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Income Inequality and the Formation of Preference for Redistribution in China and Korea*

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This study aimed to discover the determinants of redistribution preferences and their roles in shaping redistribution preferences in China and Korea. A series of prior research had largely neglected the complex interdependent relationships among the determinants of attitude towards redistribution. This study employed a Bayesian network approach to estimate the conditional dependency structure of the determinants and uncovered heterogeneity in the patterns of relationships in the two countries. The study results shed light on the stable and direct effects of perceived income inequality on demand for redistribution. Also, it conveyed that these effects were further affected by various perceptions of societal fairness as well as individuals' economic status. Furthermore, by comparing China to Korea, this study revealed that different types of fairness perceptions were associated with perceived inequality and preference for redistribution. In sum, these results demonstrate that preferences for redistribution within a society is an outcome of a complex interplay among individuals' perceptions, judgments, and beliefs with regards to the fairness of society.

Keywords: *income inequality, preference for redistribution, perceived fairness, Bayesian network approach, Korea, China*

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Introduction

The rise in income inequality has long been a global conundrum for developed countries. Prominent international organizations such as the Organisation for Economic Co-operation and Development, the United Nations, and the World Bank have urged state governments to take action to reduce income inequality in pursuit of sustainable growth and for the well-being of citizens (OECD 2015; Basu and Stiglitz, 2016; UN 2020, etc.). Despite such international efforts, the overall support for redistribution in many countries has remained the same, if not diminished (Cojocaru and Diagne 2014; Cavaillé and Trump 2015; Kuziemko et al. 2015). The East Asian region, including China and Korea, has been no exception to this trend. Prior studies have found that redistribution preferences in the region have not grown despite the rising perception of income inequality (Park and Lee 2018; Kim et al. 2019; Lee and Kim 2019; Chang 2020, etc.).

Public support for redistribution is critical for designing and implementing redistribution policies to reduce income inequality. It legitimizes the government's redistribution policies as a countervailing process against income inequality (Lamont and Pierson 2019, p. 6). For this reason, a wide array of research has been devoted to uncovering the factors affecting individuals' attitudes regarding redistribution policies. In the field, a widely known theory of demand for redistribution posits that a higher level of income inequality leads to a higher demand for redistribution (Meltzer and Richard, 1981). However, empirical research on the topic shows inconsistent results. While some studies found a positive relationship between income inequality and demands for redistribution (e.g., Milanovic 2000; Finseraas 2009; Olivera 2015; Gründler and Köllner2017; Colagrossi, Karagiannis, and Raab 2019), others presented a negative or no significant relationship (e.g., Dallinger 2010; Cavaillé and Trump 2015; Choi 2019). Accordingly, a growing body of literature has been devoted to uncovering the effects of income inequality on preferences for redistribution. Some of this research has attempted to search for a third variable that intervenes or mediates the relationship between income inequality and redistribution preferences. Other research has raised questions about the theoretical assumptions underlying the link between the two variables. These approaches have also been unable to yield clear answers regarding how income inequality affects redistribution preferences.

Individual preferences for redistribution are, indeed, an outcome of a

chained psychological process intertwined with various factors such as individual characteristics, perceptions of fairness, cultural norms, and welfare systems. (Alesina and Giuliano 2009; Son Hing et al. 2019). The process is often triggered with an increase in income inequality. In other words, as the inequality grows, people may perceive it as being too large and undesirable. Once people evaluate the rise of income inequality within society as being undesirable, they may seek corrective measures to mitigate such a disparity. If people consider the government's redistribution measures appropriate and effective, they may demand the expansion of redistribution policies. In turn, people may participate in political processes, such as voting, to express their demands. This process, beginning from the rise of inequality and continuing to demand for redistribution policies, involves a complex interplay between a variety of factors rather than being a simple, linear process and it may vary vastly depending on individual, cultural, or institutional contexts (Park and Lee 2018; Son Hing et al. 2019). These interrelationships between influential factors, however, have not been fully discovered in prior research.

This study intends to investigate the chained relationships among the determinants of individual preferences for redistribution through a Bayesian network approach. This study examined what structural patterns emerge in the process from perceptions of income inequality to redistribution preferences and whether such patterns differed by country. With a Bayesian network analysis, this study explored the interconnected structure of the multivariate data and investigated the similarities and differences between the various associations among the determinants of redistribution preferences within different societal contexts.

This research studied individuals in two East Asian countries, China and Korea. Many studies explored considerable cross-national differences in the perception of inequality and the support for redistribution (Dallinger 2010; Tóth and Keller 2011; Guillau 2013; Steele 2015; Bussolo et al. 2019; Colagrossi et al., 2019; Choi 2021). Relatively fewer studies, however, investigated this topic in Asian countries (Kim et al. 2018; Miongsei Kang 2019; Woojin Kang 2019). More importantly, East Asian countries present interesting cases in that the countries' rapid economic growth successfully reduced poverty and inequality until the early 1990s without any significant expansion of redistribution policies (World Bank 1993; Feng 2011; Jain-Chandra et al. 2016, p. 103; Woojin Kang 2019, p. 318). This pattern deviated from the conventional pattern observed in developed Western countries, where economic growth caused massive income disparities, thus the expansion of welfare and redistribution policies. Therefore, one of this study's

objectives was to add empirical knowledge to the discourse on redistribution by comparing two East Asian countries, China and Korea.

The article is organized as follows: the next section reviews a series of theoretical and empirical studies explaining the determinants of redistribution preferences, as well as the societal characteristics of China and Korea. Section three introduces the data and methodology of this study. Section four presents this study's major findings and is followed by section five, in which the results are discussed. In the conclusion the implications and limitations of this study are addressed.

Literature Review

Determinants of Support for Redistribution

The median voter model, proposed by Meltzer and Richard (1981), may be one of the most influential hypotheses for explaining the demand for redistribution in democracies. The authors explained the formation of governmental redistribution policies in terms of being the public choice of rational voters. They suggested that in a society with universal suffrage and majority rule, the choice of median-income voters, so-called "decisive voters," usually determined the share of income redistributed by government. According to the authors, median-income voters pursued the maximization of their income. If their income lay below the mean income of the society due to the rise of income inequality, the median-income earners sought to compensate for the gap with gains from social benefits and voted for political parties that supported redistribution. In turn, as income distribution became more unequal, supports for redistribution policies were likely to increase. This theoretical model implied that individual relative income position was a critical determinant of preferences for redistribution.

