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2011 Unification Clock

When Will We See a Unified Korea?

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2011 Unification Clock

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By Park Young-Ho and Kim Hyeong Ki

Introduction

The Unification Forecasting Clock is a three-year project conducted by the Korea Institute for National Unification (KINU) that spans the years 2009 through 2011. The purpose of the project is simple but weighty: When will unification occur and what will bring it about?

On July 6. 2011 at the International Convention Center in Durban, South Africa, South Korean members of the 2018 bid committee cheer after hearing the official IOC announcement that PyeongChang (in Gangwon Province) will host the Winter Games in 2018.

The Unification Forecasting Clock is a three-year project conducted by the Korea Institute for National Unification (KINU) that spans the years 2009 through 2011. The purpose of the project is simple but weighty: When will unification occur and what will bring it about? In order to answer these questions, especially given that half of the peninsula is veiled in mystery, we need to adopt a judgment-based quantitative method using the Delphi technique.

Numerous studies related to the unification issue have accumulated; however, in most cases the focus was on pending issues and short-term policy goals. Moreover, very little research could be found that scientifically reviews and predicts the factors for unification based on objective data. Thus, the goal of this research is to objectively measure and analyze various factors that affect unification and to design an optimal forecast model (Unification Forecast Clock) to demonstrate a peaceful solution.

This project is the outcome of a long-term research plan. It developed initially out of a theoretical foundation found in two books: *Unification Scenarios and Policy Implementations in the Unification Process: A Theoretical Model and Experts' Perspectives* (2002), and *Unification Forecast Model: Index Development and North Korean System Transformation Trends* (2003) both published by the Korea Institute for National Unification (KINU). Based on this foundation, the Unification Forecast Clock project was launched in 2009. A rare index on the Korean Peninsula, the project was designed as a three-year plan, and this report is the summary of its final-year research.

The initial focus of the project is on the expected time of unification and the form it will take. Will the North gradually develop and unify with the South or will it collapse suddenly and be absorbed by its southern neighbor? Inspired by the Doomsday Clock and the Environmental Doomsday Clock, we created two Unification Clocks—Agreement-type and Absorption-type.

While discussions have focused on various types of unification, in broad terms they all converge into just two: agreement and absorption. The Agreement type referring to the realization of gradual unification through peaceful improvement of relations between the two Koreas and Absorption referring to the South 'taking in' North Korea after its collapse. The two types were again subdivided into six areas: overall, politics, economy, military, society and international relations. Accordingly, a total of 12 unification clocks were prepared for the survey.

Secondly, the study tries to articulate unification determinants: Unification is a complex and multi-faceted process influenced by various domestic factors found not only in the two Koreas themselves, but in inter-Korean relations and the international environment.

During the three-year project, we carefully selected members for the expert panel and were able to glean their knowledge and opinions on unification issues. In 2009, a total of 12 unification clocks were created based on one pilot study and three rounds of the Delphi survey. In the results of the first survey, the Delphi panel of 51 experts in the areas of unification, foreign affairs, and security suggested about 1,500 unification factors. These factors were narrowed down to 33 factors that were applied in the third Delphi survey.

While staying on track with the work accomplished in 2009, the Unification Forecast Clock of 2010 supplemented and improved on issues raised by a post-hoc analysis. Moreover, in addition to the survey completed by the Delphi panel, more comparison groups were selected and researched. Members of the first comparison groups consisted of experts and businesspeople. The non-panel experts were gleaned from a list of Korean scholars and experts engaged in the areas of foreign affairs, security, and unification, the same list from which the Delphi panel for the 2009 survey had been selected. Inter-Korean businessmen made up another comparison group. Engaged in inter-Korean exchange and cooperation in the Kaesong Industrial Complex in North Korea, they were not academics yet they were well informed and sensitive to North Korea-related information. At first, both groups were selected to enlarge the sample size in order to overcome the 'small N' problem of the Delphi panel. Only non-panel experts showed similar responses. Also, the same survey was conducted on North Korean defectors who had entered the South. Finally, a public survey was performed using simplified questionnaires to

assess the view of the general public on unification. The 2011 survey focuses on continuity and stabilization of the index. The same 2010 survey questionnaire on the Unification Clock and unification factors was used. Furthermore, non-panel experts who responded to the 2010 survey joined the 2011 Delphi panel, which brought the total number of panel members from 50 to 80. We believe this increased panel size will reduce the problem of over-representation and under-representation and thus, guarantee reliability. Due to financial limitations, we could not carry out as many comparison group surveys as we had in 2010. Only the public opinion poll was conducted using a shorter, simplified questionnaire. However, we found that there was still a gap between the Delphi panel and the public, a result that will draw meaningful implications on policymaking.

The 2011 Unification Clock showed minimal changes compared to the 2010 one: The overall Agreement-type and Absorption-type clocks marked 3:31 and 5:30, respectively. The 2009 Agreement-type clock was 4:19. The clock hand retreated 34 minutes in 2010 and again fell behind by 14 minutes in 2011. The Absorption type showed a small fluctuation: The hands were at 5:56 in 2009, moved backward 36 minutes in 2010, and then forward 10 minutes in 2011. It is noteworthy that the Delphi panel's Absorption type Unification Clock advanced 10 minutes in 2011. During the three-year survey, the Delphi panel viewed that Absorption type unification was more likely than Agreement type; however, the hands of both clocks still remained at before 6:00, meaning that they were in the "slightly negative" quadrant.

The results of the public opinion poll indicated that the Absorption type clock also advanced closer to unification than the Agreement type. However, we found a relatively huge gap between the public and the panel. The public opinion poll numbers for Agreement and Absorption resulted in unification times of 4:42 and 4:57, respectively. This is one hour and 16 minutes forward for one type and 33 minutes back for the other, compared to the Delphi panel. In other words, the public viewed that agreement was more likely while absorption was more unlikely.

As research that is focused on predicting the future based

on the accumulated knowledge of the past as well as the intellectual judgments of the present, there are obvious and intrinsic limitations in the methodology. Moreover, since it deals with unification issues comprising complex and uncertain factors, careful attention is required. To develop accurate knowledge regarding unification and to draw effective policies based on it, this research needs to be implemented on a continual basis.

Methodology

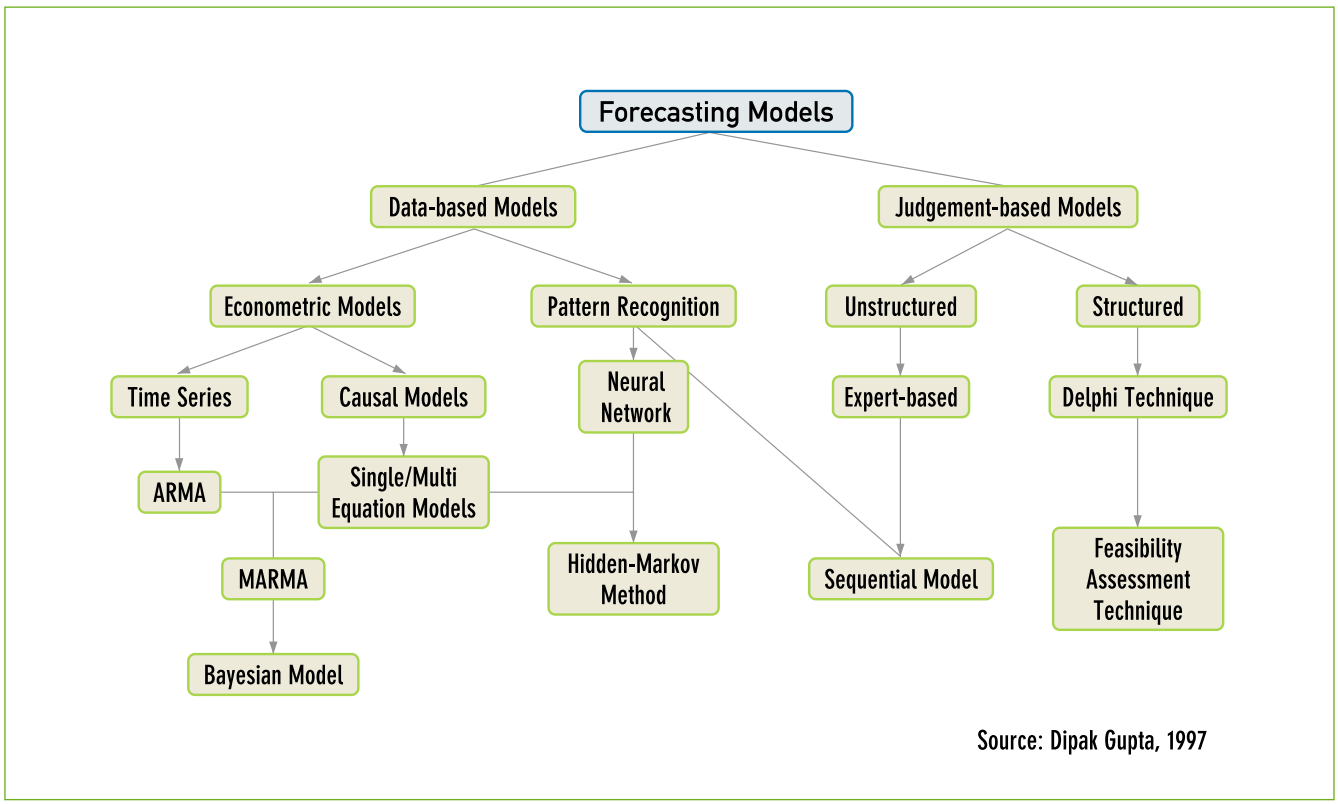
The task is to forecast the future of the Korean Peninsula, a situation fraught with uncertainty, complexity, and duplicity. Indeed, despite prolonged division and a transition to the post-Cold War era, the tension and instability appear more intense than ever. Under these circumstances, the most objective and systematic method for future forecasts is a primary prerequisite.

As Dipak Gupta[1] shows, various methodologies must be ascertained in order to predict the future. While no single future forecast method predominates over others, both data-based and judgment-based models should be developed and aggregated. Balanced development of a forecasting model, however, is limited due to the Hermit Kingdom's characteristics.

After reviewing various study methods, the decision was

1) Dipak Gupta, "An Early Warning About Forecasts: Oracle to Academics" in S. Schmeidl & H. Adelman, eds. *Synergy in Early Warning Conference Proceedings*, March 15-18, 1997, Toronto, Canada, 375-396 (Chp. 10).

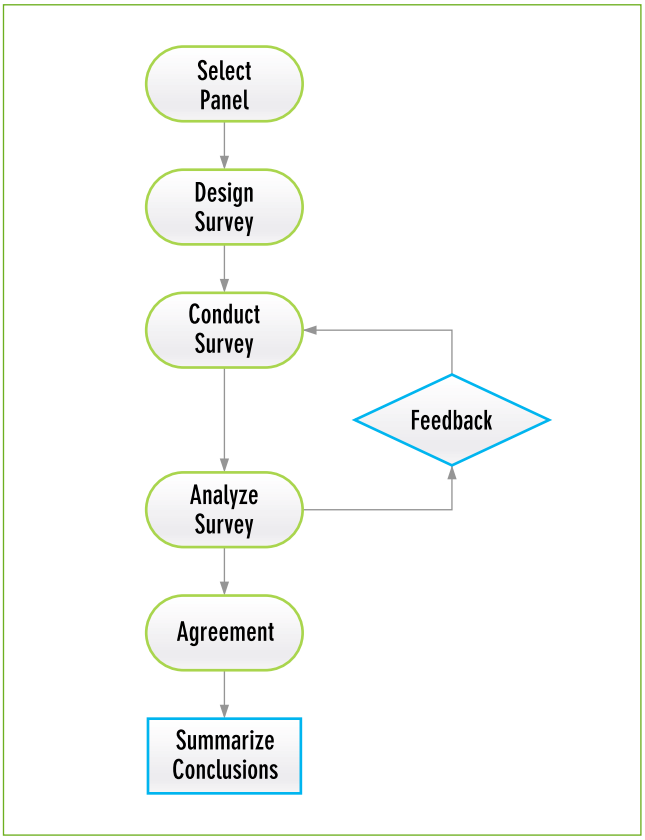
Types of Forecasting Models



made in 2009 to adopt methods from the Delphi technique, which was deemed the most appropriate and useful methodology under the current situation. The Delphi method, first developed by the RAND Corporation during the 1950s, has been applied in various fields. This optimizing method of the results of group opinions consists of the following four necessary features:[2)]

(1) Anonymity: Panelists are given an opportunity to express their opinions regardless of their group's opinion.
(2) Iteration: Through a number of rounds, panelists are given an opportunity to reconsider their answers.

Delphi Method Sequence



2) Gene Rowe and George Wright, "Expert Opinions in Forecasting: The Role of the Delphi Technique," in *Principles of Forecasting: A Handbook for Researchers and Practitioners*, ed. by J. Scott Armstrong, New York, NY: Springer, 2001, pp. 126-127

(3) Feedback: After each response in the questionnaire, the facilitator informs panelists of the opinions of their anonymous colleagues.
(4) Statistical aggregation: The facilitator uses statistical estimates (mean or median) during the feedback and the final round.

For this research, the typical Delphi research technique was implemented from the first year (2009) of the research, which was largely focused on two factors: the time of unification for each type (Agreement and Absorption) and factors influencing it. While other unification types were suggested, it was judged that all types converged into Agreement type or Absorption type. The first-year Delphi research comprised a pilot study and three Delphi surveys, and was conducted from June to November 13, 2009. The survey was processed based on the repetitive circulation of unification clock and unification determinants presented in the first and second surveys for re-questioning.

The Delphi surveys in the following years were basically conducted in the same way. The results of the prior-year survey and the post-hoc analysis details were presented to the Delphi panel in the same manner. In the first-year, the questions on the unification clock and the unification factors tended to be too difficult to understand. Therefore, the second-year questionnaires were made simpler and more intuitive.

The 2010 questionnaire was used again for the 2011 Delphi survey, thus guaranteeing stability and continuity in the data collected. As the situation in the Korean peninsula develops, however, new unification determinants will be added. In order to preserve new questions on unification determinants, we inserted an open question again in 2011.

Chapter I

The 2010 Survey Review and Overview of the 2011 Survey

Through several workshops and post hoc analysis of the previous surveys, the 2011 Unification Clock Survey concentrated on continuity and stabilization. The 30 new panel members were culled from the list of Korean scholars and experts engaged in the areas of foreign affairs, security, and unification, the same list from which members of the Delphi panel were chosen.

View of the Aprok River Steel Bridge (built in 1911) as seen from Dandung, China. The bridge is now part of a major overland logistics route across the border between North Korea and China.

1. The Post-Hoc Analysis of 2010 Unification Clock

A. Refining the Questionnaire

The 2009 research on the Unification Forecast Clock was focused on classification of unification types and unification factors as a basic task to prepare the foundation for a systemized future forecast through durability and repeatability. The 12 clocks were first gauged according to a 1 to 100-point scale and then recalculated into 12 hours of time. In other words, the closer to 12 o'clock, the greater the possibility of unification, and 100 (or 12 o'clock) would mean that unification had been achieved.

While following the basic direction of the previous year's research, the 2010 research focused on the structure of each question. The 12 questions on the unification clocks, which in the first year were disorganized and somewhat vague, were modified. In addition, to providing respondents with an evaluation standard, quartile criteria were suggested as follows: 'very negative,' 'slightly negative,' 'slightly positive,' and 'very positive.' The simpler, more intuitive format enabled better and faster understanding by the respondents. This improvement proved successful. In the 2009 unification clock survey, there had been a relatively high rate of missing values. In the 2010 survey, however, the problem of missing values was eradicated completely.

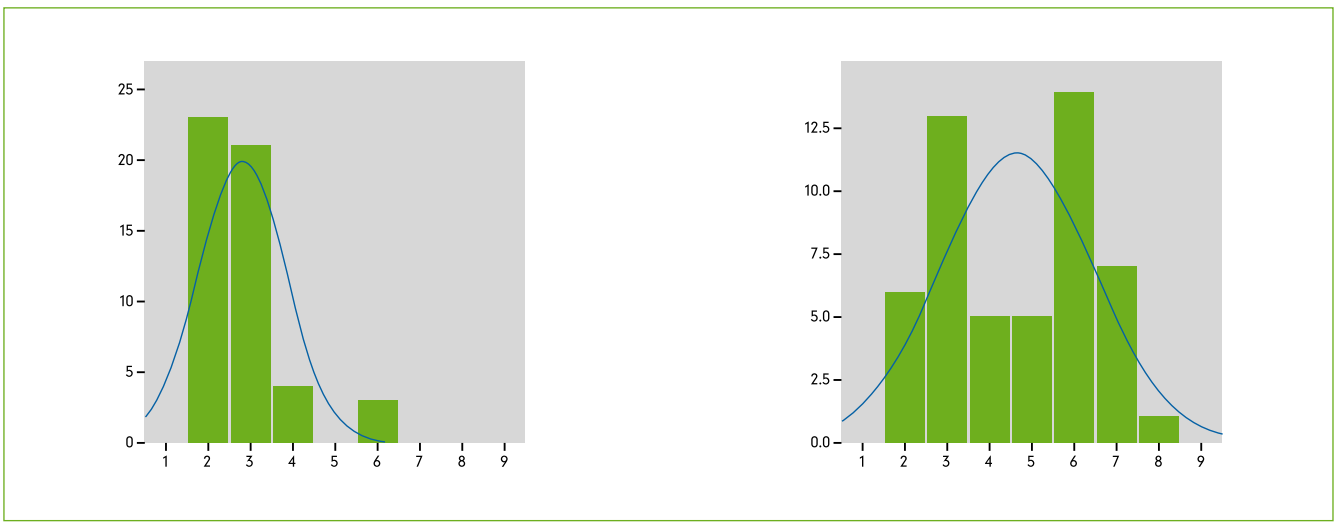
Questionnaires for unification determinants were also re-structured and simplified in a more intuitive manner. Existing questions were reclassified by each sector and then simplified into one- or two-line questions. In addition, the 10-point Likert scale was changed to a 9-point format which has an integral number for its mid-point, i.e., 5.

B. Bimodal Distributions

The Delphi panel showed a wide range of answers on the unification clocks as well as on some of the unification factors. Among them, clear bimodal distributions which have two different modes were observed, indicating that the Delphi panelists were clearly divided into two groups regarding their evaluation of some unification factors. Considering that the panel had not only studied, but actively engaged in unification, foreign affairs and security areas for a long period of time, and they shared relatively similar knowledge and information on unification issues, this clear division was unexpected. This tendency was seen in the 2010 survey as well.

For example, six Absorption-type clocks had wider

Histogram Examples: Unimodal distribution (left) and Bimodal distribution (right)



response ranges than the Agreement-type, indicating the variance of the panel's evaluation of Absorption. The 2010 overall Agreement-type unification clock's standard deviation was 11.929, while the Absorption-type clock's was 16.128.

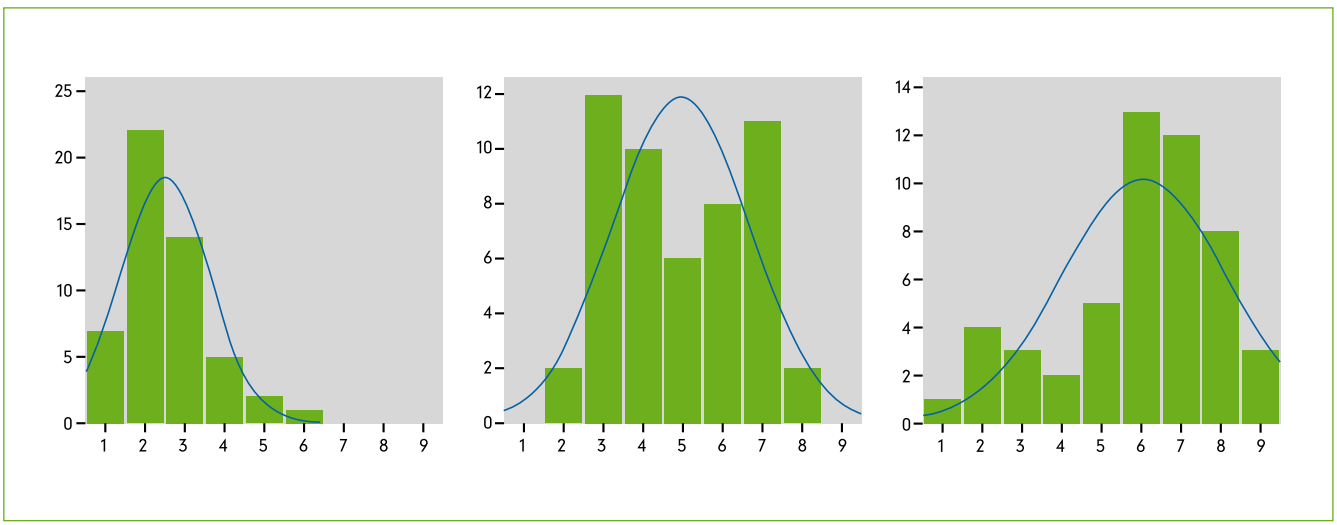
A similar tendency was also seen regarding the unification factors survey: Some of the factors show a clear converging central tendency, while a wide range of answers was seen on other questions. Since there were only 51 panel members, a clear central tendency resembling normal distribution on the 9-scale questions could not be expected. Rather, we could find a clear bimodal distribution on some unification factors that revealed that the panelists' evaluations of the factors remained far apart.

As the above table shows, some factors indicate narrow ranges with a higher central tendency (left) while others prompted clearly divided opinions (right). Narrow ranges shown on some questions were, for example, on the economic situation, regime characteristics, and North Korea's reform and openness. Questions that prompted clearly divided opinions or bimodal distributions included the following: the level of reform and openness, North Korea's internal power conflict, market economy and privatization, North Korean residents' system support, and South Korea's economic unification ability.

Usually, bimodal distributions are regarded as an attribute that hinders indicators' reliability. During the 2009~2010 research, however, we reached the following provisional interpretation: Firstly, although the panel members were engaged in the unification area for a long period of time and they shared common knowledge in this area, their divided opinions on some unification issues were a reflection of the Korean experts' own values and attitudes. Unlike other Delphi studies, the stance of our project's panelists rarely changed after the feedback processes. Thus, we needed to accept the results per se.

Secondly, by carefully analyzing the results year by year, the bimodal distributions themselves offered insights. To illustrate, as shown in the bar chart below, the unification factors change according to unimodal (not changed), bimodal (changing) and unimodal (changed) sequence. When a factor is changing, its distribution is prone to be bimodal. For example, in the beginning, answers were concentrated below 5 points, as shown in the left bar chart. Then, when there are some changing signs on the factor, answers over 5 points increased and the chart indicated a bimodal distribution as shown in the center bar chart. Then, the opinions of most panelists moved 5 points as shown in the chart on the right. Therefore, the shape of distribution presented useful information that measurements of central tendency could not provide.

