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2023 INTERNATIONAL JOINT RESEARCH PROJECT

How Efficient Are United States Department of Defense Hospitals?

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Changing Global Order: Evolution of NATO Partnerships and its Cooperation with South Korea

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2. 본 연구보고서는 정책입안시 참고자료로만 활용하고 타기관에 불필요한 자료유출을 삼가주시기 바랍니다.

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The Research Institute for National Security Affairs (RINSA), South Korea's leading research institute at Korea National Defense University, dedicates itself to strengthening national security through a promotion of international collaboration and efficient defense practices.

The world of 2024 promises to be complex, marked by ongoing conflicts like the Ukraine-Russia war and escalating tensions between the US and China. Against this backdrop, South Korea faces the imperative of both bolstering its own defenses and fostering strategic partnerships. Recognizing the challenges, in 2023, we conducted two international research projects as a part of our endeavors to contribute to these efforts.

Evaluating U.S. Department of Defense Hospital Efficiency: Amidst budget constraints and heightened healthcare demands, accurate assessments of military hospital performance are crucial. This study delves into data-driven solutions for optimizing resource allocation and ensuring effective care for service members.

Expanding South Korea-NATO Cooperation: Recognizing the evolving security landscape and NATO's successful track record, this project explores avenues for deeper collaboration between South Korea and the alliance. With hybrid threats and non-traditional challenges becoming increasingly relevant, this partnership holds immense potential for regional stability.

RINSA believes an open discussion and data-driven analysis are vital in shaping effective defense strategies. Our first project seeks to optimize U.S. military healthcare delivery, contributing to the well-being of service members while maximizing resource utilization. Similarly, our exploration of South Korea-NATO cooperation highlights the potential for collaborative approaches to the evolving security landscape in the Asia-Pacific region.

PREFACE

In a world fraught with uncertainty, RINSA stands committed to promoting international cooperation and strengthening national defense capabilities. We believe our research serves not only South Korea, but also contributes to a more peaceful and prosperous future for Indo-Pacific region as a whole.

December 31, 2023

Director-General of Research Institute for National Security Affairs
Director-General Park, Young June

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Ⅰ. INTRODUCTION

Military hospitals are important because they directly relate to national defense. As well as serving the unique healthcare needs of active-duty service members, veterans, and their families, most military hospitals offer training grounds for medical professionals, medical research and development, and disaster and pandemic responses. These functions benefit citizens in general as well as those who serve in the military.

The United States has one of the largest and most preeminent military healthcare systems in the world. The U.S. Military Health System (MHS) provides 9.6 million beneficiaries, including military personnel, with healthcare services through military treatment facilities such as U.S. Department of Defense (DOD) hospitals and clinics. It is also in charge of developing medical-ready forces in the U.S. and around the world. The current budget of the MHS is USD58.4 billion, an increase of $20 billion from $38 billion in 2010; the compound annual growth rate (CAGR) is 3.3%.

However, the MHS cannot be completely free from the trends of fiscal constraint. In March 2023, the Biden Administration requested $58.7 billion from Congress for the 2024 MHS budget, almost the same amount as for 2023 (Congressional Research Service, 2023). Despite diminishing resources, the MHS is confronting an increasing demand for healthcare services, especially as it is expected to improve the ability to prevent, detect, and respond to biological incidents and threats like the COVID-19 pandemic.

As they have done in the past when confronted with a challenge, DOD hospitals are meeting this fresh challenge with a variety of efforts to enhance hospital efficiency (Harrison et al., 2004; Harrison & Coppola, 2007; Harrison & Meyers, 2014; Weeks et al., 2009). It is meaningful, therefore, to analyze DOD hospital efficiency, thereby drawing practical policy and managerial implications on how to manage these hospitals efficiently. This analysis will benefit healthcare policymakers, hospital executives, and public managers.

Despite their importance, military hospitals receive less attention these days.

Although healthcare researchers keep studying hospital efficiency, they focus more on hospitals overall, attempting to generalize their findings to all kinds of hospitals (Imani et al., 2022; Moshiri et al., 2010; Srimayarti et al., 2021; Rosko et al., 2020). This has led them to pay relatively little attention to military hospitals, treating them as a type of public hospital.

To fill the gap in previous studies and generate practical implications on hospital efficiency, this study set out to evaluate U.S. Department of Defense (DOD) hospital efficiency. More specifically, it attempts to identify the differences in hospital efficiency between the Air Force, Army, and Navy hospitals, as well as fluctuations in their efficiency from 2010 to 2021. Drawing on the American Hospital Association's annual survey data during this period, the study employs data envelopment analysis (DEA), slack analysis, and the Malmquist Productivity Index (MPI).

The paper is structured along the following lines. First, it provides a snapshot of hospital-efficiency research. Second, it explains our empirical strategies, including data-gathering techniques, variables and measurements, and analytics. Third, it interprets the descriptive statistics as well as the results of the DEA, slack analysis, and MPI. Lastly, we discuss our findings and their implications and offer further considerations in the conclusion.

Ⅱ. LITERATURE REVIEW ON HOSPITAL EFFICIENCY

The demand for health services has increased due to the aging population, chronic diseases, the cost of medical technology, and rising customer expectations. This demand has led to increased pressure on health expenditure. To help hospitals meet the increasing demand without causing a spike in health expenditure, hospital research has focused on assessing and prescribing hospital performance.

Various concepts, particularly economic efficiency and productivity, are applied to assess hospital performance. Although used interchangeably, economic efficiency

and productivity are distinct. Productivity refers to the ratio of outputs to inputs—larger values of productivity indicate better performance. Economic efficiency in the hospital-efficiency literature encompasses two types: technical and allocative. Technical efficiency indicates the extent to which a set of inputs is used to produce a set of outputs. To achieve technical efficiency, an organization tries to obtain maximum outputs from given inputs or employ minimum inputs to generate given outputs (Farrell, 1957; Kumbhakar & Lovell, 2000). If an organization is perfectly optimized, it can generate maximum outputs from minimum inputs without any waste of resources. Allocative efficiency is defined as a mix of inputs to produce a mix of outputs. It enables us to find out the input mix that minimizes costs or the output mix that maximizes revenue.

Relying on these concepts, hospital-efficiency researchers have made continuous efforts to find out practical ways to optimize hospital management. These researchers have focused on identifying relevant input and output variables to analyze hospital efficiency (Hadji et al., 2014; Rahimi et al., 2014; Garcia-Alonso et al., 2019). According to systematic reviews of hospital-efficiency studies, the most widely used inputs involve human resources (i.e., the number of doctors, nurses, other medical staff, other non-medical staff, and total employed staff), physical resources (i.e., the number of beds, equipment, and infrastructure), and financial resources (i.e., the total amount of budget, the total amount of expenditure, the total amount of non-labor costs, the value of fixed capital, and the cost of drug supply). The number of outpatients and inpatients, average daily admission, the number of surgeries, the number of deliveries, the average length of stay, bed occupancy rate, life expectancy, death rate, survival rate, malnutrition rate, the total amount of revenue, and the total amount of profit are generally employed as outputs in the hospital literature (Azreena et al., 2018; Jung et al., 2023; Mbau et al., 2023; Zubir et al., 2023).

To analyze the input and output variables, hospital-efficiency research has also paid attention to selecting and sophisticating methodological approaches (Azreena et al., 2018; Jung et al., 2023; Mbau et al., 2023; Zubir et al., 2023). The two main methodological approaches used are the non-parametric (such as DEA) and the

parametric (such as stochastic frontier analysis or SFA) approaches (Hollingsworth, 2003; 2008).

DEA is the most widely used non-parametric method in assessing efficiency (Kohl et al., 2019). It is a mathematical technique to measure the efficiency of homogeneous decision-making units, such as hospitals, schools, and banks, by using a set of inputs and outputs (Charnes et al., 1978). DEA compares the relative efficiency of decision-making units in the sample by assessing how efficiently a decision-making unit utilizes a set of inputs to produce a set of outputs (Cooper et al., 2011). The result of DEA presents a form of efficiency score that ranges from 0 to 1, where 1 indicates perfect efficiency while less than 1 means the decision-making unit is inefficient and thus there is room for efficiency improvement. That is to say, DEA enables us not only to measure the relative efficiency of decision-making units but also to identify the best-performing decision-making units. The most efficient decision-making units are at the efficiency frontier, which indicates that they produce the maximum outputs with the same level of inputs. Thus, DEA offers hospital managers opportunities to benchmark the best-performing hospitals, thereby contributing to improving hospital efficiency. In DEA, there are two kinds of returns-to-scale (RTS) widely used in hospital-efficiency studies: constant-returns-to-scale (CRS) and variable-returns-to-scale (VRS) (Banker et al., 2011).

The CRS-based efficiency model assumes a fixed scale of operations; all decision-making units operate at an optimal scale (Banker et al., 2011). As CRS-based efficiency assumes that the outputs of a decision-making unit increase in a linear relationship, an increase or decrease in the scale of production does not affect efficiency. If the CRS-based efficiency score of a decision-making unit is 1, it means that the decision-making unit is operating at the optimal scale—i.e., using its inputs efficiently to produce the maximum outputs. On the other hand, if the CRS-based efficiency score of a decision-making unit is less than 1, this implies that the decision-making unit could improve the utilization of its inputs to achieve the same level of output.

In contrast to CRS-based efficiency, VRS-based efficiency assumes that the scale of operations can affect efficiency (Banker et al., 2011). That is to say, VRS-based efficiency enables us to compare inefficient hospitals to efficient hospitals of the same size. Thus, VRS-based efficiency separates scale efficiency from overall technical efficiency, giving us pure technical efficiency. If the VRS-based efficiency score, ranging from 1 to 0, is 1, the implication is that the decision-making unit is operating at optimal efficiency given its current scale. If its VRS-based efficiency score is less than 1, it indicates that the decision-making unit is not using its inputs efficiently enough to achieve maximum outputs given its current scale.

To specify inefficient areas based on VRS-efficiency analysis, slack analysis can be employed. It identifies which input or output is generating inefficiencies. That is to say, the results of slack analysis clarify the surplus or deficit of inputs or outputs, thus improving the pure technical efficiency of a decision-making unit by guiding it to increase its outputs or decrease its inputs.

CRS-based efficiency indicates overall technical efficiency, encompassing pure technical efficiency and scale efficiency; VRS-based efficiency means pure technical efficiency. If we divide CRS-based efficiency by VRS-based efficiency, we obtain scale efficiency. The scale efficiency score measures the extent to which a decision-making unit deviates from an optimal scale (Farrell, 1957). If the scale efficiency score is 1, the CRS-based efficiency score is the same as the VRS-based efficiency score, implying that the decision-making unit is operating optimally.

To examine the productivity trends of a hospital over time, DEA-based MPI has been widely employed in hospital-efficiency research (Guo et al., 2017; Valdmanis et al., 2017). It enables us to analyze panel data to investigate changes in the relationship between a set of inputs and a set of outputs in a hospital during a given period. This technique can not only accommodate a set of inputs and outputs but also present the change of specific indices, including total factor productivity, technical efficiency, technology, pure efficiency, and scale efficiency during a certain period (Färe et al., 1994). If the value of the MPI is higher than 1, the productivity of a hospital in $t+1$ has increased compared to its productivity in t.

Hospital-efficiency research has employed these methods and applied the results to improve hospital performance. Indeed, hospital-efficiency analysis enables hospital managers to assess the extent to which their hospital is efficiently run. In addition, the results of hospital-efficiency analysis can be compared between individual hospitals or between countries (Ahmed et al., 2019). For example, Céu Mateus and her colleagues conducted a comparative analysis of hospital efficiency between English, Portuguese, Spanish, and Slovenian hospitals using Stochastic frontier analysis and ordinary least squares (OLS) regression analysis (Mateus et al., 2015).

The change in hospital efficiency can also be compared using panel data (Chiu et al., 2022). For instance, one study analyzed the efficiency of 107 Greek NHS (National Health Service) hospitals over a five-year period from 2009 to 2013 by using DEA and identified how hospital efficiency changed during the period (Flokou et al., 2017).

Based on the results of hospital-efficiency analysis, researchers have gone the extra mile to identify the determinants of hospital efficiency. This effort has uncovered the effect of organizational factors (e.g., internal resources and organizational publicness) (Babalola et al., 2022) and environments (e.g., market competition and the population covered by the hospital) (Yousefi et al., 2022) on hospital efficiency. For example, using DEA to assess the efficiency of hospitals in the U.S., one study uncovered that the hospital–physician integration level, teaching status, and market competition were positively associated with hospital efficiency (Leleu et al., 2018).

Ⅲ. EMPIRICAL STRATEGIES FOR U.S. DOD HOSPITAL-EFFICIENCY EVALUATION

1. DATA

This study attempted to analyze the efficiency of U.S. DOD hospitals. Thus, the unit of analysis in this study is individual military hospitals. The study obtained data

from the American Hospital Association's annual surveys ranging from 2010 to 2021 to evaluate the efficiency of DOD hospitals. The data include input and output information from the U.S. Air Force, Army, and Navy hospitals.

2. METHODS

The study employed DEA to analyze DOD hospital efficiency. Relying on CRS-based and VRS-based efficiency techniques, we analyzed the overall technical efficiency, pure technical efficiency, and scale efficiency of DOD hospitals from 2010 to 2021. In addition, to specify the surplus of input variables, we ran a slack analysis. Lastly, we applied the DEA-based MPI technique to investigate productivity changes over time.

3. VARIABLES AND MEASUREMENTS

1) Input variables

The study employed hospital beds, operating expenses, and full-time employees (physicians, nurses, and other employees) as input variables to analyze hospital efficiency.

Hospital Beds. The number of hospital beds has been widely used as a capital investment to measure hospital resources (Azreena et al., 2018; Ravaghi et al., 2020) because it is critical to providing services to hospital inpatients. Both excessive bed capacity and shortage of available beds can negatively affect how a hospital functions. Thus, we included hospital beds as one of the input variables in our analysis, measuring the total number of beds in a military hospital in a certain year.

Operating Expenses. Previous studies have generally employed operating expenses to assess the overall cost of hospital operations (Azreena et al., 2018; O'Neill et al., 2008). We also included operating expenses as an input variable in our analysis, measuring it by the total amount of operating expenses in a military hospital in a specific year. However, we did not include payroll expenses because the number

of full-time employees is a distinct input variable in our analysis.

Full-Time Employees. As human resources have a critical impact on the healthcare system, hospital-efficiency research has often used medical personnel as a labor input variable (Fazria & Dhamayanti, 2021). Relying on previous studies, we included full-time employees as an input variable in our analysis, operationalizing the full-time employees in three ways: 1) the number of full-time physicians, 2) the number of nurses, and 3) the number of other employees in a military hospital in a specified year.

2) Output variables

This study employed outpatient visits, inpatient days, inpatient and outpatient surgical operations, and full-time employee trainees, as output variables to analyze hospital efficiency.

Outpatient Visits. Outpatient visits indicate the number of patients who come to the hospital to receive medical, dental, or other medical services but are not admitted, including all clinic visits, referred visits, and observation services. Outpatient visits are widely accepted in hospital-efficiency research as a way to capture hospital outputs (Azreena et al., 2018; O'Neill et al., 2008). We also included outpatient visits as one of our output variables, operationalized as the total number of outpatient visits in a military hospital in a specified year.

Inpatient Days. Inpatient days mean the number of days during which a patient receives medical services in a hospital. It can be considered as an output variable. As the implementation of the Prospective Payment System based on the Diagnosis-Related Group (DRG) shifted the primary standard for hospital reimbursement from inpatient days to cases, attention to inpatient days as an output variable has been steadily decreasing in hospital-efficiency studies (Azreena et al., 2018; O'Neill et al., 2008). However, previous studies of U.S. federal hospitals show that inpatient days can be useful in evaluating the output of U.S. federal healthcare systems (Harrison & Coppola, 2007; Harrison & Meyer, 2014; Harrison & Ogniewski, 2005). As our study focused on U.S. military hospitals, we included inpatient days

as one of the output variables in our analysis, measuring it by the total number of inpatient days in a military hospital in a specified year.

Surgical Operations. Surgical operation is a scheduled surgical service performed on patients and is widely regarded as one of the output variables in hospital-efficiency research (Azreena et al., 2018; Fazria & Dhamayanti, 2021). Our analysis involved surgical operations as an output variable. To add nuance to the measurement of surgical operations, we drew a distinction between outpatient and inpatient operations based on whether a patient receiving a surgical service remained in the hospital overnight. We measured outpatient and inpatient surgical operations by the total number of such operations in a military hospital in a specified year.

Full-time Employee Trainees. Full-time employee trainees, such as medical and dental residents, can be regarded as both input and output variables (O'Neill et al., 2008) and a resource for inexpensive labor. They can be also viewed as the achievement of a social mission. Considering that federal hospitals are one of the largest medical training providers in the United States and that there are enough previous studies that show the value of full-time employee trainees as an output variable in hospital-efficiency analysis (Han & Lee, 2021; Lee et al., 2015; Oh et al., 2022; 2023; O'Neill, 1998; Ozcan, 1992), we included full-time employee trainees as an output variable, measuring it as the total number of full-time employee trainees in a military hospital in a specified year.

4. FINDINGS

1) Descriptive statistics

Descriptive statistics of all DOD hospitals are presented in Table 1, while Tables 2, 3, and 4 show descriptive statistics of the input and output variables for Air Force, Army, and Navy hospitals, respectively.

Table 1 shows that the number of DOD hospitals has been decreasing from 45 hospitals in 2010 to 38 hospitals in 2021. Regarding the input of DOD hospitals, the number of hospital beds has decreased by 6.65 beds or 7.22% over 11 years.

This reduction is interesting because the number of active-duty DOD personnel has decreased by 5.75%, from 1,417,370 in 2010 to 1,335,848 in 2021.