Over the past few decades, however, the Meltzer-Richard model (hereafter "MR model") has received limited support. On the one hand, empirical studies testing the model have presented inconsistent outcomes. While some researchers found a positive relationship between income inequality and redistribution (e.g., Milanovic 2000; Finseraas 2009; Olivera 2015; Gründler and Köllner 2017; Colagrossi, Karagiannis, and Raab 2019), others found negative or no significant relationships (Dallinger 2010; Cavaillé and Trump 2015; Choi 2019). On the other hand, previous studies also challenged the theoretical assumptions of the MR model, which assumed that

individuals were motivated by self-interest and were knowledgeable about the actual level of inequality. These challenges arose from the observation that perceptions of income inequality did not match the actual level of inequality. This discrepancy was explained in part by the possibility that individuals could be misinformed about or misperceive the actual level of inequality or of their own income position (Engelhardt and Wagener 2014; Gimpelson and Treisman 2018; Hoy and Mager 2019; Iacono and Ranaldi 2021). For instance, Gimpelson and Treisman (2018) criticized the MR model in that it assumed voters were fully informed. In their research analyzing cross-national surveys, the authors found that people had a limited ability to correctly assess the actual level of inequality and to track changes in inequality over time. Scholars in this line of research also provided evidence that individuals often underestimated or overestimated their positions in income distribution depending on their income reference group (Hoy and Mager 2019). Such a bias in perception was considered an explanatory factor for the inconsistencies in previous findings on the relationship between income inequality and preference for redistribution (Iacono and Ranaldi 2021).

The discrepancy between actuality and perceived reality further highlighted the significance of the subjective nature of inequality assessments (Bussolo et al. 2019; Choi 2019; Duman 2019). For instance, Bussolo, Ferrer-i-Carbonell, Giolbas, and Torre (2019, p. 2) criticized the arguments of biased perceptions in that perceptions were not formed simply through misinformed or biased estimations. Rather, these perceptions were generated in a more systematic and complex manner. By analyzing the individual level data, they show that inequality perceptions were correlated with the societal context, fairness perceptions, subjective expectations of social mobility, and political ideology, and these heterogeneous perceptions of inequality, in turn, influenced the demand for redistribution.

In this vein, numerous studies focused on the importance of fairness in shaping one's perception of inequality and redistribution preferences (Alesina and La Ferrara 2005; Alesina and Angeletos 2005; Duman 2013; Starmans et al. 2017; Ahrens 2019, 2020; Garcia-Sanchez et al., 2020; Mijs 2020, etc.). They posit that people do not pursue solely their own interest. They continue to assert that people are concerned with fairness and the effect of inequality on the demand for redistribution depends on various perceptions regarding the fairness of inequality. It has been noted that various norms or rules for judging fairness—such as equity-based, need-based, and equality-based fairness principles—coexist in their societies (Park and Kim 2015, pp. 245-

246; Lee 2018, pp. 12-14). An equity-based fairness principle denotes that rewards must be proportionate to the degree of contribution or achievement, whereas according to an equality-based view, everyone deserves equal distribution. Need-based fairness rules that distribution must be consistent with the levels of need. Although there exist dominant views of fairness in any society, in practice, individuals tend to utilize different fairness principles to judge fairness or inequality depending on different circumstances.

Ahrens (2019, 2020) provided an explanation based on the equity theory of social psychology. Equity theory implies that individuals judge the fairness of their own income based on social comparisons to reference groups. According to Ahrens, individuals view income as an exchange for relevant inputs, i.e., their own effort or skill. If people believe income distribution is disproportional to the relevant inputs, they perceive income as unfair. Furthermore, the individual evaluations on the fairness of their own income depend on comparisons to observable reference groups such as colleagues, family members, neighbors, etc. Individuals who feel they are treated unfairly support redistribution to compensate for that unfairness (Ahrens 2019, pp. 4-6). Relying on these theoretical explanations, Ahrens asserted that differences between income groups did not explain preferences for redistribution. These preferences were dependent on peoples perceived fairness regarding their own income in comparison to their effort or skills.

Research on people's perceptions of income inequality raised the possibility that income inequality is not always undesirable. Literature discovered that people did not have aversive attitudes regarding inequality and had different degrees of tolerance towards income inequality. Several studies employing experimental data analyses of surveys revealed that even when people had accurate knowledge and perceptions of income inequality, they did not support redistribution for reducing inequality (Kuziemko et al. 2000). Starmans et al. (2017) also demonstrated that individuals preferred fair distributions and fair inequality rather than equal distributions and unfair equality both in experimental and real-world situations. In other words, what people cared most about was economic unfairness, not economic inequality itself.

Such attitudes regarding income disparities were attributable to various system-justifying beliefs or myths (Roex, Huijts, and Sieben. 2019; Son Hing et al. 2019; Garcia-Sanchez et al. 2020; Trump 2018). Son Hing and her colleagues (2019) explicated that the psychological processes of legitimizing growing income inequality are based on beliefs in three intertwined subjects: meritocracy in society, social mobility, and the market system. These beliefs

influenced not only perceptions of economic inequality but also preferences for redistribution.

Mijs's recent study (2020), which explored why people living in more unequal societies had fewer concerns about inequality than those in more egalitarian societies, found that belief in meritocracy justified rising inequality. According to Mijs, when people believed that income inequality was generated from individual efforts or merits, they believed inequality was fair and were accepting of it. Such meritocratic beliefs, which provided legitimacy to inequality, dampened support for redistribution (Alesina and Angeleto 2005; Alesina and La Ferrara 2005; Fehr and Vollmann 2020).

The belief that economic success is distributed on the basis of merit or effort is closely related to the deservingness of the beneficiaries of redistribution. A series of research pointed out that if people believed poverty was attributable to a lack of individual effort, they were likely to believe the poor people deserved to be poor and tended to oppose redistribution policies (Fong 2001, 2006; Gee, Migueis, and Parsa 2017). Additional research demonstrated that if people believed poverty was caused by situational or structural forces beyond individual control, people were likely to demand redistribution (Piff et al. 2020).

In addition to a belief in meritocracy, the expectation of social mobility was also an important legitimizer of income inequality. Economic mobility as a significant legitimizer of income inequality was well established in the literature (Benabou and Ok 2001; Cojocaru 2014; Gimpelson and Monusova 2014; Alesian, Stantcheva, and Teso 2018, etc.). The literature showed that a socially mobile and dynamic society was more accepting of the given level of inequality. Benabou and Ok (2001) found that even the low-income class often dismissed redistribution policies due to their expectation that redistribution could deter their upward mobility. This relationship was often referred to as the POUM (prospect of upward mobility) hypothesis. Gimpelson and Monusova's study (2014), which tested the POUM hypothesis, concluded that people accepted inequality where societies provided opportunities to move up the socio-economic ladder.

Finally, trust in the market system might contribute to legitimizing inequality when the market system equipped individuals with more equal opportunities and fairer outcomes equitable to individual merit and effort (Pliskin, Jost, Knowles, and Shahrzad 2019). Loveless and Whitefield (2011) provided evidence that beliefs in the performance of the market economy to improve the standard of living negatively impacted inequality aversion in Central and Eastern Europe. VanHeuvelen (2017) also observed that there

existed a tradeoff between economic development and state redistribution, providing evidence that economic development dampened public support for redistribution at higher levels of economic development.