Distributional Change: Right skewed unimodal distribution (left), Bimodal distribution (center), Left skewed unimodal distribution (right)



C. Summary of the 2010 Unification Clock

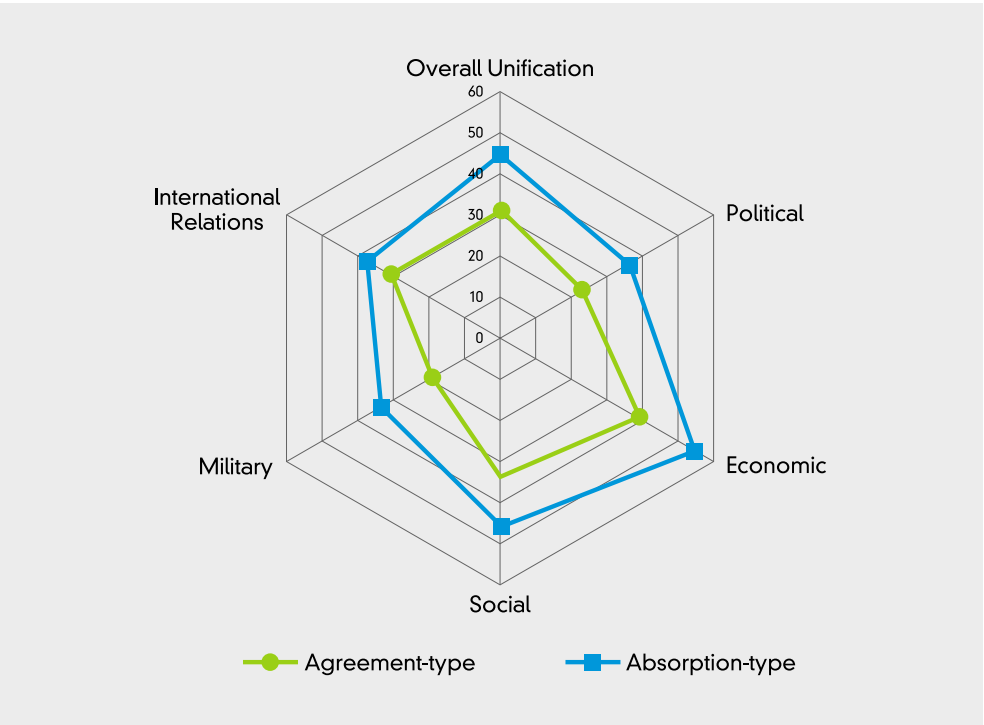
When compared to 2009, all of the 12 unification clocks of the Delphi panel reversed without exception. Among the clocks that significantly moved back in time were the political-area Absorption-type (1hr19min), the international relations-area Absorption-type (1hr11min), the international relations-area Agreement-type (1hr11min), the political-area Agreement-type (1hr8min), and the military-area Agreement-type (52 min). On the other hand, the economic-area Absorption-type (4 min) and economic-area Agreement-type (15 min) clocks changed minimally compared to other clocks.

The 2009 panel's opinion that Absorption-type unification could come somewhat sooner than Agreement-type remained intact in 2010. Greater points were given to "absorption" than "agreement" in all aspects while the economic-area Absorption-type unification clock indicated the time nearest to unification. In contrast, the time on the military-area Agreement-type clock remained farthest away.

The range of the panel's response for each clock did not change significantly compared to 2009. Despite this year's efforts to make the questions clearer and more intuitive and to provide a guideline, the effect was insignificant, which proved that although the Delphi panel was a homogeneous group which had long done research on North Korea and had good access to information on the North, inherent within the group was a wide range of positions and approaches regarding unification. The tendency toward dispersed responses also appeared in the unification factors survey.

Another characteristic of the 2010 unification clock was a greater difference in respondents' thoughts about Absorption-type unification compared to 2009. The standard deviation was between 16.13 and 18.66 with a range of between 60 and 80, while that of all six sectors of the Agreement-type clock was between 11.93 and 14.13 with the range between 55 and 64. Furthermore, on a scale of 1-100, opinion disparity in Absorptive unification indicated radical differences among the panelists.

2010 Unification Clock: The Delphi Panel



D. Comparison Groups

Summary of 2010 Survey Groups

Title	Target	Period	Method	Structure
Delphi Panel	51 Experts on North Korea, unification and security area	August 20~ September 9, 2010	Email survey	2009 Post-Hoc Analysis Unification Clocks Unification Factors Open Questions
Non-panel Experts	30 Experts on North Korea, unification and security area	September 3~15, 2010.	Email survey	2009 Post-Hoc Analysis Unification Clocks Unification Factors Open Questions
Inter-Korean Business people	20 South Korean business people in Gaeseong Industrial Complex	September 1~15, 2010.	Corporate Association of Gaeseong Industrial Complex	Unification Clocks Unification Factors Open Questions
Public Opinion	1,000 male and female adults, stratified sampling	August 21~22, 2010	Research & Research	14 Questionnaire
North Korean Refugees	99 North Korean refugees living in the South	August 31~ September 20, 2010	NK Intellectuals Solidarity	Unification Clocks Unification Factors

In addition to the survey completed by the Delphi panel, more comparison groups were selected and researched. The first of those consisted of experts and businesspeople. The non-panel experts were sampled from the list of Korean scholars and experts engaged in the areas of diplomatic, security, and unification, the same list from which members of the Delphi panel were chosen for the 2009 survey. The inter-Korean businessmen comprised another comparison group. Engaged in inter-Korean exchange, they were well informed and sensitive to North Korea-related information. At first, both groups were selected to enlarge the sample size in order to overcome the 'small N' problem of the Delphi panel. Later, however, they were analyzed separately due to salient group differences. Also, the same survey was conducted on North Korean defectors who had entered the South.

Finally, a public survey was performed using simplified questionnaires to assess the view of the general public on unification.

Noteworthy in the 2010 survey of these five groups were the similarities and differences between the Delphi panel and the others. The Delphi panel of experts, whose members were long involved in North Korea-related affairs, unification and security and who shared common views on the unification clock and unification factors in the 2009 survey, were considered to be a homogeneous group. On the other hand, the other groups involved had distinct personal characteristics. The non-panel experts group, sampled from the same list used for the Delphi panel in 2009, showed basically identical attitudes but the evaluation range was wider than that of the Delphi panel.

The business people working in North Korea represented a very rare case. As either South Korean employers or employees at the Gaeseong Industrial Complex in the North, they were in constant contact with North Korean partners and workers, even amidst tense inter-Korean relations (currently at a standstill). The North Korean refugees were selected because of their unique experience both in North and South Korea. Finally, a public opinion poll was conducted in a bid to identify the gap between the Delphi panel and the general public, but due to the limitations of the telephone survey, a simplified survey was carried out instead.

2010 Overall Agreement-type Unification Clock by Comparison Group

Delphi Panel	Non-panel Experts	NK business people	Public Opinion	NK Refugees
03:45	04:07	05:16	04:47	05:11
	Panel + 0:22	Panel + 1:31	Panel + 1:02	Panel + 1:26

For Agreement-type unification, the Delphi panel estimated unification time at 3:45, which was 34 minutes behind the 2009 clock. All five of the other Agreement-type clocks were further behind. Among them, the hands on the political-area clock marked the greatest change at 2:45, which was an hour and 8 minutes slower than last year.

Non-panel experts evaluated the Agreement-type unification clock at 4:07, a very negative view of agreed unification. When a simple t-test was carried out to compare answers of the Delphi panel with those of non-panel experts, the difference between the two groups was found to be within the limits of acceptability.

Most of the groups held, to a lesser or greater extent, a more negative view of Agreement-type than Absorption-type unification. In the case of businesspeople working in the Gaesong Industrial Complex, however, the Agreement-type unification clock was faster than the Absorption-type. More specifically, the overall Agreement-type unification clock was 5:16, while the Absorption-type was 5:05. The business people's exceptional view resulted from the effects of their environment, which tended to intensify positive feelings about economic exchange with North Korea. For that reason, many of their answers reflected their expectations rather than a realistic evaluation of the current situation.

In the public opinion poll, the Agreement-type unification clock was at 4:47, an hour and 2 minutes faster than the Delphi panel's clock. After a series of t-test analyses, the Delphi panel and the public opinion group were proved independent of each other, while, interestingly, the public opinion group, North Korean refugees and the inter-Korean businesspeople appeared to be identical groups.

North Korean refugees evaluated the Agreement-type at 5:11, an hour and 26 minutes closer to unification than the Delphi panel. The refugees' estimate of the Agreed unification time was also closer because they tended to express their expectations and rely on their experience, rather than considering the reality of the current situation.

2010 Overall Absorption-type Unification Clock by Comparison Group

Delphi Panel	Non-panel Experts	NK business people	Public Opinion	NK Refugees
05:20	05:36	05:05	05:36	06:40
	Panel + 0:16	Panel – 0:15	Panel + 0:16	Panel + 1:20

For the Delphi panel, the time on the Absorption-type unification clock, as on the consensus-type clock, was behind. The overall Absorption-type unification clock was at 5:20. In other words, the clock hands were 36 minutes slower than the previous year. Some may think that the Agreement-type and Absorption-type clocks could show an inverse relationship. During the design process and the post-hoc analysis, we found both clocks were partly influenced by separate factors, and the 2009 post-hoc analysis revealed the reasons for this. Included among the Agreement unification factors were the following: reform and openness of the North Korean economy, China's role, the emergence of reform leadership in North Korea, diffusion of market economy factors, homogeneity between the two Koreas, and military trust. On the other hand, Absorption unification points included the instability of Kim Jong-il regime, the internal power conflict in the North, the economic crisis, South Korean residents' understanding of unification, and US interests, factors that appear to have adversely affected the unification time for both types.

Non-panel experts estimated the overall Absorption-type clock at 5:37, which was 17 minutes faster than that of the Delphi panel. Moreover, it was an hour and 30 minutes faster than their estimate for the Agreement unification clock, indicating that they envisioned a better possibility for the Absorption-type. This is coincidental with the Delphi panel's estimate. A t-test comparing the two was carried out, which showed that the two groups were identical.

As mentioned, the Absorption-type unification clock for the inter-Korean business people indicated a time of 5:05, an exceptional 11 minutes behind their clock for Agreement-type unification. Meanwhile, unlike the Agreement-type clock, the inter-Korean business people's Absorption-type clock was found to be similar to the Delphi panel's—only a 15-minute gap.

The public opinion poll estimated the Absorption-type clock at 5:36, which was 49 minutes ahead of the Agreement-type clock, and 16 minutes ahead of the Delphi panel's Absorption-type clock.

North Korean refugees' answers put the overall Absorption-type clock at 6:40, which was an hour 20 minutes faster than the same clock for the Delphi panel. The gap of one hour and 26 minutes between the refugees' Agreement-type and Absorption-type clocks was consistent with the other groups' results.

2. Overview of the 2011 Survey

A. Questionnaire Examination and Panel Enlargement

Through several workshops and post hoc analysis of the previous surveys, the 2011 Unification Clock Survey concentrated on continuity and stabilization. First, we decided to continue the same 12 unification questions on Agreement-type and Absorption-type unification clocks. The 12 questions for the unification clocks, which in the 2009 survey had been disorganized and somewhat vague, were modified in the 2010 survey. We found that the questions on the unification clock (ex: How do you feel about the current level of unification) could be read in a number of ways. In other words, without a supplementary guideline the question itself could be interpreted as 'negative—positive,' 'impossible—possible,' and 'distant—near'. In order to simplify the question on the unification clocks, we inserted a quartile guideline with 'negative—positive' criteria. The simpler, more intuitive format enabled better and faster understanding by the respondents.

Quartile Criteria for the 12 Unification Clocks

1~25	26~50	51~75	76~100
Very Negative	Slightly Negative	Slightly Positive	Very Positive
Absolutely Impossible	Slightly Impossible	Slightly Possible	Absolutely Impossible
Very Distant	Slightly Distant	Slightly Close	Very Close

The main purpose of the change in the unification clock questions was to reduce the wide range of panel responses. The 2010 survey based on the improved questionnaire also showed the wide range of the 12 unification clocks: from 80 to 90. This tendency needed to be narrowed by a feedback process, but despite such a process, panelists rarely changed their decisions. Rather, the refined questionnaire reaped quite unexpected results: The extent of missing values seen in the 2010 survey was dramatically reduced compared to 2009 survey. In the end it was decided that questions about the unification clocks would not be changed in the 2011 survey.

The number of questionnaires for unification determinants remained the same. The original questions composed in 2009 were collected from the 2009 survey. Some 1,500 questions were narrowed down to 33. Again in 2010, the questions were restructured and made simpler and more intuitive. During this process, a new factor, 'US-China relations' influence on unification' was added as a result of analysis of a prior open question. After re-examining the 2010 unification factors survey, we found that a few questions had double meanings; for example, the question on market economy and private ownership (Q20). However, for the sake of continuity, we decided to use same questionnaire. All questions were scaled on the 9-point Likert scale to secure the integral number of 5 for its mid-point. The questionnaire on unification determinants covered the areas of politics, economy, society and military in North Korea, as well as South Korea's capacity, inter-Korean relations, and the international environment.

The panel size grew from 50 to 80 persons to equal that of the 2010 survey's non-panel experts. The 30 new panel members were culled from the list of Korean scholars and experts engaged in the areas of foreign affairs, security, and unification, the same list from which members of the Delphi panel were chosen in 2009. During the 2010 survey, the difference between the Delphi panel and non-panel experts was found to be within the limits of acceptability. The enlargement of the panel size would

partly solve the 'small-N' problem, thus reducing over-estimation of extreme values.

The Delphi panel survey was conducted by e-mail from June 7~27, 2011. For feedback, the post-hoc analysis of the 2010 survey was attached. The 2011 survey consisted of a questionnaire about the unification forecast clock and unification factors, and open questions. All 80 questionnaires was collected.

Due to financial limitations, we could not conduct surveys on inter-Korean businesspeople and North Korean defectors living the South. However, nationwide opinion polls were conducted to gauge the views of the general public on unification. We used almost the same questionnaire as the 2010 survey to ensure continuity: However, the questionnaire was modified to include easier terms and phrases more suited to ordinary citizens. In addition, questions were only on two unification clocks (overall Agreement-type and overall Absorption-type). The firm of Research & Research was commissioned to conduct the survey from October 13~17, 2011. Conducted through computer-assisted telephone interviews (CATI), the survey targeted 1,000 adults over 19 years of age living in South Korea. The sampling was extracted by random digit dialing (RDD) method after proportionally allocating the registered population based on region, age and gender. The RDD became a common sampling method since it covers non-Korea Telecom users.[3] It had a margin of error of plus/minus 3.1 percentage points.

Summary of 2011 Survey Groups

Group	Interviewee	Period	Method and Procedure	Description
Delphi Panel	N=80 Unification, foreign affairs and security area experts	June 7~27, 2011	E-mail survey	2010 Post-Hoc Analysis Unification Clocks Unification Factors Open questions
Public Opinion Poll	N=1,000 Nationwide survey, Selected by stratified sampling (RDD)	October 13~17, 2011	Conducted through Research & Research, Inc.	Unification Clocks (2 Questions) Unification Factors (18 Questions)

3) Controversy arose over sampling methods after South Korea's June 2nd 2010 local election. While the traditional ARS method uses Korea Telecom subscribers only, the RDD method encompasses non-KT users. It is known that the results of the traditional ARS method are more conservative than those of RDD.

Chapter II

The Delphi Panel: Unification Clock

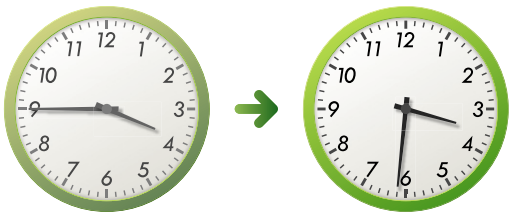
The 2011 unification clocks showed less change than the previous year. The Delphi panel's 2011 overall Agreement-type clock was at 3:31, i.e., 14 minutes behind that of the same clock in 2010. On the other hand, the 2011 overall Absorption-type unification clock stood at 5:30, 10 minutes closer to unification than it was in 2010.

Kim Jong-il and his son Jong-un pose with visiting Chinese Vice Premier Li Keqiang during their meeting in Pyongyang on October 24, 2011. When North Korea's media released a list of top officials for this visit, they unanimously started referring to Kim Jong-un as "general."

1. Unification Clock

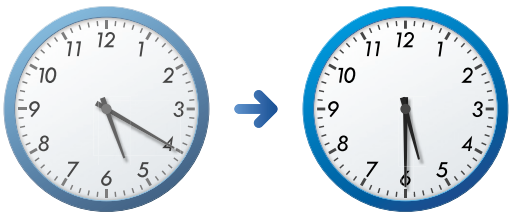
2011 Unification Clock

Overall Agreement-type Unification Clock



2010	2011
03:45	03:31
Year 2009 – 0:34	Year 2010 – 0:14

Overall Absorption-type Unification Clock



2010	2011
05:20	5:30
Year 2009 – 0:36	Year 2010 + 0:10

Changes in Unification Clocks, 2009-2010

		Overall		Political		Economic	
		Agreement	**Absorption**	**Agreement**	**Absorption**	**Agreement**	**Absorption**
2009	Time	**4:19**	**5:56**	**3:53**	**5:44**	**4:57**	**6:26**
2010	Time	**3:45**	**5:20**	**2:45**	**4:25**	**4:42**	**6:22**
2011	Mean	29.263	45.783	22.238	38.675	39.938	54.875
	Std Dev	14.459	17.642	14.124	19.424	16.940	20.313
	Time	**3:31**	**5:30**	**2:40**	**4:38**	**4:48**	**6:35**
	Changes	– 0:14	+ 0:10	– 0:05	+ 0:13	+ 0:06	+ 0:13

		Social		Military		International Relations	
		Agreement	**Absorption**	**Agreement**	**Absorption**	**Agreement**	**Absorption**
2009	Time	**4:26**	**5:38**	**2:51**	**4:53**	**4:27**	**5:40**
2010	Time	**4:01**	**5:26**	**2:14**	**4:01**	**3:44**	**4:29**
2011	Mean	34.300	46.500	18.150	31.438	29.900	40.650
	Std Dev	17.264	20.499	14.340	19.345	16.470	20.652
	Time	**4:07**	**5:35**	**2:11**	**3:46**	**3:35**	**4:53**
	Changes	+ 0:06	+ 0:09	– 0:03	– 0:15	– 0:09	+ 0:24

In comparison to the 2009 clocks, all of the 2010 unification clocks of the Delphi panel lagged significantly farther behind. The 2011 unification clocks, however, showed less change than the previous year. The Delphi panel's 2011 overall Agreement-type clock was at 3:31, i.e., 14 minutes behind that of the same clock in 2010. On the other hand, the 2011 overall Absorption-type unification clock stood at 5:30, 10 minutes closer to unification than it had been in 2010.

Among the Agreement-type clocks that lost time were the political-area (5 minutes behind), military-area (3 minutes behind), and international relations-area (9 minutes behind), while the economic-area (6-minutes closer) and social-area (6 minutes closer) gained time. Again in 2011, the economic-area Agreement-type unification clock fell into the "slightly positive" quadrant with a time of 6:35.

The five Absorption-type unification clocks also showed minimal changes, and except for the military-area Absorption-type (15-minutes behind), all clocks gained time to a greater or lesser extent. The international relations Absorption-type clock showed a significant change (24 minutes closer), followed by the political-area (13 minutes closer), economic-area (13 minutes closer), and society area (9 minutes closer).

The 2009 and 2010 panel's opinion that Absorption-type unification could come somewhat sooner than Agreement-type remained intact in 2011. Greater points were given to Absorption than for Agreement in all aspects, while the economic-area unification clock indicated a time nearest to unification. In contrast, the military-area Agreement-type clock remained the farthest away.

The range of the panel's response for each clock did not change significantly compared to 2009 and 2010. The range of response on Absorption-type clocks was 85~90, slightly higher than for the Agreement-type clocks. Despite our efforts to make the questions more clear and intuitive and to provide a guideline, the effect was insignificant, which proved that although the Delphi panel was a homogeneous group whose members had long conducted research on North Korea and had good access to information on the North, inherent within the group was a wide range of positions and approaches regarding

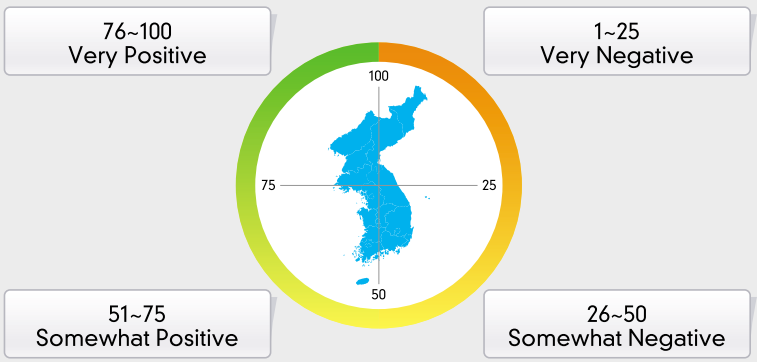
unification. This tendency toward diverse responses also appeared in the Unification Factors survey.

Because the 2010 non-panel experts were added to the 2011 Delphi panel list, the standard deviation increased about 2 points. The standard deviation in all six sectors of the Agreement-type clock was between 14.12 and 17.26 and the range was between 79 and 85. In the case of Absorption-type unification, however, it was between 17.64 and 20.65 with a range of 85 to 90. On a scale of 1-100, opinion disparity indicated radical differences among the panelists. However, an increased sample size would offset the extreme values. The differences in the range and standard deviation between Agreement-type and Absorption-type indicated that the panel's disagreement level was higher on the Absorption-type clocks.

Design of the Unification Clock

Each unification clock is based on a set of twelve 100-point questions. Agreement-type unification is defined as gradual unification led by peaceful improvement of inter-Korean relations and North Korea's opening and reform. It has an overall agreement-type unification clock with five sub-area clocks: political, economic, social, military and international relation. Absorption-type unification refers to unification as a result of incorporation of North Korea by the South. It also has overall absorption-type unification with the same five sub-area clocks. The difference between it and the 2009 unification clock is the quartile guideline: Numbers 1-25 indicate "very negative," 26-50 "somewhat negative," 50-75 "somewhat positive" and 76-100 "very positive."A sample question is below.

How do you feel about the current level of agreement-type unification? Write points within the range from one to 100 (100 points indicates a unified Korea).



How many points do you give for the Overall Agreement-type unification at present?

(1) Overall Agreement-type Unification: ( ) points

How many points for following areas?