In contrast, other input variables show a significant increase during this period. For example, Table 1 shows that the total amount of operating expenses has increased by USD 143.52 million. The total amount of operating expenses in 2021 was USD294.10 million, which accounts for 195.31% of those in 2010 ($150.58 million). Despite consideration of the annual inflation rate from 2010 to 2021, this increase is noticeable. The CAGR of operating expenses from 2010 to 2021 is 6.27%. The number of full-time employees also shows a significant increase during this period. The number of full-time physicians increased by 45.30 or 31.73% from 142.75 in 2010 to 188.08 in 2021, showing that its estimated CAGR is 2.54%. The number of full-time nurses increased by 97.42 or 38.23%, while the number of full-time other employees increased by 524.10 or 42.39%. Their CAGR is 2.99% and 3.26%, respectively. Overall, the input of DOD hospitals increased remarkably from 2010 to 2021.

Table 1 shows that there has also been an increase in the outputs of DOD hospitals during this period except on inpatient days. The total number of outpatient visits, surgical operations, and full-time employee trainees increased from 2010 to 2021. For example, the total number of outpatient visits increased by 88,738.50, or 21.44%. The total number of inpatient surgical operations increased by 1,072.56 or 86.40%, from 1,241.33 in 2010 to 2,313.90 in 2021. The total number of outpatient surgical operations also shows an increase of 1,481.48 or 70.04%, from 2,115.20 in 2010 to 3,596.68 in 2021. The CAGR of the two types of surgical operations from 2010 to 2021 is 5.82% and 4.94%. The total number of full-time employee trainees has also increased by 24.60 or 44.39%, from 55.42 in 2010 to 80.03 in 2021. Its CAGR is 3.40%. On the other hand, the total number of inpatient days shows a decrease, shifting from 18,161.64 in 2010 to 14,694.63 in 2021. The gap is 3,467.01 days or 19.09%. This means the total number of inpatient days has annually decreased by -1.91%.

Changes in the input and output variables from 2010 to 2021 reveal some differences

between the Air Force, Army, and Navy hospitals. Navy hospitals have shown an increase in both inputs and outputs, while Air Force hospitals have revealed a noticeable decrease in outputs. (See Appendix 1, which summarizes the CAGR of each input and output in each of the three types of DOD hospitals.)

According to Table 2, Air Force hospitals have shown an increase in operating expenses, full-time physicians, nurses, and other employees while showing a decrease in hospital beds. Regarding the output variables, Air Force hospitals have revealed a decrease in inpatient days, inpatient surgical operations, and full-time employee trainees but an increase in outpatient visits and outpatient surgical operations.

Table 3 indicates that Army hospitals have shown the same pattern of change regarding input variables. The total number of hospital beds decreased while other input variables increased in Army hospitals from 2010 to 2021. When it comes to the output variables, Army hospitals have shown an increase in outpatient visits, inpatient surgical operations, and outpatient surgical operations while confronting a decrease in inpatient days and full-time employee trainees.

Table 4 reveals that Navy hospitals are different from other military hospitals in terms of changing input variables from 2010 to 2021. All the input variables of Navy hospitals increased from 2010 to 2021. Interestingly, the number of hospital beds in Navy hospitals increased by 4.52 or 4.65%. Although its CAGR is only 0.41%, it shows an interesting difference from other types of hospitals because both Air Force and Army hospitals showed a decrease in the number of hospital beds during this period. Navy hospitals also show a difference in the change in output variables from other types of hospitals. In Navy hospitals, all output variables increased, except for outpatient visits. In particular, the number of inpatient surgical operations and outpatient surgical operations showed a significant increase. Their CAGR from 2010 to 2021 is 8.56% and 7.04%, respectively.

Tables 1, 2, 3, and 4 imply that DOD hospital efficiency may have changed during this period. They also hint at some meaningful differences in hospital efficiency between the three types of DOD hospitals.

Table 1. Descriptive Statistics of Input and Output Variables (All DOD Hospitals)

Variable	2010 (N=45) M (SD)	2011 (N=42) M (SD)	2012 (N=43) M (SD)	2013 (N=43) M (SD)	2014 (N=43) M (SD)	2015 (N=42) M (SD)	2016 (N=41) M (SD)	2017 (N=40) M (SD)	2018 (N=40) M (SD)	2019 (N=40) M (SD)	2020 (N=38) M (SD)	2021 (N=38) M (SD)
Inputs												
Beds	92.07 (82.38)	88.21 (76.54)	84.07 (75.58)	82.42 (76.21)	82.47 (76.78)	83.64 (77.29)	84.41 (76.54)	85.90 (76.88)	85.73 (77.09)	84.70 (75.89)	87.97 (76.47)	85.42 (71.56)
Expenses (M U.S. $)	150.58 (128.09)	207.61 (170.40)	187.58 (187.55)	205.12 (182.19)	250.66 (278.30)	267.75 (287.31)	246.71 (237.26)	264.87 (244.00)	326.89 (279.44)	339.53 (339.23)	310.12 (316.27)	294.10 (269.41)
FTE Physicians	142.78 (98.73)	82.55 (74.71)	98.81 (103.15)	125.35 (93.28)	139.23 (139.94)	116.19 (148.96)	130.32 (162.53)	154.05 (168.03)	166.38 (143.92)	184.25 (194.68)	149.08 (147.02)	188.08 (135.47)
FTE Nurses	254.84 (219.18)	284.38 (257.90)	240.19 (247.11)	305.58 (272.02)	350.26 (355.93)	299.14 (356.87)	330.51 (367.06)	355.55 (372.46)	327.48 (309.97)	348.48 (381.70)	343.47 (350.42)	352.26 (294.32)
FTE Other	1,236.42 (769.96)	1,214.14 (713.07)	979.19 (973.49)	1,146.14 (881.99)	1,253.12 (1,310.69)	1,041.79 (1,414.92)	1,082.37 (1,122.41)	1,393.18 (1,562.41)	1,579.30 (1,238.67)	1,689.63 (1,611.52)	1,690.24 (1,211.51)	1,760.53 (1,246.77)
Outputs												
Outpatient Visits	413,873.70 (217,254.70)	480,246.90 (391,008.40)	444,511.20 (237,057.20)	398,654.60 (273,801.60)	458,749.40 (298,639.30)	405,303.10 (325,892.60)	468,103.60 (295,484.40)	423,702.30 (549,649.00)	395,792.70 (344,858.10)	419,818.20 (430,104.00)	312,896.80 (368,818.30)	502,612.20 (449,983.70)
Inpatient Days	18,161.64 (21,082.45)	17,375.64 (17,829.80)	14,743.05 (15,132.22)	15,326.74 (16,201.73)	18,110.19 (20,990.02)	17,210.76 (20,704.64)	15,761.12 (16,475.93)	18,055.33 (19,719.22)	15,953.33 (18,090.23)	17,172.50 (21,666.18)	15,786.03 (17,942.29)	14,694.63 (16,310.11)
Inpatient Surgical Operation	1,241.33 (1,351.14)	753.12 (614.23)	742.51 (702.46)	1,386.93 (1,410.92)	831.81 (1,106.59)	866.67 (1,717.20)	1,806.49 (2,011.96)	1,247.60 (1,480.73)	2,998.60 (4,857.66)	2,940.85 (5,590.32)	2,483.53 (4,990.27)	2,313.90 (4,426.69)
Outpatient Surgical Operation	2,115.20 (1,663.79)	1,640.81 (728.13)	2,171.00 (763.50)	2,522.74 (1,878.82)	1,646.00 (1,315.54)	1,604.45 (1,577.27)	4,264.85 (12,501.80)	3,271.55 (4,021.06)	4,481.90 (4,401.20)	4,626.38 (5,367.28)	3,304.82 (4,700.35)	3,596.68 (4,085.81)
FTE Trainees	55.42 (83.98)	60.19 (107.38)	43.74 (81.82)	38.98 (82.50)	48.47 (116.55)	49.79 (117.66)	46.17 (112.21)	59.80 (126.05)	64.08 (110.64)	70.48 (133.36)	63.37 (108.93)	80.03 (113.96)

Table 2. Descriptive Statistics of Input and Output Variables (Air Force Hospitals)

Variable	2010 (N=10) M (SD)	2011 (N=7) M (SD)	2012 (N=8) M (SD)	2013 (N=8) M (SD)	2014 (N=8) M (SD)	2015 (N=7) M (SD)	2016 (N=7) M (SD)	2017 (N=7) M (SD)	2018 (N=7) M (SD)	2019 (N=7) M (SD)	2020 (N=7) M (SD)	2021 (N=7) M (SD)
Inputs												
Beds	94.60	71.57	58.25	59.50	59.50	66.57	66.57	65.86	65.86	65.86	65.86	65.86
	(81.65)	(24.57)	(29.12)	(29.03)	(29.03)	(22.73)	(22.74)	(22.87)	(22.87)	(22.87)	(22.87)	(22.87)
Expenses (M U.S. $)	141.05	158.20	115.08	124.29	154.48	174.85	184.98	174.58	243.73	243.73	218.16	249.42
	(131.86)	(70.26)	(73.11)	(83.29)	(83.73)	(102.05)	(106.68)	(120.97)	(102.46)	(102.46)	(165.15)	(114.25)
FTE Physicians	134.40	86.43	56.13	104.25	101.38	57.57	83.00	106.57	111.29	110.71	81.43	147.29
	(81.25)	(28.86)	(52.42)	(46.51)	(40.36)	(21.92)	(21.30)	(31.90)	(32.48)	(32.79)	(30.60)	(49.41)
FTE Nurses	247.70	227.14	130.50	247.63	251.50	170.14	217.86	241.43	209.00	208.57	196.57	258.14
	(214.18)	(102.54)	(101.89)	(163.37)	(158.28)	(129.74)	(127.36)	(154.52)	(136.61)	(136.37)	(216.96)	(128.61)
FTE Other	1,195.40	892.71	542.75	746.75	831.25	350.00	649.14	843.43	1,084.14	1,084.86	1,416.14	1,311.86
	(710.30)	(209.88)	(634.75)	(334.19)	(306.90)	(231.62)	(130.10)	(111.31)	(303.61)	(303.47)	(166.78)	(555.05)
Outputs												
Outpatient Visits	360,609.30	325,503.00	340,498.80	250,357.60	390,412.80	332,344.00	457,266.40	272,443.30	292,059.60	292,059.60	219,356.00	405,669.60
	(185,329.80)	(49,742.19)	(87,657.58)	(122,417.10)	(163,468.90)	(105,214.20)	(136,184.00)	(114,269.10)	(83,206.41)	(83,206.41)	(122,491.50)	(289,550.20)
Inpatient Days	17,055.80	15,664.00	9,017.00	10,538.63	10,778.50	11,965.43	12,408.71	12,606.43	10,834.86	10834.86	9,685.29	9,326.29
	(21,268.17)	(11,279.65)	(5,846.86)	(10,883.76)	(9,915.27)	(8,454.84)	(8,808.86)	(11,757.72)	(9,770.55)	(9,770.55)	(9,229.86)	(7,283.06)
Inpatient Surgical Operation	1,260.70	606.43	435.50	2,032.00	926.88	830.43	1,575.29	740.86	1,004.00	1,004.00	310.57	622.86
	(1,337.37)	(369.98)	(558.98)	(1,044.28)	(686.84)	(1,191.26)	(1,166.17)	(287.70)	(1,060.01)	(1,060.01)	(339.50)	(388.44)
Outpatient Surgical Operation	1,932.40	1,645.29	2,325.75	3,705.38	2,142.00	2,147.71	2,577.29	2,399.00	3,354.00	3,354.00	1,449.00	2,075.43
	(1,311.87)	(225.76)	(791.69)	(1,716.83)	(878.04)	(723.64)	(785.58)	(937.68)	(772.99)	(772.99)	(300.46)	(630.68)
FTE Trainees	42.70	13.71	4.88	3.63	1.00	0.43	0.43	14.86	14.71	14.71	13.86	31.14
	(76.35)	(12.16)	(3.80)	(5.88)	(2.14)	(1.13)	(1.14)	(11.65)	(29.25)	(29.25)	(24.77)	(63.00)

Table 3. Descriptive Statistics of Input and Output Variables (Army Hospitals)

Variable	2010 (N=22) M (SD)	2011 (N=22) M (SD)	2012 (N=22) M (SD)	2013 (N=22) M (SD)	2014 (N=22) M (SD)	2015 (N=22) M (SD)	2016 (N=21) M (SD)	2017 (N=20) M (SD)	2018 (N=20) M (SD)	2019 (N=20) M (SD)	2020 (N=20) M (SD)	2021 (N=20) M (SD)
Inputs												
Beds	87.77 (74.51)	87.32 (73.77)	85.00 (71.21)	81.77 (72.40)	82.00 (72.55)	81.27 (73.15)	82.67 (71.39)	85.80 (71.81)	84.95 (71.04)	83.20 (69.08)	83.20 (69.08)	83.20 (69.08)
Expenses (M U.S. $)	143.17 (117.56)	207.46 (167.31)	194.22 (177.44)	214.64 (171.18)	249.64 (254.43)	264.52 (269.98)	246.80 (231.68)	276.39 (237.53)	331.76 (261.11)	361.56 (385.35)	296.24 (305.92)	272.2614 (266.52)
FTE Physicians	148.00 (109.61)	79.95 (61.11)	95.77 (91.05)	116.50 (84.02)	129.82 (125.06)	109.14 (131.46)	121.10 (142.24)	142.70 (146.33)	166.25 (128.95)	202.95 (226.60)	142.75 (123.44)	183.90 (130.05)
FTE Nurses	246.27 (205.55)	279.05 (240.70)	243.95 (233.35)	307.68 (284.57)	351.82 (346.10)	297.73 (331.69)	329.19 (340.46)	364.75 (357.09)	337.00 (286.83)	380.75 (428.21)	354.25 (333.05)	349.05 (283.60)
FTE Other	1,207.68 (752.77)	1,223.68 (669.10)	948.59 (843.87)	1,125.64 (793.36)	1,174.27 (1,164.40)	1,005.86 (1,235.06)	1,061.14 (967.56)	1,321.15 (1,361.24)	1,572.40 (1,070.78)	1,804.30 (1,830.21)	1,545.85 (1,043.32)	1,766.80 (1,183.01)
Outputs												
Outpatient Visits	450,339.70 (224,308.20)	482,100.60 (364.897.00)	454,650.00 (244,176.10)	429,034.90 (282,313.40)	457,591.70 (286,625.90)	401,844.00 (329,330.20)	457,871.60 (298,034.40)	373,252.90 (486,312.10)	386,852.00 (321,483.50)	447,828.50 (503,665.10)	258,127.50 (325,432.60)	481,171.90 (454,111.20)
Inpatient Days	17,426.91 (19,172.15)	17,116.95 (17,536.37)	15,903.55 (16,269.65)	16,430.59 (17,337.65)	18,674.64 (20,338.04)	16,664.36 (19,647.52)	15,901.33 (16,423.70)	19,436.80 (20,610.59)	16,459.05 (17,686.55)	18,755.70 (24,254.73)	15,517.10 (17,079.61)	14,535.90 (15,850.62)
Inpatient Surgical Operation	1,165.59 (1,258.71)	742.09 (613.75)	783.23 (673.93)	1,367.59 (1,599.32)	982.77 (1,389.02)	1,119.32 (2,160.94)	2,032.86 (2,482.91)	1,198.75 (1,311.22)	2,984.50 (4,334.35)	3,247.65 (6,377.63)	2,189.20 (4,228.48)	2,339.20 (4,240.74)
Outpatient Surgical Operation	2,161.68 (1,869.24)	1,541.14 (692.81)	2,129.18 (715.00)	2,331.36 (1,749.22)	1,697.36 (1,506.95)	1,708.73 (1,943.44)	6,156.95 (17,421.31)	2,892.15 (3,560.70)	4,303.45 (3,992.63)	4,684.20 (6,097.99)	2,902.65 (4,035.96)	3575.95 (3,878.76)
FTE Trainees	56.77 (89.15)	60.68 (102.97)	43.27 (73.78)	35.95 (74.29)	42.86 (104.56)	43.27 (104.41)	39.90 (98.23)	51.50 (111.76)	66.10 (100.70)	79.75 (147.53)	59.25 (94.09)	83.00 (109.75)

Table 4. Descriptive Statistics of Input and Output Variables (Navy Hospitals)