As we have seen so far, a series of existing research has presented numerous factors affecting redistribution preferences. These factors were not mutually exclusive but rather influenced one another reciprocally. To put it another way, these factors operated interactively and jointly to form people's attitudes regarding income inequality and redistribution. For example, the effect of a belief in social mobility on the acceptance of inequality was closely related to a belief in whether this mobility was driven by fair and legitimate processes, such as meritocratic principles (Gimpelson and Monusova 2014). The same factors determining perceptions of inequality may influence the demand for redistribution. Moreover, the direction of relations among these factors may not be straightforward. For example, a recent experimental study (McCall, Burk, Laperriere, and Richeson 2017) illustrated that exposure to information about rising inequality could lead to skepticism about equal opportunity and thus motivated support for redistributive policies, not the other way around. As such, the relationships between factors that may shape the demand for redistribution might be more complex and highly non-linear. This study focused on these complexities and attempted to investigate the patterns of interplay among explanatory factors in a more systematic manner.

China and Korea as Study Subjects

As Alesina and Giuliano (2015) presented, culture and institutions contribute to various economic outcomes. Different cultural contexts and institutional arrangements had a profound influence on the shape of perceived inequality, fairness, and redistribution preferences (Corneo and Grüner 2002; Alesina and Fuchs-Schündeln 2007; Alesina, Cozzi, and Mantovan 2012; Guillaud 2013). Particularly, fairness perceptions at the onset of capitalism (Alesina and his colleagues 2012) and political regime change such as in formerly socialist countries (Cornero and Gruiner 2002; Alesina and Fuchs-Schundeln 2007; Guillaud 2013) had long-lasting influences on perceptions of poverty and the demand for government intervention to inequality.

In this regard, China and Korea present interesting cases to compare. China and Korea have followed different developmental trajectories. While Korea had adopted the use of a market economy since its industrialization and modernization period, China had initially established an egalitarian system through state socialism, then later adopted a market system in the late

1970s.

Despite these different paths for economic development, China and Korea shared some similarities in their economic development processes. Along with the rapid growth of their economies, they both achieved fairly equitable income distributions until pre-1990, which was referred to as a "growth with equity miracle" (Jain-Chandra et al. 2016). Rapid growth and dramatic changes in the economic and social structures gave rise to novel systems and structures in a variety of areas throughout the countries while disrupting the existing institutions and systems. These structural transformations provided massive opportunities for upward mobility and individuals experienced high social mobility. In addition, during the economic development process, the governments each played a dominant role in promoting the economy and implementing redistribution policies.

China and Korea also share commonalities with regards to the development of welfare and redistribution policies (Aspalter 2006; Kim et al. 2018; Woojin Kang 2019). For instance, the goal of social policies was primarily to support economic development and to promote the legitimacy of the government. There existed widespread beliefs that economic growth would benefit all people and families, while individuals were responsible for their own welfare. In both of these countries, the particular path and nature of development provides a basis for the peculiar characteristics of public response to income inequality and demand for government redistribution.

Since the 1990s, both China and Korea have been facing relatively stagnant economic growth and growing income inequality. To respond to these challenges, the reconstruction of economic and welfare systems was inevitable. In China, the Gini coefficient rose dramatically, from 33 in 1990 to 53 in 2013 (Jain-Chandra et al. 2016, p. 10).[1] It was expected that such sharp increase in income inequality would cause massive social discontent among Chinese people. Despite this dramatic increase in income inequality, however, no substantial changes in attitudes toward inequality occurred (Whyte 2010; Whyte and Im 2014). Xie and his colleagues (2012, 2016) found that Chinese people were tolerant of inequality coupled with economic development. Chinese people recognized economic inequality as an inevitable consequence of economic development and believed that unequal income motivated individuals to work hard, which was necessary for

[1] The Gini coefficient has a value between 0 and 1, and the closer the coefficient is to 1, the more unequal income is distributed. In general, when the Gini coefficient is 0.4 or higher, the degree of inequality is severe.

economic growth. On the other hand, Chang (2020) found unexpectedly low support for welfare policies in China, despite the dramatic increase in income inequality over the past three decades. This contrast in existing studies exposes a communist legacy associated with dependence on welfare and collective preferences for redistribution (Alesina and Fuchs-Schündeln 2007; Guillaud 2013).

Korea was also an exceptional case in the literature of redistribution policies. According to Gründler and Köllner (2017), a high level of income inequality in developing countries was accompanied by a much lower degree of redistribution compared to advanced countries. This phenomenon was caused by less elaborate economic and political systems in developing countries. In OECD countries with well-established market and political systems, Gründler and Köllner found a positive relationship between income inequality and the expansion of redistribution. However, in Korea, despite the comparative stable level of inequality in Korea, its Gini Coefficient being 32 in 1990 and 31 in 2013 (Jain-Chandra et al. 2016, p. 10), public perceptions of inequality in the country were excessively high and popular demand for redistribution were also remarkable (Kim et al. 2018). This was a puzzling phenomenon since Korean people valued income differentiation and had a strong tendency to recognize individual wealth as a reward for one's effort compared to other countries (Hwang 2019).

As illustrated above, China and Korea presented interesting cases that rejected conventional wisdom. China had traditionally endorsed equality but exhibited a higher tolerance for the recent increases in inequality, while Korea supported income differentiation but showed a higher degree of aversion for inequality. By comparing these two countries, this study intends to gain a deeper understanding of the patterns of relationships between demand for redistribution and perceptions of income inequality.

Data and Methodology

Data

This study employed the International Social Survey Programme's (ISSP) social inequality data from 2009.[2] The ISSP is a cross-national collaborative

[2] The ISSP research group conducted a replication survey of the social inequality module fielded in 2019. Unfortunately, data are not available for the two countries. Although the data used in this

survey program that inquires about various important sociological topics on an annual basis. The social inequality module of ISSP covers 39 Western and non-Western countries and includes various themes such as individuals' perceptions of income inequality, attitudes regarding social inequality, views on earning and income, fairness perceptions, etc.

Originally, the 2009 ISSP data included 1,599 cases for Korea and 3,010 cases for China. The sample cases were selected to include only those who had work experience, because the study aimed to examine the perceived fairness of their income compared to their skills and effort so having work experience was essential. The final number of cases in the statistical analysis was 1,486 cases for the Korean data (Mean age=43.9, SD=14.62, Range 18 to 94, 51.0% female) and 2,845 cases for the Chinese data (Mean age=43.3, SD=13.91, Range 18 to 98, 51.4% female).

Measures

(1) Preferences for Redistribution

Choice when selecting redistribution preferences is important since previous studies observed inconsistency in support for redistribution depending on the government's redistribution measures. For instance, according to past research, Korean people were supportive of having more redistribution policies but were less likely to accept progressive tax policies (Sa Hyun Kim 2015; Park and Lee 2018). Considering the varying degrees of preference for various redistribution measures, this study analyzed three items related to attitudes towards redistribution; the government's responsibility for reducing income inequality, progressive taxation, and social benefits targeted at the low-income class. Whereas the government's responsibility to reduce income inequality is an indicator of general attitudes towards redistribution via government intervention, the latter two items measure attitudes regarding specific government redistribution policies. Separate examination of these attitudes allowed us to understand the relationships among them and the structural patterns of relationships with the explanatory factors included in this study.