(2) Political-area Agreement-type Unification: ( ) points

(3) Economic-area Agreement-type Unification: ( ) points

(4) Social-area Agreement-type Unification: ( ) points

(5) Military-area Agreement-type Unification: ( ) points

(6) International Relations-area Agreement-type Unification: ( ) points

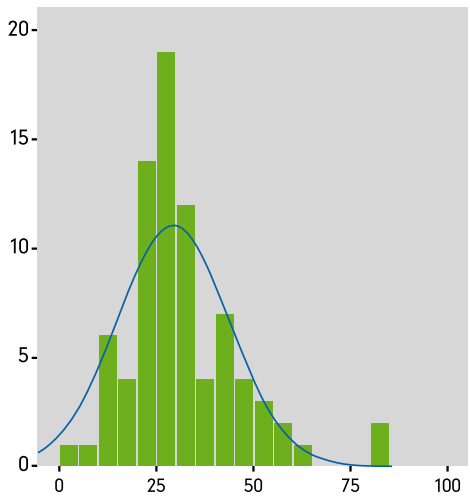
The Agreement-type Unification Clock

Overall Agreement-type Unification Clock

2009
04:19
-

2010
03:45
- 0:34

2011
03:31
- 0:14

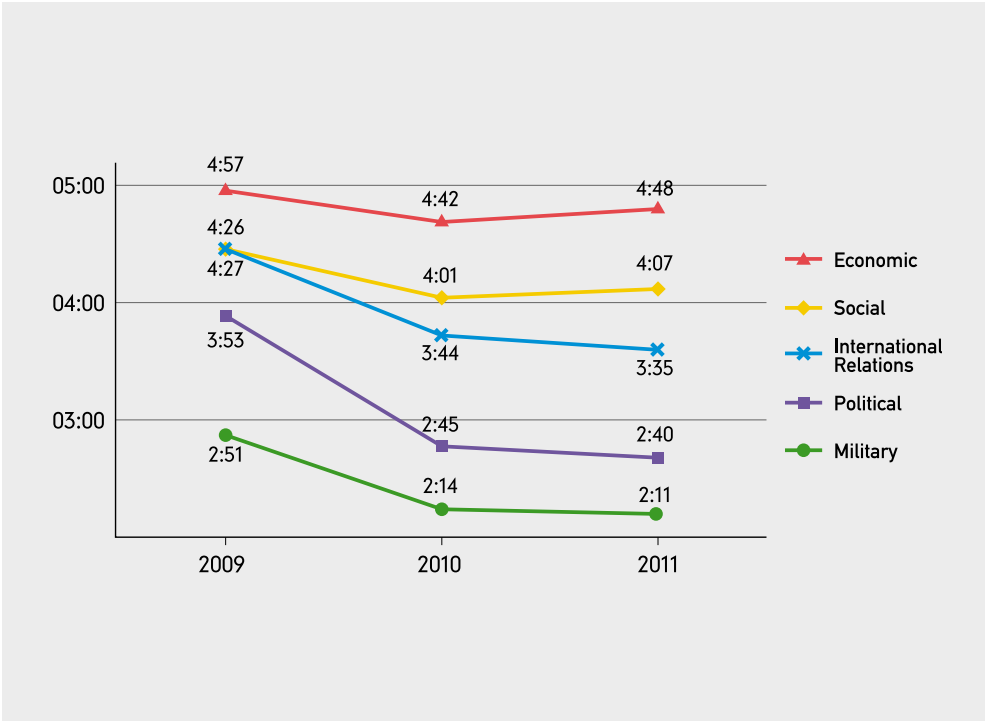


N	Valid	80
	Missing	0
Mean		29.263
Median		25.000
Mode		25.0
Standard Deviation		14.4588
Skewness		1.183
Kurtosis		2.505
Minimum		1
Maximum		80

The 2011 overall Agreement-type unification clock for the Delphi panel was 3:31, 14 minutes behind the previous year. The time was converted from a mean of 29.26 on a 100-point scale (standard deviation 14.459).[4] As 12 o'clock means that unification has been achieved, the panel's estimation of the time 3:31 indicated extreme pessimism on the possibility and opportunity of Agreement-type unification. The range of the panel's response was between 1 and 80, wider than in 2010. However, except for two extreme values (80 on a 100-point scale), it resembles the 2010 survey. The most frequent answer (mode) was 25 points (18 responses). Those responding 50 or below accounted for 93.8 percent. The relatively high Kurtosis (peaks around the mean compared to normal distribution) of 2.51 indicates that responses were concentrated around the mean value.

4) The mean value was converted to the minute unit (mean*720/100) and then converted to the 12-hour unit. 100 points and 12:00 o'clock means a unified Korea and quartile-criteria are 3:00, 6:00, 9:00, and 12:00.

Changes in Agreement-type Unification Clocks, 2009~2011

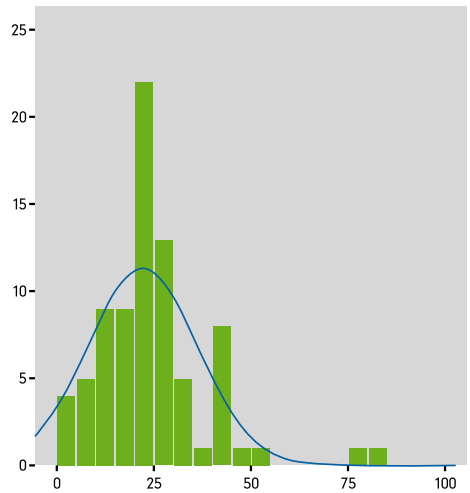


As the above chart shows, the five areas lost significant time in 2010 and remained nearly the same in 2011. All five Agreement-type areas showed extreme lags in time compared to respective Absorption-type clocks. The time on the economic-area clock, relatively closer to 12 o'clock than other areas, was only 4:48. The political-area and international relations-area clocks lagged dramatically behind, (1 hour 13 minutes and 52 minutes, respectively), reflecting the harsh situation in these areas. The Agreement-type clocks in the economic area, social area and international relations area moved into the "slightly negative" quadrant, while the political and military areas hovered in the "extremely negative" quadrant.

Compared to the 2010 survey, the ranges of all five area clocks were relatively wide. Except for a few extreme values, however, the shape of distribution became denser than in previous years. This fact was caused first by the larger panel size, and second, the panel's consensus on this area. This is a distinctive attribute compared to the 2009 and 2010 surveys that showed sparse and multi-modal distributions.

Political-area Agreement-type Unification Clock

2009	2010	2011
03:53	02:45	02:40
-	- 1:08	- 0:05

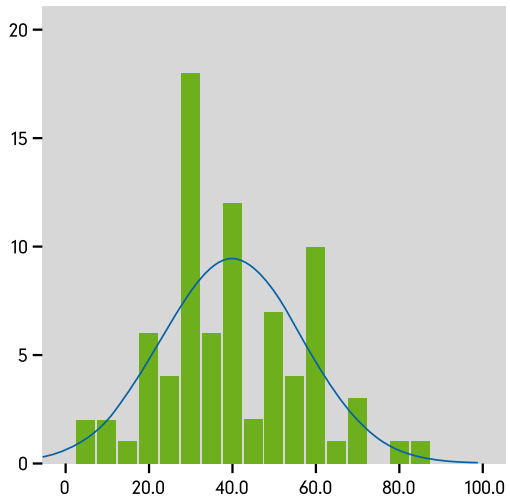


N	Valid	80
	Missing	0
Mean		22.238
Median		20.0
Mode		20.0
Standard Deviation		14.1235
Skewness		1.549
Kurtosis		4.484
Minimum		1
Maximum		80

The political-area Agreement-type clock, which showed the most serious loss of time in 2010, remained in the negative quadrant. With a time of 2:40, it fell behind 5 more minutes than the previous year, losing time for the second year in a row. The political-area Agreement-type clock first fell into the "slightly negative" quadrant in 2009, and then, made a dramatic move into the "strongly negative" quadrant, where it has remained since 2010. Thus, the political area Agreement-type clock and the military area one are the least optimistic of all. In other words, the panel conceived this area's unification as very negative and lagging far behind. The responses were in the range of one to a maximum of 80. However, 97.5 percent of the responses were concentrated below 50 points. The high concentration level was reflected in a kurtosis score of 4.484. The average on a 100-point scale was 22.24 with a standard deviation of 14.124.

Economic-area Agreement-type Unification Clock

2009	2010	2011
04:57	04:42	04:48
-	- 0:15	+ 0:06



N	Valid	80
	Missing	0
Mean		39.938
Median		40.0
Mode		30.0
Standard Deviation		16.9402
Skewness		.325
Kurtosis		-.178
Minimum		5
Maximum		85

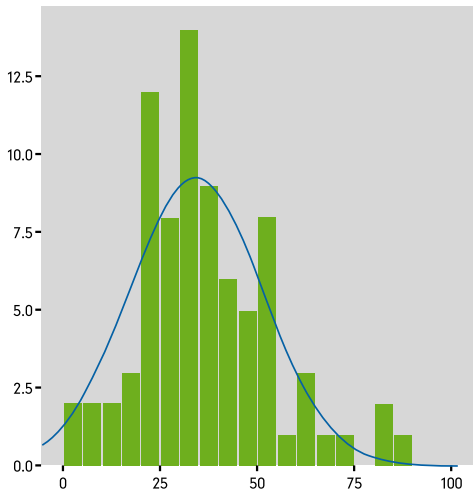
The Economic-area Agreement-type unification clock recorded a time of 4:48, slightly ahead of the previous year. This area remained comparatively the same considering rapid changes in the other areas; it had lost 15 minutes in 2010 and gained 6 minutes this year. Although the economic sector clock still fell into the "slightly negative" quadrant, it came closest to unification among all the areas for Agreement-type unification clocks. The panel's responses were relatively dispersed, with a minimum value of 5 and a maximum of 85. The average on a 100-point scale was 39.94 with a standard deviation 16.940. The panel members with negative responses (50 or below) totaled 75%. The mode was 30 points accounting for 21.3 percent followed by 40 points (15%) and 60 points (12.5%).

Social-area Agreement-type Unification Clock

2009
04:26
-

2010
04:01
- 0:25

2011
04:07
+ 0:06

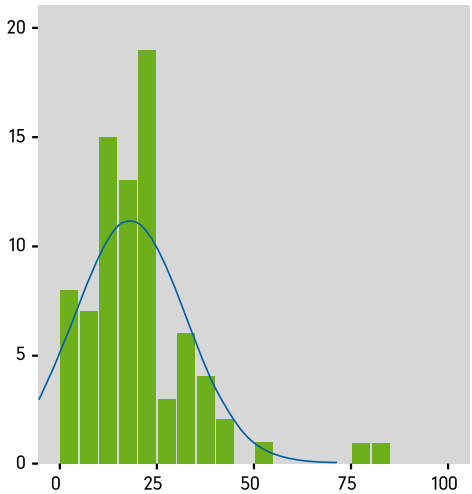


N	Valid	80
	Missing	0
Mean		34.300
Median		30.0
Mode		30.0
Standard Deviation		17.2637
Skewness		.713
Kurtosis		.779
Minimum		1
Maximum		85

The 2011 social-area Agreement-type clock was 4:07, 6 minutes closer than the previous year. Along with the economic-area clock, this clock was still closer to 12:00 than other Agreement-type unification clocks. Although there was a wider range because of the larger panel size, in general, the clock was similar to the previous year. On the 100-point scale, it had an average of 34.30 with a standard deviation of 17.264. With a mode of 30, the responses ranged from 1 to 85. A total of 78.8 percent of the panel provided negative answers (50 or less).

Military-area Agreement-type Unification Clock

2009	2010	2011
02:51	02:14	02:11
-	- 0:37	- 0:03

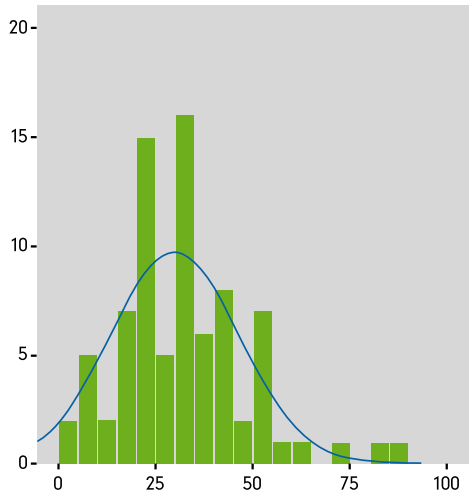


N	Valid	80
	Missing	0
Mean		18.150
Median		15
Mode		20
Standard Deviation		14.3396
Skewness		1.947
Kurtosis		5.993
Minimum		1
Maximum		80

For both the Agreement and Absorption-type clocks, the military areas had the slowest time, with the military-area Agreement-type unification clock the slowest among all 12 clocks. Compared to 2010, when it lost 37 minutes, the 2011 clock lost only 3 minutes, remaining somewhat similar. The new time of 2:11 for Agreement-type unification symbolizes the severe military situation since 2010. Noteworthy, the clock has the highest kurtosis value of 5.993 among all 12 unification clocks, reflecting the 2011 panel's strong consensus on this area. The range value 79 (minimum 1 and maximum 80) shows fairly wide disagreement; however, as seen on the histogram, the Delphi panel expressed a very convergent central tendency (barring consideration of the two exceptionally deviant cases) About 96.3% of the panel members evaluated it as 50 points or less, with 67.5 percent giving between 5 and 20 points. The mean value obtained was 18.15 on a 100-point scale, and the standard deviation was 14.340.

International Relations-area Agreement-type Unification Clock

2009	2010	2011
04:27	03:44	03:35
-	- 0:43	- 0:09



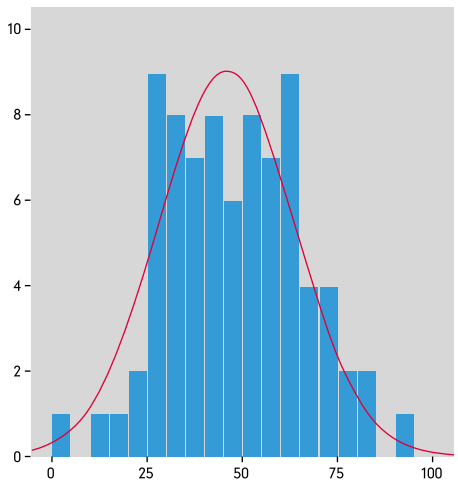
N	Valid	80
	Missing	0
Mean		29.900
Median		30.0
Mode		30.0
Standard Deviation		16.4698
Skewness		.870
Kurtosis		1.464
Minimum		1
Maximum		85

The international area Agreement-type unification clock was at 3:35, 9 minutes behind last year's time of 3:44. Although this lag was the greatest among the five area Agreement-type clocks, only minimal change occurred. The mean value obtained was 29.90 on a 100-point scale, and the standard deviation was 16.470. Twelve panelists gave answers with a mode value of 30, with 1 to 85 points distributed along this line. The respondents with negative responses (50 or less) totaled 85 percent.

The Absorption-type Unification Clock

Overall Absorption-type Unification Clock

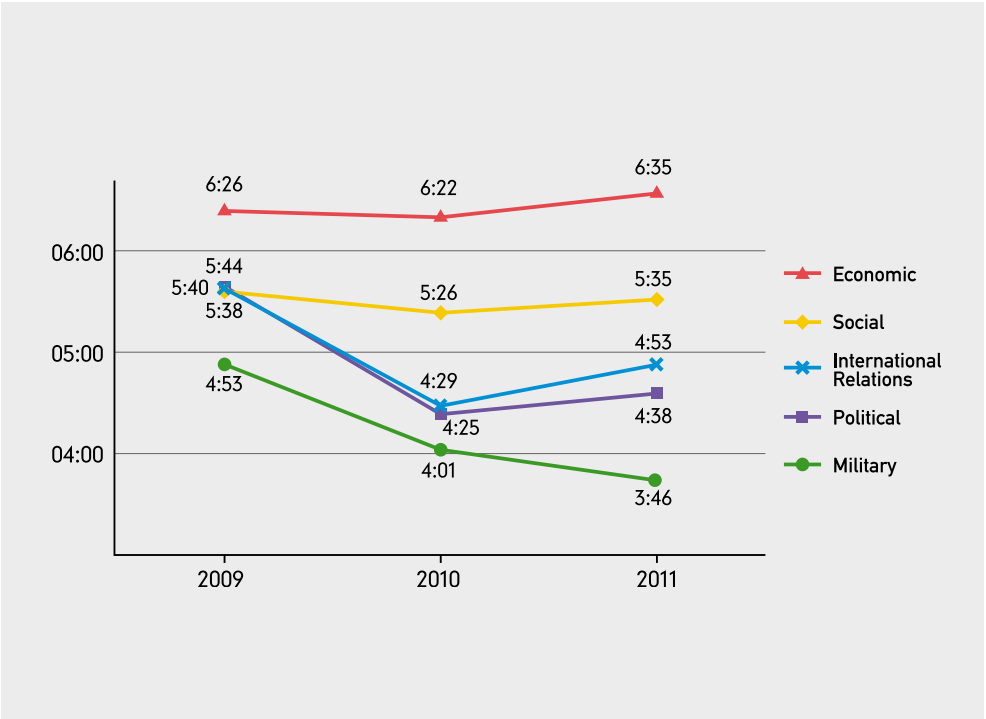
2009	2010	2011
05:56	05:20	05:30
-	- 0:36	+ 0:10



N	Valid	80
	Missing	0
Mean		45.783
Median		45
Mode		60
Standard Deviation		17.6418
Skewness		.098
Kurtosis		-.399
Minimum		3
Maximum		90

For 2011 overall Absorption-type unification, the mean value was 45.78 on a 100-point scale, which was converted to 5:30, 10 minutes ahead the time of 5:20 in 2010. Considering that the overall Agreement-type clock was 15 minutes slower, a move of ten minutes forward is politically meaningful: The probability of inter-Korean reconciliation decreased and North Korean stability increased to a certain degree. The time of 5:30 on the overall Absorption-type unification clock means that in just 30 minutes it will reach the mid-point (6:00 o'clock). The panel's responses ranged from 3 to 90, a wider gap than the overall Agreement-type clock. The kurtosis value of this clock scored -.399, obviously flatter than the overall Agreement-type's 2.505. As the histogram shows, its mode was 60 with 8 panelists' responses (10%) but all responses were widely dispersed. All statistics indicated there was more disagreement over the overall Absorption-type unification clock than over the Agreement-type one. About 53.8 percent of the panel responded negatively (50 points or less).

Changes in Absorption-type Unification, 2009~2011

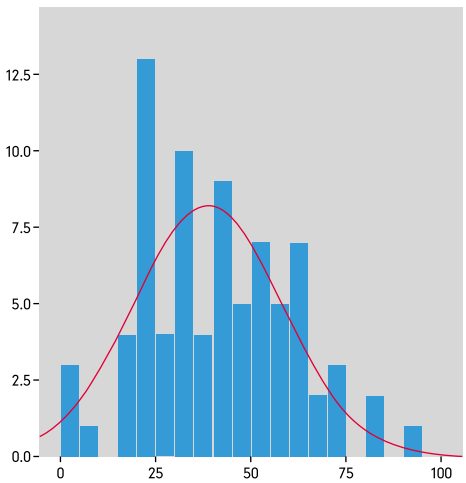


The five Absorption-type clocks had some unique traits depending upon the area. All clocks in this category showed widely dispersed responses ranging from 85 to 90. The shape of the bar charts, the multiple peaks, the higher standard deviations, and obviously, the low kurtosis values (platykurtic), all indicated that the panel's disagreement level on this group of clocks was much greater than on the Agreement-type.

As shown in the chart above, four Absorption-type unification clocks, which had lagged in 2010, increased more or less in 2011. The military-area clock, however, fell behind for two consecutive years. The economic-area clock, the only one that exceeded the mid-point of 6:00 o'clock, was closest to unification among all the others. Other clocks, in fact, lagged far behind the economic-area with 1- to 3-hour gaps. Political and international relations-area clocks, which had dramatically fallen behind in 2010, recovered slightly in 2011.

Political-area Absorption-type Unification Clock (N=80)

2009	2010	2011
05:44	04:25	04:38
-	- 1:19	+ 0:13

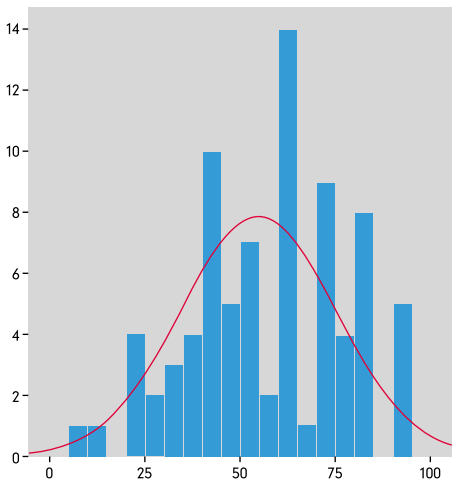


N	Valid	80
	Missing	0
Mean		38.675
Median		40.0
Mode		20.0
Standard Deviation		19.4245
Skewness		.276
Kurtosis		-.287
Minimum		1
Maximum		90

In 2010, the Absorption-type unification clock in the political area recorded the most significant slowdown among all 12 clocks. It nevertheless moved forward by 13 minutes, namely 4:25 in the 2011 survey. The mean was 38.68 on a 100-point scale with a standard deviation 19.425. The panel responses ranged from 1 to 90 with a relatively low kurtosis of -.287. As shown in the histogram, a fairly flat and even distribution was concentrated between 20 and 60 points. These results all indicated the panel's disagreement regarding Absorption-type unification in the political area. The number of members showing a negative response to Absorption-type unification totaled 53 (66.3 %).

Economic-area Absorption-type Unification Clock (N=80)

2009	2010	2011
06:26	06:22	06:35
-	- 0:04	+ 0:13



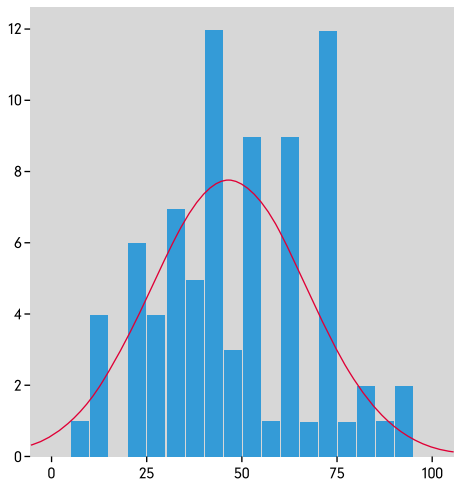
N	Valid	80
	Missing	0
Mean		54.875
Median		60.0
Mode		60.0
Standard Deviation		20.3130
Skewness		-.209
Kurtosis		-.573
Minimum		5
Maximum		90

As in the 2009 and 2010 surveys, the economic-area Absorption-type unification clock continued to have the highest average and the fastest time among all 12 clocks. The mean was 54.88, which, on a 12-hour clock, converted to 6:35. This clock was the only one that exceeded the mid-point (6:00 o'clock), which placed it in the "slightly positive" quadrant. A noteworthy fact is that during the three-year study, the 2011 economic-area Absorption clock was the fastest and the least changed of all the others. The clock hands moved forward 13 minutes after a 4-minute retreat in the previous year. Just looking at the clocks tells us that the North Korean economy has continued to worsen during three consecutive years.

The responses were distributed relatively widely, and as shown in the histogram, formed a slightly bimodal distribution of around 40 and 60 points. With a platykurtosis -.573 and high standard deviation 20.313, the panel was basically divided into two groups and showed wide disagreement on this clock. Furthermore, considering the 2010 clock in this area had a unimodal distribution, this year's new distribution shape indicated that some panel members had moved their positions from negative to positive. Responses of more than 50 points accounted for 62.5 percent.

Social-area Absorption-type Unification Clock (N=80)

2009	2010	2011
05:38	05:26	05:35
-	- 0:12	+ 0:09

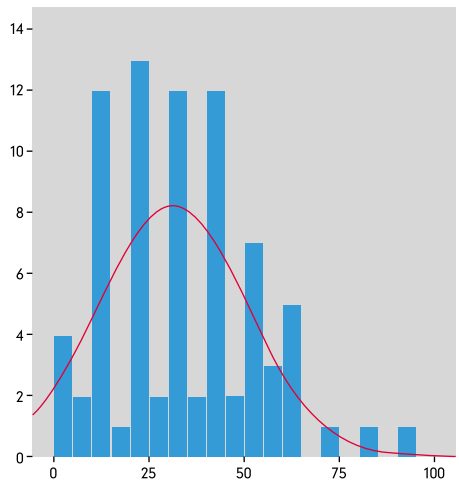


N	Valid	80
	Missing	0
Mean		46.500
Median		45.0
Mode		70.0
Standard Deviation		20.4995
Skewness		.073
Kurtosis		-.716
Minimum		5
Maximum		90

The time on the social-area Absorption-type clock was 5:35, converted from the mean value of 46.5. The minute hand gained 9 minutes after 2010's 12-minute lag compared to 2009. Along with the economic area, this clock also showed few changes during the three year study. The distributional shape, however, indicated extreme disagreement among the panelists. Actually, the kurtosis -.716 was the flattest among all 12 clocks. The panel was divided into two groups showing a modest bimodal distribution. With a range of 85 (minimum 5, maximum 90), 52.5 percent responded under 50 points.