Variable	2010 (N=13) M (SD)	2011 (N=13) M (SD)	2012 (N=13) M (SD)	2013 (N=13) M (SD)	2014 (N=13) M (SD)	2015 (N=13) M (SD)	2016 (N=13) M (SD)	2017 (N=13) M (SD)	2018 (N=13) M (SD)	2019 (N=13) M (SD)	2020 (N=11) M (SD)	2021 (N=11) M (SD)
Inputs												
Beds	97.38 (100.50)	98.69 (99.55)	98.38 (99.78)	97.62 (100.31)	97.38 (101.67)	96.85 (102.07)	96.85 (102.07)	96.85 (102.07)	97.62 (103.33)	97.15 (102.57)	110.73 (106.29)	101.91 (94.80)
Expenses (M U.S. $)	170.47 (149.41)	234.47 (224.18)	220.98 (245.16)	238.75 (234.73)	311.59 (378.82)	323.26 (375.34)	279.79 (298.46)	295.77 (301.39)	364.18 (367.43)	357.21 (356.56)	393.88 (402.35)	362.24 (343.96)
FTE Physicians	140.38 (98.22)	84.85 (109.97)	130.23 (137.21)	153.31 (124.71)	178.46 (193.49)	159.69 (202.95)	170.69 (225.57)	197.08 (231.99)	196.23 (194.23)	195.08 (193.60)	203.64 (209.53)	221.64 (178.50)
FTE Nurses	274.85 (259.23)	324.23 (331.77)	301.31 (316.67)	337.69 (313.58)	408.38 (457.16)	371.00 (467.86)	393.31 (485.94)	402.85 (476.30)	376.62 (402.15)	374.15 (400.02)	417.36 (440.46)	418.00 (383.14)
FTE Other	1,316.62 (890.97)	1,371.08 (919.07)	1,299.54 (1,263.25)	1,426.62 (1,167.79)	1,646.15 (1,813.18)	1,475.08 (1,912.85)	1,349.92 (1,562.95)	1,800.00 (2,151.58)	1,856.54 (1,702.53)	1,838.85 (1,682.61)	2,127.18 (1,744.01)	2,034.64 (1,638.24)
Outputs												
Outpatient Visits	393,134.80 (232,350.80)	560,433.40 (516,891.00)	491,361.10 (279.440.70)	438,501.30 (309,990.00)	502,761.80 (384,157.00)	450,442.50 (402,739.40)	490,467.80 (364,594.60)	582,763.80 (745,578.60)	465,403.70 (455,797.90)	445,518.50 (429,595.00)	472,003.50 (503,094.70)	603,285.50 (537,059.80)
Inpatient Days	20,255.69 (25,307.35)	18,735.08 (21,921.40)	16,302.85 (17,067.87)	16,405.23 (17,459.06)	21,666.77 (26,658.93)	20,959.85 (26,861.77)	17,339.77 (20,179.26)	18,864.00 (22,379.22)	17,931.38 (22,374.42)	18,149.38 (22,754.99)	20,157.27 (23,206.46)	18,399.45 (20,970.58)
Inpatient Surgical Operation	1,354.62 (1,598.45)	850.77 (733.68)	862.54 (817.62)	1,022.69 (1,197.19)	517.85 (692.61)	458.62 (946.22)	1,565.31 (1,534.49)	1,595.62 (2,019.22)	4,094.31 (6,539.19)	3,511.77 (5,822.97)	4,401.46 (7,042.96)	3,344.00 (5,922.30)
Outpatient Surgical Operation	2,177.15 (1,645.81)	1,807.08 (947.52)	2,146.54 (871.88)	2,118.85 (2,025.98)	1,253.85 (1,139.30)	1,135.46 (1,094.56)	2,117.08 (1,383.44)	4,325.08 (5,490.78)	5,363.77 (5,981.46)	5,222.54 (5,754.49)	5,217.00 (6,632.16)	4,602.46 (5,496.36)
FTE Trainees	62.92 (85.93)	84.38 (137.39)	68.46 (110.57)	65.85 (111.87)	87.15 (158.84)	87.38 (158.72)	80.92 (152.61)	96.77 (170.35)	87.54 (145.86)	86.23 (143.82)	102.36 (152.62)	105.73 (142.71)

Ⅳ. RESULTS OF DATA ENVELOPMENT ANALYSIS AND SLACK ANALYSIS

We used DEA to calculate the technical efficiency scores, the number of DOD hospitals on efficiency frontiers, and average input slacks. The overall results are shown in Table 5, and the results for each of the Air Force, Army, and Navy hospitals are presented in Tables 6, 7, and 8 respectively. (See Appendix 2, which visualizes the change of CRS-based, VRS-based, and scale efficiency.)

Table 5 indicates that the average CRS-based technical efficiency from 2010 to 2021 is 0.950. DOD hospitals showed instability in CRS-based technical efficiency during this period. For example, they recorded the lowest score, 0.904, in 2010, while they registered a CRS-based technical efficiency score of 100% in 2020. As found in the number of CRS-based technical efficiency frontiers in Table 5, 25 out of 45 DOD hospitals (55.6%) in 2010 ran inefficiently, while 37 of 38 DOD hospitals (97.4%) in 2020 ran efficiently. It is also noticeable that CRS-based technical efficiency suddenly decreased in 2013, 2018, and 2019. CRS-based technical efficiency decreased by 0.05 from 2012 to 2013, by 0.06 from 2017 to 2018, and by 0.03 from 2018 to 2019, respectively. Then it suddenly increased by 0.12 from 2019 to 2020.

Table 5 also shows that the average VRS-based technical efficiency from 2010 to 2021 was 0.971. In addition, it seems it was unstable during this period, like CRS-based technical efficiency. The VRS-based technical efficiency of DOD hospitals recorded its lowest value, 0.922, in 2018, while the highest value, 1.000, was achieved in 2020 and 2021. Table 5 reveals that only 22 out of 43 DOD hospitals (51.2%) in 2014 were efficient, while 37 out of 38 DOD hospitals (97.4%) in 2020 ran efficiently. Like CRS-based technical efficiency, VRS-based technical efficiency also suddenly decreased in 2013 and 2018. It decreased by 0.03 from 2012 to 2013 and by 0.07 from 2017 to 2018, respectively. Then, the VRS-based technical efficiency spiked by 0.07 from 2019 to 2020.

Scale efficiency increased steadily from 2010 to 2021, as shown in Table 5. It was 0.956 in 2010 but achieved 1.000 in 2020 and 2021. Indeed, only 20 out of 45 DOD hospitals (44.4%) in 2010 showed an optimal size. However, all DOD hospitals have

achieved their optimal size since 2020. Scale efficiency showed similar changes to those of CRS-based and VRS-based efficiency during this period. It decreased by 0.02 from 2012 to 2013 and by 0.05 from 2019 to 2020. Then, scale efficiency rocketed by 0.07 from 2020 to 2021.

These results indicate that, overall, DOD hospitals from 2010 to 2021 were not successful in substantially increasing their technical efficiency, thereby achieving an optimal level of efficiency to maximize their outputs. Indeed, all averages of CRS-based, VRS-based, and scale efficiency are less than 1, indicating that all DOD hospitals were not perfectly efficient during this period. In particular, the average of VRS-based technical efficiency, 0.971, was lower than the average of scale efficiency, 0.976. This implies that overall technical efficiency originated from failure to achieve pure technical efficiency rather than an optimal scale. In particular, it is noticeable to highlight that the gap between VRS-based technical efficiency and scale efficiency in 2018 was 0.061. Considering that the CRS-based technical efficiency was 0.910, that means that overall DOD hospitals ran inefficiently in 2018, and the inefficiency may be due to the lack of pure technical efficiency.

Table 5 presents the average VRS input slacks in DOD hospitals from 2010 to 2021. It reveals that the average operating expense and other full-time employee slacks showed wild fluctuations during this period. For example, they suddenly soared in 2018. The total number of operating expense slacks increased by 767.71% from USD1,043,573.15 in 2017 to USD8,011,643.51 in 2018. The total number of full-time other employee slacks also surged by 531.80%, from 12.313 employees in 2017 to 65.480 in 2018. In contrast, hospital beds, full-time physicians, and full-time nurses steadily decreased from 2010 to 2021. In particular, all input variables showed little or no slack in 2020. Indeed, all CRS-based, VRS-based, and scale efficiency recorded 1, which means that they were perfectly efficient. This may be due to the outbreak of the COVID-19 pandemic in 2020.

Tables 6, 7, and 9 reveal differences in technical efficiency as well as changes from 2010 to 2021 between the Air Force, Army, and Navy hospitals. The average CRS-based technical efficiency of the Air Force, Army, and Navy hospitals from 2010

to 2021 was 0.962, 0.949, and 0.946 respectively, while their average VRS-based technical efficiency was 0.976, 0.968, and 0.972. The average scale efficiency of the three types of hospitals from 2010 and 2021 was 0.984, 0.977, and 0.969, respectively. The Air Force hospitals showed relatively higher technical efficiency than Army and Navy hospitals during this period.

The results indicate that all types of DOD hospitals have revealed their overall inefficiency during this period because the averages of CRS-based, VRS-based, and scale efficiency were less than 1 in all types of DOD hospitals. Interestingly, the average VRS-based technical efficiency was lower than the average scale efficiency from 2010 to 2021 in both Air Force and Army hospitals. In contrast, the average VRS-based technical efficiency was larger than the average scale efficiency during this period in Navy hospitals, implying that the overall inefficiency of Air Force and Army hospitals is likely to originate from the lack of pure technical efficiency rather than suboptimal scale, while the inefficiency of Navy hospitals is likely to be related to failure in achieving an optimal size rather than the lack of pure technical efficiency.

Specifically, Table 6 indicates that the Air Force hospitals have shown fluctuations in CRS-based technical efficiency, although they have maintained relatively high efficiency compared to Army and Navy hospitals. Regarding CRS-based technical efficiency, the Air Force hospitals recorded the lowest score, 0.892, in 2010 and then showed a decrease from 2010 to 2014. In particular, only 1 out of 8 Air Force hospitals (12.5%) in 2014 was efficient. Both the average VRS-based technical efficiency and scale efficiency in 2014 align with the average CRS-based technical efficiency. Then, they suddenly registered a CRS-based technical efficiency score of 100% in 2015 and 2016. Both VRS-based technical efficiency and scale efficiency also showed similar patterns during this period.

As Table 7 shows, Army hospitals increased their technical efficiency from 2010 to 2016. The average CRS-based technical efficiency, VRS-based technical efficiency, and scale efficiency of Army hospitals in 2010 were 0.909, 0.947, and 0.958, respectively while they increased to 0.968, 0.990, and 0.977 in 2016. Since

then and before 2020, Army hospitals have shown a substantial decrease in their average CRS-based technical efficiency, VRS-based technical efficiency, and scale efficiency. According to the number of CRS-based technical efficiency frontiers, only 9 out of 22 Army hospitals (40.9%) in 2010 were efficient. However, 19 out of 22 Army hospitals (86.4%) in 2015 ran efficiently. After achieving this recordable efficiency, the number of CRS-based technical efficiency frontiers among Army hospitals decreased to 15 out of 20 Army hospitals (75.0%) in 2019. Similar patterns are discovered in the changes in the average VRS-based technical efficiency and scale efficiency.

Table 6 reveals that the Navy hospitals experienced fluctuations in their technical and scale efficiency. For example, their average CRS-based, VRS-based, and scale efficiency in 2010 was 0.90, 0.941, and 0.958, respectively. The average CRS-based, VRS-based, and scale efficiency in 2010 increased to 0.966, 0.999, and 0.966. However, they went down to 0.878, 0.950, and 0.908 in 2019. The number of efficiency frontiers was lowest in 2014. Regarding the number of CRS-based technical efficiency frontiers, there were only 5 out of 13 Navy hospitals (38.5%) in 2014. The number of scale efficiency frontiers also indicates that only 6 out of 13 Navy hospitals (46.2%) had an optimal scale to produce maximum outputs in 2014. After experiencing the worst year, the number of efficiency frontiers increased and became stable. Ten or 11 out of 13 Navy hospitals from 2015 to 2019 ran efficiently.

With regard to the average VRS input slacks, the Air Force, Army, and Navy hospitals gradually decreased their slacks from 2010 to 2021, although the average VRS input slacks suddenly soared in 2021; this rapid change in 2021 may be due to the impact of the COVID-19 pandemic. Generally, all three types of military hospitals maintained few slacks in hospital beds, full-time physicians, and full-time nurses during this period. However, as shown in Tables 6, 7, and 8, they experienced some rapid changes in operating expenses and other full-time employee slacks in certain years. That is to say, the Air Force, Army, and Navy hospitals had some difficulties in managing their operating expenses and other full-time employees to maximize hospital efficiency.

Table 5. Average Technical Efficiency Scores, Number of Efficiency Frontiers, and VRS Input Slacks (All DOD Hospitals)

Year	Technical Efficiency			Number of Efficiency Frontiers			VRS Input Slacks (Average)					Number of Hospitals
	CRS efficiency	VRS efficiency	Scale efficiency	CRS	VRS	Scale	Beds	Total Expense	Physicians	Nurses	Other FTE	
2010	0.904	0.944	0.956	20	28	20	0.662	723,874.09	8.618	9.635	1.779	45
2011	0.963	0.987	0.975	25	29	27	0.016	1,955,633.12	7.627	0.543	1.760	42
2012	0.968	0.985	0.982	23	30	25	0.975	0.00	0.304	0.061	4.548	43
2013	0.920	0.959	0.958	24	27	25	0.000	1,518,408.75	3.826	0.005	54.700	43
2014	0.951	0.969	0.981	20	22	20	1.225	799,647.17	3.665	1.281	5.848	43
2015	0.973	0.988	0.985	36	37	36	0.000	41,499.46	0.033	0.012	2.000	42
2016	0.972	0.989	0.981	34	35	34	0.228	1,230,019.79	0.045	0.011	5.828	41
2017	0.968	0.990	0.977	32	34	32	0.394	1,043,573.15	0.012	0.011	12.313	40
2018	0.910	0.922	0.983	31	31	31	0.359	8,011,643.51	0.000	6.061	65.480	40
2019	0.881	0.928	0.933	31	31	31	0.673	6,734,720.39	0.019	5.404	70.321	40
2020	1.000	1.000	1.000	37	37	38	0.000	0.00	0.001	0.009	0.026	38
2021	0.991	0.991	1.000	26	26	38	5.376	34,271,291.50	4.868	4.852	0.000	38
Mean	0.950	0.971	0.976	28.250	30.583	29.750	0.826	4,694,192.58	2.418	2.324	18.717	

Table 6. Average Technical Efficiency Scores, Number of Efficiency Frontiers, and VRS Input Slacks (Air Force Hospitals)

Year	Technical Efficiency			Number of Efficiency Frontiers			VRS Input Slacks (Average)					Number of Hospitals
	CRS efficiency	VRS efficiency	Scale efficiency	CRS	VRS	Scale	Beds	Total Expense	Physicians	Nurses	Other FTE	
2010	0.892	0.939	0.948	4	7	4	1.064	1,185,045.87	7.273	12.902	0.000	10
2011	0.999	0.999	1.000	5	5	6	0.035	51,612.98	0.040	0.000	0.000	7
2012	0.972	0.990	0.982	5	7	5	1.095	0.00	0.109	0.000	2.286	8
2013	0.938	0.979	0.959	6	7	6	0.000	0.00	1.901	0.000	25.565	8
2014	0.919	0.957	0.961	1	2	1	2.506	93,990.97	9.809	6.578	7.736	8
2015	1.000	1.000	1.000	7	7	7	0.000	0.00	0.000	0.000	0.000	7
2016	1.000	1.000	1.000	7	7	7	0.000	0.00	0.044	0.000	0.000	7
2017	0.977	0.985	0.991	6	6	6	0.663	1,743,097.17	0.071	0.000	20.758	7
2018	0.943	0.943	0.999	6	6	6	0.001	5,337,678.49	0.000	4.251	48.685	7
2019	0.924	0.940	0.973	6	6	6	0.000	3,589,614.84	0.044	3.790	47.291	7
2020	1.000	1.000	1.000	6	6	7	0.009	0.00	0.003	0.000	0.000	7
2021	0.979	0.979	1.000	2	2	7	11.749	58,490,822.08	10.424	10.390	0.000	7
Mean	0.962	0.976	0.984	5.083	5.667	5.667	1.427	5,874,321.87	2.477	3.159	12.693	

Table 7. Average Technical Efficiency Scores, Number of Efficiency Frontiers, and VRS Input Slacks (Army Hospitals)

Year	Technical Efficiency			Number of Efficiency Frontiers			VRS Input Slacks (Average)					Number of Hospitals
	CRS efficiency	VRS efficiency	Scale efficiency	CRS	VRS	Scale	Beds	Total Expense	Physicians	Nurses	Other FTE	
2010	0.909	0.947	0.958	9	13	9	0.704	460,057.88	10.675	9.429	0.000	22
2011	0.960	0.985	0.974	12	15	13	0.019	3,552,534.00	14.321	0.543	1.934	22
2012	0.973	0.987	0.985	13	16	14	1.003	0.00	0.269	0.089	2.476	22
2013	0.921	0.956	0.962	12	14	12	0.000	2,001,264.35	4.055	0.009	60.587	22
2014	0.961	0.973	0.988	14	14	14	1.154	1,028,132.62	2.299	0.000	5.364	22
2015	0.966	0.985	0.980	19	20	19	0.000	54,092.91	0.039	0.023	3.321	22
2016	0.968	0.990	0.977	17	18	17	0.236	1,156,831.02	0.038	0.022	5.541	21
2017	0.965	0.985	0.979	16	17	16	0.516	1,386,116.74	0.000	0.000	16.097	20
2018	0.900	0.908	0.989	15	15	15	0.221	8,869,890.78	0.000	6.897	76.522	20
2019	0.867	0.911	0.936	15	15	15	0.455	7,035,479.00	0.023	6.290	79.533	20
2020	1.000	1.000	1.000	20	20	20	0.000	0.00	0.000	0.017	0.050	20
2021	0.994	0.994	1.000	16	16	20	3.471	21,945,135.34	3.255	3.204	0.000	20
Mean	0.949	0.968	0.977	14.833	16.083	15.333	0.648	3,957,461.22	2.915	2.210	20.952	

Table 8. Average Technical Efficiency Scores, Number of Efficiency Frontiers, and VRS Input Slacks (Navy Hospitals)

Year	Technical Efficiency			Number of Efficiency Frontiers			VRS Input Slacks (Average)					Number of Hospitals
	CRS efficiency	VRS efficiency	Scale efficiency	CRS	VRS	Scale	Beds	Total Expense	Physicians	Nurses	Other FTE	
2010	0.906	0.941	0.958	7	8	8	0.282	815,584.76	6.172	7.469	6.159	13
2011	0.950	0.985	0.962	8	9	8	0.001	278,427.08	0.385	0.834	2.412	13
2012	0.957	0.979	0.977	5	7	6	0.852	0.00	0.484	0.050	9.447	13
2013	0.908	0.952	0.950	6	7	7	0.000	1,635,673.91	4.623	0.000	62.668	13
2014	0.952	0.971	0.980	5	6	5	0.555	847,229.44	2.195	0.190	5.505	13
2015	0.971	0.986	0.984	11	11	11	0.000	42,533.32	0.041	0.000	0.842	13
2016	0.962	0.982	0.979	10	10	10	0.337	2,010,566.15	0.056	0.000	9.430	13
2017	0.966	0.999	0.966	10	11	10	0.060	139,916.24	0.000	0.034	1.944	13
2018	0.908	0.932	0.965	10	10	10	0.764	8,131,090.42	0.000	5.750	57.536	13
2019	0.878	0.950	0.908	10	10	10	1.370	7,965,533.21	0.000	4.912	68.550	13
2020	1.000	1.000	1.000	11	11	11	0.000	0.00	0.000	0.000	0.000	11
2021	0.992	0.992	1.000	8	8	10	4.784	41,270,056.79	4.266	4.325	0.000	11
Mean	0.946	0.972	0.969	8.417	9.000	8.833	0.750	5,261,384.28	1.519	1.964	18.708	

V. RESULTS OF THE MALMQUIST PRODUCTIVITY INDEX

We employed the DEA-based MPI to assess the productivity change of DOD hospitals from 2010 to 2021. The results are presented in Tables 9–12. (See Appendix 3, which visualizes these tables as a graph.) The tables show the average MPI and its four components: technical efficiency change (Effch), technological change (Techch), pure efficiency change (Pech), and scale efficiency change (Sech).