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study are relatively outdated, the analysis is meaningful in that the late 2000s was a time when inequality and social welfare issues became major policy agenda in both countries (Woojin Kang 2019).

(2) Perceptions of Income Inequality

The study used two items to capture individual perceptions of income inequality; the perceived income gap and the aversion to inequality. For example, regardless of the perceived level of inequality, individuals may not perceive income inequality in their society as being undesirable. Therefore, this study included an additional variable measuring the perceived degree of conflict between the rich and poor which represented one's consideration of income inequality as a social problem.

(3) Other Determinants

The previous section of this study explored the multifaceted nature of redistribution preferences. This study includes variables that may represent varying dimensions that form individual preferences for redistribution. They are objective income level, education level, subjective placement of class position, social mobility experience, prospects for status mobility, and various fairness-related perceptions and beliefs. Income and education levels, as well as subjective economic status were included as proxies for indicating self-interest-driven motives for redistribution (Bussolo et al. 2019). Social mobility and fairness perception variables were included to examine the effects of beliefs that justify inequality.

Experience of status mobility was measured according to the difference between one's current and past positions on the socio-economic ladder. For prospects for social mobility, this study followed Gimpelson and Monusova's approach (2014) which assumed that a society with a large middle class offered more opportunities and thus more possibility for upward mobility. In the ISSP questionnaire, a question asked about the structural shape of society and provided five diagrams. The diagrams with large middle classes were included to represent less inequality and better prospects for upward mobility.

This study's analysis also encompassed several fairness-related variables such as perceived educational opportunities, pay norms, perceived fairness of one's income, and meritocratic beliefs.[3] The first variable, perceived educational opportunities, measured whether one believed in the existence of equal opportunity to access valuable resources. The second variable, pay

[3] Although they are closely related, meritocratic beliefs and equality of opportunity represent distinct concepts. Whereas meritocracy is a concept about success resulting merely from individual effort and merit, perceived inequality of opportunity assumes the chance to succeed is the same to all (García-Sánchez, Obsorne, Willis, and Rodríguez-Bailón 2020, pp. 113-114).

norms, represents one's fairness rules of income distribution. This study included three items of pay norms; need-based, merit-based, and effort-base.[4] While pay norms referred to general standards regarding fairness judgments, perceived fairness of one's income indicated fairness evaluations based on the proportionality of their income to their input. Lastly, meritocratic beliefs were measured on one composite item that evaluated the extent of agreement to the statement "hard work and ambition are prerequisites for success in society." Table 1 shows the variables used in this study and the concepts they represent.

Table 1
Descriptions of variables

	Variable names	Description of variables	Response codes
	AGE	Respondent's age	-
Socio-economic position	EDUC	level of education	0=No formal qualifications 1=Lowest formal qualification 2= Above lowest qualification 3=Higher secondary completed 4=Above higher secondary level, other qualifications 5=University degree completed
	INCOMEE	Equivalized household income which takes into account a household's size	-
	RANK	Self-placement currently on a top-bottom scale	1=Bottom; 10=top

[4] The ISSP 2009 module did not include items to measure equality-based pay norms. Therefore, we cannot use equality-based norms in this study. We included two separate items of merit-based and effort-based norms. Although they are often treated as equity norms, we consider their effects on inequality and redistribution preferences as not being identical.

Social mobility	MOVEEXP	Difference between the placement on the top-bottom scale of the family that respondents grew up in and respondents currently	If less than 0, experienced downward mobility If 0, no experience of mobility If greater than 0, experienced upward mobility
	DIATYPE	Types of society shows the share of middle and upper class	1=A society with most people in the middle or many people near the top, and only a few near the bottom. 0=Else
Fairness perceptions	EDUOPP	Attitude towards equality of educational opportunity; only the rich can afford the costs of attending university in [country]	1=Strongly agree 5=Strongly disagree The higher, the more equal the opportunity
	MERIT1	Hard work and having ambition are prerequisites for success in life	1=Not important at all 5=Essential The higher, the more meritocratic the belief
	JUSTPAY1	Feeling of a just payment given his, her skill and effort	1= Much more than is just 5= Much less than is just The higher, the more unjust
Pay norms	PAYNEED1	Pay criteria: how necessary to support family or children	1=Not important at all 5=Essential The higher, the more support for need-based pay norm
	PAYWELL1	Pay criteria: how well he or she does/ quality of their job performance	1=Not important at all 5=Essential The higher, the more support for performance-based pay norm

Pay norms	PAYHARD1	Pay criteria: how hard he or she works	1=Not important at all 5=Essential The higher, the more support for hard work-based pay norm
Income inequality	INCGAP1	Differences in incomes in [country] are too large	1=Strongly disagree 5=Strongly agree The higher, the greater the perceived inequality
	CONFLICT1	The perception of conflict between poor people and rich people	1=No conflict 5=Very strong conflict the higher, the stronger conflict
Preferences for redistribution	GOVRESINC1	The responsibility of the government to reduce the differences in income	1=Strongly disagree 5=Strongly agree The higher, the more support
	TAX1	Share of income tax of high income earners relative to low income earners	1=Should pay a much smaller share 5=Should pay a much larger share The higher, the more support for progressive taxes
	HELPPOOR	The government should spend less on welfare for the poor	1=Strongly agree 5=Strongly disagree The higher, the more support for spending for the poor

Methods

(1) Bayesian Network Approach

This study employed a Bayesian network approach (BNA) to investigate how preferences for redistribution were formed. Linear modeling, such as multivariate regression, was limited in its ability to detect the patterns of interconnected and systematic relations among variables (Im, Koo, and Park 2020).

BNA is a graphical model that represents the probabilistic relationships between the variables. This analytical method estimates the probability

structure of relations among random variables and produces a graphical model known as a directed acyclic graph (DAG). Within the DAG, nodes represent random variables and the directed arrows represent statistical dependencies among variables. If there is a directed edge in the DAG from node X to node Y, X is considered a parent of Y. Likewise, Y is a child of X. BNA allows us to capture the conditional independence-relations among variables. Each variable can be determined to be conditionally independent from the set of all its predecessors in the network, given the values of directly linked variables. In other words, the absence of a directly linked edge between two variables indicates those two variables are independent, given the values of any intermediate nodes.

BNA offers several advantages. First, it enables an examination of the patterns of pairwise conditional dependencies. Second, the patterned and complex relationships are effectively represented through graphical visualization, which facilitates understanding of joint relationships. Third, the methodology is suitable for identifying indirect pathways of influence and understanding the mechanisms of interactions. Despite the benefits, since this study analyzed cross-sectional data and could not rule out the possibility of omitted variable bias, interpreting the resulting networks in causal terms was not feasible. Therefore, this study focused on the patterns of relationships among variables in the networks.

