/Research/Economic-Impact

Appendix A. Sectoral Industry Output (Scenario 1) (Unit: Percent Change)

	USA	China	ASEAN	Korea	Japan	India	EU_27	Brazil	Russia	UK	ROW
Agriculture	-2.27	0.04	-0.53	1.18	0.05	-1.44	-0.08	-2.34	-0.88	-0.06	-3.78
TextileClth	5.03	-4.75	-2.93	1.05	0.93	-3.46	7.45	0.06	5.83	9.23	-0.37
Petrochem	-1.41	0.08	0.45	-3.6	-4.16	-4.92	-1.41	0.11	2.38	3.64	1.88
Ironsteel	2.7	-0.22	5.04	4.05	1.09	1.48	6.42	0.57	1.79	1.05	-1.07
Motorparts	0.11	3.03	-3.79	2.14	-1.28	-2.03	-1.52	-0.76	3.16	-1.59	-5.01
Electronics	7.46	-4.29	-8.39	0.92	4.8	6.28	10.21	2.69	6.9	10.78	-0.43
Machinery	-0.19	-0.42	-2.08	1.94	-1.41	-1.44	3.94	0.52	3.81	1.07	-1.49
Pharm	0.5	-1.52	3.76	-0.89	1.39	-6.55	-0.09	-0.09	3.64	2.71	-4.74
OthManu	0.89	-0.91	2.83	3.47	0.88	-0.3	4.07	-1.45	-0.9	4.16	0.15
PublicUtl	-2.72	-1.42	-4.79	-2.3	-1.35	-2.3	-1.39	-1.71	-1.19	-1.13	-5.92
ICT	-2.57	0.05	-3.79	-1.94	-0.22	-4.15	-1.59	-1.49	-1.36	-0.77	-5.47
FinanInsure	-2.69	-1.09	-3.08	-1.57	-0.48	-1.89	0.65	-1.52	-0.45	-1.1	-5.28
Realestate	-2.4	0.04	-4.34	-2.13	-0.87	-2.33	-1.42	-1.53	-1.3	-0.73	-5.07
Construction	-3.86	2.58	-4.86	-2.73	0.88	0.72	-5.44	0.04	0.52	-0.74	-5.17
Wholesale	-2.2	-0.94	-4.24	-1.05	-0.67	-2.07	-1.14	-1.47	-0.86	-0.81	-5.15
AccomFood	-3.15	-0.1	-7.76	-1.24	-1.91	-3.76	-4.42	-1.48	-1.42	-2.37	-7.09
Transport	-1.14	1.45	-10.02	-2.96	1.05	-1.71	-4.45	0.11	0.18	1.31	-6.59
RecreCulture	-5.2	3.38	-4.3	-1.18	-0.47	3.32	-3.17	-1.45	2.96	-1.54	-5.9
Education	-2.75	-1.59	-5.67	-2.38	-0.34	-3.68	-0.39	-2.81	-1.97	-0.49	-7.25
Health	-2.91	-2.15	-6.29	-3.02	-1.09	-3.69	-2.41	-2.32	-2.07	-1.44	-7.36
OthServices	-2.52	-1.13	-3.96	-1.27	-0.5	-3.85	-0.44	-1.43	-1.55	-0.45	-4.98

Appendix B. Sectoral Industry Output (Scenario 2) (Unit: Percent Change)

	USA	China	ASEAN	Korea	Japan	India	EU_27	Brazil	Russia	UK	RoW
Agriculture	-4.38	0.01	-1.37	2.31	0.21	-2.98	-0.24	-4.66	-1.73	-0.01	-7.83
TextileClth	10.13	-9.74	-6.07	2.55	3.72	-7.18	14.76	0.08	12.57	19.05	-0.89
Petrochem	-2.66	-0.01	1.52	-6.73	-7.65	-9.8	-2.34	0.04	4.79	7.57	4.12
Ironsteel	5.29	-0.44	9.86	8.25	2.22	2.84	12.6	1.15	3.7	2.28	-2.08
Motorparts	0.06	6.1	-7.98	4.14	-2.84	-4.21	-3.15	-1.5	6.76	-3.05	-10.18
Electronics	14.92	-8.89	-17.27	2.22	10	12.3	20.13	5.43	14.6	22.16	-0.62
Machinery	-0.73	-0.47	-4.03	3.78	-2.78	-2.86	6.84	1.3	8.18	1.98	-2.49
Pharm	1.25	-2.85	6.33	-2.06	2.87	-12.74	-1.28	-0.27	7.87	5.41	-9.16
OthManu	1.76	-1.46	5.06	7.24	2.33	-0.52	7.8	-2.75	-1.86	8.57	0.03
PublicUtl	-5.44	-2.71	-10.05	-4.7	-2.69	-4.63	-3.13	-3.45	-2.38	-2.38	-12.05
ICT	-5.14	0.29	-7.71	-3.87	-0.39	-8.24	-3.28	-2.96	-2.68	-1.52	-11.15
FinanInsure	-5.42	-2.11	-6.35	-3.14	-0.98	-3.82	1.09	-3.02	-0.85	-2.14	-10.78
Realestate	-4.83	0.27	-8.8	-4.31	-1.76	-4.73	-3.03	-3.04	-2.64	-1.54	-10.38
Construction	-8.03	5.56	-9.91	-5.62	1.86	1.59	-10.78	0.08	1.2	-1.31	-10.91
Wholesale	-4.47	-1.85	-8.58	-1.96	-1.24	-4.14	-2.33	-2.92	-1.71	-1.63	-10.48
AccomFood	-6.27	-0.75	-15.03	-3.39	-3.72	-7.61	-7.83	-3.22	-3.01	-4.47	-13.96
Transport	-2.27	1.83	-15.2	-5.61	0.79	-3.52	-6.12	-0.56	-0.12	1.75	-11.68
RecreCulture	-9.05	4.56	-8.44	-3.33	-1.3	4.03	-4.66	-3.25	3.88	-2.46	-11.77
Education	-5.56	-3.06	-11.93	-4.86	-0.62	-7.4	-1.2	-5.61	-4.02	-1.14	-14.82
Health	-5.93	-4.15	-13.23	-6.17	-2.2	-7.45	-5.32	-4.67	-4.23	-3.1	-15.11
OthServices	-5.08	-2.18	-7.95	-2.52	-1.02	-7.7	-0.89	-2.85	-2.94	-1.02	-10.13