Table 9 shows the results of all DOD hospitals. The average MPI of all DOD hospitals from 2010 to 2021 is 0.995, indicating that the average productivity of all DOD hospitals decreased by 0.5% annually during this period. That is to say, all DOD hospitals failed to improve their productivity significantly over time.

In particular, it is interesting that the average technological change was 0.993, which is less than 1, while the average pure and scale efficiency changes were 1.000 and 1.001, respectively, which are larger than 1. This may denote that the decrease in all DOD hospital productivity originates from a decrease in technological change. Appendix 3 clearly shows that the MPI has moved with technological efficiency during this period. That is to say, some DOD hospitals might fail to fully employ technology and innovative management to produce more outputs with fewer inputs and thus stay inefficient.

When it comes to the change in productivity by year, we found that significant decreases in both MPI and technological efficiency happened together in 2013–2014 and 2016–2017, while technical efficiency, pure technical efficiency, and scale efficiency remained relatively constant during this period. It is also interesting to mention that all of MPI and its four components spiked in 2019–2020. This may be due to the COVID-19 pandemic.

Tables 10–12 show the results for Army, Navy, and Air Force hospitals, respectively. Only the Army hospitals achieved productivity improvement while Air Force and Navy hospitals experienced a decrease in productivity. All three types of DOD hospitals showed similar patterns in their change of MPI and its four components during this period; the MPI and technological efficiency moved together and showed

a significant decrease in 2013–2014 and 2016–2017 and a sudden rise in 2019–2020.

Specifically, the average MPI of Army hospitals from 2010 to 2021 is 1.015, meaning that Army hospitals increased their productivity by 1.5% annually during this period. All the average values in their technical efficiency, technological efficiency, pure technical efficiency, and scale efficiency are larger than 1, implying that the Army hospitals showed enhancement of all productivity from 2010 to 2021. Indeed, the MPI and its four components of Army hospitals have been relatively stable, although MPI and technological efficiency showed a noticeable decrease in 2013–2014 and 2016–2017 and a remarkable increase in 2015–2016 and 2019–2020.

On the other hand, the average productivity of Air Force and Navy hospitals are 0.963 and 0.997, which implies that their productivity decreased by 3.7% and 0.3%, respectively, during this period. In particular, the Air Force hospitals showed the most significant decrease in productivity among the three types of DOD hospitals. Considering that their average value of technological efficiency is 0.963, this decrease may be due to their inefficiency in using technology and innovative management to manage their inputs and outputs. When we examined the MPI and its four components of Air Force hospitals by year, we found that the MPI and technological efficiency between 2012–2013 and 2013–2014 rapidly decreased by 0.86 and 0.84, respectively. Indeed, Air Force hospitals had the highest MPI and technological efficiency among the three types of DOD hospitals in 2012–2013, but their MPI and technological efficiency were placed third in 2013–2024.

Table 9. MPI and Its Components (All DOD Hospitals)

Periods	Effch	Techch	Pech	Sech	MPI
2012-2013	0.956	1.193	0.980	0.975	1.141
2013-2014	1.028	0.804	1.008	1.019	0.827
2014-2015	1.045	0.972	1.025	1.020	1.015
2015-2016	1.000	1.110	1.000	1.000	1.110
2016-2017	0.967	0.687	0.988	0.978	0.664
2017-2018	0.926	1.067	0.920	1.007	0.989
2018-2019	0.948	1.069	1.006	0.943	1.014
2019-2020	1.178	1.252	1.093	1.078	1.474
2020-2021	0.990	0.923	0.990	1.000	0.914
Mean	1.002	0.993	1.000	1.001	0.995

Table 10. MPI and Its Components (Air Force Hospitals)

Periods	Effch	Techch	Pech	Sech	MPI
2012-2013	0.998	1.476	0.986	1.012	1.472
2013-2014	0.958	0.638	0.974	0.984	0.611
2014-2015	1.072	1.080	1.054	1.018	1.159
2015-2016	1.000	0.974	1.000	1.000	0.974
2016-2017	0.975	0.705	0.984	0.991	0.687
2017-2018	0.953	0.988	0.945	1.009	0.942
2018-2019	0.965	1.036	0.994	0.971	1.000
2019-2020	1.115	1.154	1.082	1.030	1.286
2020-2021	0.978	0.864	0.979	1.000	0.846
Mean	1.000	0.963	0.999	1.001	0.963

Table 11. MPI and Its Components (Army Hospitals)

Periods	Effch	Techch	Pech	Sech	MPI
2012-2013	0.940	1.149	0.975	0.964	1.080
2013-2014	1.048	0.864	1.019	1.029	0.906
2014-2015	1.036	0.941	1.016	1.019	0.974
2015-2016	1.000	1.172	1.000	1.000	1.172
2016-2017	0.963	0.667	0.984	0.978	0.642
2017-2018	0.914	1.080	0.905	1.010	0.988
2018-2019	0.940	1.091	1.003	0.938	1.026
2019-2020	1.208	1.290	1.120	1.079	1.559
2020-2021	1.002	1.007	1.000	1.002	1.009
Mean	1.002	1.012	1.001	1.001	1.015

Table 12. MPI and Its Components (Navy Hospitals)

Periods	Effch	Techch	Pech	Sech	MPI
2012-2013	0.959	1.110	0.987	0.972	1.064
2013-2014	1.038	0.820	1.012	1.026	0.851
2014-2015	1.044	0.963	1.022	1.022	1.006
2015-2016	1.000	1.090	1.000	1.000	1.090
2016-2017	0.968	0.716	1.000	0.969	0.693
2017-2018	0.932	1.099	0.934	0.998	1.025
2018-2019	0.952	1.051	1.021	0.933	1.001
2019-2020	1.163	1.248	1.049	1.108	1.451
2020-2021	0.991	0.955	0.991	1.000	0.946
Mean	1.003	0.993	1.001	1.002	0.997

VI. DISCUSSION

DOD hospitals are expected to fulfill two primary missions: maintain an operational medical capacity to support combat operations and offer healthcare benefits to DOD beneficiaries. Both are critically related to the overall capacity of national defense. This makes military healthcare one of the most important policy areas and one of the largest expenditures in the defense budget.

To be accountable for achieving these two primary missions against rising costs in the military healthcare system, DOD hospitals are expected to meet demand efficiently. For that reason, Congress as well as the DOD have paid attention to evaluating and improving the efficiency of DOD hospitals. For example, Congress mandated MHS reform through the Fiscal Year 2017 (FY17) National Defense Authorization Act (NDAA), which not only shifted the administration of Military Treatment Facilities (MTFs) from individual services to the Defense Health Agency but also directed the agency to investigate all MTFs to define what should be done to achieve the right-sized facilities (Farrell, 2018; Mendez, 2019; Whitley, 2017).

Academia has also engaged in assessing and prescribing hospital efficiency in the MHS. Hospital-efficiency researchers assess military hospital efficiency by analyzing technical efficiency (Bastian et al., 2017; Coppola, 2003; Fulton, 2005; Oh et al., 2022; Ozcan & Bannick, 1994), specifying the differences in efficiency between types of military hospitals, such as between DOD and Veterans Administration (VA) hospitals (Ozcan & Bannick, 1994; Bannick & Ozcan, 1995), comparing them to non-federal hospitals (Burgess & Wilson, 1993) and identifying the determinants of military hospital performance (Ozcan & Luke, 2011), as well as the outcomes of military hospital efficiency (Bastian et al., 2016a; 2016b).

This study is an extension of this federal hospital-efficiency research. In particular, it focuses on analyzing all DOD hospitals, consisting of Army, Air Force, and Navy hospitals, from 2010 to 2021. The results contribute to previous federal hospital-efficiency studies by adding new findings.

First, this study offers the trends of DOD hospital efficiency from 2010 to 2021.

The average of all DOD hospitals' CRS-based technical efficiency moved from 0.904 in 2010 to 0.991 in 2021. It slightly improved (its CAGR is 0.84%), although there were some fluctuations during this period. The CRS-based technical efficiency of all DOD hospitals recorded its highest value (1.000) during this period in 2020, while its lowest value (0.881) was in 2019. All three types of DOD hospitals showed a similar pattern in CRS-based technical efficiency trends from 2010 to 2021. The average CRS-based technical efficiency of the Air Force from 2010 to 2021 moved from 0.892 in 2010 to 0.979 in 2021 (its CAGR is 0.85%), while one of the Army hospitals shifted from 0.909 in 2010 to 0.994 in 2021 (its CAGR is 0.82%), and one of the Navy hospitals increased from 0.906 in 2010 to 0.992 in 2021 (its CAGR is 0.83%).

Although simple comparison is not possible, we can trace the trends of DOD hospital-efficiency change based on previous studies. For example, in employing DEA, Ozcan, and Bannick (1994) found that the average efficiency of 124 DOD hospitals ranged from 0.91 to 0.96 from 1988 to 1990; the average efficiency of all DOD hospitals during this period was 0.95 while the average efficiency of Air Force, Army, and Navy hospitals was 0.96, 0.94, and 0.91, respectively. For the three years, the average efficiency of all DOD hospitals slightly increased from 0.93 in 1988, 0.95 in 1989, and 0.94 in 1990. Harrison and Meyer (2014) also used DEA to analyze the efficiency of VA and DOD hospitals in 2007 and 2011. The results indicated that the efficiency of federal hospitals was 0.81 in 2007 and 0.86 in 2011, respectively. Summarizing these studies, we can estimate that DOD hospitals have not been operating efficiently, although their average efficiency has been slightly improving with some upward and downward trends. This implies that there is room for efficiency improvement and thus policymakers and hospital managers should make more effort to find practical ways to improve the efficiency of DOD hospitals.

Second, the overall technical efficiency of all DOD hospitals has been more influenced by pure technical efficiency than scale efficiency. The average of VRS-based technical efficiency from 2010 to 2021 was 0.971, while the average of scale efficiency during this period was 0.976. Considering that the overall technical efficiency of all DOD hospitals during that time was 0.950, they have been run inefficiently and the inefficiency is likely to be due to the lack of pure technical

efficiency. For example, when CRR-based technical efficiency recorded its lowest value (0.881) in 2019, slack analysis indicated that the average slack of total expenses was USD6,734,720.39 and the average slack of nurses and other full-time employees was 5.404 and 70.321, respectively. However, when specifying the difference between the three types of DOD hospitals, we found that Navy hospitals were different from Army and Air Force hospitals. During this period, there were only three years when the average of VRS-based technical efficiency was lower than the average of scale efficiency: 2010, 2014, and 2018. During the remaining nine years, the average of VRS-based technical efficiency was higher than the average of scale efficiency. That is to say, the overall inefficiency of Navy hospitals might have been more influenced by scale efficiency than pure technical efficiency during this period. This implies that policymakers and hospital managers should pay more attention to addressing pure technical efficiency, although it depends on the type of military hospital.

Lastly, the change in the productivity of all DOD hospitals is related to technological efficiency. When scrutinizing the MPI and its four components in all DOD hospitals from 2010 to 2021, this study found that the MPI and technological efficiency showed the same pattern. They showed an upward or a downward trend in the same year. That is to say, an increase or a decrease in the productivity of all DOD hospitals may originate from technological efficiency or inefficiency. When successfully employing the development of technology or adopting innovative management, the productivity of all DOD hospitals in *t* increased compared to one in *t-1*. However, when they failed to use technology and innovative management techniques in *t-1*, their productivity in *t* decreased compared to one in *t-1*. This implies that policymakers and hospital managers should pay more attention to employing smart technology and innovative management to improve the productivity of DOD hospitals.

These findings offer practical implications for Korean military hospitals as well. First of all, information disclosure can play an important role in improving military hospital efficiency. All DOD hospitals have transparently disclosed a variety of information regarding their inputs and outputs. It leads external stakeholders, such

as hospital research communities and healthcare practitioners, to not only assess hospital efficiency of DOD hospitals but also compare them with their counterparts in the private sector. In contrast, Korean military hospitals tend to be reluctant to open their information. Indeed, due to the limited accessibility to the data on Korean military hospitals, we could not make a direct comparison of hospital efficiency between the U.S. and Korean military hospitals. Without the right assessment of something, we cannot find the right solution to improve it. Thus, Korean military hospitals should consider information disclosure to the public, thereby mobilizing untapped resources from external stakeholders in assessing and improving military hospital efficiency.

Second, Korean military hospitals should establish a monitoring system to regularly assess their efficiency. As the analysis of DOD hospital efficiency revealed, military hospitals do not always run efficiently. In addition, the productivity of DOD hospitals does not automatically increase over the years. It implies that achieving and maintaining hospital efficiency needs constant efforts. Thus, Korean military hospitals should assess the efficiency of individual military hospitals every year and compare it based on the time horizon. It will enable Korean military hospitals to not only better understand their efficiency status but also find what causes the inefficiency. In addition, as DOD hospitals showed, there may be a difference in hospital efficiency between Air Force, Navy, and Army hospitals. It indicates that Korean hospitals should consider and check if the type of military hospitals is related to their efficiency.

Lastly, Korean military hospitals should be detailed in analyzing their efficiency. The efficiency analysis of DOD hospitals revealed that their inefficiency has been more influenced by pure technical efficiency than scale efficiency while their productivity is more related to technological efficiency than overall and pure technical efficiency and scale efficiency. It implies that to find the right solution to enhance efficiency we should pay more attention to identifying what kind of efficiency causes the inefficiency at an individual hospital level.

Ⅶ. CONCLUSION

The importance of DOD hospitals cannot be underestimated. Their two primary missions—to maintain medical readiness for combat and to distribute healthcare benefits to DOD beneficiaries—are directly related to national defense. Thus, they have received significant attention and are expected to meet the demand for doing more with less—i.e., achieving optimal operational medical capacity. Assessing the efficiency of DOD hospitals benefits decision-makers and managers as well as Congress. However, there has been a decrease in hospital-efficiency research focusing only on DOD hospitals because current hospital-efficiency studies tend to regard DOD hospitals as public hospitals.

To fill the lacuna, this study aimed to evaluate DOD hospital efficiency. It drew upon the American Hospital Association's annual survey data and employed DEA, slack analysis, and the MPI to analyze DOD hospitals from 2010 to 2021.

The findings of this study offer practical policy and managerial implications on how to manage DOD hospitals efficiently. They reveal that, overall, DOD hospitals operated inefficiently from 2010 to 2021, although the average technical efficiency of all DOD hospitals increased slightly during this period. In addition, our findings show that the inefficiency of all DOD hospitals may be due to the lack of pure technical efficiency rather than the suboptimal scale. However, as Navy hospitals seem to be different from Army and Air Force hospitals, we should be careful in addressing the inefficiency of each type of DOD hospital.

Despite these contributions, we should acknowledge that this study has revealed some limitations that further research could accommodate. The study heavily relies on analyzing the efficiency of DOD hospitals and not on offering any causal relationship that could explain what generates the efficiency or inefficiency of DOD hospitals. In addition, although this study attempted to analyze the differences in efficiency between Army, Air Force, and Navy hospitals from 2010 to 2021, it employed aggregated data and thus could not explain the variations of individual DOD hospitals regarding their relative efficiency and change during this period.