In a BNA, the network structure is determined through the process of learning the structure of the network (structure learning) and the process of learning the parameters (parameter learning). The various algorithms used for structural learning to estimate the structure of a graph are generally divided into three types: constraint-based, score-based, and hybrid algorithms. Constraint-based algorithms use traditional statistical verification methods to estimate conditional independence between variables, while score-based algorithms estimate networks in the direction of maximizing goodness-of-fit among multiple networks. Hybrid algorithms combine constraint-based and score-based algorithms to perform conditional independent verification and then estimate the network according to score-based algorithms.

BNA uses different assumptions about the types of variables, which can be discrete, continuous, or mixed. The variables used in this analysis could be regarded as either continuous variables or dummy variables, they were assumed to follow a multivariate Gaussian distribution, and the network structure was estimated using a score-based hill-climbing algorithm. The network structure was selected based on a value that maximizes the Bayesian

information criterion (BIC).

Expert knowledge on the relationship between variables can be utilized to estimate BN. Based on researchers' prior knowledge and the logical relationships among the variables, researchers can determine whether certain variables could not be connected in a specific direction (blacklist) or must be connected (whitelist) in advance. Accordingly, this study blacklisted the links from perception and attitude variables to age, education level, household income, and social mobility experiences. In addition, the connections from education level, household income, and mobility experience to age were blacklisted as well.

To ensure the stability of the estimated graph model, each network structure was learned through bootstrap resampling 1,000 times, while the connections and directions were obtained by averaging them. A significant edge selection is typically based on either an arbitrary threshold (Sach et al. 2005) or a statistical threshold (Scutari and Nagarajan 2013). This study used Scutari and Nagarajan's statistically derived threshold for obtaining significant edges in the final averaged network, as it produced networks with high sensitivity and high specificity. The directed edges in the graph were based on probability of the direction that at least 51% of the fitted networks went in the direction depicted in the graph. The thickness of each edge represented the percentage of the edge between two variables that appeared in the fitted networks.

(2) Handling Missing Values

A total of 17 variables were entered into the analysis. Some of them contained missing values. Modeling a Bayesian network with incomplete data is computationally challenging. Due to this limitation, a learning BN normally assumes that data is complete. The proportions of missing values in the datasets for China and Korea were 1.78% and 0.54%, respectively. In addition, the proportion of respondents with missing values on at least one of the variables accounted for 7.20% of the Korean data and 19.3% for the Chinese data. Particularly, missing values for the income variable were 4.89% and 2.89% in China and Korea, respectively. The proportion of missing values for the fairness variable measuring assessments of respondents' remuneration relative to their effort and ability were 2.22% in Korea and 5.52% in China. In turn, this study examined patterns of missingness thoroughly and found that they were MCAR (missing completely at random) or MAR (missing at random). Instead of excluding all missing cases, which may lead to a of information and statistical power, this study imputed the missing values

using multivariate imputations via chained equations (MICE) to make use of the available information to the greatest extent. MICE is a method used to predict and impute missing values by using information from other variables in the dataset.

The *R bnlearn package* (Scutari 2010) was used for analysis, and the *R mice package* was used for examining and imputing the missing values. Descriptive statistics and correlations between variables used in this study are provided in Appendix 1.

Results

Descriptive Statistical Analyses

Before estimating the network structure, we investigated the perception of income inequality and attitudes towards redistribution in China and Korea. Table 2 presents the distributions of variables measuring perceived income inequality and preferences for redistribution. As shown in Table 2, most respondents in both countries agreed that the income gap in their country was too large. On the other hand, the two countries slightly differed in the perceived level of conflict between the rich and poor. While 87.7% of Korean respondents agreed that the conflict between the rich and the poor is serious, only 65% of Chinese thought so.

Regarding the government's responsibility to reduce the income gap, both countries expressed similar attitudes. More than three in four people, either in Korea or China, responded that the government should take responsibility for reducing the income gap. However, respondents in the two countries responded differently to two types of government redistribution policies, levying progressive taxes and the provision of social welfare to the poor. For progressive taxation, 93.6% of Koreans supported the idea that the share of income tax paid by high income-earners should be larger or much larger. Whilst most Chinese also agreed with that premise, 23.4% of Chinese people responded that the share of income tax should be the same for the high-income earners and the low-income earners, compared to 4.7% in Korea. Providing social welfare to the poor portrayed notable differences between the two countries. In Korea, only 10% of survey respondents expressed that the government should spend less on welfare for the poor. In China, more than half of the respondents thought the benefits should decrease.

The results indicated that, while the actual level of inequality, as indicated by the Gini index, was much lower in Korea, Koreans were opposed to income inequality more strongly and considered the conflict between the rich and the poor serious in their country. In addition, although the two countries agreed that the government should take responsibility for narrowing the gap between the rich and poor, there was a clear difference in attitudes towards specific redistribution policies. In other words, it appeared that Chinese people were less supportive of a progressive tax and welfare benefits to the poor, compared to Korean people.

Table 2
Attitudes regarding income inequality and redistribution

China	Strongly disagree/ No conflict	Disagree	Neither	Agree	Strongly agree/ Very strong conflict	Agree+ strongly agree
Differences in income are too large	0.3	2.9	5.4	**52.9**	**38.5**	91.4
Conflict between the rich and the poor	0	8.7	26.3	**42.1**	22.9	65.0
It is the responsibility of the government to reduce the income differences	0.2	5.5	13.0	**54.2**	**27.1**	81.3
Government should spend less on benefits for the poor	9.8	24.7	13.1	**37.0**	**15.4**	52.4
	Much smaller	Smaller	The same share	Larger	Much larger	Larger+ much larger
Share of income tax of high income earners relative to low incomers	0.6	2.5	**23.4**	51.6	21.9	73.5

Korea	Strongly disagree/ No conflict	Disagree	Neither	Agree	Strongly agree/ Very strong conflict	Agree+ strongly agree
Differences in income are too large	1.0	2.5	6.2	**43.7**	**46.5**	90.2
Conflict between the rich and the poor	0	1.0	11.8	**51.6**	**36.1**	87.7
It is the responsibility of the gov, to reduce the income differences	2.0	8.1	14.8	**46.5**	**28.6**	75.1
Government should spend less on benefits for the poor	**42.7**	**36.0**	11.5	7.2	2.7	9.9
	Much smaller	Smaller	The same share	Larger	Much larger	Larger+ much larger
Share of income tax of high income earners relative to low incomers	0.4	1.3	**4.7**	43.5	50.1	93.6

Source: ISSP 2009, authors' own calculations.

Estimated Bayesian Network Structures

This study estimated a DAG (directed acyclic graph) to examine the patterns of relationships among determinants. BN analysis was applied to obtain the joint probability distribution of all the variables as a product of conditional distributions. The decomposition of probability distribution converted the complicated model consisting of 17 variables into a simpler model to identify subsets of factors that directly and indirectly influence each variable. Figure 1 shows the DAGs resulting from the averaging of the 1,000 bootstrapped networks. Edge thickness represents the magnitude of the BIC value of an edge, signifying the importance of an edge to fit the network model. The direction of an edge was obtained if it appeared in at least 51% of the bootstrapped networks.