Military-area Absorption-type Unification Clock (N=80)

2009	2010	2011
04:53	04:01	03:46
-	- 0:52	- 0:15

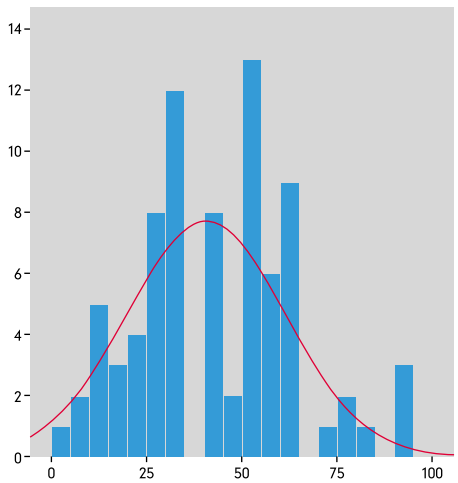


N	Valid	80
	Missing	0
Mean		31.438
Median		30.0
Mode		10.0
Standard Deviation		19.3449
Skewness		.512
Kurtosis		.037
Minimum		1
Maximum		90

The military-area Absorption-type clock, at 3:46, was the only clock that lagged behind for two consecutive years in the Absorption-type category: The minute hand moved back 52 minutes in 2010, and another 15 minutes in 2011. Also, the unification time was the farthest behind among all six Absorption-type clocks. As shown in the histogram, the distribution did not have a central tendency with four modes of 10, 20, 30, and 40 points (12 responses each). With the mean 31.44 and the standard deviation 19.345, 77.5 percent answered less than 50 points.

International Relations-area Absorption-type Unification Clock (N=80)

2009	2010	2011
05:40	04:29	04:53
-	- 1:11	+ 0:24



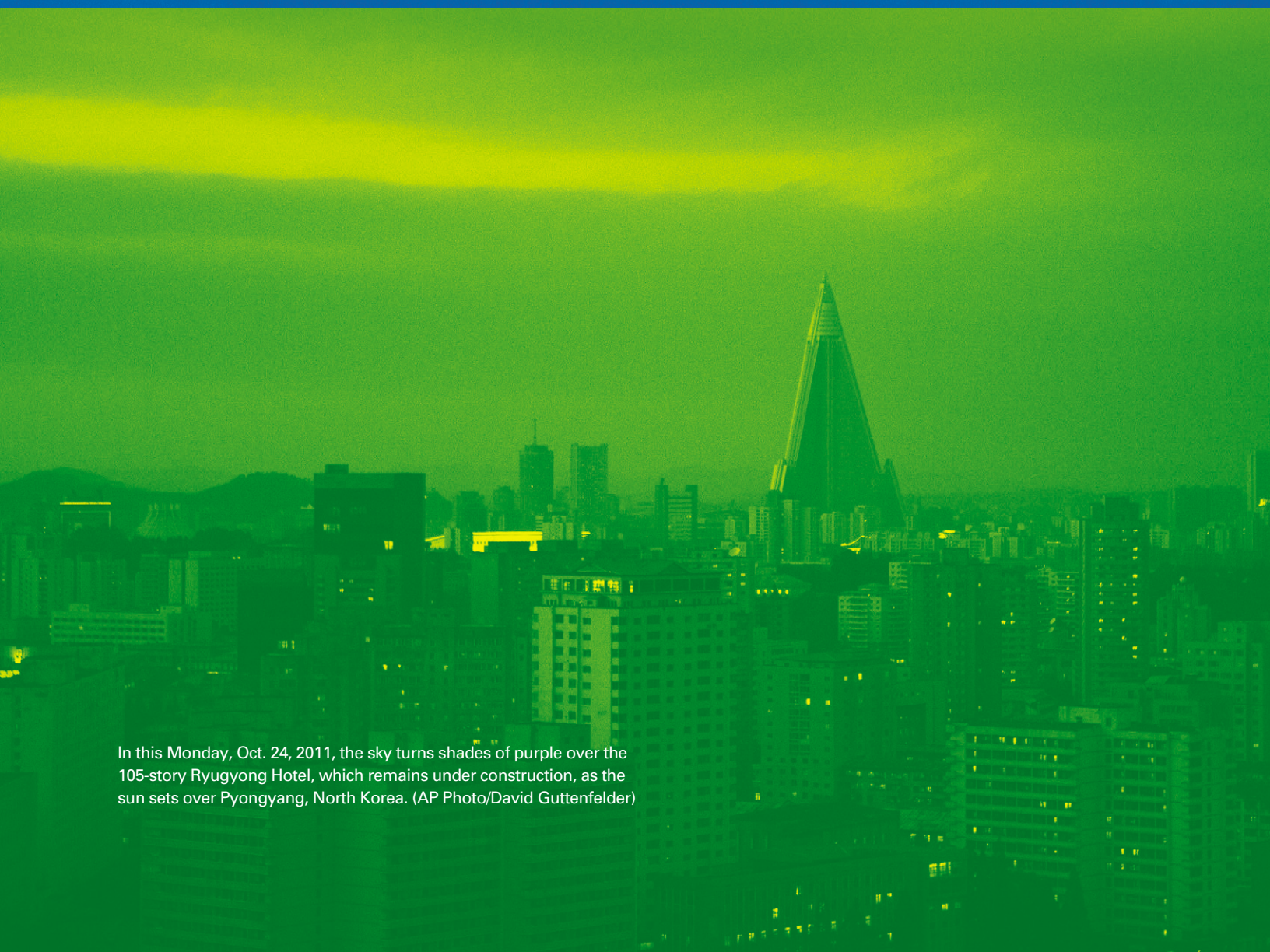
N	Valid	80
	Missing	0
Mean		40.650
Median		40.0
Mode		50.0
Standard Deviation		20.6521
Skewness		.287
Kurtosis		-.250
Minimum		1
Maximum		90

Respondents' evaluations of Absorption-type unification in international relations, which had rapidly plummeted in 2010, moved forward 24 minutes in 2011 marking the highest change among the 12 clocks. The standard deviation for the international relations-area clock was 20.652, which was the greatest among all the 12 clocks. With a mean value of 40.65, the histogram indicated a slight bimodal distribution. A total of 56.3 percent answered less than 50 points.

Chapter III

The Delphi Panel: Unification Factors

For the 2009 and 2010 Delphi surveys, 1,500 factors that might have an effect on unification were reclassified into 36 questions. The 2011 survey used the same questionnaire that was used in 2010 in order to guarantee continuity and stability. All questionnaires were based on a 9-point Likert scale.

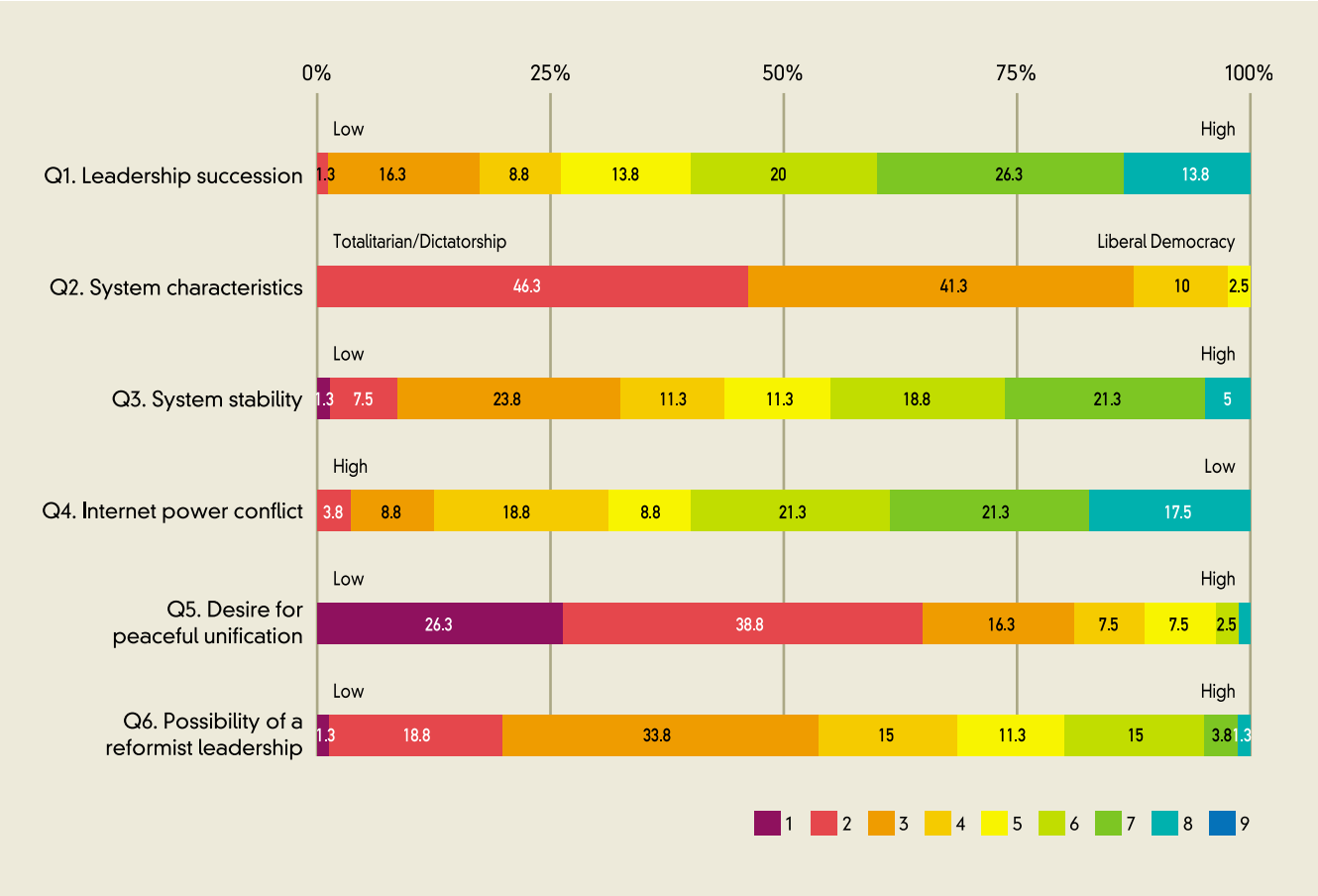


In this Monday, Oct. 24, 2011, the sky turns shades of purple over the 105-story Ryugyong Hotel, which remains under construction, as the sun sets over Pyongyang, North Korea. (AP Photo/David Guttenfelder)

For the 2009 and 2010 Delphi surveys, 1,500 factors that might have an effect on unification were reclassified: In 2009, 33 questions (37 including sub-questions) were developed and used in the 3rd Delphi survey of the same year. In the 2010 survey, the same questions were modified to 36 questions which were clearer and more concrete. The 2011 survey used the same questionnaire that was used in 2010 in order to guarantee continuity and stabilization. All questionnaires were based on a 9-point Likert scale, which unless otherwise specified, is normally interpreted as 1 "extremely negative," 2 "very negative," 3 "negative," 4 "slightly negative," 5 "neutral," 6 "slightly positive," 7 "positive," 8 "very positive," and 9 "extremely positive."

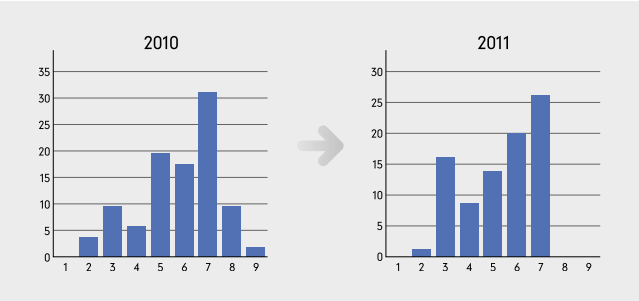
North Korean Politics

Six questions were reserved for the North Korean political area: (Q1) Leadership succession after Kim Jong-il, (Q2) Characteristics of the political system in North Korea, (Q3) Stability of Kim Jong-il's power system, (Q4) The possibility of internal power conflict, (Q5) The willingness of the North Korean leadership for peaceful unification, and (Q6) The possibility of emergence of a reformist leadership.



Q1) With regard to establishing leadership succession in North Korea, about 70.1 percent of the panel evaluated that it was proceeding smoothly, as indicated by their answers: 'slightly positive' (5) to 'extremely positive' (9). The mode value was seven points (21 respondents). A wide range (between 2 and 8) was seen, indicating a large disparity among the panel members. The mean value was 5.69, with the standard deviation 1.703. Compared to the 2010 survey's mean of 5.8, there were few changes on this question. However, a distinguishable increase was identified in the 'negative' (1~4) answers, from 19.6 to 26.4 percent. This, as mentioned at Chapter I, changed the bar chart shape from a unimodal to a fairly bimodal distribution. As the panel evaluated the future of the leadership succession negatively, the distribution shape tended to become a clear bimodal distribution. Then, it would become a unimodal distribution with a negative mode value.

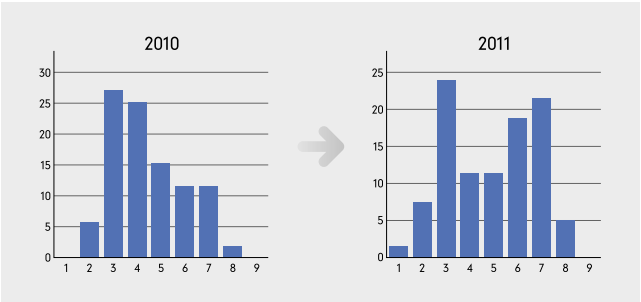
Q1. Leadership succession



Q2) This question asked about the nature of the North Korean regime type ranging from a totalitarian dictatorship to liberal democracy along a 1-to-9 point scale; the lower points meant a more totalitarian dictatorship, and vice versa. Panelists' evaluations of the North Korean system characteristics showed great similarity. All panel members gave four points or less. The responses remained almost the same during the 2009~2011 surveys. Responses to this question showed the least disparity among the panel members, along with responses to Q17 (inter-Korean confidence level) and Q24 (inter-Korean military confidence level). The mean values and standard deviations for these questions were 1.76 and 0.839, respectively.

Q3) Regarding the stability of the Kim Jong-il regime, the panel was divided into two groups in 2011. About 43.8 percent answered 'unstable' (1~4 points) while 45.1 percent said 'stable' (6~9 points). As shown in the bar charts below, the regime stability changed to a stable direction from the mean 4.43 in 2010 to the mean 4.90 (with a standard deviation of 1.860) in 2011. Also, the shape of the chart moved from a unimodal distribution to a bimodal one.

Q3. System stability



Q4) Respondents were asked about the current state of the North Korean regime's internal stability, with responses to be given on a 2-to-8 point scale from 'very unstable' (2) to 'very stable' (8). A significant gap was seen among the panelists on power conflict in North Korea. Of the respondents, 18.8 percent answered that it was 'unstable,' or less than 5 points and 60.1 percent answered 'stable,' or more than 5 points. Compared to the 2010 mean value of 5.41, this year's mean slightly increased to 5.69, that could be interpreted as the internal stability level slightly improved as of June 2011.

Q5) Of 80 respondents, 71 (81.3%) responded negatively to North Korean leaders' desire for peaceful unification. The mean value was 2.44, with a standard deviation of 1.395, almost the same result as the 2010 survey.

Q6) About 68.8 percent of the panel estimated negatively on the possibility of the emergence of reformist leadership in North Korea. Responses to this question fluctuated during the three-year study: Very negative opinions were dominant in 2009, 25.5 percent answered positively in 2010, and in 2011, positive responses decreased to 20.1 percent. The mean was 4.29, with a standard deviation of 1.565.

North Korean Economics

Questions on the economic sector included (Q11) on the economic crisis, (Q12) on the economic system, (Q13) on opening and reform, and (Q20) on the spread of a market economy and private ownership. Although the first three questions were quite different, the answers showed a pattern of similarity. Specifically, the Delphi panel responded very negatively, most of them giving only two or three points. For the question on North Korea's spread of a market economy and privatization, however, it showed a bimodal distribution, indicating a significant disparity among panel members.

Q11) With regard to North Korea's economic crisis, 87.5 percent answered negatively, or less than 5 points. This extreme concentration in opinions on the North Korean economy has continued for the three consecutive years (since 2009). The mean calculated as 3.03, with a relatively smaller standard deviation of 1.387.

Q12) For the question on North Korea's economic system (a continuum between "socialist planned economy" and "capitalist market economy"), respondents' answers were on a scale of 1 to 9 points. The panel viewed North Korea's economic system as being close to a purely socialist planned economy. With the mode value of 3, responses ranged from one to six. The mean value was 2.9 (standard deviation 1.249), slightly less than the 2009 survey's mean of 3.14. Of the respondents, 87.5 percent gave four points or less.

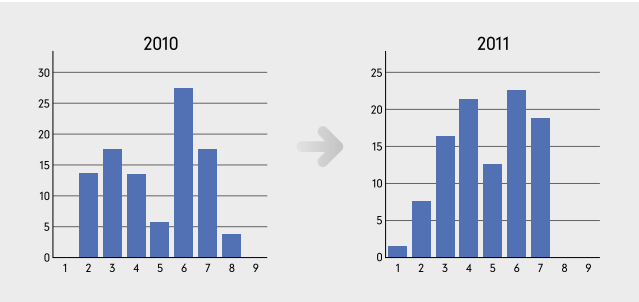
Q13) About 90 percent of the panel answered negatively on openness and reform of the North Korean economy. The question was inserted in 2009 for its close relevance with Agreement-type unification. Interestingly, the mean value 2.83 (standard deviation 1.310) closely resembled the mean of the Overall Agreement-type unification clock, 29.26 on a 100-point scale. Like other economic area questions (Q11, Q12), its standard deviation of 1.310 indicated the panel's consensus on this area.

Q20) The distribution of the responses for this question is quite unlike that of the above three questions. To the question on diffusion of market economy and private ownership in North Korea, the mean value was calculated at 4.79 and the standard deviation at 1.644. The mean value, approximating the mid-point of 5, indicated opinion could be divided on this question. There were

responses of 46.3 percent for 'somewhat negative (4)' or below, and 41.3 percent for 'somewhat positive (6)' or above. Responses fell across a wide range from a minimum of one to a maximum of seven. This clearly indicates that there was a clear bimodal distribution on this question. The panel responses fell into two groups on either side of the mid-point of five.

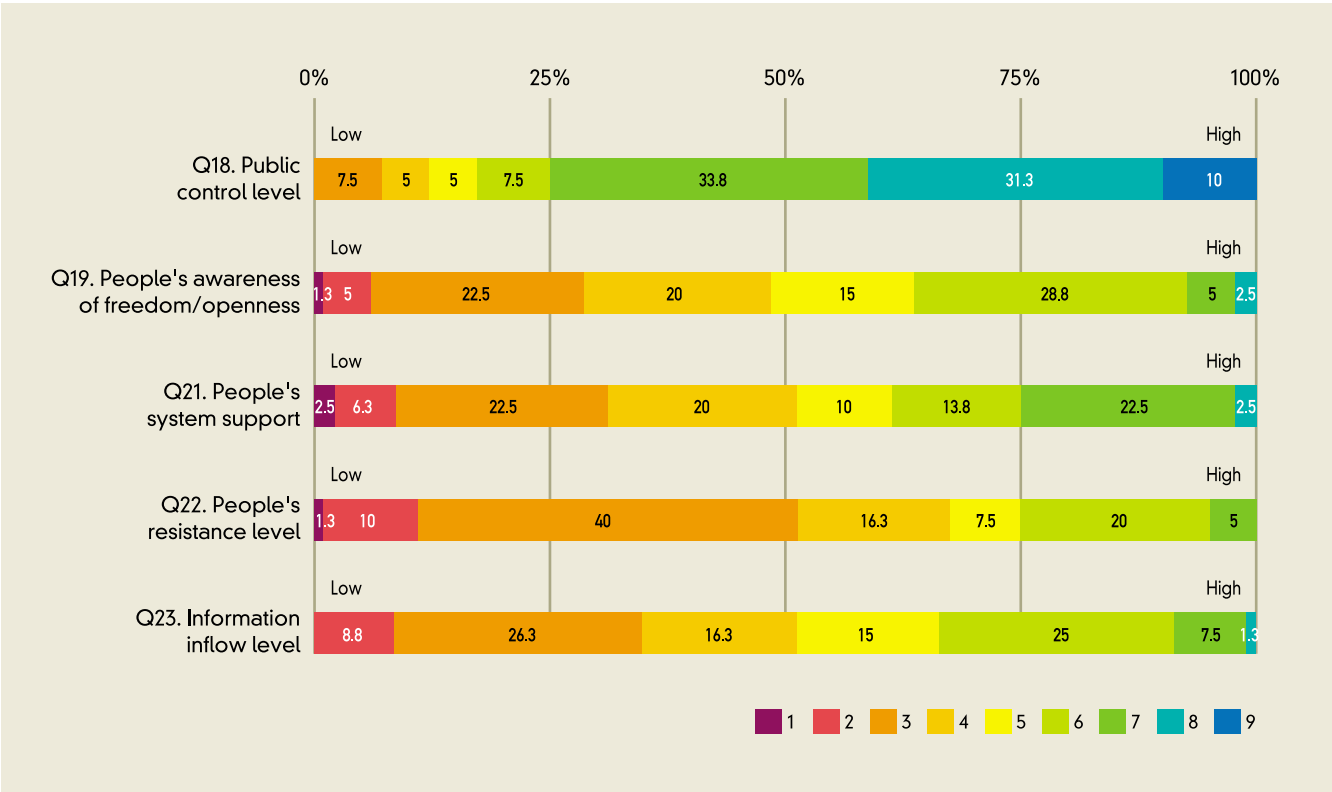
The answer to this question was significantly different from those of the 2009 survey, where negative views were slightly dominant. However, since 2010, positive views on the diffusion of market economic factors and privatizations increased significantly.

Q20. Market economy and privatization



North Korean Society

Questions regarding the social sector were mostly about North Korean residents. These included (Q18) North Korean authorities' control over their residents, (Q19) Residents' awareness of liberalization and openness, (Q21) Residents' system support, (Q22) Resistance and protest against the system, and (Q23) inflow of external information. During the 2010 post hoc analysis, we found that the questions on North Korean society had a logical causal link: The external information inflow increase -> The residents' awareness increase -> The residents' system support decrease -> The authorities' control decrease -> The protest increase. After a causal modeling process, however, we could not find a clear statistical structure. We merely found correlations between Q19, Q22, and Q23.



Q18) Panelists' views differed widely regarding North Korean authorities' control over NK residents, ranging from 'weak' (3) to 'extremely strong' (9). Nevertheless, the views were concentrated on 'strong' (7) and 'very strong' (8) by 65.1 percent, indicating that overall, the panel evaluated North Korea's public control as strong as ever. The mean value was 6.89, with a standard deviation of 1.630. The 2010 survey result on this question was almost the same.