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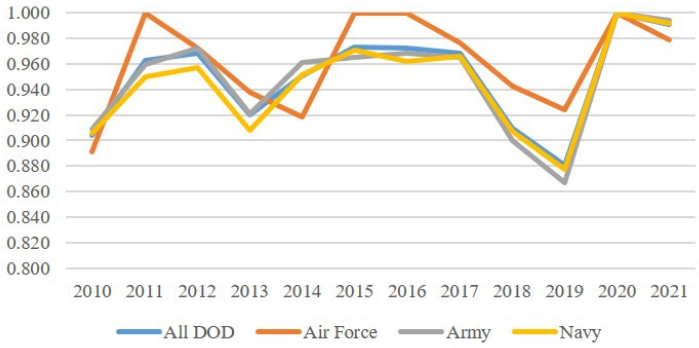
Appendix 1. CAGR of Input and Output Variables from 2010 to 2021

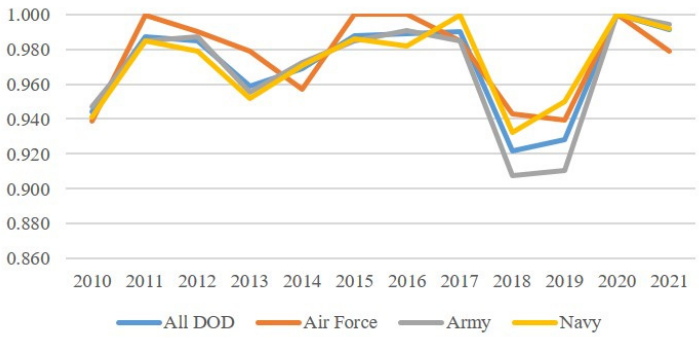
Variables		All DOD	Air Force	Army	Navy
Inputs					
	Beds	-0.68%	-3.24%	-0.49%	0.41%
	Expenses (millions US$)	6.27%	5.32%	6.02%	7.09%
	FTE Physicians	2.54%	0.84%	1.99%	4.24%
	FTE Nurses	2.99%	0.38%	3.22%	3.89%
	FTE Other Employees	3.26%	0.85%	3.52%	4.04%
Outputs					
	Outpatient Visits	1.78%	1.08%	0.60%	3.97%
	Inpatient Days	-1.91%	-5.34%	-1.64%	-0.87%
	Inpatient Surgical Operations	5.82%	-6.21%	6.54%	8.56%
	Outpatient Surgical Operations	4.94%	0.65%	4.68%	7.04%
	FTE Trainees	3.40%	-2.83%	3.51%	4.83%

Appendix 2. Change of Technical Efficiency from 2010 to 2020

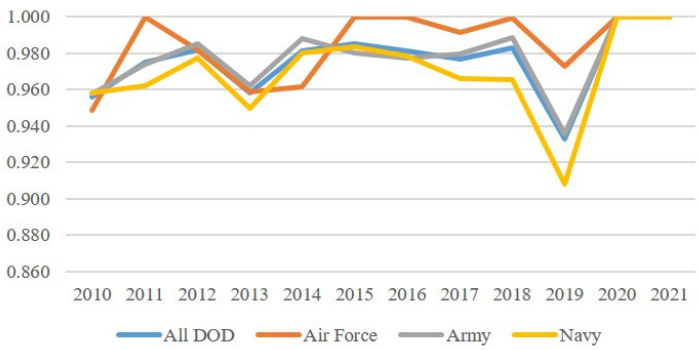
1) CRS-Based Technical Efficiency



2) VRS-Based Technical Efficiency

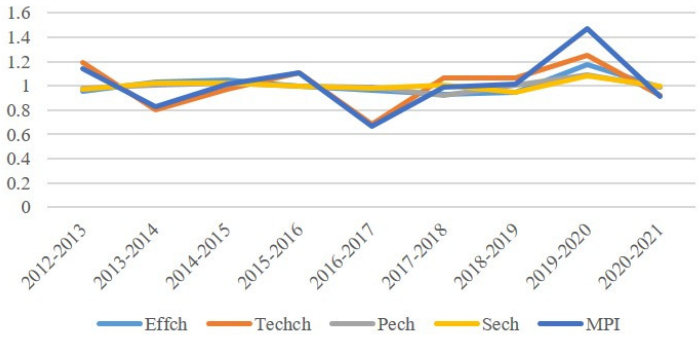


3) Scale Efficiency

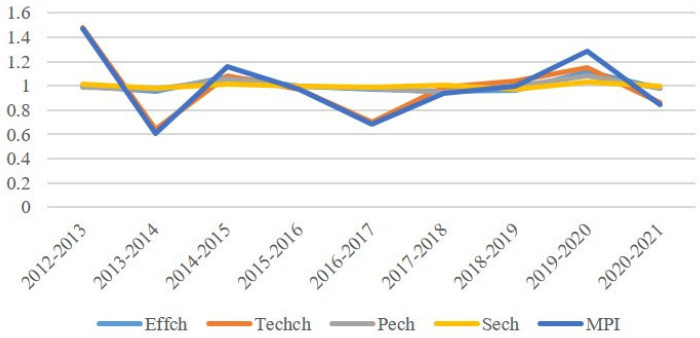


Appendix 3. The Change of MPI and its Components from 2010 to 2020

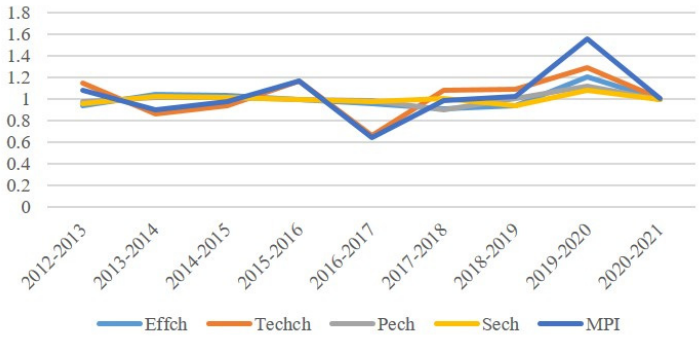
1) All DOD Hospitals



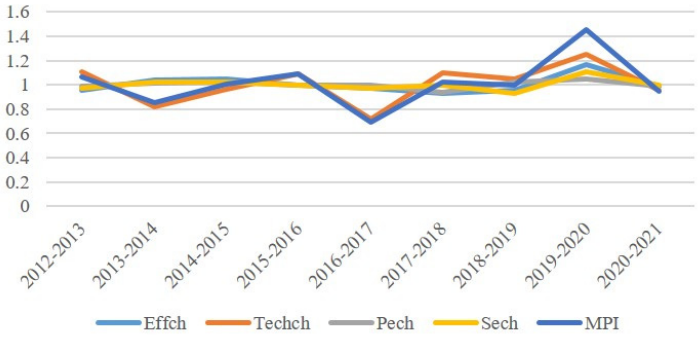
2) Air Force Hospitals



3) Army Hospitals



4) Navy Hospitals



Ⅱ

Changing Global Order : Evolution of NATO Partnerships and its Cooperation with South Korea

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1. The Evolution of NATO Partnerships

Following multiple changes in the North Atlantic Treaty Organization (NATO) after the Cold War era, the emerging concept of 'Cooperative Security' intertwined with the concept of 'partnership' is of great importance. NATO Partnership, a newly emerged concept in the post-Cold War, was strategically employed for its enlargement centered on Central and Eastern Europe in the 1990s. At present, outreach activities become the most powerful method to facilitate the new members' accession process.

'Cooperative Security' has two general approaches to address security challenges. The general meaning of security in the partnership is "managing regional and foreign stability and peace through cooperation with member states and partners." In specific, there are three types of partnerships based on the depth of arrangements. The first type is the one with non-NATO European countries that have a willingness to have an official partnership with NATO, such as Ukraine, Sweden, and Georgia. The second one is the relationship with countries in peripheral areas of the European Union (EU) of non-NATO defense zones, such as Jordan and Israel. The third type is the one with NATO's offshore area, mainly those in the Asia-Pacific region. The best-known examples are South Korea, Japan, Australia, and New Zealand, invited at the 2023 Hiroshima Summit and the 2022 NATO Madrid Summit.

The evolution of NATO's partnership stemmed from the collapse of the Cold War system. A series of events 'Fall of the Berlin Wall in 1989', 'German Reunification in 1990', and 'Dissolution of the Warsaw Pact and the Soviet Union in 1991' signify the fundamental dismantling of the international order built on the aftermath of two world's major wars. For instance, German Reunification uprooted the post-World War order established at the Yalta Conference, and the Dissolution of the Soviet Union, Yugoslavia, and Czechoslovakia mainly dismantled the order based on the Treaty of Versailles[1].

1) Ronald D. Asmus, "Double Enlargement: Redefining the Atlantic Partnership after the Cold War," in David C. Gompert and F. Stephen Larrabee(eds.), *America and Europe: A Partnership for A New Era*(Cambridge: Cambridge University Press, 1998), 이수형 역, 『미국과 유럽의 21세기 국제질서』(서울: 한울아카데미, 2000), p. 51.

These rapid changes in the security landscape created both stability and instability in Europe, which is a mixture of peace in Western Europe and instability in Central and Eastern Europe.

When significant transitions of the world order had been in progress, Europe's security situation in the early 1990s was divided into three different regions.[2] The first region was "peaceful Western Europe", which implied the victory at the end of the Cold War and a liberal democratic society. The second one was Central Europe including Poland, Hungary, and the Czech Republic, with traditional European cultures and identities. Last but not least, there were the suburbs of Europe consisting of Eastern Europe and the Balkans, whose nationalism still being a strong political factor for nation construction. From that perspective, the task of preventing nontraditional and transnational security threats, such as racial disputes and territorial disputes happening in the Central and the suburbs of Europe, from occurring the Western Europe was pressing for NATO. To deal with these conflicts, at the 1991 Rome Summit, NATO adopted a new strategic concept reflecting these security environments following the end of the Cold War. During the transitional period of Europe, at the 1994 Brussels Summit, it also officially declared that no European countries should be inhibited from joining NATO, which reaffirmed its *Open Door Policy* reflecting the alliance's willingness to consider new members. This enhanced NATO's mission and role in promoting this policy which facilitated freedom and peace over Europe while considering Russia's security position as well.

After the official declaration of the policy, NATO established the *Partnership for Peace* (PfP) as an enlargement strategy. This initiative was aimed at not only promoting NATO's expansion but also relieving Russia's concerns[3] about its expansion. It also provided all European countries participating in the North Atlantic

2) Adrian Hyde-Price, "European Security in the Twenty-first Century: Towards a Stable Peace Order?," in Andrew Cottey and Derek Averre(eds.), *New Security Challenges in Postcommunist Europe: Securing Europe's East* (Manchester: Manchester University Press, 2002), pp. 190~212.

3) Ronald D. Asmus, *Opening NATO's Door: How The Alliance Remade Itself for a New Era* (Columbia: Columbia University Press, 2002), p. 35.

Cooperation Council (NACC)[4] with the benefits of the Open Door Policy and encouraged them to join all military activities except the ones enshrined in Article 5 of the North Atlantic Treaty. This was to promote NATO's enlargement to the East through PfP while addressing potential risks in these regions.

However, the abrupt incident of terrorist attacks in the 21st century served as a decisive opportunity for immediate changes in the security landscapes of the United States and the world's major countries. At that time, the former U.S. Secretary of Defense Donald Rumsfeld demonstrated the September 11 attacks as 'a different kind of war that none other nation has faced'[5].

As it led to the reconstruction of the U.S. National Security Strategy, NATO raised the need to establish a new type of partnership. Therefore, for the first time in history, NATO invoked Article 5 of the North Atlantic Treaty, supporting the U.S. with the war on Afghanistan. At the same time, it strongly emphasized the necessity to expand its deterrence and defense to the global level to efficiently counter the terrorism. Moreover, it included the threat of terrorism and the growing threat of weapons of mass destruction as an 'area of activity.' In the wake of the incident, NATO reconstructed its existing partnership to cope with the new threats and unstable security environments locally and internationally. In the end, these concerns are expressed as *Global Partnership*, revealing the intent for a much wider extent of influence than in the past.

However, NATO's Global Partnership has faced another phase of facets since the September 11 attacks. At the end of the Cold War, the original purpose of NATO's Open Door Policy was centered on the countries of Central and Eastern Europe while building cooperative political and security relationships, which was designed to promote stable security order across Europe. However, it was the attack in 2001 that changed the purpose of NATO's enlargement to become a wider engagement

4) NACC, a institutionalized platform for cooperation, was established in the background of NATO's urge for political and military cooperation with countries in the Central and Eastern Europe at 1990 London Summit.

5) Donald H. Rumsfeld, "A New Kind of War," *The New York Times*, September 27, 2001

of cooperative security with countries of non-Europe and the Middle East. That is, a new cornerstone of NATO Global Partnership becomes promoting military and security capacity, rather than military one.[6] Coupled with the expansion of NATO's areas of activities, it further deepened its partnership with like-minded countries in the Middle East allying with the U.S. and Asia-Pacific countries for security and military cooperation.

Table 1. The Development of NATO Partnerships after the Cold War

Year	Partnership (Initiative)	Scope
1991	North Atlantic Cooperation Council (NACC)	Central & Eastern Europe
1994	Partnership for Peace (PfP)	
	Mediterranean Dialogue (MD)	Southern & Eastern Europe
1997	Euro-Atlantic Partnership Council (EAPC)	NATO Allies and Partners
2002	NATO-Russia Council (NRC)	NATO-established security arrangements
	NATO-Ukraine Commission (NUC) → NATO-Ukraine Council (2023~)	
2003	NATO-EU Cooperation (based on "Berlin Plus" arrangements)	NATO and European Union
2004	Istanbul Cooperation Initiative (ICI)	Middle East
2006	NATO Global Partnership (Republic of Korea, Japan, Australia, New Zealand)	Globe

※ 출처: 이수형, 『북대서양조약기구: 이론·역사·쟁점』(서울: 서강대학교출판부, 2012), p. 417.

After the 2002 Prague Summit, NATO marked its Global Partnership as an important juncture in its alliance aimed at fostering cooperation with non-member countries. Despite this development, there are differing opinions on the term Global Partnership. The reason for the criticism was due to concerns of causing misunderstanding not only within NATO but also in other non-NATO countries about its implications resulting from the term 'global' and discriminating nature compared to other NATO regional partnerships.[7] Therefore, it was superseded by the *NATO Partnership.*

6) Karl-Heinz Kamp, "Global Partnership? A New Conflict Within NATO?," *Analysen und Argumente der Konrad-Adenauer-Stiftung*, Nr. 29/2006, p. 4.

7) Karl-Heinz Kamp, "NATO Before Bucharest," *Atlantisch perspectief*, 32-2(2008), pp. 4-8.

Over the years, the partnership has shown a new phase of expansion beyond the European region. For instance, there have been new efforts to build new cooperation with countries in the Mediterranean and Middle East, thereby creating platforms of Mediterranean Dialogue (MD) and Istanbul Cooperation Initiative (ICI). Moreover, NATO promoted its engagement and cooperation with countries in the Asia-Pacific region at the 2008 Bucharest Summit. The most representative examples are with AP4, which are the Republic of Korea, Japan, Australia, and New Zealand, now serving as key NATO's Indo-Pacific partners.

Looking back at the 2010 Strategic Concept, it well reflected the evolvement of the NATO Partnership after the September 11 attacks. As defined in the concept, "new threats" can be any form of aggression to the security of the alliance rather than to the territory, regardless of geographical origins, which means the Alliance now covers a much wider spectrum of threats.[8] This means that NATO's de-territorialization activities were emphasized in the face of security challenges. In that sense, the concept reflected the perception that the peace and stability of the Euro-Atlantic region can best guaranteed through a wide network of partnerships with countries and organizations across the world.

After the announcement of the 2010 Strategic Concept, the issue of 'security developments beyond its borders' stimulated strife among NATO allies and this new direction weakened the traditional function of collective defense. Since principles of crisis management and cooperative security have become essential core tasks as much as collective defense, political function has been reinforced. Concerning these changes, Raymond Aron mentioned that NATO means more than just an alliance in the Euro-Atlantic region though it functions below the traditional alliance outside that region.[9]

8) Trine Flockhart, *After The Strategic Concept: Towards a NATO Version 3.0*, 2011, p. 16.

9) Raymond Aron, *Peace and War: A Theory of International Relations* (New Brunswick, NJ.: Transaction Publishers, 2003), p. 445.

2. Systemic Competition and Strategic Implications for NATO Partnership

As of 2022, the NATO Summit was held in Madrid amid the evolving landscape of international security involving conflicts between the Trump administration and the Alliance, expansion of China's rise and influence, and Russia's invasion of Ukraine, which are quite different from the past ones.[10)]

2-1. Conflicts between NATO and the U.S.

First of all, the NATO-U.S. conflict arose from political differences. In general, the reciprocal ties reflect the nature of the political community of the alliance and cohesion of the member states. Since the foundation of NATO, it has emphasized the principle of maintaining and strengthening the alliance's political cohesion whenever envisioning its new strategic concept. This is because unity among the members is of paramount importance not only to sustain the alliance but also to prepare military postures. For example, the 'Flexible Response' strategy, a significant shift of Kennedy's administration military doctrine, was ambiguous from a military perspective and caused controversy due to the timing and method of nuclear weapons replacing conventional forces. Nevertheless, the formats eventually helped retain and reinforce the political effectiveness of strengthening the cohesive power of the alliance.[11)]

With the launch of the Trump administration in 2017, however, European members of the NATO Alliance began to express doubts about the U.S. commitment to European security. Former U.S. President Donald Trump's foreign policies, "America First" and "Peace through Strength", mainly emphasized principled realism and an alliance prioritizing U.S. national interests. Trump's fundamental principle was therefore rooted in taking action on the outcomes rather than ideologies, as well as seeking harmony and friendships, not conflicts. In other words, the administration

10) 이수형, "우크라이나 전쟁과 나토(NATO)의 신전략개념: 국제안보적 함의와 동북아 시사점," 『안보학술논집』, 제33집, 2022년, pp. 69-72.

11) 이수형(2012), pp. 211-212.

considered the value of NATO as its national interest rather than the existing value-oriented alliance, even perceiving the allies as competitors unless they do benefit its national interests.[12)]

This aggressive stance triggered the deadlock between the United States and the member states of NATO. For instance, there was political strife because of Trump's claims on NATO's defense spending and existence, and the absence of explicit endorsement of NATO's Article 5.[13)] These non-traditional behaviors led European countries to cast doubts on the U.S. security commitments to NATO, thereby bringing them to strengthen individual security capabilities. To relieve the concerns and unrest, the U.S. Senate and House of Representatives reaffirmed their commitments to the Atlantic alliance through a series of resolutions as well as introducing bills prohibiting any U.S. presidents from leaving NATO.[14)]

The conflict served as the background for the establishment of the 2022 Strategic Concept in NATO and the reinforcement of its character in its political community. At the 2019 London Summit, the leaders resolutely emphasized the necessity to strengthen the political cohesion of the Alliance due to heightened uncertainty between Europe and the United States. At last, the appeals were reflected in 『*NATO 2030: United for a New Era*』[15)]', which was written by a group of experts in the preparation of a new strategic concept. Since the report stressed the necessity of a new strategic concept, the leaders were able to prepare and adopt it at the 2022 Madrid Summit.

12) 이상현, "트럼프 행정부의 국가안보전략(NSS): 국제정세 및 한반도에 대한 함의," 『국가전략』, 제24권 2호, 2018년, pp. 31-66.

13) Barry R. Posen, "The Rise of Illiberal Hegemony: Trump's Surprising Grand Strategy," *Foreign Affairs*, March/April 2018, pp. 1-12.

14) Douglas Lute and Nicholas Burns, *NATO at Seventy in Crisis* (Cambridge, MA: Belfer Center for Science and International Affairs, 2019), p. 14.