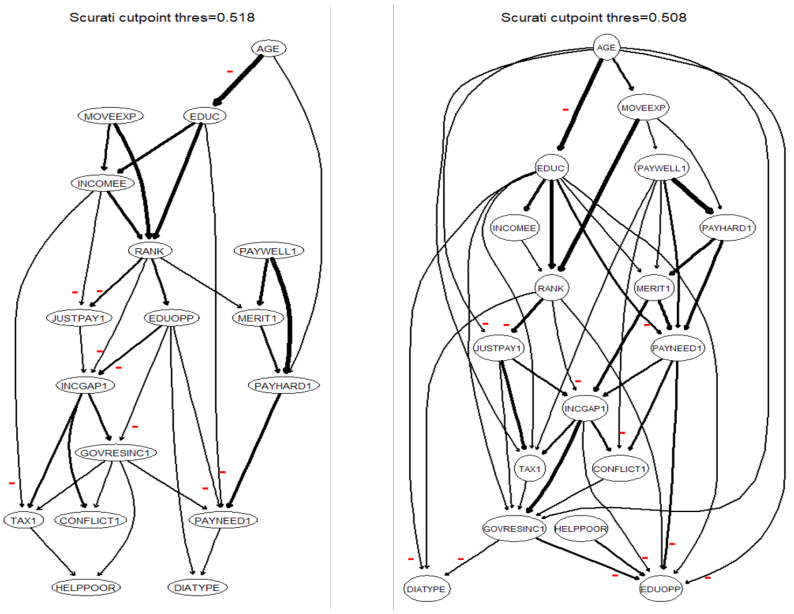

Fig. 1.—Fitted networks

Note: Fitted networks resulted from the averaging of 1,000 bootstrapped networks. The red minus sign indicates that the relationship between two linked variables is negative. No sign between variables implies a positive relationship.

Several features in the network structures presented in this study were noteworthy. First, the network structure of Korean data was relatively sparse and held lesser edges, 32, than that of the Chinese data, which had 46 edges. Second, within the overall network, RANK appeared to be more important than other variables in the Korean data and EDUC in the Chinese data. In Bayesian networks, the number of neighbors can be calculated by adding the number of parents to the number of children of a particular node. Consequently, nodes with more neighbors may weigh more in the network. In this study, RANK had seven neighbors with three parents and four children in Korea. RANK seemed to connect socioeconomic variables to perceived level of fairness and inequality. It also had direct effect on income inequality and an indirect effect on support for redistribution in Korea. In China, EDUC had nine neighbors with one parent and eight children in China and appeared to be more important. It directly influenced redistribution-related items such as GOVRESINC1 and TAX1. Third, the overall patterns of inter-variable relationships differed between the two countries. In Korea, a set of variables denoting distributive norms and

meritocratic beliefs had no direct links to INCGAP1 or GOVRESINC1. Contrarily, the variables had several links to variables concerning the perception of inequality and preference for redistribution in China. These links produced a denser network in China.

The paths to determine redistribution preference varied by country. In Korea, a path from individual's objective situation → subjective identification of income status → fairness perception → perception of income inequality → redistributive attitude was detected. While in China, the experience of economic mobility → distributive norms → income inequality perception → redistributive attitudes path was noticed, in addition to the path identified in the Korean data.

The networks demonstrated the local structure of the variables and identified variables that directly influence other variables. Table 3 and Table 4 provide parameter estimates and the strength of network links based on bootstrap analysis for the selected variables studied in this research. Edge strengths indicate the proportion of the edge that appeared in the 1,000

Table 3
Parameter estimates and stability of BN: Korea

Predictors	Outcomes	Edge strength	Directional strength	Regression coefficients
RANK	INCGAP1	0.70	0.87	-0.042
EDUOPP		0.98	0.53	-0.111
JUSTPAY1		0.87	0.68	0.119
INCGAP1	CONFLICT1	1.00	0.96	0.153
GOVRESINC1		0.92	0.65	0.092
INCGAP1	GOVRESINC1	1.00	0.92	0.280
EDUOPP		0.88	0.77	-0.094
INCOMEE	TAX1	0.54	1.00	0.000
INCGAP1		1.00	0.94	0.185
GOVRESINC1		0.94	0.55	0.090
GOVRESINC1	HELPPOOR	0.85	0.92	0.122
TAX1		0.97	0.82	0.209

Note: Edge strength indicates the proportion of the edge that appeared in the 1,000 bootstrapped networks. Directional strength indicates the proportion of the observed direction that appeared in the fitted network structures in which the relevant edge appeared.

Table 4
Parameter estimates and stability of BN: China

Predictors	Outcomes	Strength	Direction	Regression coefficients
RANK	INCGAP1	0.91	0.72	-0.029
MERIT1		1.00	0.99	0.174
PAYNEED1		0.93	0.55	0.110
JUSTPAY1		0.70	0.70	0.092
PAYNEED1	CONFLICT1	0.98	0.67	0.131
PAYWELL1		0.58	0.92	-0.069
INCGAP1		0.97	0.92	0.158
AGE	GOVRESINC1	0.82	1.00	0.005
EDUC		0.92	1.00	0.017
INCGAP1		1.00	1.00	0.363
CONFLICT1		0.89	0.54	0.067
TAX1		0.81	0.51	0.066
JUSTPAY1		0.93	0.61	0.086
AGE	TAX1	0.62	1.00	0.005
EDUC		0.53	1.00	0.012
PAYWELL1		0.73	0.75	0.058
JUSTPAY1		1.00	0.69	0.144
INCGAP1		0.98	0.77	0.130

Note: Edge strength indicates the proportion of the edge that appeared in the 1,000 bootstrapped networks. Directional strength indicates the proportion of the observed direction that appeared in the fitted network structures in which the relevant edge appeared.

bootstrapped networks. Directional strengths represent the proportion of the observed direction that appear in the fitted network structures where the relevant edges appear. Conventionally, BN analysis regard edge strengths and direction strengths that are below 0.85 (Sach et al. 2005) as relatively unstable and to be interpreted with caution, although directed relationships that are lower than 0.85 do not mean statistically insignificant. The regression coefficients demonstrate the relationships between outcome variables and predictor variables.

Perceived Income Inequality and Its Determinants

As shown in the averaged network graphs (Figure 1) and the Tables above, RANK, EDUOPP, and JUSTPAY1 were variables that directly influenced INCGAP1 in Korea. The link between RANK and INCGAP1 had moderate edge strength (0.70) with relatively stable direction strength (0.87). The regression coefficient for these variables was negative, suggesting that the higher the subjective economic status, the lower the perception of inequality. The EDUOPP and JUSTPAY1's links to INCGAP1 presented high values of edge strength (0.98, 0.87 respectively) but the direction strength was relatively weak (0.53, 0.68 respectively). The regression coefficient revealed that EDUOPP was associated with INCGAP1 negatively, while JUSTPAY1 was related to INCGAP1 positively. Via JUSTPAY1, RANK was both directly and indirectly linked to INCGAP1, hinting that JUSPAY1 could be a mediator between RANK and INCGAP1.