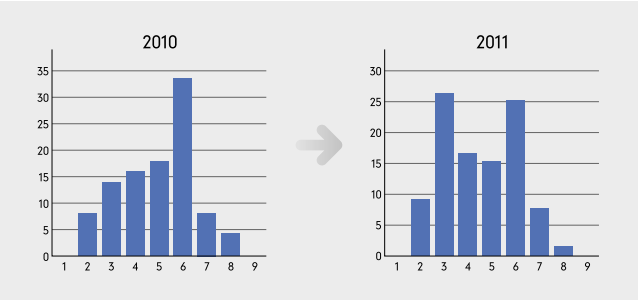
Q19) The question on North Korean residents' awareness of liberalization and openness resulted in somewhat negative answers, with a mean value of 4.61 (standard deviation 1.530). However, the answers formed a clear bimodal distribution: 48.8 percent responded negatively (4 points or less), while 36.3 percent stated positively (6 points or more). Given that in 2009, this question recorded a mean value of 3.91, a considerable number of panel members changed their views in 2010 with a mean value of 4.65. The 2011 survey was more or less similar to the previous year's evaluation.

Q21) To the question on North Korean resident's regime support, the answers formed a typical bimodal distribution with two mode values: 18 responses were concentrated around 'weak' (3) and 18 were concentrated around 'strong' (7). The mean value was 4.73 and the standard deviation was 1.814. More specifically, 51.3 percent responded 4 points or less and 38.8 percent responded 6 points or more. The mean value and distribution shape has maintained since the 2010 survey.

Q22) The question on the residents' resistance was expected to have a minus-correlation relationship with Q21: If regime support for residents decreased, then resistance would increase, and vice versa. The correlation test between the two questions indicated modest minus relations (gamma score was -.391, p=.000). Overall responses to this question indicated a low resistance level: 67.5 percent answered 'somewhat low' (4 or less) while 25 percent responded positively (6 or more). The mean value was estimated at 3.99 and the standard deviation at 1.505. The 2010 survey's mean was 3.98, almost the same as before.

Q23) Regarding the question on inflow of external information, the panel responses were slightly less positive than in 2011. Given that in 2010, this question recorded a mean value of 4.94, it appears that a number of panel members changed their views in 2011. The mean value was 4.49, with a standard deviation of 1.559. Of the respondents, 51.3 percent answered negatively with 'somewhat low' (4 or less) while 33.8 percent answered positively with 'somewhat high' (6) and the remaining 15 percent were 'neutral' (5).

Q23. Information inflow level



Military Area

Questions regarding the military sector were as follows: (Q24) Inter-Korean confidence building and arms control level, (Q25) Inter-Korean military tensions, (Q26) The role of the North Korean military in sustaining the system, (Q27) South Korea's readiness against North Korea's military, (Q28) North Korea's military capability, and (Q29) The possibility of North Korea's abandoning its nuclear program. The panel members' views on North Korea's military generally coincided with the 2010 survey results.

Q24) On the inter-Korean military confidence level, the panel members showed a more concentrated evaluation: A total of 81.3 percent of the panel expressed 'extremely negative' (1) or 'very negative' (2). For this answer, there was a mean value of 1.81 with a .607 standard deviation, which was considered very low. The panel's view on this question resembled the Agreement-type unification clock in the military area. The mean value for 2010 was 1.72.

Q25) Regarding the level of military tension between the two Koreas, 82.6 percent of the responses were concentrated between 'high' (7) and 'extremely high' (9). The mean was 7.15 with a standard deviation of 1.639. The range was relatively wide (minimum 2 and maximum 9) caused by 7 (7.9 %) respondents' answer of 'slightly low' (4 or less). This question's distribution has changed dramatically since the first survey: The panel was clearly

divided into low-tension and high-tension groups in 2009, and in 2010, most low-tension panelists moved toward the high-tension group. The mean value in 2009 of 7.27 has remained the same.

Q26) Panel members' evaluations of the North Korean military's influence on politics were concentrated on a mode of eight by 36 respondents. The mean value was 7.55 with a standard deviation of 1.168. A total of 97.5 percent gave answers valued at 'somewhat high' (6 points or above). This tendency has continued since the first survey in 2009.

Q27) The panel highly evaluated South Korea's military readiness against North Korea, which had a mean value of 6.29 and a standard deviation of 1.425. The range between the points (2 to 8) was quite wide, however, with 76.3 percent answering 'somewhat high' (6 or above). The 2010 survey showed similar results, with a mean value of 6.47.

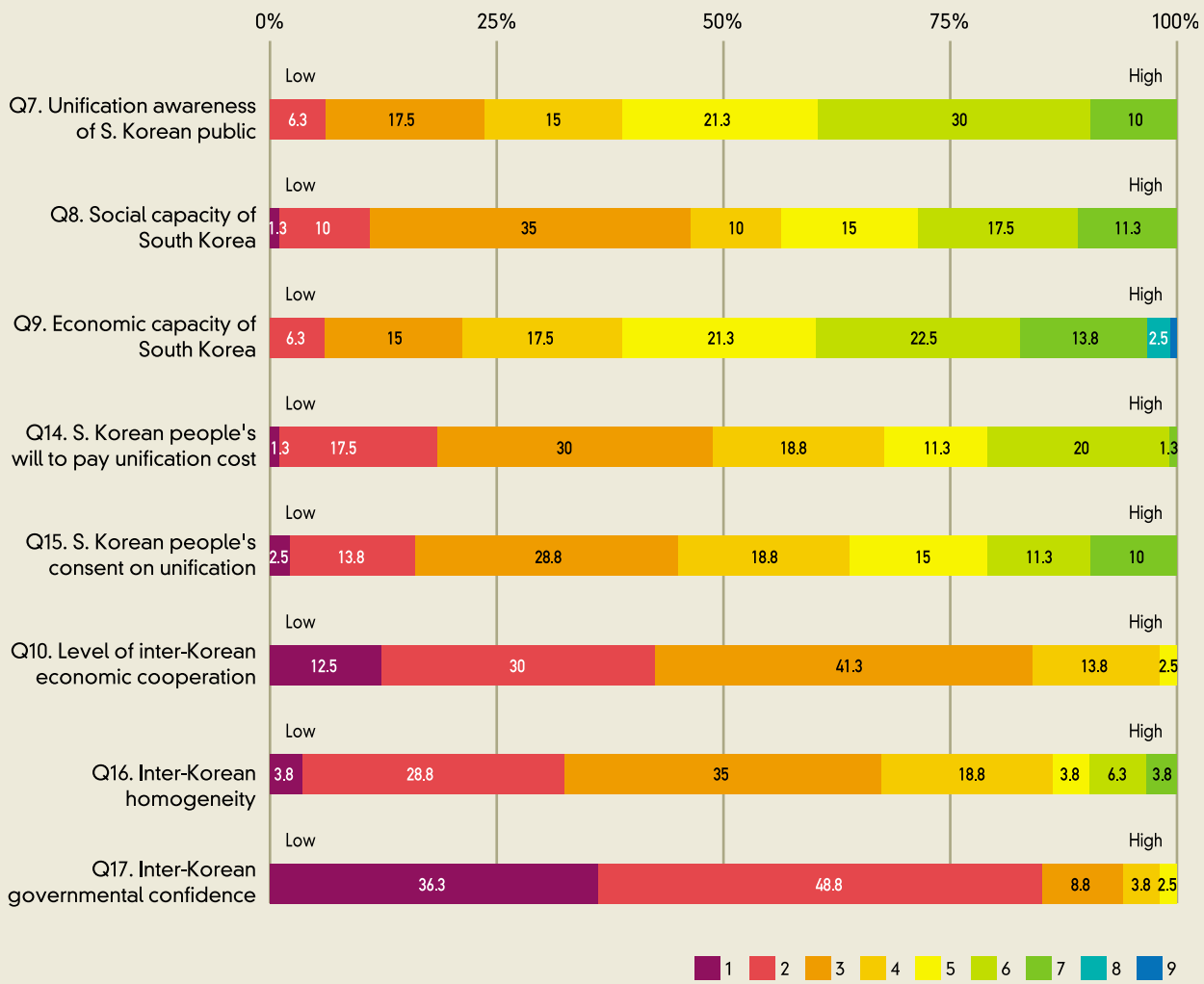
Q28) Evaluation of North Korea's military power was widely distributed from 3 to 8 points, with a mean value of 5.93 and a standard deviation of 1.339. A total of 12 respondents (23.5%) answered 'somewhat low' (4 or below) and 31 (60.8%) answered 'somewhat high' (6 or above). The mean value in the 2010 survey was 5.69.

Q29) With regard to the possibility of North Korea's abandonment of nuclear power, answers were distributed across a wide range from one to eight points, but they were concentrated in one area. That is, 81.3 percent gave answers of 'somewhat low' (4 or less). The mean value was 2.56 with a standard deviation of 1.813. Only 7.5 percent predicted North Korea's abandonment of nuclear power. The mean value in the 2010 survey was 2.76.

South Korea's Capability and Inter-Korean Relations

This issue comprised eight questions. First, in terms of South Korea's capability, there were five questions: (Q7) South Korean residents' understanding of unification, (Q8) South Korea's social capacity for unification, (Q9) South Korea's economic capacity for unification, (Q14) South Korean residents' willingness to pay unification costs, and (Q15) South Korean residents' consent to unification. Second, questions about inter-Korean relations were as follows: (Q10) The level of inter-Korean economic exchange and cooperation, (Q16) Inter-Korean social and cultural homogeneity, and (Q17) Inter-governmental mutual trust.

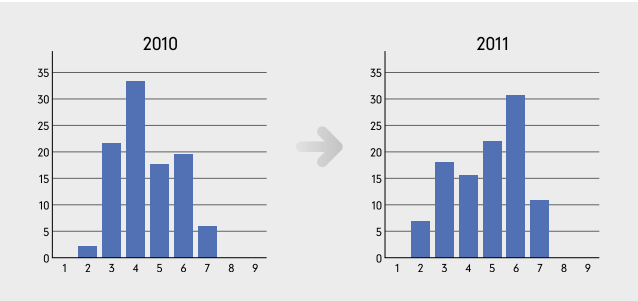
All questions in this area were interrelated. After a factor analysis, highly correlated questions were grouped as follows: Q7, Q14, Q15 and Q17 as factor-1; Q10 and Q17 as factor-2; and Q9 and Q8 as factor-3.



Q7) Regarding South Korean residents' understanding of unification, 17 answered 'somewhat positive' (6) and answer values were distributed from 'very negative' (2) to 'positive' (7). While answers of 'somewhat negative' (4 or below) totaled 38.8 percent, responses for 'somewhat positive' (6 or above) totaled 40 percent. The mean value was 4.81 with a standard deviation of 1.450. These figures indicate that the panel was almost evenly divided on this question.

Given that in the 2010 survey, negative answers (56.9 %) exceeded positive answers (25.5%) by more than double, the panel's response moved in a positive direction in 2011.

Q7. Unification awareness of S. Korean public



Q8) Answers to the question on South Korea's social capability for unification were slightly more positive than in the previous year. The mean value was 4.25 with a standard deviation of 1.642. While 28.8 percent (23 responses) responded positively, 56.3 percent (45 responses) evaluated its social capacity negatively. The 2010 survey's mean was 4.02.

Q9) Regarding South Korea's economic capacity, the panel evaluated it more positively than it had for social capacity (Q8). The mean value was 4.96 with a standard deviation of 1.603. Answers of 'somewhat negative' (4 or below) were given by 38.8 percent, while those of 'somewhat positive' (6 or more) were given by 50.1 percent. The range was from 'very negative' (2) to 'extremely positive' (9). Compared to the 2010 survey, the 2011 results moved to a slightly more positive distribution based as seen in the charts below.

Q14) Regarding the question on the South Korean people's willingness to pay for unification costs, the panel generally viewed it quite negatively. Answers of 'somewhat negative' (4 or below) accounted for 67.5 percent. While the 'neutral' answer (5 points) got 11.3 percent, 21.3 percent responded 'slightly positive' (6) and 'positive' (7). The mean was 3.72 with a standard deviation of 1.549. The 2010 survey's mean on this question was 3.72, identical to this year's result.

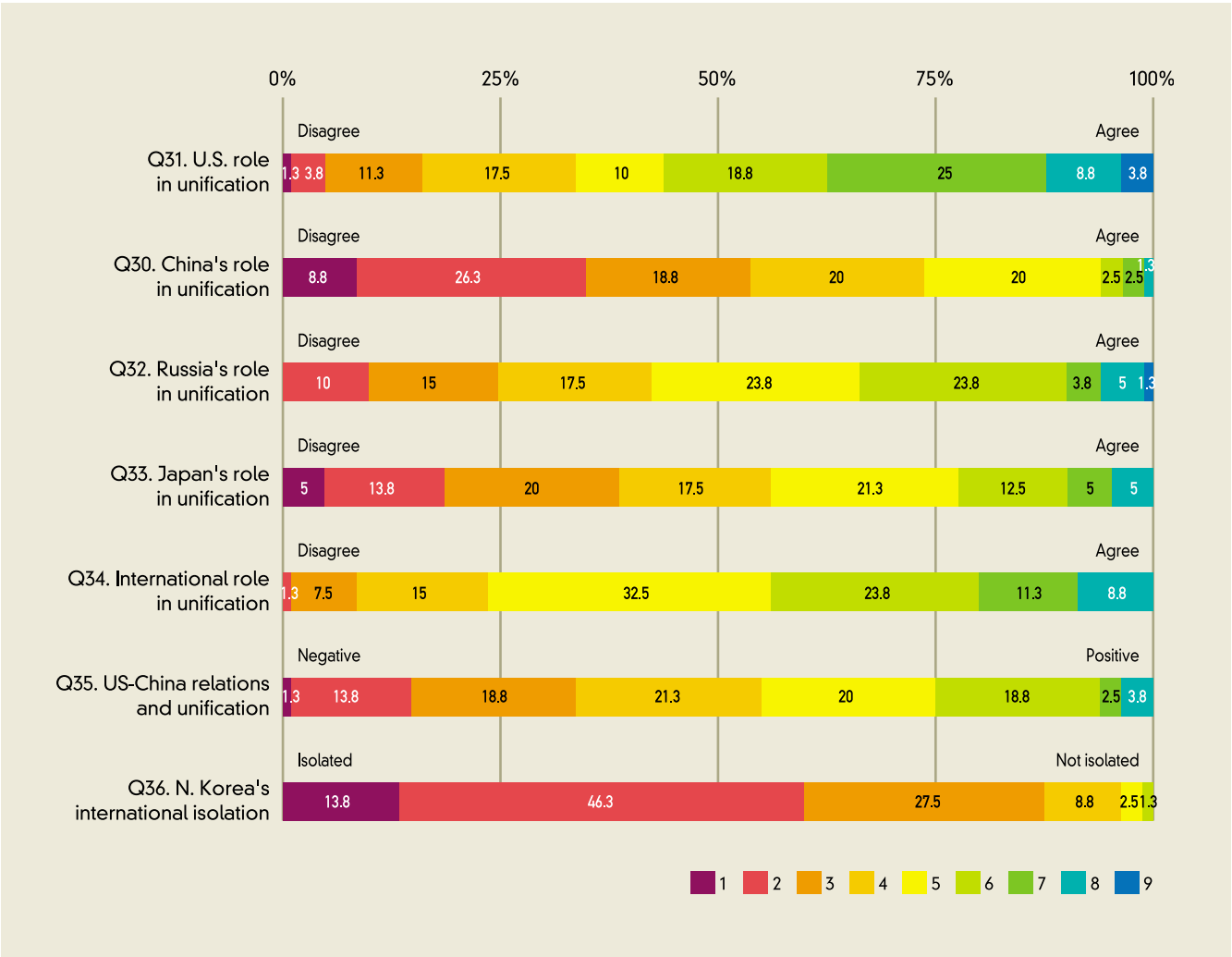
Q15) The panel's evaluation of South Koreans' consent to unification was similar to Q14 (above), i.e., somewhat negative. Answers were distributed over a range of 'very negative' (2) to 'positive' (7). Among the answers, 63.8 percent answered 'slightly negative' (4 or below), while 15 percent were 'neutral' (5), 21.3 percent were 'slightly positive' (6) and 'positive' (7). The mean value was 4.04, and the standard deviation was 1.610. In comparison, the mean for this question in the 2010 survey was 3.96.

Q10) With regard to current inter-Korean economic cooperation, the response was very negative. A total of 97.5 percent gave answers of 'somewhat negative' (4 or less.) The mean value was 2.64 (standard deviation 0.958), indicating a slight decline from the 2010 mean of 2.94.

Q16) Regarding social and cultural homogeneity between the two Koreas, even though the range of answers was wider than in the 2010 Delphi survey, the level of homogeneity was almost identical. While the mean value in 2010 was 3.33, the 2011 mean was 3.24 (standard deviation 1.380). Of the respondents, 86.4 percent gave answers of 'somewhat negative' (4 or below.)
Q17) In general, the panel showed concentrated negative views on inter-governmental mutual trust between the two Koreas. A total of 97.5 percent answered negatively (four points or below), while the remaining 2.5 percent stayed 'neutral' (5). Worth noting, 36.3 percent gave the extreme value of one point (extremely negative), which was seldom seen in the expert surveys. The mean value was 1.88 (standard deviation .905), a figure much like the 2010 mean of 1.92.

International Environment

Surveys of interest were conducted in surrounding countries: (Q31) The U.S., (Q30) China, (Q32) Russia, and (Q33) Japan. Moreover, there were questions on the attitude toward unification in the international community (Q34), as well as North Korea's isolation level (Q36). Considering its importance to the unification process, a question on US-China relations' influence on unification (Q35) has been added since the 2010 survey.



Q31) In the 2009 post-hoc analysis, the U.S. stance emerged as a prerequisite for Absorption-type unification. The question was "Do you think that U.S. interests are in line with Korean unification?" The answers to this question fell along a bimodal distribution in 2009, which continued to some extent in the 2010 and 2011 surveys. Panel members' views on the role of the U.S. were widely dispersed from 'extremely negative' (1) to 'extremely positive' (9). In sum, 66.4 percent answered 'somewhat positive' (6 or above), while 33.8 percent answered 'somewhat negative' (4 or below). The mean value was 5.54 (compared to the mean of 5.96 for the 2010 survey) with a standard deviation of 1.869. Among the four questions on the stance of the surrounding powers, this is

the only question in which the mean exceeded the mid-point of 5.

Q30) According to the 2009 survey's post hoc analysis, China's stance on unification had a positive correlation with agreement-type unification. Unlike the above question on the U.S. stance, the panel members' view on China's role in unification was negative, with a mean value of 3.40 (standard deviation, 1.556). A total of 73.8 percent gave answers valued at 'somewhat negative' (4 or below), while 20 percent stayed 'neutral' (5), and only 6.3 percent answered 'somewhat positive' (6 or above). The mean of the 2010 survey was 3.38, which was identical with this year's result.

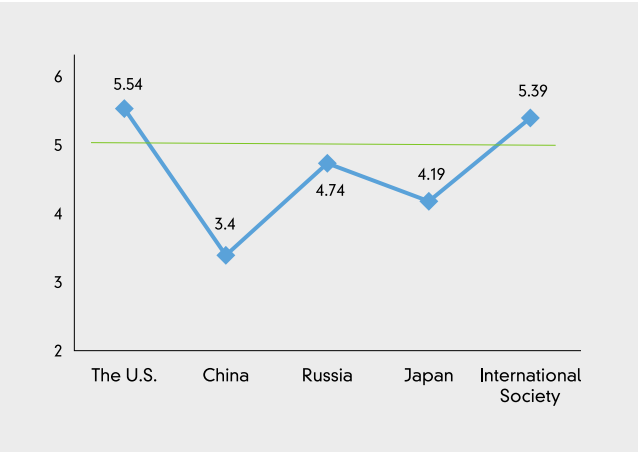
Q32) Panel members' views on Russia's role in unification of the Korean peninsula appeared to be almost neutral, with a mean value of 4.74 (standard deviation, 1.636). Of the responses, 42.5 percent answered 'somewhat negative' (4 or below), while 23.8 percent stayed 'neutral' (5), and 33.9 percent answered 'somewhat positive' (6 or above). The 2010 survey's mean was 4.84.

Q33) Panel members were slightly more negative toward Japan's stance in unification than of Russia's. Of the respondents, 56.3 percent gave negative answers, while 21.3 percent stayed in the neutral zone and 22.5 percent answered positively. The mean value was 4.19 with a standard deviation of 1.780. The 2010 survey's mean was 4.41.

Q34) The Delphi panel viewed that the international community would be somewhat friendly to unification of the Korean peninsula. A total of 43.9 percent answered positively, 32.5 percent were neutral, and 23.8 percent answered negatively. Regarding the 2010 survey's mean of 5.39, this year's mean (5.39) was identical (standard deviation 1.383).

The panel's evaluation on the surrounding four powers' stance on the Korean unification varied by country: The U.S. came in first with the only positive mean value that exceeded the mid-point of 5, and Russia, Japan, and China followed in order. The panel viewed the overall international environment on unification as slightly positive.

Surrounding Powers' Stance on Unification (mean)



Q35) This question was first introduced to the 2010 survey considering the importance of the U.S. and China's stance and their relations. The panel viewed that current U.S.-China relations would negatively influence unification: The average was 4.3 (stand deviation, 1.602), a slight improvement than the 2010 survey's 3.75. Answers from 'extremely negative' (1) to 'somewhat negative' (4) were given by 55 percent, while 20 percent were 'neutral'
(5), and 25.1 percent stayed 'slightly negative' (6 or above).

Q38) This question presented a 1-to-9 point scale along a continuum from 'isolated' to 'not isolated.' The panel's view on North Korean isolation has grown more negative year by year since the first survey. This year, 96.3 percent answered between 'slightly isolated' (6) and 'extremely isolated' (9). The mean was 2.53, with a standard deviation of 1.054.

Chapter IV
Public Opinion

The public opinion poll was intended to identify how the South Korean public actually viewed unification and to compare those findings with the Delphi panel survey. The subjects of the poll were 1,000 male and female adults, aged 19 or above. The sampling was extracted by a random digit dialing (RDD) method after proportionally allocating the registered population based on region, age and gender.

On August 15, 2011, South Korean citizens wave the national flag, Taegeukgi, to celebrate the 66th anniversary of National Liberation day in Seoul.

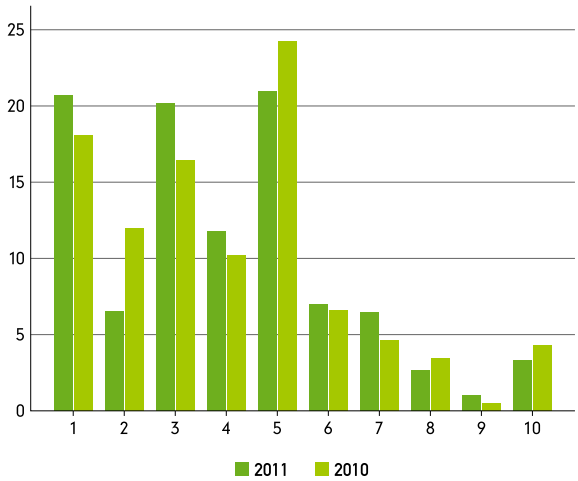
The public opinion poll was intended to identify how the South Korean public actually viewed unification and to compare those findings with the Delphi panel survey. The poll was contracted to the firm of Research & Research, Inc. and conducted on October 13~17, 2011. The subjects of the poll were 1,000 male and female adults, aged 19 or above. The sampling was extracted by a random digit dialing (RDD) method after proportionally allocating the registered population based on region, age and gender. The sampling error was ±3.1 percent at the 95 percent confidence interval. The interview method was a computer assisted telephone interview (CATI).

Questions were derived from the 2010 Delphi survey and the 2010 public opinion poll on the unification clock. Cost and time were considerations. The lengthy questions in the Delphi survey required considerable attention by respondents, making it very difficult to conduct through the telephone-interview approach. Yet, a face-to-face interview would have required not only a large group of survey interviewers who would need a great deal of time but it would also considerable financial resources. This public opinion poll was not independent research, but was intended to obtain a comparison group for the panel survey on the unification forecast clock.