15) The Reflection Group appointed by the NATO Secretary General, *NATO 2030: United for a New Era*, 25 November 2020

2-2. China's Rise

Furthermore, the series of following incidents served as another background for adopting NATO's strategic concept of 2022: China's rise, and deterioration of relations between Russia and NATO after 2014 Russia's annexation of Crimea. 『*NATO 2030*』, which reflected diverse security challenges announced by the U.S. administrations, suggested that they must devote resources and action to security challenges posed by China and should continue a dual-track approach of deterrence and dialogue with Russia.[16] In this regard, the prime message of the 『*NATO 2030*』 can be said the urgency of new measures for China's strategic rise and crisis in Ukraine, apart from the Alliance's political cohesion.

The Obama administration embodied a 're-balancing policy' over China's increasing influence and assertiveness. Since then, both Trump and Biden administrations defined China as a 'strategic competitor' through its National Security Strategy (NSS) and Interim National Security Strategic Guidance in 2017[17], 2018[18], and 2021. 'Strategic competitor' contains the meaning of political-strategic natures in that the U.S. has both conflicts and cooperation with China in areas of politics, economy, and military.[19] For instance, there have been strife and competition in economic and trade sectors in the Trump administration and the spectrum of disputes has been expanded into various fields as well as intensified in the Biden administration.

2-3. Crisis in Ukraine

Most of all, it is the crisis in Ukraine that directly influenced intensified NATO's military posture in its preparation of the 2022 Strategic Concept. The origin of the war can be discussed in various contexts, but one of the main reasons is NATO's

16) The Reflection Group appointed by the NATO Secretary General(2020), p. 12.

17) The White House, *National Security Strategy of the United States of America*, December 2017

18) The U.S. Department of Defense, *National Defense Strategy*, January 19, 2018

19) Refer to the following report about the concept of strategic competition. T. G. Mahnken, *Competitive Strategies for the 21st Century: Theory, History, and Practice* (Stanford, CA: Stanford University Press, 2012)

expansion into Central and Eastern Europe, sparking Russia's aggression in Ukraine.[20] President Putin's choice of the war is interpreted as 'restoring the former Soviet Union' or 'rebuilding at least a new sphere of influence on the Russian border'. These claims seem convincing considering the talks between the United States & NATO and Russia on Russia's demands for security guarantees. Now, Putin is preventing NATO's expansion and demanding NATO to give up any military activities of newly developed forces in Eastern and Central Europe.

Amid the intensification of strategic games between NATO and Russia over the crisis in Ukraine, Putin considered Russia's security interests facing threats from NATO's enlargement policy. This is because of NATO's enlargement without consideration of Russia's position and the expansion of U.S. missile defense capacities since 2007, which leads to a national disgrace[21] in his homeland after the end of the Cold War. As such, Putin revealed his unfeasible plans to transform the asymmetric European security architecture through the Ukraine war and restore its past glory.

2-4. New NATO Strategic Concept

A series of different security situations compared to the past served as backgrounds for a new strategic concept in 2010; the decline of the U.S. power, China's rapid rise, and a revival of Ruissa's power seeking to change the security landscape. The current NATO strategic concept, therefore, defined Russia as the most significant and direct threat to the Alliance and China as a systemic challenge[22] which threatens the universal value of the liberal international order. In the wake of the 2022 Madrid Summit, the U.S. and European countries have formalized systemic competition with China over the reorganization of global order.

In general, there are two core concepts in the NATO Strategic Concept of 2022.

20) Dan Bilefsky, Richard Perez-Pena and Eric Nagourney, "The Roots of the Ukraine War: How the Crisis Developed," *The New York Times*, 24 March, 2022.

21) Robert Hunter, "The Ukraine Crisis: Why and What Now?," *Survival*, 64-1, February/March 2022, p. 14.

22) NATO, *NATO 2022 Strategic Concept*, June 29, 2022

One is the reorganization and expansion of military capabilities for collective defense, which had been negligible in regard to the war in Ukraine. The other is to formalize NATO's position to engage in systemic competition centered on the Indo-Pacific as a tool to revitalize its offshore activities. For the first time, NATO declared the importance of the Indo-Pacific to strengthen dialogue and cooperation with the regional partners. The invitation of South Korea, Japan, Australia, and New Zealand (Asia-Pacific Four, AP4) to the Madrid Summit as well as the 2023 Vilnius Summit also reflected its intention as such.

The inclusion of AP4 to reinforce security cooperation is intertwined with the systemic competition about a new world order. After NATO announced China as a systemic challenger, the Biden administration also declared it as the only competitor[23] with both the intent to reconstruct world order and the economic, diplomatic, and technological power to do it. In response, President Xi Jinping, who recently laid the groundwork for a long-term reign, stated that he would never submit to any external attempts to suppress, deter, and contain China. Meanwhile, China and Russia jointly reaffirmed that they would work to create for the revision of the world order in the joint statement. They stated their position to create a more fair international order, emphasizing that liberal international norms and customs, respect for human rights, and rules-based order are favorable to the West, not to non-Western countries. Thus, it can be said that the systemic competition and confrontation on a changing international order began in earnest between liberal democratic blocs of the U.S. and authoritarian blocs in solidarity with China and Russia. This competition, also referred to as hegemony competition and the new cold war, is driving the global order into chaos, which is different from the past as follows.

23) The White House, *National Security Strategy*, October 2022, p. 23.

2-5. Main Features of Systemic Competition

First of all, systemic competition of global order brings about geopolitical conflicts, confrontation, and war. The geopolitics centered on global powers is not an exceptional phenomenon in the history of international politics, which can be seen in international relations in Europe in the 19th century, World War, and the Cold War in the 20th century. The very difference of the current geopolitics is "security connectivity." That is, the security of the Euro-Atlantic is related to the security of the Indo-Pacific, also the security of Russia and Central Asia is linked to that of Central and South Asia. Then, this inter-connectedness of security between different regions may set conditions for promoting an arms race and its regional expansion.

Second, the current competition between China and the U.S. creates an international landscape requiring support and cooperation from major countries, not blocs based on robust inter-relations back in the Cold War. What it means is that the rise and influence of "regional pivotal states" become crucial elements for systemic competition since the existing hegemon and newly emerged power both failed to show definite global leadership. For instance, emerging pivotal states, such as India, Turkiye, Saudi Arabia, and Brazil, are actively developing practical diplomacy, which prioritizes national interests without being overly inclined to either side in the U.S.-China competition. Moreover, this diplomacy serves as a buffer to loosening the blocs between the two powers.

Hence, this paradox of systemic competition creates environments for emerging states to pursue practical diplomacy and prioritize national interests since it is not a dichotomous competition between good and evil that imposes ideology or values like that of the Cold War era. Even the current international competition seems confrontation of ideological values outwardly, but "national interests" based on the logic of national priority are the main driver. Consequently, the essence of U.S.-China systemic competition for global order is whether to maximize national interests, rather than to pursue absoluteness of ideologies. Despite the reinforcement of confrontational blocs, these are the reasons why "joint blocs (bandwagoning and

balancing)", the alliance of global powers and pivotal powers based on strategic choices, are available.

In the midst of the development of practical diplomacy across the blocs, East Asia has emerged as a prime actor of international politics since the 21st century. After the Obama administration recognized China's rise as a potential challenge, "Pivot to Asia" and "Indo-Pacific Strategy" have been succeeded and developed as the main foreign strategy. Now, each hegemon is devoted to securing allies for an escalating rivalry.

The United States strives to build up bilateral cooperation with members of NATO, QUAD (Quadrilateral Security Dialogue), and AUKUS (Trilateral Security Partnership between Australia, the United Kingdom, and the United States) and recently reached a new level of security cooperation with Korea and Japan. For China, on the other hand, there are non-Western authoritarian countries, and, it successfully reinforced trilateral security cooperation with North Korea and Russia. Furthermore, it is expanding partnerships while strengthening the status of the Shanghai Cooperation Organization (SCO). As competition to secure allies intensifies, geopolitical circumstances in East Asia have never been more extreme than in any other region in recent days.

In the face of the re-alignment of a new global order, NATO is strengthening partnerships with countries in the Indo-Pacific by redoubling its interests in the region's security. It also intends to become a global alliance in the preparation of China's rise and influence and strengthen institutional cooperation with other regional partnerships outside Europe. The idea of transforming from regional to global alliance is not an unforeseen phenomenon. This NATO expansionist plan started from the 2002 Prague summit, approving a series of initiatives to form new relations with partner countries and providing diverse commitments and measures to security.[24)]

24) "Prague Summit Declaration," issued by the Heads of States and Government participating in the meeting of the North Atlantic Council in Prague, Czech Republic, 21 Nov. 2002

With the start of the plan for a 'de-regional' alliance, NATO's global partnerships have been manifested. Meanwhile, Daalder, the former U.S. ambassador, advocated NATO's transformation into a global partnership, expressing that a revision of Article 10 of the North Atlantic Treaty is inevitable.[25] In other words, its initiative has laid the foundation to be developed as a global alliance that emphasizes the interconnection between the Europe-Atlantic and the Indo-Pacific. Therefore, NATO will reinforce its identity[26] by taking advantage of major regional partners as Scheffer stated "we don't need a global NATO, the kind of NATO that we need is an Alliance that defends its members against globalized insecurity."

3. The Emergence of New Global Order and China-Russia Strategic Partnership

New spheres of relations and competition commenced among the major countries over the Ukraine crisis since President Putin announced a 'special military operation' against Ukraine on Feb 24, 2022. In fact, geopolitical risks are affecting Ukraine after the U.S.-NATO(Western/Democracy) and China-Russia(Non-Western/Authoritarian) forces intervened in the Ukraine crisis. In the case of China, re-elected President Xi completely modified foreign strategy, by stating its position changing from "leading participant (主動參與)" to "active leader (積極引領)" for the multi-polar international order away from the U.S.-centered unipolarism. For instance, China began to present proactive and aggressive foreign policies and intent to expand cooperation through SCO and BRICS (Brazil, Russia, India, China, and South Africa), as well as expansion of the Belt and Road Initiative (BRI) and presenting Global Development Initiative (GDI) and Global Security Initiative (GSI).

25) Ivo Daalder and James Goldgeier, "Global NATO," Foreign Affairs, 85-5(September/October), 2006, pp. 105-113.

26) "Global NATO: Overdue or Overstretch?," Speech by NATO Secretary General Jaap de Hoop Scheffer at the SDA Conference, Brussels, 6 November, 2006

Since the 2021 withdrawal of U.S. troops from Afghanistan and China-Russia cooperation after the Ukraine crisis, China and Russia expressed intention to push for the establishment of a new global order. China recognized this change as geopolitical transition from the old international order, which was formed after the collapse of the Soviet Union. Also, some Chinese experts pointed out 'NATO and Western countries' provision of military weapons to Ukraine', 'NATO-Ukraine joint military exercises', 'Ukraine's demands to join the EU and NATO', 'Ukraine's far-right neo-Nazi Forces and their suppression of Russian residents' and 'setting anti-Russian public opinion.' Considering that the hegemonic competition between China and the U.S. has already expanded from the Indo-Pacific to the global level, it also has had direct and indirect impacts on Eurasia, the Middle East, Europe, South America, and Africa.

Ultimately, in a new structure of international order of the so-called 'new Cold War' after the Ukraine crisis, two confrontational blocs have been built centering around, respectively liberal democratic U.S. and Europe and authoritarian of China and Russia. In other words, China and Russia have expanded their economic-security relationships, one as a 'challenger' of the U.S.-centric international norms, and another as a 'strategic actor' exerting influences in the New Cold War. Although the U.S. including the members of NATO has sought to weaken Russia's influence in the region, the global competition intensified over the past years, with the Ukraine crisis being a more complicated and uncompromising issue.

Perceived as a transnational event for changing international order and global hegemony, the Ukraine war became a proxy war between Russia and the Western blocs of the U.S. and Europe under continuous weapons and military training. Thus, Russia has no choice but to strengthen cooperation and solidarity with other Eurasian countries including Iran, India, North Korea, as well as China, to transform the regional order in Eurasia and replace the current global order. According to the dialogue between newly appointed Chinese Foreign Minister Wang Wi and the Secretary of the Russian Security Council Nikolai Patrushev in 2023, they discussed that they should work out new joint steps to promote the security of both countries. This can be construed as 'Chinese-Russian solid comrade' with regard to any form

of interference in the war in Ukraine and China's internal affairs related to core interests (核心利益), which are intended to block both countries.

Thus, the biggest change is that the Ukraine crisis provided a new impetus for the world order and strategic partnership and cooperation between China and Russia. What two countries alleged is that the current order is utilized as a justification for the maximization of national interests and unilateralism of the United States while the West claimed it to be a liberal democratic order. Regardless of the disputes, however, it is anticipated that the war in Ukraine will not only mean the 'revival of the two new powers', but also the most essential turning point in the change of the U.S. global leadership. For this purpose, China is vigorously widening strategic cooperation with Russia in every area of security and economy to expand partnerships to the Eurasian continent as well. Against this movement, the Western countries are imposing sanctions targeting Russia and China by raising strong opposition to China-driven economic support and weapons provision on Russia. Concerning fierce territorial recapture in Ukraine, if China hits its stride in its military support on Russia, it would be a real turning point for Russia/China to be a 'game changer.'

In 2023, President Xi had a first official overseas visit to Russia to further reinforce a comprehensive strategic partnership that better accommodates their nation's interests. They especially shared a vision for a new world order not to be dominated by the West by discussing the issues occurring in the Ukraine crisis, the Middle East, the Taiwan Strait, and the Korean Peninsula. According to one article in People's Daily Online (人民日报) ahead of the summit, it mentioned that China and Russia would no longer serve a rule serving the rich, but would continue to concentrate their efforts on building an alternative order, which is a fairer and multi-polar world order based on international law. On top of that, at Xi's speech in Russia, we could sense his strong will to defend the UN-centered international order, pursue a multipolar order, and discuss mutual international and regional issues with Russia.[27)]

27) 정재흥, "우크라이나 사태 이후 중러 전략적 안보-경제협력 본격화 함의," 『한반도와 세계』 The Report(2023.03.27.).

China has kept aggressively opposing the U.S.-led value-based alliance through the opposition to the illusion of democracy and freedom and the issuance of warnings on the use of this ideology as a political tool to pressure the opponents. As an outcome of this summit, '*Joint Statement of the People's Republic of China and the Russian Federation on Deepening the Comprehensive Strategic Partnership of Coordination for the New Era*', which reaffirms reciprocal cooperation and support as to sovereignty, territorial integrity, defense, and economic development, enables mutual support on the issues of Ukraine and Taiwan Strait. Also, two leaders advocated North Korea's concerns on sanctions and pressures and stressed that dialogue and negotiations are the only solutions to resolve the Korean Peninsula issue.

Emphasizing the meaning of the rapprochement of Saudi and Iran through China's mediation, the Xi Jinping administration maintained its stance that more constructive and accommodatable resolutions should be sought under a solid partnership between China and Russia. Against the U.S' abuse of hegemony, use of force, and threats to the stability of the world order, two sides reached an agreement on the following aspects; (1) Wide-ranging strategic cooperation on economic-security issues until 2030, (2) Multi-polar world order, (3) Political-economic community with Eurasian countries. In addition, we can expect the expansion of economic relations within the Eurasian continent through OBOR (One Belt, One Road) and the Eurasian Economic Union (EEU), thereby expecting a new industrial supply chain.

Furthermore, through the following initiatives, China will further expand its influence; (1) Strengthening economic-security strategic cooperation with Russia, (2) Integration of Eurasian countries (Middle East, Central Asia, India) centered on China and Russia towards a multipolar order, (3) Establishment of the world's manufacturing supply chain, which ultimately would replace the U.S.-oriented financial system, expand Chinese economy through OBOR and GDI, build various infrastructure facilities, and promote the development of natural resources. After the Chinese-mediated Saudi-Iran reconciliation, it is undeniable that rapid changes are happening in the Middle East considering China's plan for the New Gulf

Cooperation Council (GCC) Summit and the inclusion of Iran in this summit. In that context, there is potential for de-dollarization and a new Eurasian community through these ongoing initiatives.

Amidst increasing uncertainty about security circumstances, Korea is facing many significant risks compared to the past. Since the China-Russia summit, the world has faced an acceleration of the multipolar order, which is expected to have a direct influence on the Korean Peninsula as well. Accordingly, this study is essential to present the necessity to predict changes in the international order after the Russia-Ukraine war and seek feasible methods to deal with diverse issues over the peninsula.

There is a symbolic meaning in the recent change in the international order. That is, the 'crisis in Ukraine' is the one that provided an impetus for a multipolar order since it caused not only the decline of rules-based order but also provided the environments for widening relations with other countries including the members of SCO, BRICS, and the Global South. Since then, the relations between China and Russia have been continuously promoted against Western pressure. The two sides also have worked together as an alliance based on anti-Western sentiment with other countries to build a platform of strategic cooperation and communication. With an upcoming Putin's visit to China in October 2023, many nations including the members of SCO, BRICS, and the Global South expect a new sphere of international order and its reorganization as well as the investment of China's BRI, while pointing out the hypocrisy of Western-centered unipolarism and their astronomical financial support on the crisis of Ukraine.

However, the Chinese administration is proposing a new different foreign strategy compared to the previous one, such as promoting changes in the Middle East like the normalization of Saudi-Iran relations, providing a peace arbitration plan to resolve the Ukraine crisis, proposing a 'Third United Front (國共合作)' and six-party talks, and plan for Peace Regime on the Korean Peninsula. Moreover, for the establishment of a new global order, the Chinese administration newly announced the Global Development Initiative (GDI), Global Security Initiative (GSI), and Global

Civilization Initiative (GCI), revealing its plans to build a new order with more active approach away from the existing passive stance. In short, we would witness a global order's reconstruction and reciprocal cooperation on core interests-related issues under the strengthened relations[28] given China's world's best manufacturing capacities and Russia's largest nuclear power and abundant resources (oil, gas, and minerals).