In the case of China, the variables directly linked to INCGAP1 were MERIT1 and PAYNEED1 as well as RANK and JUSTPAY1. The association between MERIT1 and INCGAP1 was stable with regards to both edge strength (1.00) and direction strength (0.72). Interestingly, the regression coefficient for MERIT1 was positive, implying that people with meritocratic beliefs had higher perception of inequality in China. The association between PAYNEED1 and INCGAP1 had high edge strength but weak direction strength with a positive regression coefficient. This result depicted that the need-based pay norm was positively associated with perceived inequality.

In both countries, the association between INCGAP1 and CONFLICT1 had high edge strength and directional strength. Also, the regression coefficients were positive, indicating higher levels of perceived income inequality led to a higher perception of conflict between income groups. In China, PAYNEED1 and PAYWELL1 were also associated with CONFLICT1. In the association, the variables' regression coefficients went in opposite directions, implying that those who had stronger need-based pay norms were more likely to consider conflict between the rich and the poor intense. However, those who had stronger beliefs in merit-based pay norms were less likely to understand the level of conflict between income groups as being high.

Preferences for Redistribution and Their Determinants

The relationship between perceived income gap (INCGAP1), a set of redistribution-related variables, GOVRESINC1, TAX1, and HELPPOOR, and other variables were examined to determine what affected redistribution preferences.

In Korea, INCGAP1 and EDUOPP were associated with GOVRESINC1. Both links were stable with high edge strength and direction strength. However, their relations to GOVRESINC1 were the opposite. The regression coefficient of INCGAP1 to GOVRESINC1 was positive, implying that when people perceive income inequality as excessive, they support government redistribution. Furthermore, household income level (INCOMEE) was negatively associated with TAX1, indicating that those with higher income were less likely to support progressive taxation. INCGAP1 was also directly and indirectly associated with TAX1. Two redistribution variables (GOVRESINC1 and TAX1) were directly related to HELPPOOR, while the relationship of INCGAP1 with HELPPOOR was indirect and mediated by other redistribution variables.

In China, similar to Korea, INCGAP1 was associated with demand for redistribution in general as well as progressive taxation. On the other hand, China differed from Korea in that respondents' education level and age were positively related to the demand for redistribution. Those who were older and more highly educated were likely to express a stronger demand for redistribution. An additional difference between the two countries lay in the associations among preferences for redistribution. Figure 1 depicts that three variables regarding redistribution preferences were interconnected in Korea, whereas in China, one of them, HELPPOOR, was not connected to the other two. As illustrated, the variable HELPPOOR did not have parent nodes and contained one child node, educational opportunity, within the fitted network in China. In other words, HELPPOOR was conditionally independent from other determinants given the educational opportunity. Alternative logic might be necessary to explain attitudes regarding the provision of redistributive benefits to the poor.

Discussion

This study's Bayesian network analyses of China and Korea displayed both

similarities and differences. In both China and Korea, the perceived income inequality was a stable and significant determinant of redistribution preferences. To elaborate, those who perceived inequality in their society as excessive tended to demand redistribution and progressive taxation. These results may support previous studies that emphasized the role of perceived income inequality in the formation of redistribution demands. This study also confirmed that perceived inequality was affected by the subjective level of income status, rather than the actual level of an individual's income. However, subjective income status did not directly influence one's preference for redistribution. Its effect on redistribution is indirect and mediated by the perception of income inequality.

This study contradicted one notion put forth by previous studies in that it finds that one's experience with or positive prospects of social mobility had no direct effect on perceived inequality nor the demand for redistribution in both countries. Social mobility experience was found to have an indirect effect through the subjective level of income status or the distribution norms of valuable resources.

The analyses suggested that various aspects of fairness, along with the perceived economic status, influenced one's perception of income inequality in society. In particular, this study showed that the fairness evaluation of one's income in relation to their effort and skill had a direct and stable effect on the perceived income inequality in both China and Korea. It indicated that people care more about fairness of their own income for evaluating the overall level of inequality in their societies, suggesting that social equity theory based on social comparisons played a significant role in the perception of inequality. However, similar to the subjective perception of income status, fairness in income indirectly influenced the demand for redistribution through perceived income inequality.

This study found a notable difference between the countries regarding the relationship between fairness considerations and perceived income inequality. While one's perception of income inequality manifested a strong association with the perceived availability of equal opportunities in Korea, it was rather directly related to the need-based pay norm and meritocratic belief in China. In other words, fairness of opportunities mattered more for Korean people and distributive fairness mattered for Chinese people. This result suggested that different types of fairness considerations were associated with perceived inequality in different countries.

The difference in the role of meritocratic belief in shaping perceived income inequality between the two countries was particularly interesting.

Recently, the conception of meritocracy as an indicator of social fairness was being increasingly challenged. In Korea, some criticized the ideology of meritocracy for wrongfully justifying inequality (Kim Taesim 2020; Kim Wontae 2020; Park Kwon il 2021, etc.). However, in contrast to such recent criticisms, the notion of meritocracy itself appeared to have no significant association with perceived income inequality in Korea. This was consistent with a recent finding that the effect of meritocracy on the perception of inequality was insignificant (Woo and Nam 2021). In contrast to previous studies, belief in meritocracy seemingly reinforced perceptions of inequality rather than acceptance of inequality in China. The contrast in the roles of meritocracy shown in China and Korea was also inconsistent with past findings based on Western countries (Mijs 2021) and thus required further research.

Although this study confirmed the significant and direct role of perceived income inequality in the formation of redistribution support, its relationships varied depending on the types of redistribution measures. Particularly interesting is that perceptions of income inequality did not translate into one's agreement with transferring benefits to the poor. Although the three redistribution-related items—support for a governmental role in redistribution, progressive taxation, and welfare for the poor—were closely interconnected, Korea did not show a direct relationship between support for the poor and perceived income inequality. In a similar vein, support for the less advantaged was irrelevant to the other redistribution variables in China. These results connoted that factors other than perceived income inequality and demand for redistribution formed attitudes regarding the provision of welfare to the poor.

As mentioned earlier, a few studies suggested that people's perspectives of redistribution varied depending on the potential beneficiaries of the welfare policies (Fong 2001; Cojocaru and Diagne 2014; Piff et al. 2020). These findings denoted that individual perception of what caused poverty might have affected people's attitudes towards support for the poor. This tendency was more prominent in China. Chang (2018) observed a strong tendency of valuing self-reliance for their own livelihoods in Asia. Particularly, as Chinese people tended to hold a more optimistic view of achieving a higher economic status through their own effort and hard work (Whyte 2010), they believed that the poor did not make an effort to try to be better off and thus were not deserving of government support. The World Value Surveys conducted in 1994-1999 were consistent with this notion. 58.4% of Chinese respondents answered that the poor became economically

incompetent due to laziness and lack of willpower, while the other 55 countries' average rates for this answer was only 30%. Moreover, 68% of Chinese respondents expressed that they should look after themselves and be primarily responsible for their livelihoods instead of relying on government benefits (Chang 2020). The survey results, together with this study's empirical findings, proposed that although the rise in inequality led to demand for redistribution, people's preferences for redistribution differed depending on the type of redistributive measures.