A total of 18 questions were developed around what were considered to be critical unification factors based on the post-hoc analysis of 2009. The questions for the public opinion poll were designed to be simple and not to require expertise, so that they would be more comprehensible in a telephone survey. For this, the questions were modified using a five-point Likert scale with a reverse order. In addition, some four-point scales from the 2010 public poll were changed to a five-point scale. Also included was a question on the government's proposed unification tax. For the questions on the unification clock, only the overall Agreement-type and Absorption-type were included. The 100-point scale was modified to a 10-point scale.

1. Unification Clock: Public Opinion

A. Agreement-type Unification Clock (N=962)



The 2011 Agreement-type unification clock for the public was 4:42. The minute-hand moved backward by 5 minutes from the previous year's 4:47. Meanwhile, the public's view on this type was closer to unification by an hour and 16 minutes compared to the Delphi panel's 2011 overall Agreement-type clock. As mentioned, the public survey was on a 10-point scale with a mid-point of 5.5 or 6 o'clock. Based on the 10-point scale, the mean value was 3.92 with a standard deviation, 2.269. A total of 76.4 percent answered that Agreement-type unification would be difficult (5 points or below). The most frequent answer given by 214 respondents (20.9 percent) was five points. As shown in the chart, there was no change in the overall distribution compared to 2010.

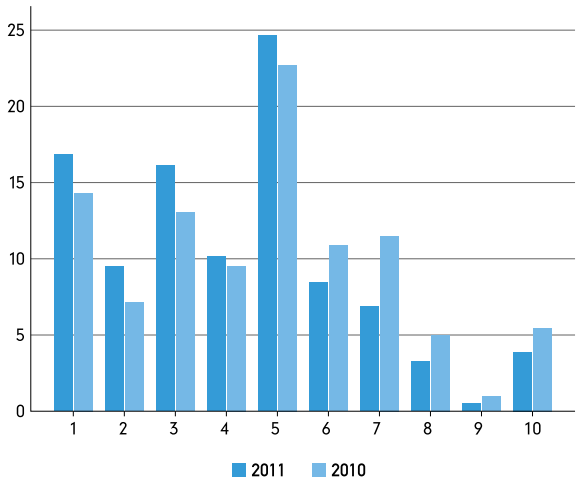
N	Valid	962
	Missing	38
Mean		3.92
Median		4.0
Mode		5
Standard Deviation		2.269
Skewness		.592
Kurtosis		.005
Minimum		1
Maximum		10

One of the characteristics of the public opinion poll was a wider range of answers. This poll also showed extreme values far from reality. For example, as seen in the chart, only eight respondents gave 9 points; however, 36 respondents gave 10 points. Also, a considerable number (20.5 percent) gave the other extreme value of '1' point. We conducted some crosstab tests to examine these extreme-value respondents, but could not find any tendencies among those who answered '1.' Only those who answered 10 points showed certain tendencies: Some respondents belonging to a certain socio-economic group (low education, low income, or full-time housewives) tended to answer 10 points. Another reason for the excessive extreme response problem was the method of data collection: Usually, long and difficult questions produce unexpected results during nation-wide telephone interviews. Resource-dependent face-to-face interviews would have been the only alternative.

B. Absorption-type unification clock (N=972)

2010
05:36
-

2011
04:57
- 0:39



For the Absorption-type unification clock, the public's answers resulted in a time of 4:57, which was 39 minutes behind those of the 2010 public poll. This evaluation (that Absorption-type unification will occur sooner than Agreed unification) concurred with the opinion of the Delphi panel. However, the public assessed 33 minutes later than the Delphi panel's 2011 Absorption-type clock. The mean value was 4.13 with a standard deviation of 2.282, and the answers ranged from one to 10 points. The most frequent answer was five points given by 248 respondents (24.2 percent). A total of 73.7 percent gave answers of five or below (negative).

Regarding answers for Absorption-type unification, the extreme values of one and 10 points appeared often. For a more specific analysis, crosstab analyses were conducted. No clear tendency toward a very negative attitude (one point) was seen. Those who answered 10 points showed some socio-economic level: Low income, low education, white collar and full-time housewives.

N	Valid	960
	Missing	40
Mean		4.13
Median		4.0
Mode		5
Standard Deviation		2.282
Skewness		.489
Kurtosis		-.115
Minimum		1
Maximum		10

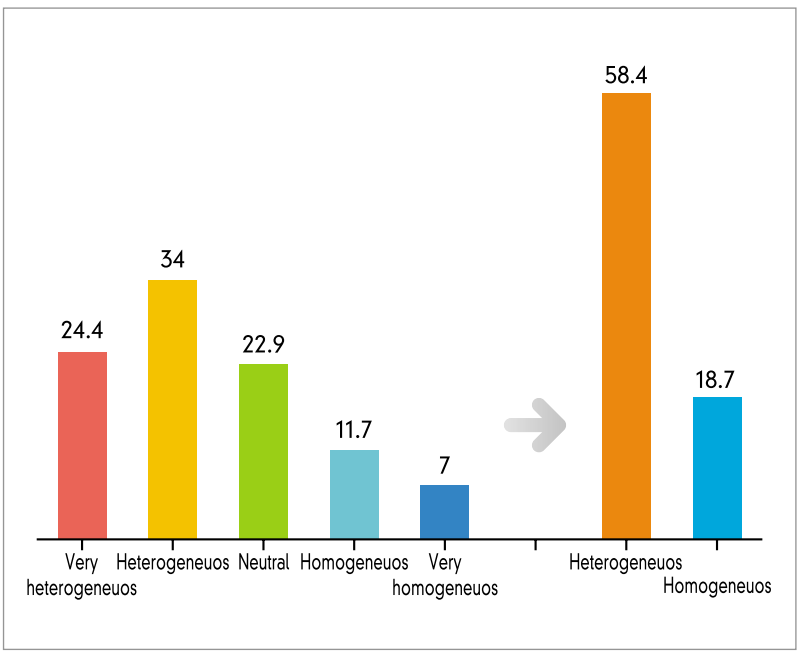
2. Unification Factors: Public Opinion

Q-1. What do you think about the level of social and cultural homogeneity between South and North Korean residents?

	Frequency	Percent	Valid %	Cumulative %
Very homogeneous	67	6.7	7.0	7.0
Somewhat homogeneous	112	11.2	11.7	18.7
Neutral	220	22.0	22.9	41.6
Somewhat heterogeneous	327	32.7	34.0	75.6
Very heterogeneous	235	23.5	24.4	100.0
Subtotal	962	96.2	100.0	
Missing value	38	3.8		
Total	1000	100.0		

Of the respondents, 58.4 percent answered that it was 'heterogeneous,' 22.9 percent remained 'neutral,' and 18.7 percent answered it was 'homogeneous.' According to the same question (Q16) in the Delphi survey, 82.4 percent of the panel answered it was 'heterogeneous,' indicating that the public was less negative than the panel.

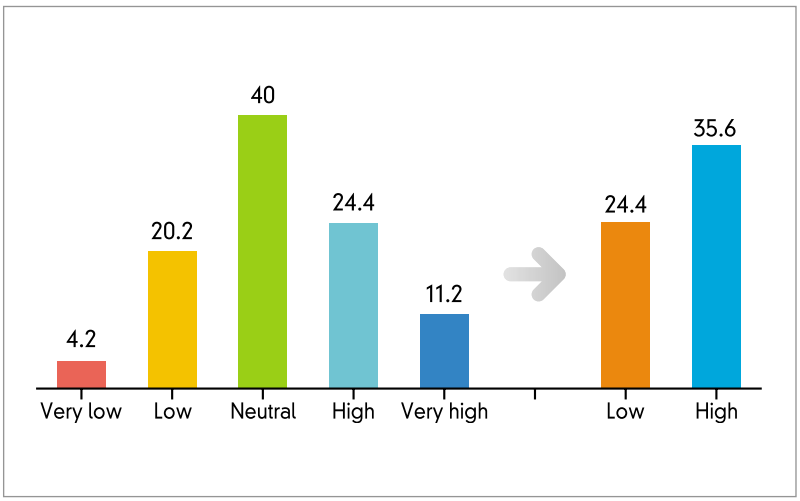
A large number of the better-educated respondents (college students or graduates) and high-income earners (more than KRW4mil/month) gave the answer 'heterogeneous.' The public attitude toward this question was identical with the 2010 public poll.



Q-2. What do you think about South Korean residents' desire for unification?

	Frequency	Percent	Valid %	Cumulative %
Very high	111	11.1	11.2	11.2
High	241	24.1	24.4	35.6
Neutral	397	39.7	40	75.6
Low	200	20	20.2	95.8
Very low	41	4.1	4.2	100
Subtotal	991	99.1	100.0	
Missing value	9	.9		
Total	1000	100.0		

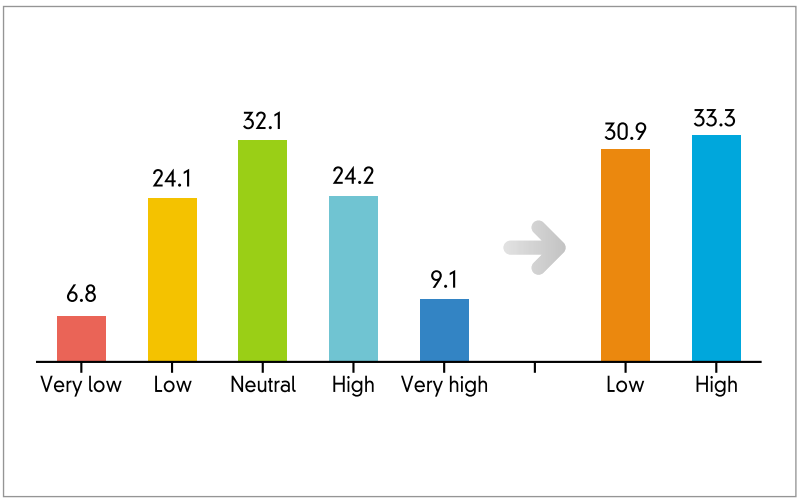
The questions on S. Korean's desire for unification were modified from the same question (Q7) of the Delphi survey. Among the respondents, the most frequent answer given was 'neutral' (40 percent). A total of 35.6 percent gave the answer 'high,' while 24.4 percent answered 'low.' In the Delphi survey, the answers were evenly distributed along a high-low continuum (40 % vs. 38.8 percent), indicating the panel's pessimism toward the South Korean residents' desire for unification. Answers to this question varied depending on the respondent: Those in groups that shared a higher number of negative answers were under age 30, had more education or were students. Results for this question remained the same compared to the 2010 poll.



Q-3. South Korea is expected to pay for unification when unification comes. What do you think about South Korean citizens' willingness to pay for unification costs?

	Frequency	Percent	Valid %	Cumulative %
Very high	91	9.1	9.5	9.5
High	242	24.2	25.2	34.6
Neutral	321	32.1	33.3	67.9
Low	241	24.1	25.0	92.9
Very low	68	6.8	7.1	100.0
Subtotal	964	96.4	100.0	
Missing value	36	3.6		
Total	1000	100.0		

The question on South Korean citizens' willingness to pay for unification costs was the same as question (Q14) in the Delphi survey. Citizens' willingness to pay for unification was slightly greater but almost evenly distributed along a high-low continuum: 34.5 percent answered 'high,' 33.3 percent remained neutral, and 32.1 percent was 'low.' As shown in the chart, positive answers have increased slightly since 2010. Meanwhile, the results showed a substantial gap between the public and the panel. According to the Q14 results, the panel's negative responses were triple the positive responses (67.5 % vs. 21.3 %).

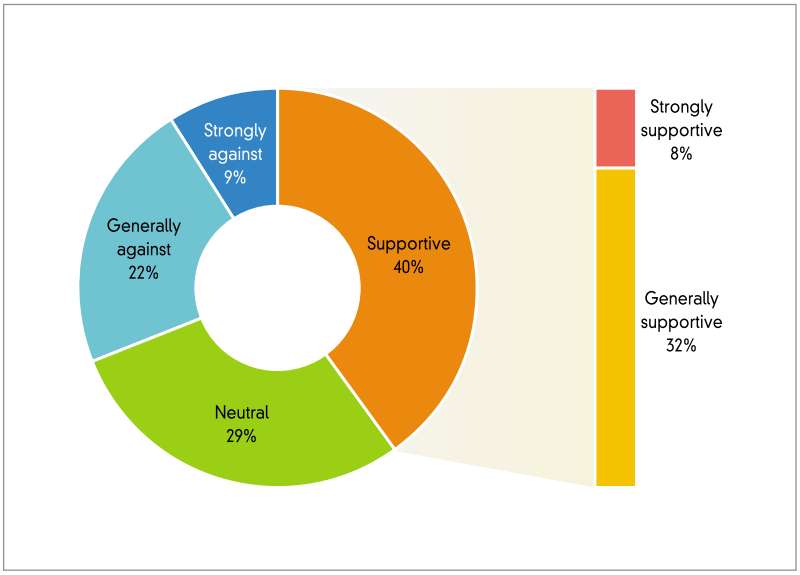


In view of the backgrounds of the respondents, their education, gender and age were related to the result: Male respondents were more willing to pay than female respondents. Also, those over the age of 60 gave more positive responses. By occupation, housewives were significantly negative. On the other hand, income and willingness to pay did not show a clear relationship.

Q-4. Do you agree that the government should collect a Unification Tax in order to pay for unification costs?

	Frequency	Percent	Valid %	Cumulative %
Strongly supportive	81	8.1	8.2	8.2
Generally supportive	317	31.7	32.1	40.3
Neutral	280	28	28.4	68.8
Generally against	217	21.7	22	90.7
Strongly against	92	9.2	9.3	100
Subtotal	986	98.6	100.0	
Missing value	14	1.4		
Total	1000	100.0		

Ever since South Korea's President Lee Myung-bak proposed a so-called unification tax to fund the future cost of unification in his 2010 Liberation Day speech, the tax issue has provoked a nationwide controversy. Although the unification tax issue would closely relate to the previous question, we decided to ask the tax issue directly. The unexpected result was that the public viewed the unification tax quite positively: A total of 40.3 percent answered 'yes', 28.4 percent remained neutral, and 31.3 percent answered 'no.' Among the respondent groups, males and those over 60 answered more positively, while those under 30 answered more negatively.

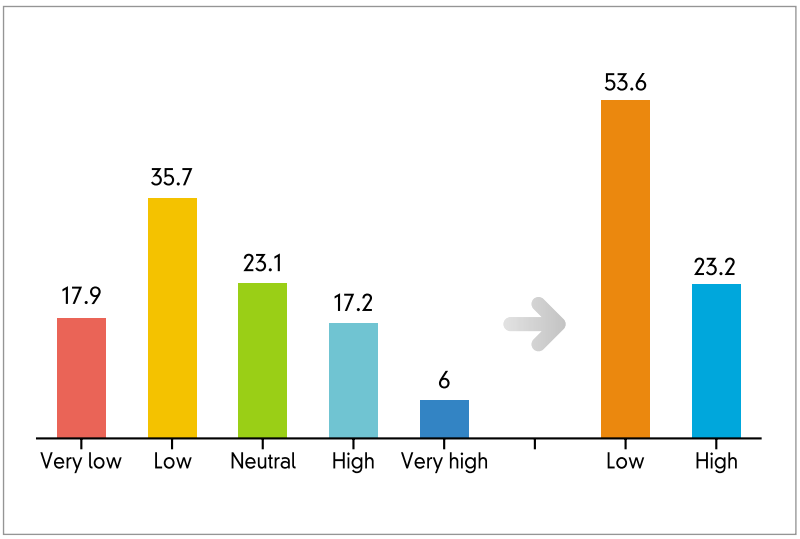


Q-5. Do you think North Korea is likely to carry out a reform policy like China?

	Frequency	Percent	Valid %	Cumulative %
Very high	58	5.8	6	6
High	164	16.4	17.2	23.2
Neutral	221	22.1	23.1	46.3
Low	341	34.1	35.7	82.1
Very low	171	17.1	17.9	100
Subtotal	954	95.4		
Missing value	46	4.6		
Total	1000	100.0		

To the likelihood of North Korea's reform policy, more than half of the respondents expressed a negative view. The most frequent answer was 'low' (53.7 percent). Answers of low' and 'very low' accounted for 51.2 percent. Answers of 'neutral' accounted for 23.1 percent, and answers of 'very high' and 'high' together made up 19.2 percent. The result is almost identical with the 2010 public poll.

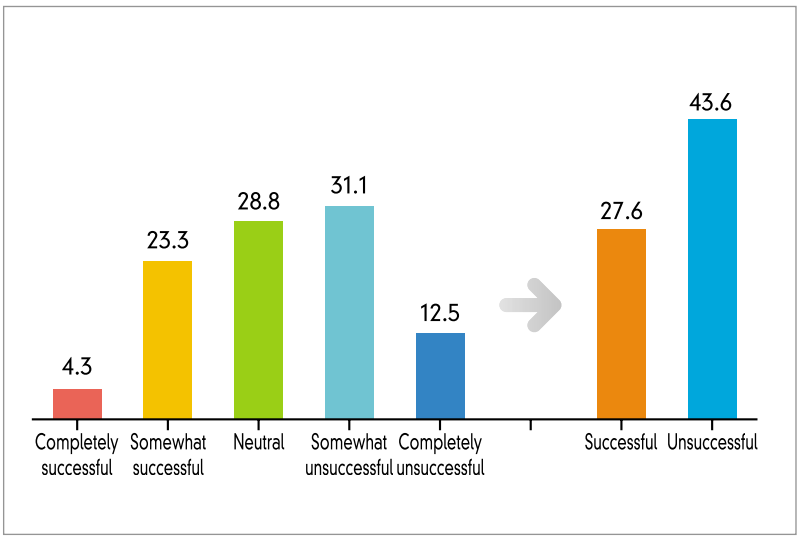
To the same question (Q13) in the Delphi survey, 89.9 percent of the respondents had a negative view. While the panel's attitude on the question was excessively negative, the public viewed prospects as substantially positive for policy change in North Korea.



Q-6.Do you think North Korea will successfully carry out hereditary succession to Kim Jong-il's son, Kim Jung-eun?

	Frequency	Percent	Valid %	Cumulative %
Completely successful	119	11.9	12.5	12.5
Somewhat successful	298	29.8	31.1	43.6
Neutral	275	27.5	28.8	72.4
Somewhat unsuccessful	223	22.3	23.3	95.7
Completely unsuccessful	41	4.1	4.3	100
Subtotal	956	95.6		
Missing value	44	4.4		
Total	1000	100.0		

This question was identical to 'Q1' in the Delphi survey. A total of 43.6 percent of the people gave responses of 'successful,' 28.8 percent stayed neutral, and 27.6 percent responded 'unsuccessful.' In the same question in the 2010 public poll, the public's assessment on the 4-scale question was almost evenly divided: 49.7 percent said 'successful' and 48.3 percent said 'unsuccessful.' The public evaluation toward North Korea's leadership succession changed dramatically in 2011. On this question, respondents aged 19~29, graduates and high income groups answered more positively.

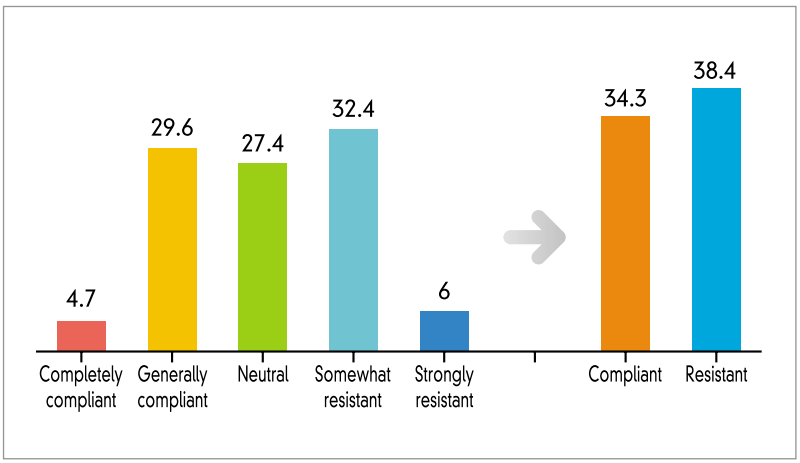


Although the public tended toward a response of 'successful', there was a gap regarding the Delphi panel: To the same question, the panel evaluated the positive-negative continuum as 60.1 percent versus 25.4 percent (neutrals were not counted).

Q-7. What do you think about the level of North Korean resident's resistance against the regime?

	Frequency	Percent	Valid %	Cumulative %
Strongly resistant	57	5.7	6	6
Somewhat resistant	308	30.8	32.4	38.4
Neutral	260	26	27.4	65.7
Generally compliant	281	28.1	29.6	95.3
Completely compliant	44	4.4	4.7	100
Subtotal	949	94.9	100.0	
Missing value	51	5.1		
Total	1000	100.0		

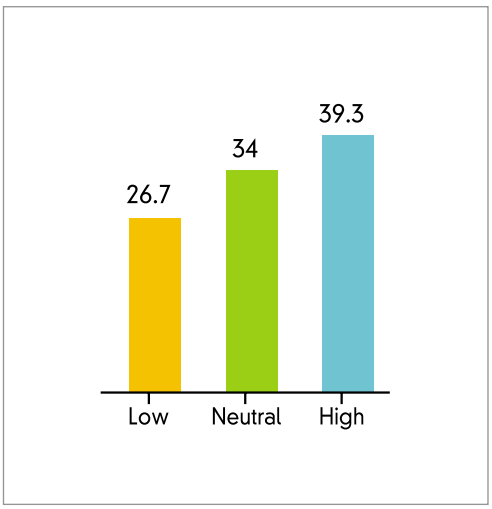
This question was derived from Q22 in the Delphi survey. The original question read, "How do you rate the level of North Korean residents' resistance and their defection?" In order to not confuse the average citizen, we decided to split this dual-meaning question into Q-7 and Q-8 based on a 5-point scale. In 2010, responses to the original question were as follows: 62.2 percent responded "resistant to government/willing to defect," while 37.8 percent answered "not resistant to government/unwilling to defect."



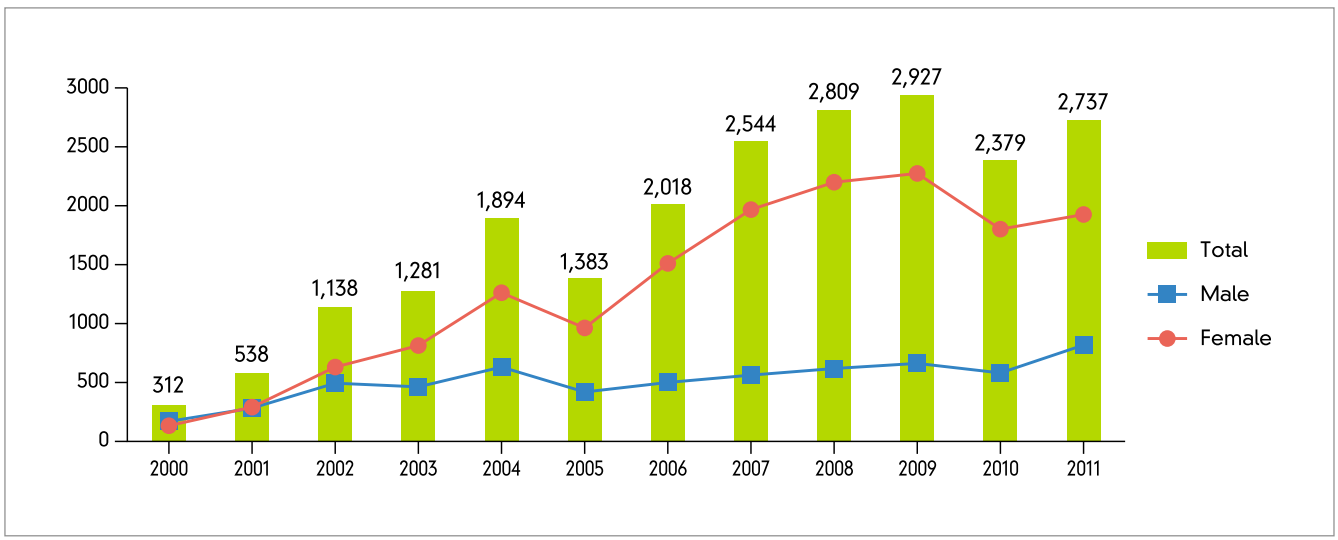
Based on the 5-point scale, the public's view on the level of resistance decreased significantly from 62.2 percent to 38.4 percent. A total of 34.3 percent still answered that North Korean residents were not resistant, while 27.4 percent remained neutral. Noticeable attitude changes based on socio-economic status were not seen. The 2010 Delphi panel had estimated the resistance level significantly low: 67.5 percent answered negatively.