Also, the Ukraine crisis is not recognized as a mere regional conflict, but rather a political, economic, and security conflict between the Western hegemony and anti-Western hegemony, so the outcome of the war will have a direct impact on the security order of Eurasia. It is an admitted fact that China has constantly economically supported Russia considering its oil gas purchases from Russia and expanded bilateral trade by more than $200 billion, thereby expecting a high potential for a deepened China-Russia partnership. Furthermore, as China gradually reduced purchasing U.S. government bands, there is a great possibility for the U.S. to face various problems, leading to an economic downturn, which will directly impact the reduction of military expenditures, and weakening defense capabilities.

This stance is relevant to Xi Jinping's leadership, actively raising questions over the U.S.-led unilateralism by the global west, which puts freedom and democracy as their core values. A series of new foreign policy directions, newly announced the GDI (`2021.09), GSI (`2022.04), and GCI (`2023.02), become more concrete as reflected in China's Global Security Initiative Concept Paper (全球安全倡議概念文件). In addition, the increased budget for public diplomacy for 2023, which increased about by 12.2% compared to the previous year, reflects the ambitious outlook of China's foreign policy, as demonstrated in the recent attendance of summits with leaders of Russia, BRICS, SCO, and the Global South.

Meanwhile, the retaliatory nature of hegemonic disputes become more intense in areas of trade, high technology, and military-security after the Ukraine crisis. As the Biden administration's sanctions became systematic and sophisticated, China

28) 정재흥, "중국의 국제질서 다극화 추진과 중동정세변화," 『정세와정책』, 2023년 5월호.

commenced 'tit-for-tat (以眼還眼 以牙還牙)', a new assertive strategy for dealing with the opponent. For instance, in July 2023, the Chinese Ministry of Commerce announced restrictions on the export of gallium and germanium, considered critical raw materials in the semiconductor industry and solar cells.

Also, it is taking advantage of the production capacity of rare earth elements, a strategic asset, to compete in the technology competition. Moreover, as stated in the official 'Report on WTO Compliance of the United States (國履行世貿組織規則義務情況報告)' on August 2023, the government listed detailed violations in 11 areas including tariffs, agricultural and industrial subsidies, and export controls by criticizing the United States as a 'unilateralist' and 'bullying hegemonist.' In addition, the Chinese Ministry of Foreign Affairs blamed the U.S. for taking unilateral measures to pressure China to take advantage of the hegemonic status[29] by publishing a series of reports titled 'US Hegemony and its Perils (美國的霸權霸道霸凌及其危害)', 'Falsehoods in US perceptions of China (美國對華認知中的謬誤和事實真相)'.

Through the Third Belt and Road Forum for International Cooperation (`2023.10) and China-Central Asia Summit (`2023.05), China has proactively committed to extending cooperation from the Eurasian continent to Africa and Latin America, which accounts for about 70% of global GDP. At the 15th BRICS Summit held on August 2023, six countries (Saudi Arabia, Iran, the United Arab Emirates, Argentina, Egypt, and Ethiopia) are officially invited to join the Alliance, which is intended to offset economic damages caused by the blockade of supply chain and various sanctions. The main topic at the summit was to establish an independent BRICS currency or renminbi for international transactions as well as gradual de-dollarization and superiority in tech and economic competition with the U.S.

After the recent Israel-Hamas war on top of the Russia-Ukraine war, China strengthened economic-security strategic cooperation and entered into a

29) In an official statement on June 2023, the Chinese Ministry of Foreign Affairs announced that there are falsehoods in U.S. Perceptions of China, calling for fundamental changes in the opponent's policy towards China. "美国对华认知中的谬误和事实真相," 「中国外交部」 2023年 6月 19日.

'*comprehensive strategic partnership for a new era*' in the field of politics, diplomacy, economy, and security with Russia, which in direct conflict with the U.S. Following the summit, China and Russia agreed to consolidate its cooperation and partnership in areas of economy and trade, investment, energy and resources, and information technology.[30] The two sides also exchanged opinions on resolving the Ukraine crisis and pointed out that it should be discussed in the global peace summit.[31] This indicates China's strategic interests that it will further promote relations with Russia to contain the strong pressure arising from the U.S. and expand international support considering future relations with Europe.

On the sidelines of the Belt and Road Forum in Beijing on October 2023, President Xi and Putin again agreed on strengthening strategic alignment on a wide range of international issues, such as the Ukraine crisis, the Israel-Hamas war, and deteriorating relations with the U.S. Two leaders also announced the long-term plans for building multilateral cooperation platforms covering energy, scientific and technological innovation, finance, and information technology. Therefore, there is a considerable chance of strengthening bilateral economic and security partnerships providing Russia a favorable position in the war and affecting the security of the Korean Peninsula.[32]

30) President Xi Jinping greatly strengthened ties with key political and business figures and made a new development for its relations with Russia at his official visit in March 2023. This summit has a strategical meaning in that major Chinese press reported its visit as feature articles. "习近平主席对俄罗斯国事访问特别报道," 「人民日报」 2023年 3月 22日.

31) At China-Russia summit held on March 2023, the two sides reached on a agreement to hold peace talks to resolve the Ukraine crisis as soon as possible by having a consensus on continuous bilateral security cooperation. "习近平主席对俄罗斯国事访问特别报道," 「人民日报」 2023年 3月 22日.

32) At Belt and Road Forum for International Cooperation on October 2023, Xi Jinping made a remarks about BRI's significance to the global development and Putin mentioned the s intent to expand cooperation with China through BRI. 俄罗斯总统普京："一带一路"倡议是面向未来的重要全球性计划, 「中国新闻」 2023年 10月 24日.

4. South Korea-NATO Cooperation and its Implications

'Cooperative Security', as one of three core tasks of NATO enshrined in its 2022 Strategic Concept, is related to managing allies' security, stability, and peace in the Euro-Atlantic area. The Alliance's cooperation is based on the cooperation with regional partners through its open-door policy targeting Central and Eastern Europe after the Cold War.

As mentioned above, there are three types of partnerships based on the depth of arrangements; (1) non-NATO European countries, which have a willingness to have a partnership with NATO, such as Bosnia, Herzegovina, Georgia, and Ukraine. (2) countries in the peripheral area of the EU of non-NATO defense zones, such as the Middle East and North Africa. For example, there are Algeria, Egypt, and Israel included in the 1994 Mediterranean Dialogue and Bahrain, Qatar, Kuwait, and the United Arab Emirates included in the Istanbul Cooperation Initiative. (3) countries in NATO's offshore area, mainly those in the Asia-Pacific region, such as South Korea, Japan, Australia, and New Zealand invited to the Madrid Summit.

What is noteworthy regarding the level of cooperation, we should take note of '*Enhanced Opportunity Partner* (EOP), which is NATO's partnership with selected partners. Selected partners refer to countries that promote cooperation for a specific purpose under a customized method. Therefore, NATO's enhanced partners are countries that can receive support comparable to NATO's allies in the event of an emergency even though they are not subject to collective defense enshrined in Article 5 of the North Atlantic Treaty. Starting in the 2014 Wales Summit, NATO has sought a higher level of engagement and cooperation with non-NATO countries without granting them the status of formal membership. Through the *Partnership Interoperability Initiative* (PII), Australia, Finland, Georgia, Jordan, and Sweden became informal partners. Ukraine was also designated as a quasi-member partner in June 2020, which paved the way for it to participate in various NATO-led operations and missions, thereby also strengthening NATO's interoperability.

4-1. 2022 NATO Strategic Concept

Recent strategic concepts of NATO present two main implications related to cooperative security.

The first implication is the reaffirmation of the Open Door Policy. It represents the high potential for the membership process of Sweden and Finland. The accession of two partners will result in the expanded operational coverage of Supreme Headquarters Allied Powers Europe (SHAPE) to more than 8,600 square kilometers. In addition, the accession will serve as a significant challenge to Russia in climate security cooperation since the Arctic Council, except for Denmark, is composed of NATO members.

Also, NATO will continue pursuing common interests by advancing partnerships with Bosnia, Herzegovina, Georgia, and Ukraine. However, it can cause controversy within the gray zone of security interests between NATO and Russia considering that Ukraine contributes to Russia's security interests. To resolve this, three approaches can be sought.[33] First, it is to strengthen the sovereignty and independence of this region as 'neutral zones' in consideration of Russia's position opposing NATO's enlargement policy to the east. Second, it is to ensure the safety of neutral zones through a coalition including the U.S. and the European Union. Lastly, it is to promote the political and economic development of the region as allies of the European Union. The last one is promising given that the process of EU candidate countries to Moldova and Ukraine is not opposed by Putin. To sum up, if NATO has the willingness to continue the enlargement policy afterward, it must come up with new and creative resolutions to address security challenges of 'gray zones (neutral zones)', which is related to the final end of the policy and Russia's security interests.

The second implication related to cooperative security is that NATO would further strengthen partner cooperation with Indo-Pacific countries. As the international landscape changes from 'strategic competition' to 'systemic competition with

33) Charles A. Kupchan(2022), pp. 7-9.

China', the Indo-Pacific geopolitical instability and liquidity are becoming extreme under the balance of power between China-led blocs and those of U.S.-led blocs.

In that regard, through invitations of four countries of the Indo-Pacific to the 2022 Madrid summit, NATO officially expressed that it will strengthen dialogue and cooperation with these partners in a new era. In particular, there is a possibility that Japan and Korea, as a quasi-member status, are able to discuss and promote information exchanges and joint military exercises and establish joint command. Depending on the situation and conditions, NATO may negotiate to open liaison offices in Seoul or Tokyo, involving the establishment of a NATO-Indo·Pacific Council.[34] These measures would help develop cooperation programs for maritime security focused on the Indo-Pacific region, targeting at South China Sea and the Taiwan Strait, as well as checking China's influences over the region.

4-2. NATO, as a Global Alliance

Meanwhile, the United States had a bold plan to transform NATO into a global alliance beyond just a regional alliance, dating back to the 2002 NATO Prague Summit. In this summit, NATO approved several initiatives to form new relationships with partners, providing various security commitments and relevant measures.[35] After the summit, 'NATO's Global Partnership' has gone through some significant changes. First, the 2006 North Atlantic Council Meeting held formal talks on global partnerships to seek military and strategic cooperation with countries outside Europe. To quote the former U.S. ambassador Daalder's remarks, he advocated NATO's transformation into a global partnership, expressing that a revision of Article 10 of the North Atlantic Treaty is inevitable.[36] Even ahead of the 2006 Riga Summit,

34) Daniel S. Hamilton and Hans Binnendijk(eds.), "One Plus Four: Charting NATO's Future in an Age of Disruption," *NATO Task Force Report*, 2022, p. 21.

35) "Prague Summit Declaration," issued by the Heads of States and Government participating in the meeting of the North Atlantic Council in Prague, Czech Republic, 21 Nov. 2002

36) Ivo Daalder and James Goldgeier, "Global NATO," *Foreign Affairs*, 85-5(September/October), 2006, pp. 105-113.

former U.S. President Bush once proposed a global partnership to invite Japan, Australia, South Korea, Finland, and Sweden.[37] However, the idea was not fully achieved due to opposition from the European member states, but they agreed on a customized measure to strengthen cooperation with non-NATO countries by laying the groundwork to develop into a global alliance in the future. Furthermore, at the 2008 NATO Bucharest summit, NATO also paid attention to the issues of the expansion of the alliance and fostering cooperation with 'contact countries', and once sought to develop closer relationships with other Indo-Pacific countries through *Tailored Cooperation Program* (TCPs).[38]

Ultimately, NATO's plan towards a global alliance will be further developed by adopting the recent strategic concept. In other words, it will set the stage for developing a regional bloc centered on the Euro-Atlantic area as well as a comprehensive one that emphasizes the linkage between the region and the Indo-Pacific. Therefore, it will promote the structural change of the Alliance by using its global partners amidst the geopolitical shifts of competition with authoritarian forces. Therefore, as Scheffer remarks, NATO will intensify its identity[39] as a global alliance and partnership for a new global order.

4-3. Cooperation between NATO and South Korea

Looking back at the historical background of NATO's relationship with the Republic of Korea, Korea first gained an enhanced partnership (NATO Partner across the Globe) at the 2008 Bucharest Summit, thereby having regular high-level policy consultations. Since then, it contributed to military and financial support to the Afghanistan war and its postwar return until 2020. In 2012, Korea signed the

37) "Bush to propose global partnership for five countries at NATO summit next week," *International Herald Tribune*, November 21, 2006

38) "Bucharest Summit Declaration," issued by the Heads of States and Government participating in the meeting of the North Atlantic Council in Bucharest, on 3 April 2008

39) "Global NATO: Overdue or Overstretch?," Speech by NATO Secretary General Jaap de Hoop Scheffer at the SDA Conference, Brussels, 6 November, 2006

Individual Partnership and Cooperation Program (IPCP) to serve as a specific roadmap to extend interaction with NATO in various areas, and participated in the *Interoperability Platform* (IP), especially in the area of standardization and logistics. Korea has also been involved in an IP that brings selective partners and allies to operate together, which has contributed to NATO operations since 2014. This led to the collaboration on the development of the *Individually Tailored Partnership Program* (ITPP), which is designed to upgrade the existing partnership programs covering bilateral cooperation in new areas, such as cyber, new technology, climate change, and defense industry. In the midst of a cooperation program with NATO, Korea attended a foreign ministers' meeting for the first time in 2020.

5. European Perspectives on NATO and China

Not all European countries are members of NATO and not all European members of NATO are also members of the European Union (EU). EU members differ from NATO members, with NATO being a US-led security alliance initially against the Soviet Union and now primarily targeting Russia, while the EU is a distinct entity without US involvement. The US, despite being a crucial ally, often presents a double-edged sword for European nations. Each European country maintains unique relations and different strategic and political objectives with the US.

The UK, outside the EU but a pivotal NATO member state, shares a special relationship with the US, based on its Anglo-Saxon English-speaking roots but also intelligence sharing within the Five Eyes network. In contrast, since the end of World War II, France has seen the US as a controversial partner, seeking independence from it economically, militarily, and politically. This independence is exemplified by France's nuclear capabilities and its emphasis on European-led security strategies, diverging from US-led NATO initiatives such as during the Iraq War, when the French (and German) positions greatly differed from those of the British.

After Chancellor Scholz announced the "*Zeitenwende*" (watershed moment)[40] in Germany's strategic approach to foreign and security policy, Germany, too, seeks a different position. Germany now aspires to become Europe's top military power due to the Russian threat while keeping a balanced posture within the US-China strategic competition. Although hosting US forces, Germany focuses more on its own interests than on the US-dominated foreign policy and security strategy. This further contrasts with the position of a number of countries from Central and Eastern Europe which have a natural pro-Atlantic inclination, seeing the US – and therefore NATO – as the main bulwark against Russia's expansion toward Eastern Europe while having divergent views of a potential China threat. Consequently, European countries, though central to NATO, have varied national interests and positions, particularly regarding China.

US President Trump's "America First" policy was one of the most important lessons about the US-led foreign policy for European countries. Even though US administrations changed every four or eight years in the past, there has been a Wilsonian consensus between Democrats and Republicans about the direction of US foreign policy. The experience of the Europeans with the Trump administration nonetheless highlighted a potential volatility in American foreign policy toward Russia and the world should Donald Trump return to the White House, significantly altering European perspectives on their role in US-led policies.

While political agreement between the US and European allies within NATO is consistent, practical and bureaucratic levels lag behind. For instance, although NATO politically recognizes China as a primary challenge, collaboration between the US and NATO remains focused on areas such as cybersecurity and technology rather than sensitive matters such as Taiwan or joint military exercises. This discrepancy stems not from a lack of alignment but from European countries assessing their

40) Scholz, Olaf. Policy Statement by Olaf Scholz, Chancellor of the Federal Republic of Germany and Member of the German Bundestag, Berlin-Die Bundesregierung. https://www.bundesregierung.de/breg-en/news/policy-statement-by-olaf-scholz-chancellor-of-the-federal-republic-of-germany-and-member-of-the-german-bundestag-27-february-2022-in-berlin-2008378 (Accessed 16 December 2023)

interests and awaiting the 2024 US presidential election results before fully affiliating themselves with the US stance on China. This leads to a focused, but not hurried, approach to cooperation with Asia-Pacific Four (AP4) countries, including South Korea, in areas such as cybersecurity and technology.

Europe's divergent interests and strategies regarding China mean that the pace of US–Europe cooperation vis-à-vis China varies in contrast to the common approach toward Russia. In this context, NATO's engagement with South Korea does not need to develop quickly but should focus on softer issues such as educational programs, joint research, cyber and technology rather than trying to rapidly advance military cooperation. France and Germany, in particular, seek greater independence from the US in their strategies toward China. Whereas France is keen on bolstering its autonomous influence within Europe and extending its reach into the Indo-Pacific, Germany is similarly intent on cultivating an independent foreign policy that extends beyond the scope of U.S.-led initiatives. Under such circumstances, even though NATO's political consensus is clear, practical cooperation is limited, focusing on non-military areas. NATO's organizational identity is traditionally rooted in European security and the deterrence of Russian (and previously Soviet) aggression. However, the current nature of the combined Russia-China military threat that NATO faces remains unclear to European countries.

Although European countries align themselves with the Biden administration's distinction between nations pursuing liberal values and democracy against revisionist countries posing systemic challenges, including China's rise, complexities in Europeans' national interests hinder deeper military, naval and airfare cooperation, such as combined exercises against China or in the case of Taiwan contingency. Moreover, a security dilemma also plays a role: a unified European stance with the US against China and Russia could intensify China-Russia collaboration against Europe. Therefore, NATO's level of engagement with the Republic of Korea and AP4 more broadly is shaped by this grand strategic context, producing a significant partnership at a political but not yet fully realized cooperation at a military level against China.