Conclusion

This paper examined the interrelationships between various factors that determine preferences for redistribution and compared the patterns of those relationships in China and Korea employing a Bayesian network method. Assuming the preference for redistribution was an outcome of a complex and comprehensive interplay of income inequality in reality, individual perceptions, and judgments about reality, as well as normative beliefs with regards to distributive justice, this study unveiled the similarities and differences in the inter-dependent structures of determinants affecting redistribution preferences. This study concluded that, whereas perceived income inequality had a direct effect on demand for redistribution, the differing fairness perceptions affected both income inequality perceptions and redistribution preferences depending on cultural and societal contexts.

This study made several contributions to the literature. First, it provided empirical evidence for the discourse on income inequality and its impact on the formation of demands for redistribution in East Asian countries, where relatively little attention has been paid. Second, its Bayesian analytical results hinted at the potentiality of the methodology in modeling a complex interrelated process related to the formation of preferences or beliefs. Such socio-psychological phenomena traditionally yielded inconsistent results that deterred gaining an accurate grasp on the formation processes and pathways. This study, taking into account indirect and non-linear relationships, corroborated that the BN approach was capable of simplifying complicated interrelationships.

Despite its achievements, this paper was not without its limitations. While this study employed various factors theoretically considered to affect preferences for redistribution, it did not include other significant variables, such as trust in government and political ideology, that were likely to

influence demand for redistribution and perceived income inequality.[5] Further studies on these factors may be necessary following this research.

One other limitation was that the data in this study was relatively outdated. Recent empirical evidence implicated an increases discrepancy between perceived income inequality and demand for redistribution in Korea (Kim et al. 2019). That is, people feel that inequality is more serious than in the past, but support a governmental role in correcting inequality less than in the past. In China, recent studies found that despite the rise in income inequality, an increasing number of people perceived the country's income distribution as fair. On the other hand, fewer people thought that there were equal opportunities in the country (Kou and Hwang 2020). As this study analyzed the ISSP 2009 data, it failed to account for such recent trends regarding income disparity and the perceptions of fairness. In this light, the examinations of recent trends of various explanatory factors affecting attitudes toward redistribution should be conducted in future studies.

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Appendix.
Descriptive statistics and correlations of Korean data (below the diagonal) and Chinese data (above the diagonal)

	CN / KR	AGE	EDUC	INCOMEE	RANK	MOVEEXP	DIATYPE	EDUOPP	JUSTPAY1	MERIT1	PAYNEED1	PAYWELL1	PAYHARD1	INCGAP1	CONFLICT1	TAX1	GOVRESINC1	HELPPOOR
	AGE		-.359***	-.079***	-.064**	.107***	.011	-.113***	-.070***	-.041*	-.009	-.012	-.006	-.019	-.051**	.045*	.036	-.017
	EDUC	-.599***		.203***	.216***	-.076***	-.065**	.118***	-.019	.065**	-.072**	.029	-.002	.009	.031	.036	.066***	.025
	INCOMEE	-.149***	.305***		.131***	.022	-.005	.030	-.059**	.037*	-.010	.049**	.047*	-.005	-.017	-.052**	-.025	-.023
	RANK	-.187***	.412***	.375***		.465***	.064**	.110***	-.204***	.026	-.028	.030	.044*	-.099**	-.012	-.075***	-.066***	-.045*
	MOVEEXP	.026	.057*	.173***	.439***		.054**	.045*	-.079***	.026	.041*	.069**	.090***	-.028	-.047*	-.035	-.030	-.041*
	DIATYPE	.020	-.041	-.023	.010	-.026		.003	-.027	.033	.002	.010	.014	-.071**	.002	.015	-.087***	-.025
	EDUOPP	-.016	.054*	.117***	.162***	.038	.115***		-.051**	-.024	-.141**	-.036	-.039*	-.115**	-.027	.010	-.144***	.111**
	JUSTPAY	.058*	-.089**	-.181***	-.210***	-.074**	-.036	-.089**		-.007	.045*	.041*	.034	.119**	.016	.152***	.124***	.016
cor	MERIT	.008	.075**	.063*	.096***	.044	-.019	-.006	-.038		.251**	.255**	.306***	.196**	.080**	.055**	.098***	.043*
	PAYNEED	.041	-.105***	-.069**	-.088**	-.027	.064*	-.126***	.045	.088**		.295**	.338***	.166**	.113**	.026	.113***	-.022
	PAYWELL	-.001	.007	.010	-.004	.001	.021	-.057*	.016	.313***	.182**		.627***	.094**	-.019	.079**	.080***	-.044*
	PAYHARD	.063*	-.040	-.021	-.010	.005	.016	.002	-.015	.302***	.233**	.632**		.107**	.026	.038*	.045*	-.015
	INCGAP	.019	-.061*	-.096***	-.135***	-.025	-.023	-.193***	.148**	.064*	.109**	.084**	.049		.138**	.141**	.352***	.055**
	CONFLICT	.038	-.024	-.060*	-.096***	-.076**	-.068**	-.123***	.103**	.075**	.107**	.111**	.112***	.209**		.037*	.122***	-.041*
	TAX	.032	-.003	-.109***	-.085**	-.012	-.035	-.115***	.098**	.041	.038	.041	.028	.252**	.141**		.132***	.048*
	GOVRESINC	-.012	-.070**	-.067**	-.081**	-.019	-.017	-.160***	.078**	.024	.123**	.024	.050	.251**	.174**	.185**		.011
	HELPPOOR	-.053*	.033	.017	-.034	-.038	-.064*	-.070**	.079**	.069**	.066*	.065*	.040	.118**	.098**	.160**	.139**	
KR	mean	43.85	3.55	2,317,064	4.52	0.27	0.20	2.56	3.55	4.11	3.40	4.10	4.07	4.34	4.23	4.42	3.92	4.10
	SD	14.62	1.385	2,092,228	1.564	2.026	0.396	1.194	0.761	0.681	0.873	0.755	0.816	0.786	0.680	0.686	0.962	1.034
CN	mean	43.34	2.18	1,613	4.59	1.05	0.14	2.73	3.66	4.11	3.82	3.96	4.01	4.27	3.79	3.92	4.03	2.76
	SD	13.91	1.299	4,226	1.968	2.261	0.348	1.064	0.762	0.689	0.755	0.821	0.804	0.710	0.895	0.773	0.797	1.252

Note: Pearson correlation. *** $p < 0.001$, **$p < 0.01$, *$p < .05$ (2-tailed).