Q-8. What do you think about North Korean residents' defection level?

	Frequency	Percent	Valid %	Cumulative %
Very high	55	5.5	5.7	5.7
High	323	32.3	33.6	39.3
Neutral	327	32.7	34	73.3
Low	205	20.5	21.3	94.6
Very low	52	5.2	5.4	100
Subtotal	963	96.3	100.0	
Missing value	37	3.7		
Total	1000	100.0		



North Korean Defectors in the South, 2000~2011



Since the division of Korea, about 23,100 individuals have defected to South Korea, and now that number is increasing dramatically. Taking the number of defectors during the 2000~2011 period, the total accounts for 95 percent of all those who have fled to the South. What is more, the number of defectors living in third countries has not been counted in this total.

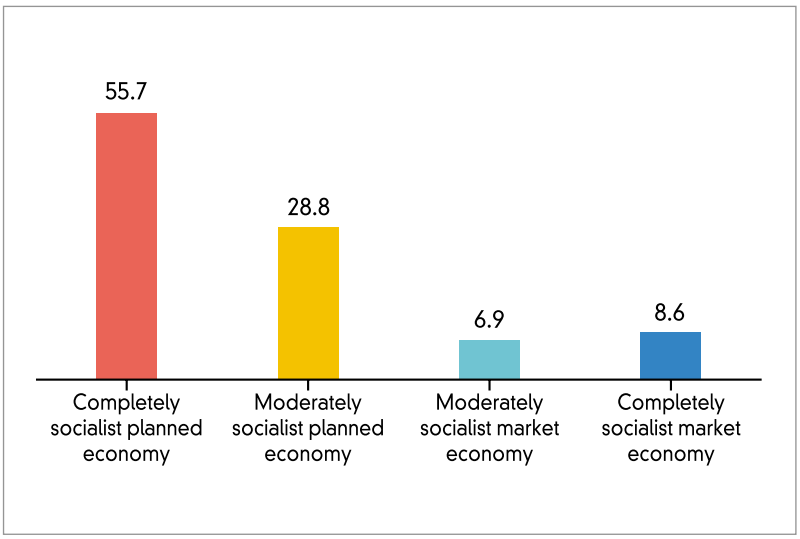
Compared to the question on the North Korean residents' resistance level, the panel showed similar but distinguishable results: A total of 37.8 percent evaluated the defection level 'high,' 34 percent stayed 'neutral,' and 25.7 percent was 'low.' We could not find cross relations between the result and socio-economic status. The Delphi panel's estimation on this question remained significantly lower than that of the public.

On the question regarding North Korean residents' resistance level, the panel showed similar but distinctive results: A total of 37.8 percent evaluated the defection level as 'high,' 34 percent stayed 'neutral,' and 25.7 percent answered 'low.' We could not find any cross relations between the results and respondents' socio-economic status. The Delphi panel's estimation on this question remained significantly lower than that of the public.

Q-9. How do you define the current North Korean economic system?

	Frequency	Percent	Valid %	Cumulative %
Completely socialist planned economy	507	50.7	55.7	55.7
Moderately socialist planned economy	262	26.2	28.8	84.5
Moderately capitalist market economy	63	6.3	6.9	91.4
Completely capitalist market economy	78	7.8	8.6	100.0
Subtotal	910	91.0	100.0	
Missing value	90	9.0		
Total	1000	100.0		

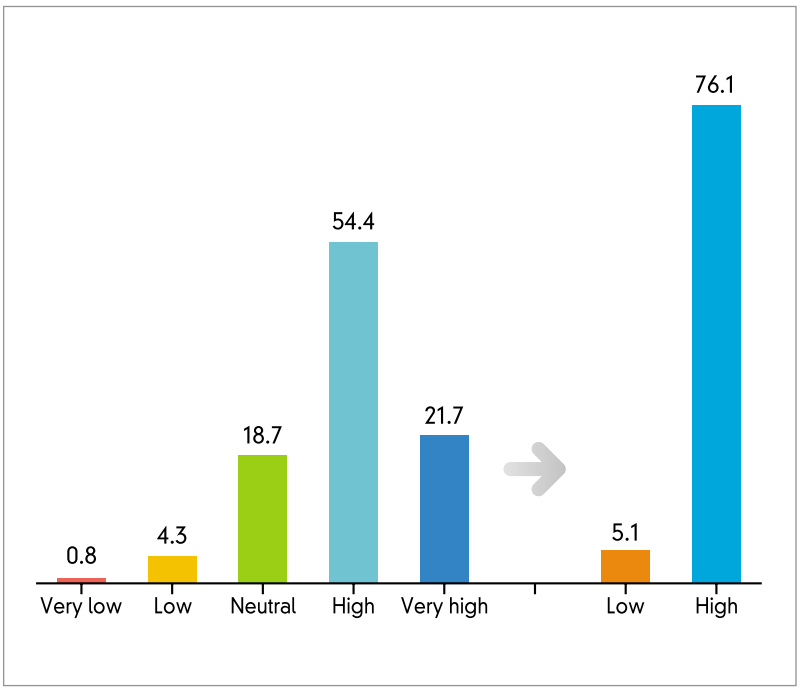
This question was a simplified version of Q12 in the Delphi survey. More than half of the people (50.7%) perceived the North Korean economy as a 'completely socialist planned economy.' Answers for 'completely' or 'moderately' socialist planned economy' accounted for 84.5 percent. The results were substantially identical to those of the Delphi panel.



Q-10. How do you see the military tension between the two Koreas?

	Frequency	Percent	Valid %	Cumulative %
Very high	213	21.3	21.7	21.7
High	533	53.3	54.4	76.1
Neutral	184	18.4	18.7	94.8
Low	43	4.3	4.3	99.2
Very low	8	0.8	0.8	100
Subtotal	981	98.1	100.0	
Missing value	19	1.9		
Total	1000	100.0		

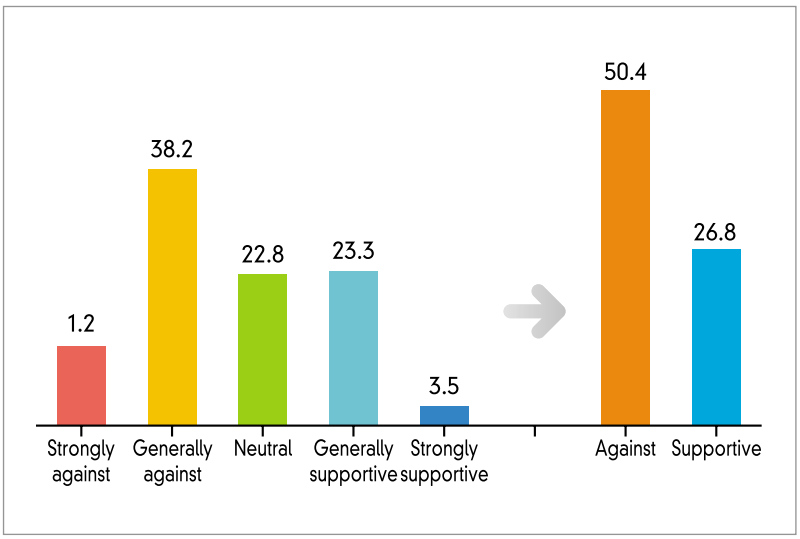
This question was a simplified version of Q25 in the Delphi survey. About 74.6 percent of respondents for the public survey answered that military tension was 'very high' or 'high.' Meanwhile, about 90 percent of the panel answered on the high side, showing more pessimism than the public. Since the sinking of the ROKS Cheonan on March 26, 2010 and the bombardment of Yeonpyeong Island on November 23, 2010, the public view on the military tension has remained at a high level. However, in 2011 answers of 'very high' fell by 10.2 percent compared to the 2010 poll, an indication that public concern over military tensions has decreased with the passing of time.



Q-11. When unification is imminent, do you think the USA will be for or against it?

	Frequency	Percent	Valid %	Cumulative %
Strongly against	116	11.6	12.2	12.2
Generally against	363	36.3	38.2	50.3
Neutral	217	21.7	22.8	73.2
Generally supportive	222	22.2	23.3	96.5
Strongly supportive	33	3.3	3.5	100
Subtotal	951	95.1	100.0	
Missing value	49	4.9		
Total	1000	100.0		

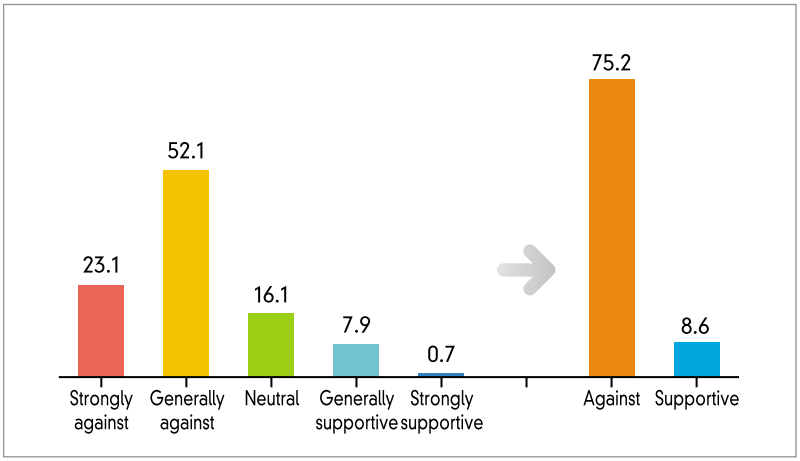
Of the respondents, a total of 47.9 percent answered 'strongly against' or 'generally against,' while 25.5 percent answered 'generally supportive' or 'strongly supportive.' Respondents 39 or younger tended to answer 'against' on this question, while those over 60 gave a higher number of 'supportive' answers. This was a simplified version of Q31 in the Delphi survey. The results of the public poll were the reverse of the panel's, in which about 56.2 percent of the Delphi panel evaluated the US role in unification 'positively.'



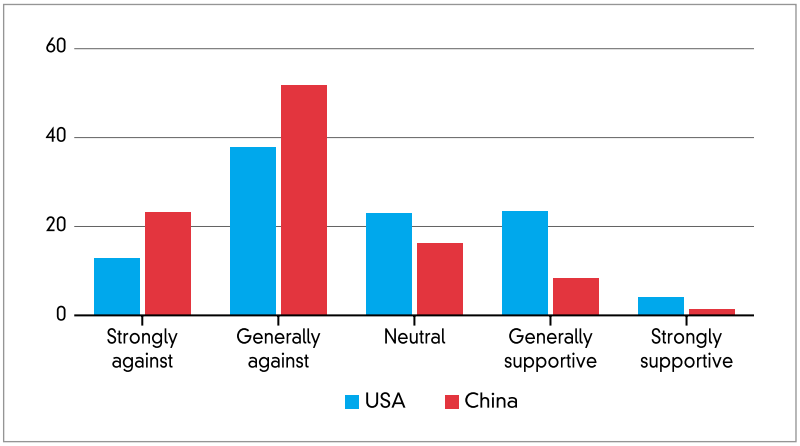
Q-12. When unification is imminent, do you think China will be for or against unification?

	Frequency	Percent	Valid %	Cumulative %
Strongly against	225	22.5	23.1	23.1
Generally against	506	50.6	52.1	75.3
Neutral	156	15.6	16.1	91.3
Generally supportive	77	7.7	7.9	99.3
Strongly supportive	7	0.7	0.7	100
Subtotal	971	97.1	100.0	
Missing value	29	2.9		
Total	1000	100.0		

This question was a simplified version of Q30 in the Delphi survey. Of the respondents, 73.1 percent answered that China would be 'against.' Compared to the 2010 public poll, responses of 'strongly against' decreased slightly by 5.3 percent and 'generally against' increased slightly by 7.4 percent. The results of this question coincided with the Delphi panel response, in which a total of 73.8 percent of the panel answered 'against'.



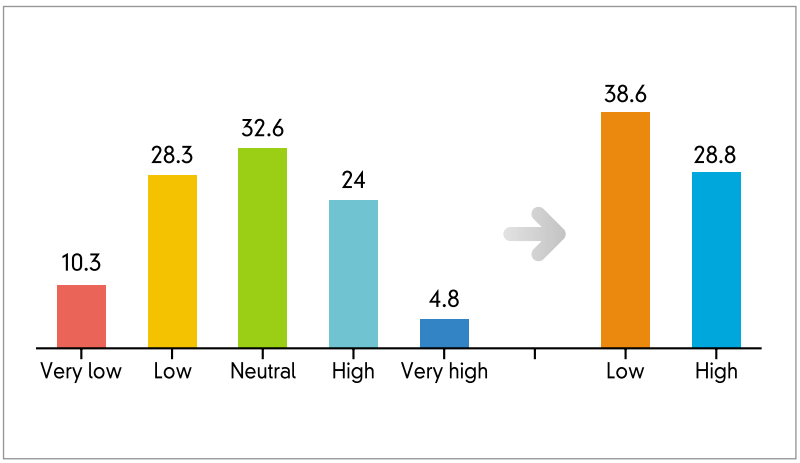
Results showed that the public, like the panel, viewed the relative role of the U.S. more positively than they did China's. (Opinions on both countries' role remained negative, however). The above chart clearly shows the public's stance on the role of the U.S. and China in unification.



Q-13. What do you think about the likelihood of absorptive unification by S. Korea?

	Frequency	Percent	Valid %	Cumulative %
Very high	46	4.6	4.8	4.8
High	231	23.1	24	28.8
Neutral	314	31.4	32.6	61.4
Low	272	27.2	28.3	89.7
Very low	99	9.9	10.3	100
Subtotal	961	96.1	100.0	
Missing value	39	3.9		
Total	1000	100.0		

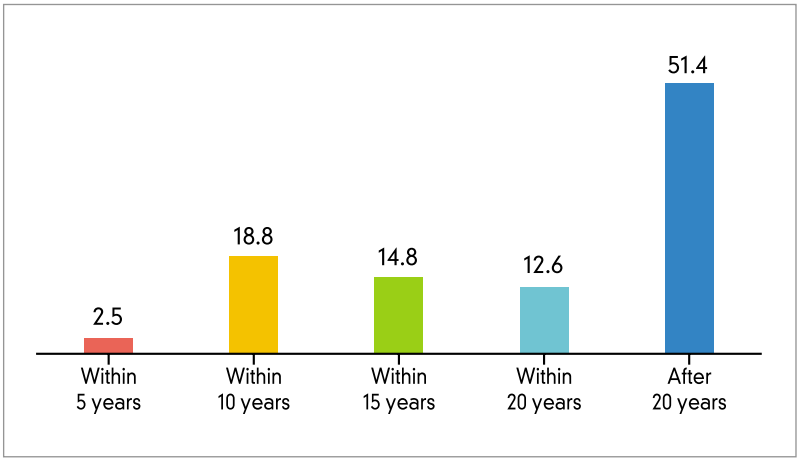
This question was developed as a comparison question for the unification clocks, together with Q13-1, Q14, and Q14-1 below. Answers of 'low' were most frequent (38.6 percent),'neutral' had a response rate of 32.6 percent, and 'high' and 'very high' were answered by 28.8 percent. Compared to the public's view on Absorption-type unification (10-point scale), answers of 'high' increased significantly. Both indicated a 'slightly negative' result for the possibility of Absorption-type unification. The 19~29 age group and students showed a relatively more negative attitude.



Q-13-1. When do you expect absorptive unification to be achieved?

	Frequency	Percent	Valid %	Cumulative %
Within 5 years	22	2.2	2.5	2.5
Within 10 years	166	16.6	18.8	21.3
Within 15 years	131	13.1	14.8	36
Within 20 years	111	11.1	12.6	48.6
After 20 years	456	45.6	51.4	100
Subtotal	886	88.6	100.0	
Missing value	114	11.4		
Total	1000	100.0		

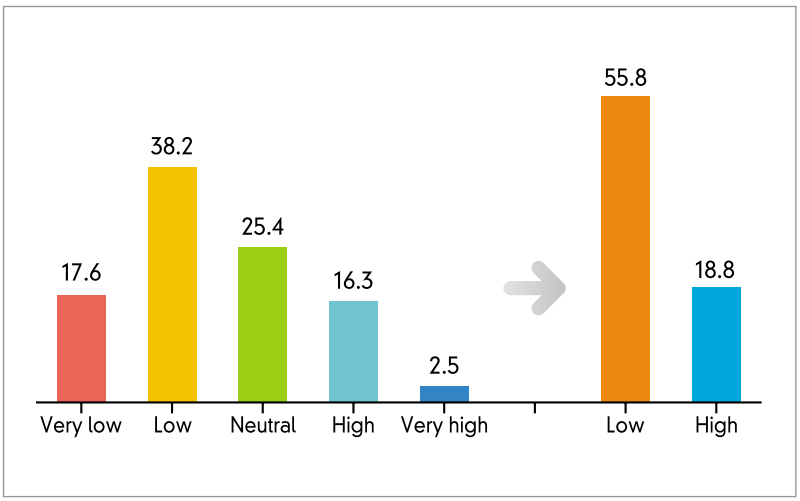
Regarding the time of Absorption-type unification, 51.4 percent of the respondents answered 'after 20 years,' while 18.8 percent answered 'within 10 years.' This is an overall continuation of the 2010 survey, in which about 64 percent answered that this type unification would occur 'within 20 years' or 'after 20 years.'



Q-14. How do you see the possibility of North Korea's implementation of a reform and open policy?

	Frequency	Percent	Valid %	Cumulative %
Very high	24	2.4	2.5	2.5
High	158	15.8	16.3	18.8
Neutral	246	24.6	25.4	44.2
Low	370	37	38.2	82.4
Very low	171	17.1	17.6	100
Subtotal	970	97.0	100.0	
Missing value	30	3.0		
Total	1000	100.0		

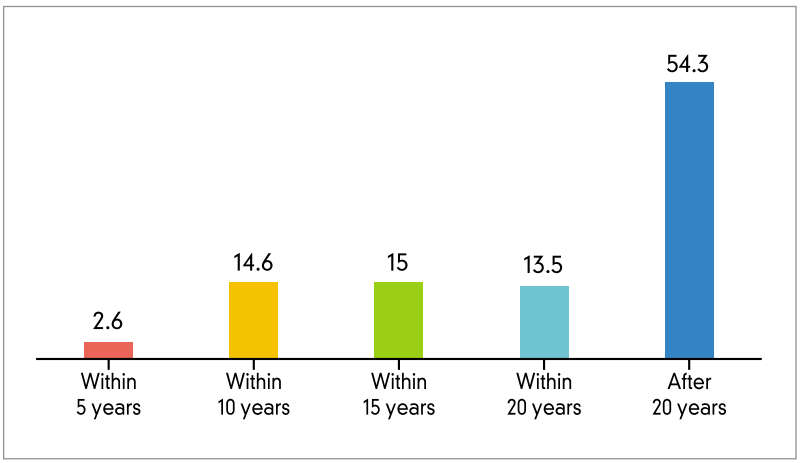
The question, along with Q-14-1, was developed to compare with the Agreement-type unification clock. Continuing the trend of the 2010 survey, 55.8 percent overall rated the possibility of the North's reform and open policy as 'low' or 'very low,' while only 18.8 percent answered 'high' or 'very high.' As mentioned previously, the public's Agreement-type clock was 4:42 while the Absorption-type was 4:57. Both Q-13 and Q-14, pertaining to the Absorption-type and Agreement-type unification clocks, yielded consistent results. In other words, the public was more pessimistic about Q-14 (reform and open policy) than Q13 (absorption).



Q-14-1. If North Korea is reformed and agreed unification is possible, when do you expect it to be achieved?

	Frequency	Percent	Valid %	Cumulative %
Within 5 years	24	2.4	2.6	2.6
Within 10 years	132	13.2	14.6	17.2
Within 15 years	136	13.6	15	32.2
Within 20 years	122	12.2	13.5	45.7
After 20 years	490	49	54.3	100
Subtotal	903	90.3	100.0	
Missing value	97	9.7		
Total	1000	100.0		

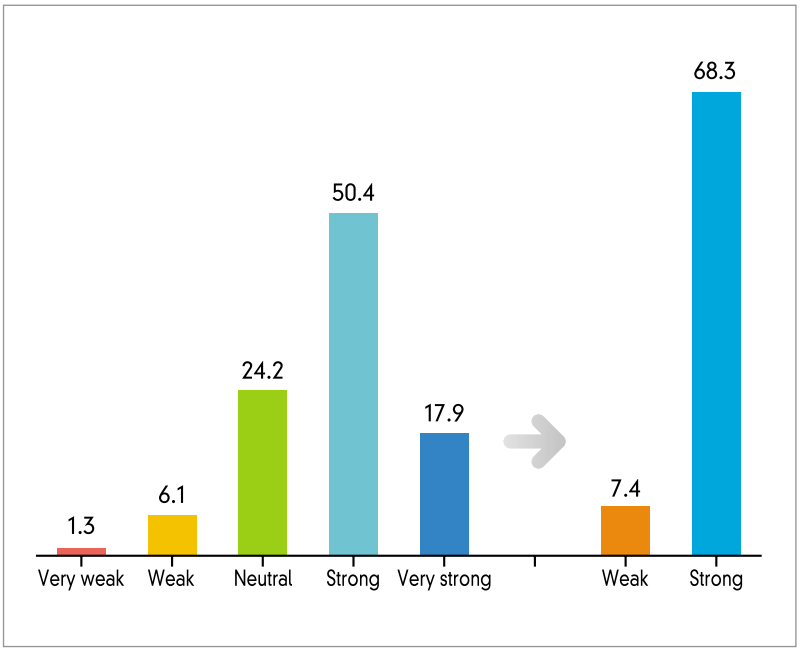
To the question about the time of Agreement-type unification, 54.3 percent answered 'after 20 years,' while 14.6 percent said 'within 10 years. Generally, results of the public opinion poll on this question—when will unification be achieved?—are concentrated on 'within 10 years' and 'after 20 years.' Answers for Q-13-1 and Q-14-1 are no exception. The results on the time of Absorption-type and Agreement-type unification showed differences, but the gap is within the margin of error. Nevertheless, the public thinks that Absorption-type unification (Q-13-1) will occur slightly before Agreement-type (Q-14-1).



Q-15. How do you see the level of the North Korean military force?