European countries largely agree with the US global strategy against Russia and China, but each of them has developed a unique approach. France, for instance, champions a Europe-centric view over a US-led NATO strategy, advocating for more active European forces engaged in regional security. The foreign policy stances of France and Germany toward Russia and China thus diverge from the US perspective. Under NATO's umbrella, AP4 are recognized as vital partners against global threats stemming from Russia and China. However, European countries balance their relations with China, acknowledging that the current geopolitical context differs markedly from the Cold War era, with Russia and China presenting a different challenge than the Soviet Union once did. Moreover, the US role has evolved since the end of the Cold War, too. As a result, NATO's collaboration with AP4 is more geared toward addressing hybrid threats such as cybersecurity and technology.

Furthermore, France and Germany prefer to collaborate with AP4 as independent partners and not just as NATO members. Consequently, NATO-AP4 cooperation faces limitations, focusing on successes in areas such as cybersecurity and technology. For instance, France seeks to bolster its position in the Indo-Pacific through partnerships with countries such as the ROK and Japan, aligning with NATO's strategic objectives while maintaining its independence from US influence. Similarly, Germany and the UK pursue independent national interests and strategies.

As a result, while NATO-AP4 cooperation under the US leadership is robust and consensus-based at the political level, actual operational collaboration at the working level, especially in sensitive areas, faces challenges. On issues like North Korea and in specific areas such as cybersecurity and technology, consensus is more easily achieved within NATO, but in-depth planning for China and Taiwan contingency is more complex and will require a prolonged effort for effective cooperation between the US and European countries under the NATO framework. In this context, NATO's engagement with the ROK should adopt a realistic and pragmatic approach.

6. Agendas for Future South Korea-NATO Cooperation

Since the Biden administration, the U.S. House Armed Services Committee passed the National Defense Authorization Act (NDAA), which also outlines the inclusion of South Korea in Five Eyes' intelligence sharing program and maintains the U.S. armed forces in Korea, but the idea was excluded in the final draft on December 2020.[41] However, the newly passed NDAA included a clause that the USAG Humphreys IBC should install the Black Hat Intelligence Fusion Center (IFC), which can collect military data from China and North Korea.[42] In addition, regarding NDAA for Fiscal 2022, the congress authorized particularly at $768 billion, the largest budget ever, to strengthen military cooperation with NATO and partners in the Indo-Pacific for defense and competition against China.[43]

Five Eyes, an intelligence alliance formed during the post-World War II era, initially began as a partnership between the United States and the United Kingdom. Over time, it was extended to include Australia, New Zealand, and Canada, which are known to share high-end intelligence and information by operating the 'echelon', a global surveillance network. At the end of the 1990s, the existence of the echelon became known to the public and emerged as a serious security issue in the European Parliament at that time. The 9/11 attacks set Five Eyes off further reinforcing public surveillance and information collection capabilities, and focusing on monitoring the World Wide Web and the leaders of major adversaries. The intensification of rivalry with China, however, instigated the Alliance to focus on the competition itself, which is distant from the traditional function of preventing terrorist attacks.

In 2021, when the U.S. announced a diplomatic boycott of the Beijing Winter Olympics due to human rights abuses, the Five Eyes Alliance also announced similar

41) Five Eyes, an intelligence coalition consisting of 5 members formed in 1956, share and gather a vast amount of intelligence information collected by each state-facilitated agency.

42) Yeon-hee Yang (2021, Dec 29). Maintaining the current state of the U.S. Forces in South Korea, the 2022 National Defense Authorization Act is passed. Final draft excludes Korea from "Five Eyes". *pennmike*. https://www.pennmike.com/news/articleView.html?idxno=50445

43) After passing 2022 NDAA, at a briefing, U.S. Assistant Secretory of Defense for Strategy, Plans, and Capabilities Mara Karlin said that the Global Posture Review (GPR) found U.S. military deployment in South Korea effective, so the administration has no plans to reduce the deployment.

decisions, thereby demonstrating remarkable solidarity. The recently passed NDAA proposed a new plan to include South Korea, Japan, India, and Germany in the U.S.-led intelligence sharing system, and the Director of National Intelligence (DNI) specified that the evaluation report, including merits and demerits, should be submitted by May 2022 in case of accession of four countries in the existing Alliance. As the nature of China Containment Policy becomes intense through the Indo-Pacific strategy and QUAD, the participation of several countries including South Korea in the strategy becomes more important for Five Eyes. From the perspective of containment, the U.S. not only will include QUAD and AUKUS but also Five Eyes in its own global network, which will require new participants (Japan, Germany, India, and South Korea) to show their capabilities.

To sum up, based on the recommendations from the Five Eyes, there is a high potential for the U.S. to expand membership and cooperation in intelligence-sharing programs. What is noticeable is that though Japan and NATO have made various efforts to join the Five Eyes, South Korea was addressed first than Japan in the revision of NDAA regarding further exchanges of information. This is because Korea, as a geographical advantage having access to information about North Korea and China, has more significant merit in sharing information with 28,5000 U.S. armed forces within the area. Although there should be an in-depth discussion among the future participants of Five Eyes for accession, it is an acknowledged fact that Korea has a significant power of influence in the U.S.-led collectivism to contain China.

Amid new changes focusing on response to Chinese military and security threats, every U.S. Intelligence Organization is carrying out adjustments to organizational structure accordingly. In October 2021, the Central Intelligence Agency (CIA) announced the establishment of the China Mission Center (CMC) and Transnational and Technology Mission Center[44] to respond to the difficulties of clandestine

44) According to Director of the CIA William Burns' remarks in 2021, he has made clear that top priority would be a rising China. For the plan, he announced the formation of China Mission Center (CMC) to address challenges posed by "the most important geopolitical threat we face in the 21st century."Refer to CIA's new mission: Protect Intelligence Agents performing in China. *sisain*. (2021. Oct 30)
https://www.sisain.co.kr/news/articleView.html?idxno=45806

operations due to the adversary's technological advancement. This is well illustrated in the example that since the Biden administration, the CIA shut down its mission center in Korea and newly created a CMC to dedicate to gathering intelligence, which focuses solely on strategic challenges posed by China. As strategic competition expands in all dimensions, including high-technology, telecommunications, AI, and semiconductors, the capabilities to gather intelligence information are required more than ever. After the crisis in Hong Kong and the Taiwan Strait in 2022, however, it becomes more challenging for the U.S. to collect intelligence information due to internal controls. These social backgrounds are what stimulated the U.S. to further strengthen cooperation with major allies concerning the operations mentioned above.

6-1. Theoretical and Practical Perspectives on South Korea-NATO Cooperation

Given the geographical proximity and understanding of the three Northeastern Provinces of China, it is advantageous for South Korea to gather confidential information about China and North Korea as well as have mutual cooperation with the United States. Thus, it would be a great chance to strengthen information gathering under the Korea-U.S. alliance. On top of the geographical advantage, Korea, as the 10th largest economy in the World, has endeavored to become a 'Global Pivotal State.' In the following sections, this paper will analyze how South Korea-NATO cooperation can be defined on the basis of the international level of cooperation given that the security issue of the peninsula is a universal issue.

As well known in NATO's partnerships, it is promoting cooperation with some European countries beyond the EU member states, the Middle East, North Africa, South Korea, Japan, Australia, and New Zealand. Concerning this ongoing expanded cooperation with Asia-Pacific countries, it is highly related to the rapidly changing international order stemming from China's rise.

The reason for responding to transnational challenges through 'De-territorialization', one of NATO's Strategic Concepts, comes from the background of a matter of

urgency to respond to the collapse of the liberal international order established for many years. For instance, as 'Outcompeting China' is outlined in the report of the 2022 U.S. National Security Strategy, the Biden administration formalized its stance by defining the PRC as the competitor over the reshaping of the global order. Considering that there were confrontations between NATO and the U.S. because of 'Principled Realism' in the Trump administration, we can witness the change of cooperation can be adjusted according to future political trends in the U.S. administration.

What is clear, though, is that the current U.S. administration is focusing on public investment to upgrade the nation's competitive edge for the future. It shows some similarities to the principled responses of the former administration, thereby meaning that any country can work together with itself as long they are helpful, otherwise, the allies can be neglected.[45] This is due to the slowdown of the strength of the middle class and inequality in American society, which eventually demonstrates decreasing economic growth and the peril of "freedom" as 'house of cards' in the democratic society. This can be said to share the remarks of Robert Dahl, a political scientist, that extreme economic inequality can undermine the democratic process by creating economic disparities.[46]

An adjustment to foreign policy in the U.S. White House, however, has drawn some criticisms since "neo-mercantilism" is becoming the core of its foreign policy.[47] One important thing to note is that the international community is pursuing 'nationalism', which is based on each national interest. In this context, we should note Karl Deutsch's three preconditions for "political community."[48] He highlighted "trust" among members within the community, which is the common political belief of democracy. The second element is "common interests" tying the parties together.

45) Aaron Ettinger, "Principled realism and populist sovereignty in Trump's foreign policy", *Cambridge Review of International Affairs*, 33:3, 410-431 (2020)

46) Rober A. Dahl, *A Preface to Economic Democracy*, University of California Press, 1986

47) Jake Sullivan, "The Sources of American Power: A Foreign Policy for a Changed World," *Foreign Affairs*, November/December 2023

48) Karl Wolfang Duetsch, *Political Community and the North Atlantic Area: International Organization in the light of Historical Experience*, Princeton University Press, 1968

The last one is "external threat."

Since the claims were made during the Cold War, there are several arguments that they should be applied in a more flexible way. Nevertheless, the three preconditions are essential for solidarity within the community. Also, it would be worthwhile to apply these elements to the cooperation between South Korea and NATO since it consists of the fundamental process of a political community claimed by Deutsch.

In addition to China's rise, international security and liberal international order have been threatened and challenged since Russia's invasion of Ukraine in 2022. Amid these rapidly changing circumstances, Korea can seek three following policy measures for further cooperation with NATO.

The first one is 'share of value'. The difference from the past is that it should be beyond political value and expand the scope for cooperation to achieve universal values of mankind and human rights issues. However, the U.S. administration is changing its 'value diplomacy' adjusted to strategic interests for cooperation with the Global South and responding to China-Russia partnerships. Paradoxically speaking, there is room for interpretation that the West can adjust its cooperation even with authoritarian countries, as long as it is for the maintenance of liberal international order.

In this respect, the Korean government should seek cooperation with the Global South, such as the Middle East, Africa, and South America, as well as five Central Asian countries (C5), which are the key nations of Eurasia. As John Ikenberry mentioned the continuity and pattern of cooperation with the Global South can determine the trend of global order, which casts great implications for Korea. In that sense, it is advantageous for Korea to make contributions to the Global South's economic growth model and political development, given its historical struggle for democratic and economic development. Since it possesses soft power, difficult for authoritarian countries to have, there is space for Korea to solidify relations with prospective partners, including NATO members.

Second, there should be an expectation of substantial 'common interests'. As the

'principled realism' approach was used by the Trump administration, any country can be defined as a competitor if it is detrimental to the U.S. national interests. In 2023, at the Brookings Institution, the U.S. National Security Advisor Jake Sullivan declared that the administration would bring back its glory of the manufacturing industry and pursue diplomacy for restoring the American middle class, which demonstrates some similarities with the previous government in that it will build and revive the domestic capacity. Therefore, NATO can expect that cooperative relations with Korea enable economic benefits, which is interpreted as a term for 'sharing common interests' by Karl Deutsch. No matter how beneficial value is it can be difficult to create a valid political community in the absence of 'reciprocal(mutual) interests'. It is inferred that cooperation between NATO and Korea should be carried out under the principle of reciprocity.

The last component is 'external threat', which can refer to actual countries, such as Russia and China. However, there is also a need for a comprehensive interpretation of 'threats' in a broader spectrum regardless of geographical origin. In fact, the strategic concept of defense is de-territorialized (expanded) by NATO. In this perspective, Korea should seek solidarity with NATO in the field of Non-Traditional Security (NTS) including cyber domains and absolute poverty. Samantha Power, the Administrator of the U.S. Agency for International Development, once claimed that America should fight against digital authoritarianism promoted by authoritarian states, in order to secure prospective allies in the Global South. This is because authoritarian countries are promoting anti-Western policies through Foreign Information Manipulation and Interference (FIMI), thereby provoking the Global South.

This is also well illustrated by the report "A World Divided", published by Cambridge University, stating that despite the Ukraine war, there is a shocking result for preferences of Russia and China in the Global South, estimating respectively 64% and 63%, considering only 61% of preferences for the U.S.[49] At this point, what

49) Roberto S. Foa et al., A World Divided: Russia, China and the West: War in Ukraine widens global divide in public attitudes to US, China and Russia – research shows. Cambridge University Press, 2022

is required the most is 'concrete cooperation' with NATO and 'strategic countermeasures' against digital authoritarian policies. For relevant resolutions, Samantha Power also emphasized that we should seek practical measures for the Global South to achieve economic growth and political development, suggesting that South Korea and allies of NATO should respond to changes in the global world through exchanges of information and expansion of cooperation.

7. Conclusion

Having the utmost changes in the security of the Korean Peninsula, the region has faced growing uncertainty, especially after the crisis in Ukraine and the Middle East. In particular, the succession of the three consecutive terms of Xi Jinping's leadership will have a direct influence on the Korean peninsula since it reorganized and strengthened its foreign strategy from "leading participant(主動參與)" to "active leader(積極引領)" as mentioned above. The aggressive nature of the policy, therefore, will become more concrete through the expansion of the China-Russia strategic partnership, the coalition of SCO and BRICS, and global initiatives such as GDI and GSI.

In this respect, the Chinese-proposed model for international order has been actively presented to the Global South, which is a socialist modernization contrary to the U.S.-led development model, emphasizing the realization of a new multipolar global order led by countries in the Global South. Furthermore, the economic base and investment are extending as follows; the development of economic supply chain and consumer markets around the Eurasian countries through BRI and GDI, improvement of basic infrastructure facilities (high-speed railways, power plants, 5G communication networks), and development of resources (petroleum and natural gas).

This is because, after a rapid reform of international order after the U.S. withdrawal from Afghanistan and the failure of the change of the Syrian Assad regime, the Xi administration plans to reorganize the Eurasian order by linking that of Northeast

Asia based on cooperation with Russia. Eventually, the ultimate confrontation of two blocs, the liberal one and the authoritarian one, is formed centering around Eurasia after the new structure of the order in the region. This represents that China is recognizing the Ukraine crisis as a military-security conflict between two very different powers, the Western and the emerging ones, so it is expected that the consequences of the Ukraine war will have a direct impact on the security order of Eurasia.

Strongly opposing the Indo-Pacific strategy, the Chinese government has a blueprint of expanding its economic and political influence over the Middle East, Europe, South America, and even Africa to eventually create a new order freed from the U.S.-centered unipolarism. Against this movement, the influence of the security coalition of NATO, QUAD, AUKUS, and IPEF (Indo-Pacific Economic Framework for Prosperity) has consistently stretched into China's major economic partners in Northeast Asia and Western countries. Nevertheless, China pointed out the fact that the U.S. will have no choice but to accept this change given many countries still maintain friendly relations and economic cooperation with them.

During this global chaos and crisis, the current geopolitical landscape of the Korean peninsula faces a much more complicated situation compared to that of the past. For the blockade of potential risks posed by DPRK nuclear weapons, South Korea continues to deepen its security cooperation with the U.S. and Japan and engages in dialogue on security issues with NATO.

However, we should also consider strategies in preparation for a Chinese-led global order and its expansion of political, economic, and security influences. Thus, in essence, it is imperative for Korea to seek a new different level of relationship with China and Russia equivalent to that of the United States and establish an inclusive multilateralism rather than an exclusive one.

Also, the improvement of the China-U.S. relationship can be a significant variable during the Chinese-Russian attempts for the multipolar order, which means the ongoing partnership between China and Russia may not be an "endless".

In fact, the most biggest driving factor in the recent partnership commenced after the U.S. strong containment policy towards China, which had been promoted since the inauguration of the Trump President. Hence, if the pressure from the U.S. is eased from China's viewpoint, the cooperative relationship between the two authoritarian states can be weakened.

The most powerful force to unify both Russia and China can be said 'common threat arising from aggressive U.S. foreign policy' and 'traditional cooperation', once shared between the two leaders before. However, the strategic goals pursued by the two countries can be quite different for the following reasons.

Since Russia has an ambitious goal to restore its glory maintained during the Cold War, so it tends not to be afraid of using military means, making it difficult to receive a positive response from the international community in the long term. However, from China's perspective, the stability in the security environment and domestic politics, and economic growth are a matter of great importance, so the motive for abandoning the liberal order is weaker than Russia's. Also, China has a willingness to solve the conflicts with the U.S., including the Taiwan one, through peaceful measures, not the ones employing military means. Therefore, it means that if there is room for adjustment of the U.S.-led containment policy, the linkage of China and Russia will decline in the end.

In this regard, there is a great chance of cooperation between two hegemons, the U.S. and China, given that both the APEC summit and Woodside summit held in 2023 showed an adjustable aspect of the U.S. foreign policy. The outcomes have two strategic meanings; one is the simple bilateral relations between the two to promote cooperation, and the other is the U.S. plan to block any attempts to build a new world order based on the cooperation of two authoritarian nations.

Nevertheless, the pursuit of a new order is expected to continue for the next decade, which will be manifested as the maintenance of a free-liberal order or drastic change to the multi-polar order, but it will also change depending on the domestic political situations and solidarity between the associated countries. Given the circumstances, we must seek direct cooperation with European allies and develop our own strategies

while keeping track of any substantial changes in the external security landscape.

Although Germany and France are arranging for the new global order, we should have closer communication with the allies since we cannot ignore the scenario of the restoration of U.S.-China relations in the future. One evident thing is that NATO prioritizes common agendas for cooperation, such as the area of cyber and emerging technology, rather than the direct intervention of future military conflicts in East Asia.

Whether new global changes come from the Chinese-Russian blocs or new cooperation between China and the U.S., strategic cooperation with NATO will remain an important asset for Korea. Therefore, we should expand areas of security activities in a flexible and agile stance.

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