Psychological Meaning of Moving Towards an Olive-Shaped Society: Relationship Between Expanding the Middle-Income Group and Enhancing Sense of Fairness

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Abstract

[Purpose] Expanding the middle-income group represents an important pathway for promoting common prosperity and achieving Chinese modernization. This study aims to examine the relationship between expanding the middle-income group and the sense of fairness. [Method] Data from 8 waves of the Chinese General Social Survey (CGSS) from 2010–2021 (N = 61,751) were analyzed using hierarchical linear regression models. [Results] The relationship between expanding the middle-income group and the sense of fairness is subject to dual moderation by income level and economic development level, with subjective socioeconomic status and perception of upward mobility serving as opposing mediators. Specifically, when both income and economic development levels are low, expanding the middle-income group reduces the sense of fairness, with subjective socioeconomic status exerting a significant negative mediating effect and perception of upward mobility exerting a significant positive mediating effect. When either income or economic development level becomes higher, the predictive effect of expanding the middle-income group on the sense of fairness becomes positive, the mediating effect of subjective socioeconomic status becomes positive, and the mediating effect of perception of upward mobility becomes negative. Spatiotemporal heterogeneity tests indicate that the findings possess generalizability. [Results] Overall, this study suggests that income distribution restructuring should prioritize economic development.

Full Text

Psychological Meaning of Moving Toward an Olive-Shaped Society: The Relationship Between Expanding the Middle-Income Group and Enhancing Perceived Fairness

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Abstract

Objective: Expanding the middle-income group represents a strategic priority for building an olive-shaped society, promoting common prosperity, and achieving Chinese-style modernization. While sociologists and economists have offered numerous policy recommendations on expanding this group from perspectives such as income, employment, social security, and industrial structure, psychological research on the social-psychological implications of this expansion and its impact on public perceptions of fairness remains scarce.

Methods: Integrating social comparison theory and tunnel effect theory, this study proposes a parallel mediation mechanism involving subjective socioeconomic status (SSES) and perceived upward mobility, while examining the moderating roles of income and economic development level. Data were drawn from the China General Social Survey (CGSS) across eight waves from 2010 to 2021 (N = 61,751). Participants ranged in age from 18 to 70 years (Mage = 46.20 ± 13.72). The study combined annual survey data from CGSS and utilized provincial-level data for period simulation. Given that the research model incorporated both micro- and macro-level variables, a hierarchical linear regression model was employed, with individual variables treated as Level 1 predictors and provincial variables as Level 2 predictors.

Results: The study found that: (1) the proportion of the middle-income group was approximately 48%, remaining relatively stable, indicating challenges in expanding this group; (2) expanding the middle-income group significantly enhanced perceived fairness, but only through SSES, not through perceived upward mobility—in fact, the mediating effect of perceived upward mobility was not significant; (3) at higher levels of economic development, expanding the middle-income group enhanced perceived fairness across all groups, whereas at lower

development levels, it improved fairness only among higher-income groups while potentially reducing it among lower-income groups; (4) at higher economic development levels, expanding the middle-income group enhanced fairness among higher-income individuals through SSES and among lower-income individuals through both perceived upward mobility and SSES, but potentially reduced perceived upward mobility among higher-income groups; (5) spatiotemporal heterogeneity tests indicated that the findings possess robustness and generalizability.

Limitations: First, due to temporal and data constraints, period variation was examined using provincial-level data, though CGSS lacks strong provincial representativeness. Future research should explore datasets with stronger representativeness at provincial, municipal, or county levels. Second, reliance on cross-sectional survey data precludes establishing causal relationships. Future studies should incorporate experimental or intervention designs.

Conclusions: Empirical evidence demonstrates that common prosperity should be achieved progressively. When economic development is low, equal distribution may fail to enhance perceived fairness and could even undermine motivation; however, at higher development levels, greater emphasis should be placed on equitable distribution. Therefore, contemporary China must promote sustained economic growth within a high-quality development framework while increasingly prioritizing income structure adjustment. Additionally, strategies for enhancing perceived fairness should be differentiated across groups, periods, and contexts.