	Frequency	Percent	Valid %	Cumulative %
Very strong	176	17.6	17.9	17.9
Strong	496	49.6	50.4	68.3
Neutral	239	23.9	24.2	92.6
Weak	60	6	6.1	98.7
Very weak	13	1.3	1.3	100
Subtotal	985	98.5	100.0	
Missing value	15	1.5		
Total	1000	100.0		

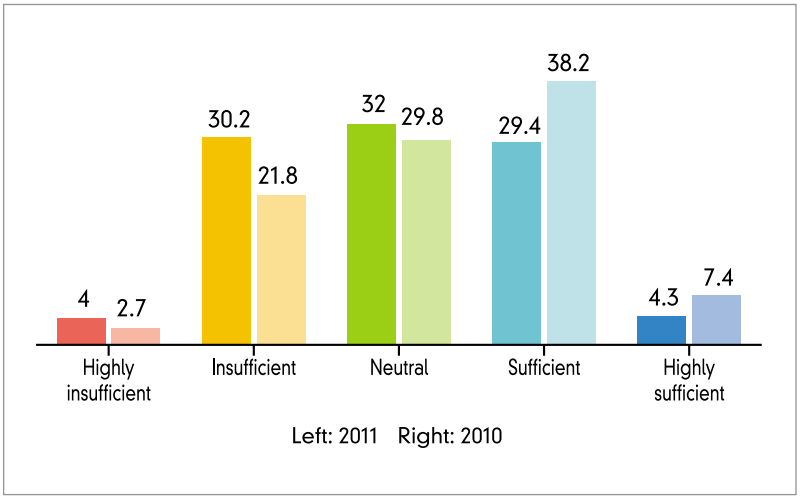
This question is the simplified version of Q28 in the Delphi survey. Of the respondents, 68.3 percent viewed North Korea's military force as 'strong' or 'very strong,' while only 7.4 percent saw it as 'weak' or 'very weak.' As for the Delphi panel's response to the same question, 62.8 percent responded 6 points or above (strong), 13.7 percent remained neutral, and 23.5 percent answered 4 points or below (weak). The distribution has not changed since the 2010 public poll.



Q-16. How do you estimate South Korean military readiness toward the North?

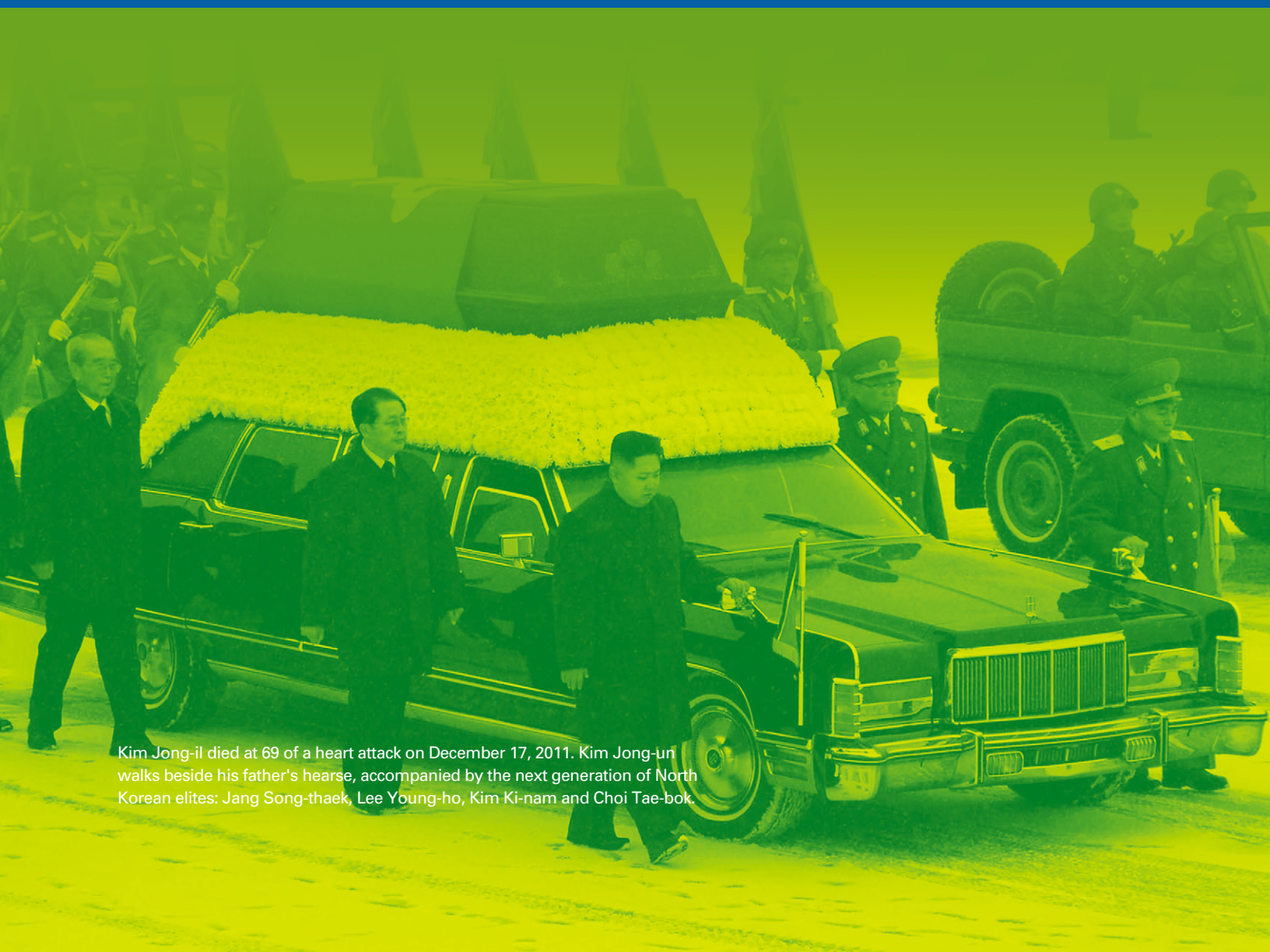
	Frequency	Percent	Valid %	Cumulative %
Highly sufficient	42	4.2	4.3	4.3
Sufficient	287	28.7	29.4	33.7
Neutral	312	31.2	32	65.7
Insufficient	295	29.5	30.2	96
Highly insufficient	39	3.9	4	100
Subtotal	976	97.6	100.0	
Missing value	24	2.4		
Total	1000	100.0		

This question was simplified from the Delphi survey's Q27. Regarding the ability of the South Korean military force, 33.7 percent of the public responded that it was 'highly sufficient' or 'sufficient,' 32 percent remained 'neutral,' and 34.2 percent responded 'highly insufficient' or 'insufficient.' Compared to the 2010 survey, the public attitude toward South Korean military readiness has worsened significantly: Answers in the 'sufficient' range decreased 11.8 percent while those in the 'insufficient' range increased 9.3 percent. This view conflicted with that of the Delphi panel survey, in which a total of 76.3 percent of the panel evaluated South Korean military readiness as in the 'sufficient' range.



Summary and Conclusion

During final preparations for publishing this article, the North Korea's Chosun Central Broadcasting Station announced the death of Kim Jong-il on December 17. The North Korean leader's passing was a shock to the country and its citizens. His death also signaled a serious change in prospects for unification in all areas.



Kim Jong-il died at 69 of a heart attack on December 17, 2011. Kim Jong-un walks beside his father's hearse, accompanied by the next generation of North Korean elites: Jang Song-thaek, Lee Young-ho, Kim Ki-nam and Choi Tae-bok.

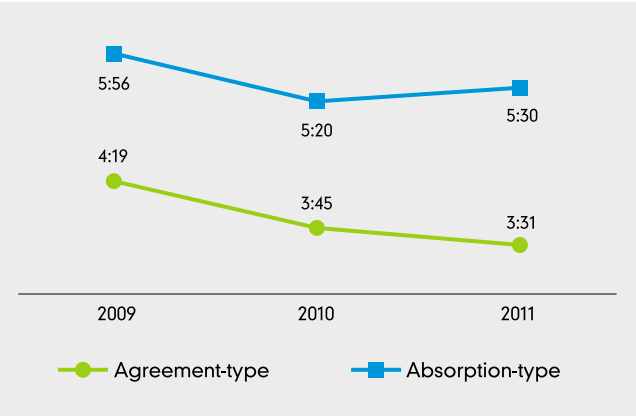
During final preparations for publishing this article, the North Korea's Chosun Central Broadcasting Station announced the death of Kim Jong-il on December 17. The North Korean leader's passing was a shock to the country and its citizens. His death also signaled a serious change in prospects for unification in all areas. According to the results of the 2011 Unification Clock survey, the panel evaluated that leadership succession would be successful and system maintenance would continue at least in the short term. This recent North Korea's leadership change reemphasizes the importance of the unification clock project.

The main focus of the 2011 Delphi survey was to guarantee continuity and stabilization of the unification clocks. In order to do this, we used the same questionnaire as well as the same unification factors. The only change was expanding the panel to include the non-panel experts group from the 2010 survey, which brought the total number of panel members from 50 to 80. In addition, a public opinion poll was conducted in a bid to identify the perception gap between the Delphi panel and the general public.

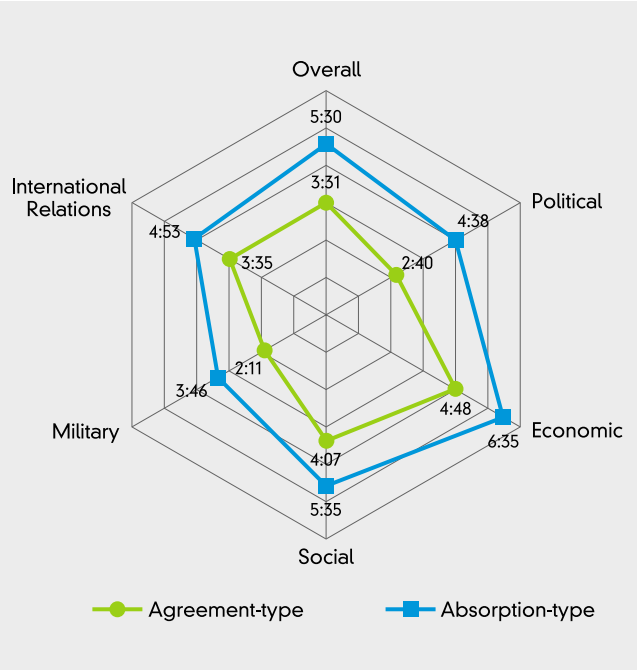
Compared to the 2010 survey that showed a significant decline, the 2011 unification clocks showed less change than the previous year. As shown in the chart below, the time on the 2011 overall Agreement-type unification clock was 3:31, continuing the trend of the previous surveys to move farther away from unification time. Meanwhile, the Absorption-type clock showed some interesting signs: Whereas the 2010 clock had lost 36 minutes, it recovered 10 of those minutes on the 2011 clock for a time of 5:30. The overall changes in both indicated that the Delphi panel saw the probability of decreased inter-Korean reconciliation and a certain degree of increase in North Korean stability. Noteworthy, although the Absorption-type clock was on the verge of reaching the mid-point of 6:00, most unification clocks were in the "slightly negative" quadrant.

The radar chart clearly summarizes the relative size of Absorption-type versus Agreement-type in the clocks for each area. In all areas, Absorption-type unification is evaluated to occur sooner than Agreement-type. Both the political and military areas tend to be against unification. Confirming that, the military sector Agreement-type clock recorded the lowest time (2:11) with the political sector not far behind, at a time of 2:40. In contrast, the economic and social areas indicate unification to be relatively closer, although absorption-type unification alone exceeded the mid-point of 6:00 o'clock.

Changes in the Unification Clock, 2009~2011



2011 Unification Clock: Delphi Panel



Agreement-type Unification Clocks

Overall	Political	Economic	Social	Military	International Relations	Public Opinion
03:31	02:40	04:48	04:07	02:11	03:35	04:42
2010 - 0:14	2010 - 0:05	2010 + 0:06	2010 + 0:06	2010 - 0:03	2010 - 0:09	2010 - 0:05

For Agreement-type unification, the Delphi panel estimated an overall unification time of 3:31, which was 14 minutes behind the 2010 clock. All five of the other Agreement-type clocks showed less change than the previous year: The political-area and military-area clocks moved back slightly, while the economic-, social- and international relations-area clocks moved a bit forward. The hands of the political- and military-area clocks continued to be in the "very negative" quadrant.

Respondents in the public opinion poll assessed the Agreement-type unification clock to be 4:42, 5 minutes behind the previous year's 4:47, indicating that the public also evaluated Agreement-type unification negatively. Compared to the Delphi panel, however, the time (4:42) was fairly positive considering that the Delphi group's Agreement-type unification clock was an hour and 11 minutes behind that of the public opinion group.

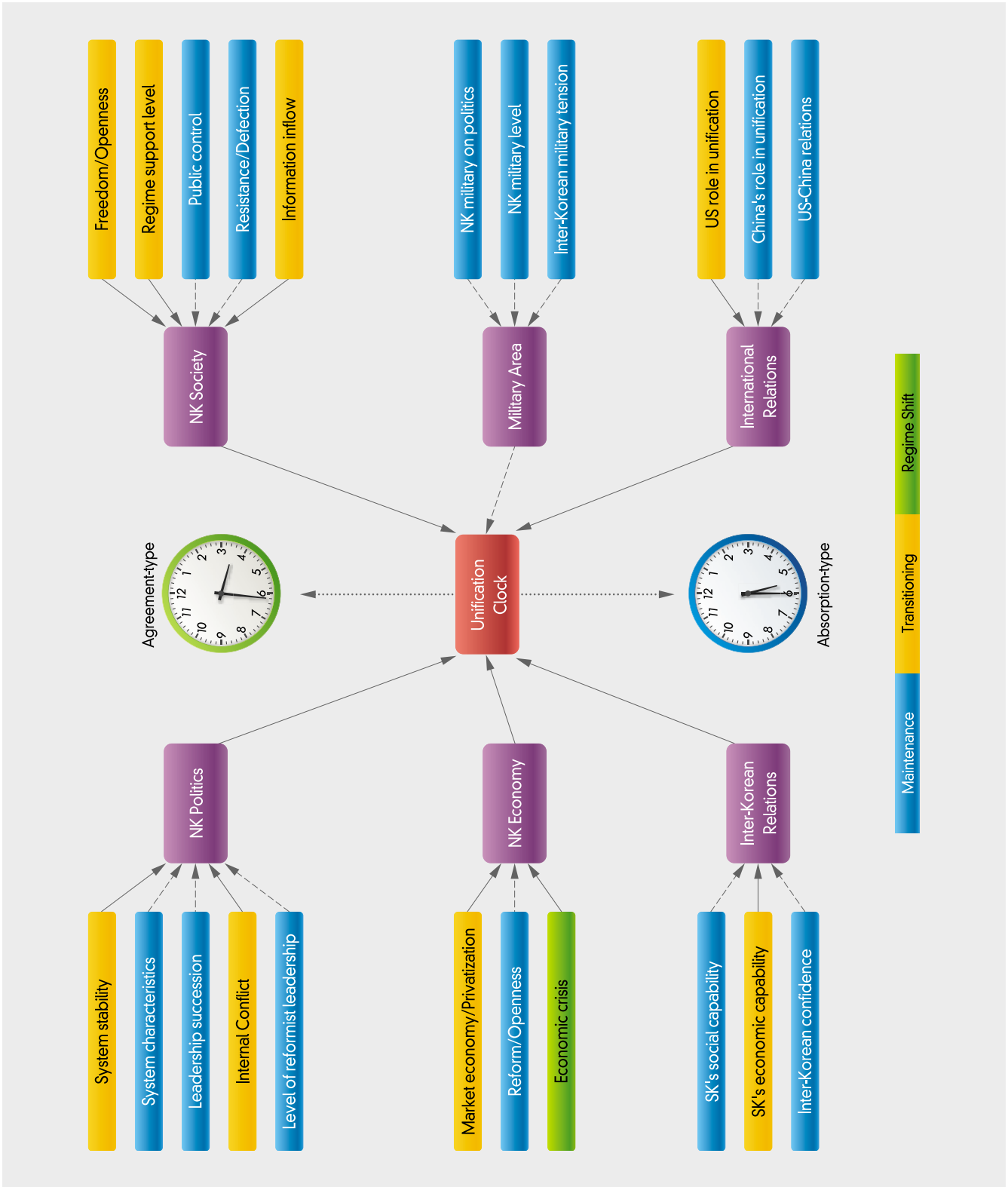
Absorption-type Unification Clock

Overall	Political	Economic	Social	Military	International Relations	Public Opinion
05:30	04:38	06:35	05:35	03:46	04:53	04:57
2010 + 0:10	2010 + 0:13	2010 + 0:13	2010 + 0:09	2010 - 0:15	2010 + 0:24	2010 - 0:39

The Delphi panel's 2011 overall Absorption-type unification clock recorded 5:30, moving 10 minutes closer than in the previous year. As for individual areas, there were noticeable differences in all the panel's Absorption-type clocks compared to the Agreement-type ones. Area clocks that had lost time in 2010 regained it in 2011, except in the military-area. The economic-area clock time was 6:35, remaining in the "slightly positive" quadrant. This clock was the closest to unification and showed the least change of all the others during the three-year survey. Of note, the International-area clock showed a significant advance of 24-minutes in 2011.

The public's response resulted in a time of 4:57 on the Absorption-type unification clock, which was 39 minutes behind that of the 2010 public opinion poll. This group assessed that Absorption-type unification will occur sooner than Agreement-type, although the time gap between them was only 15 minutes. In comparison, the public's Absorption-type clock was 33 minutes slower than the Delphi panel's, indicating it maintains a relatively pessimistic view on Absorption-type unification.

Unification Clock and Unification Determinants



Unification Determinants

During the three-year study, we developed questions that could influence the unification clocks. As a result, a survey on the 36 unification determinants continued this year, covering the areas of North Korean politics, economy and society; military area; South Korean capability and inter-Korean relations; and international relations. As both unification clocks fell into the "slightly negative" quadrant, the overall levels for unification factors remained between medium and very low.

In order to prepare for future comprehensive causal modeling, we adopted a technique called structural equation modeling (SEM) to compare each area's questions with the unification clocks. Most models, however, did not reach the required statistical limits. Nevertheless, during analysis, we found that some unification factors related to the Agreement-type or Absorption-type unification clocks. From this process, we reorganized the unification factors into three categories: system maintenance, transitioning and system shift. In detail, the system maintenance category included factors that would help to maintain the North Korean regime's current status, while the transitioning category included factors that showed some degree of potential change. The system shift category covered factors that would propel the North into the system transition stage, or toward unification. Among 36 factors, only the North Korean economic crisis fell under the system shift category which would influence both Agreement-type and Absorption-type clocks. We assume that if some unification factors changed it would influence the hands of the clocks. From the SEM analysis and the frequency analysis in Chapter I and Chapter III, we designed a tentative comprehensive model. Selected factors in the model are shown above.

Factors falling under the system maintenance category are: North Korean system characteristics; leadership succession; possibility of a reformist leadership; levels of economic reform and openness; North Korea's public control level; North Korean people's resistance level; South Korea's social capacity; government-level confidence; China's stance toward unification; U.S.-China relations; and all factors in the military area.

Factors falling under the transitioning category are: North Korean system stability; internal power conflict; market economy and privatization; North Korean people's awareness of freedom and openness; North Korean people's regime support level; information inflow level; South Korean economic capacity; and the U.S. stance toward Korean unification.

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The Korea Institute for National Unification (KINU) was founded in 1990 as a government-funded policy research institute in Seoul, Republic of Korea. As the hub of research on North Korea and unification, and a locus for the international network on Korean Peninsula issues, KINU plays a leading role in providing in-depth analysis on current issues related to North Korea and the unification of the Korean Peninsula.

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By Park Young-Ho and Kim Hyeong Ki

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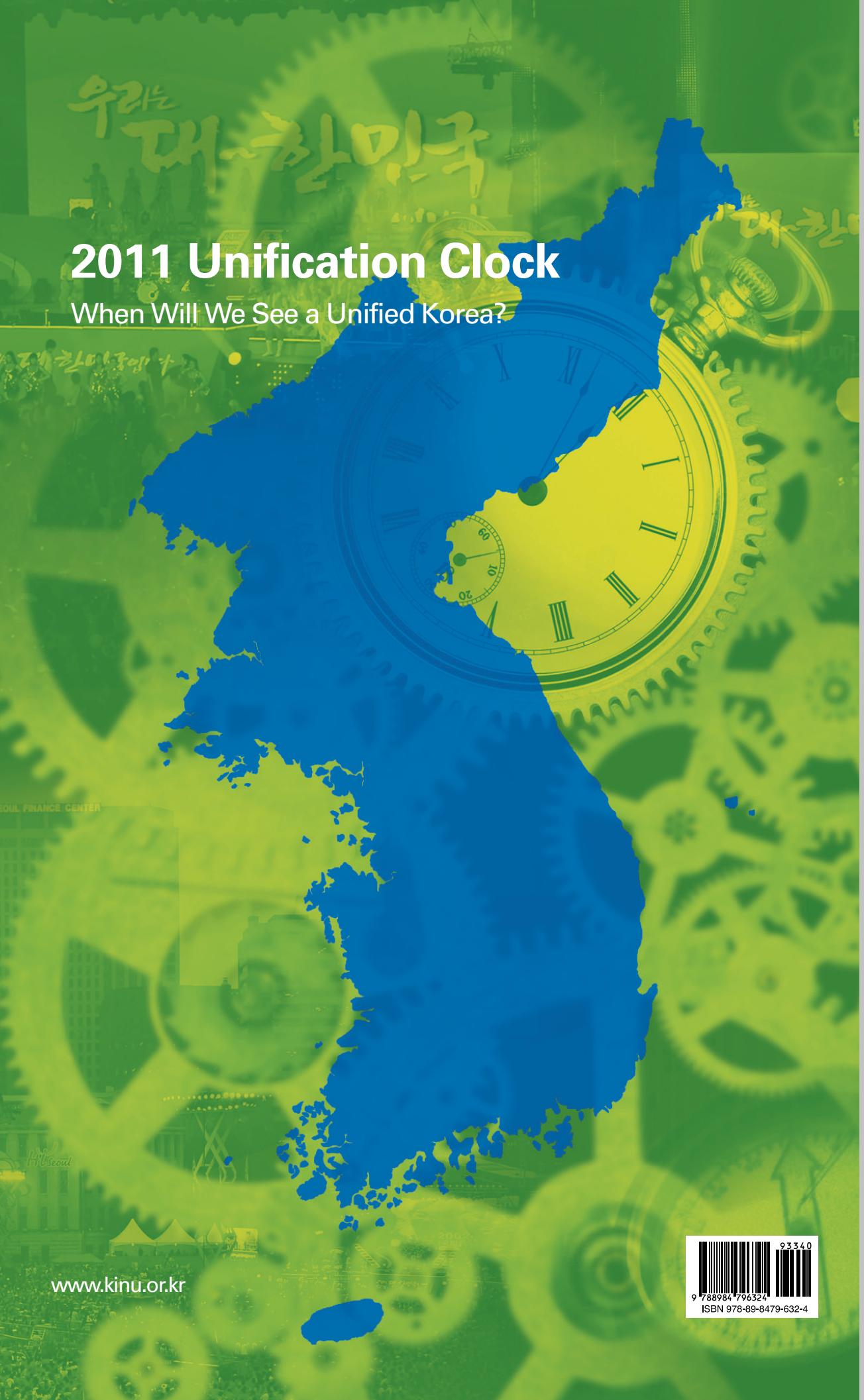

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