Keywords: sense of fairness; social comparison; tunnel effect; middle-income group; common prosperity

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1. Introduction

A well-structured society contributes to social stability, and an "olive-shaped" society—characterized by a large middle-income group—is considered optimal (Su, 2003). China' s 14th Five-Year Plan explicitly proposes to "raise the income levels of low-income groups and expand the middle-income group," aiming to substantially enlarge the middle-income group by 2035. In response, scholars have offered numerous policy recommendations regarding income distribution, employment security, and social welfare. However, existing psychological research has primarily focused on the attitudinal and cognitive characteristics of the middle-income group (Yang, 2019; Zou, 2023; Huang, 2022), rarely examining—from a macro-level perspective on social structural change—how this policy influences public social psychology.

Perceived social fairness has been described as a "stabilizer" and "barometer" of society (Li, 2019; Yang, 2019). As an objective indicator of income distribution structure, expanding the middle-income group may be linked to the public' s

subjective sense of fairness. How exactly are these two related? Under what conditions does expanding the middle-income group enhance perceived fairness? Do the underlying mechanisms differ across groups? This study examines the relationship between macro-level expansion of the middle-income group and individuals' micro-level fairness perceptions, investigates the mechanisms underlying this relationship and its boundary conditions, and conducts descriptive and heterogeneity analyses across periods and regions.

2.1 Expanding the Middle-Income Group and Perceived Fairness

Some studies have found that inequality undermines perceived social fairness (Reyes & Gasparini, 2022), whereas others show that inequality does not necessarily reduce fairness perceptions (Trump, 2020). Research in China indicates that the public tends to view current resource distribution as relatively fair (Huai, 2009; Whyte, 2010), with overall fairness perceptions gradually improving (Li, 2019; Wei & colleagues, 2014).

These inconsistent—or even counterintuitive—findings may stem partly from limitations in the traditional inequality research paradigm, which emphasizes distributional balance between rich and poor while neglecting the structural reasonableness of distribution. Although expanding the middle-income group is closely related to reducing inequality, the two are fundamentally different: expanding the middle-income group focuses on optimizing the income distribution structure itself, whereas reducing inequality emphasizes narrowing income gaps. Neither extreme polarization nor absolute egalitarianism constitutes an ideal distribution model, nor do they necessarily enhance perceived fairness. Building an "olive-shaped" social structure with a larger middle-income group may represent a more effective pathway to promoting social stability and fairness. Accordingly, we propose:

Hypothesis 1: Expanding the middle-income group significantly enhances perceived fairness.

2.2 Mediating Mechanisms: Subjective Socioeconomic Status and Perceived Upward Mobility

Drawing on social comparison theory and tunnel effect theory, this study proposes mediating pathways linking expansion of the middle-income group to perceived fairness. Social comparison theory suggests that people tend to compare themselves with those around them or with similar groups (Wood, 1996). Such comparisons may trigger upward comparisons driven by self-improvement motives—leading to feelings of relative deprivation—or downward comparisons driven by self-enhancement motives, generating a sense of relative superiority (Zhang, Liu, & Xiang, 2023).

Therefore, as the middle-income group expands, more individuals may enter higher-income categories, experiencing improvements in both absolute and relative status, thereby enhancing subjective socioeconomic status and, in turn, perceived fairness. Prior research has shown that positive social comparisons can improve fairness perceptions (Gao, 2020).

The tunnel effect (Hirschman & Rothschild, 1973) envisions a two-lane tunnel in which both lanes are completely jammed. When vehicles in the adjacent lane begin to move, individuals in the stationary lane experience heightened optimism, believing their own lane will soon move as well. Similarly, expansion of the middle-income group may signal to lower-income individuals that upward mobility is becoming more attainable, thereby increasing perceived upward mobility and enhancing perceived fairness. Empirical studies have shown that expectations of upward mobility can significantly boost fairness perceptions (Zheng & Sun, 2016).

Thus, expansion of the middle-income group may enhance perceived fairness through two parallel mediating mechanisms—subjective socioeconomic status and perceived upward mobility. We therefore propose:

Hypothesis 2.1: The expansion of the middle-income group enhances perceived fairness through the mediating effect of subjective socioeconomic status.

Hypothesis 2.2: The expansion of the middle-income group enhances perceived fairness through the mediating effect of perceived upward mobility.

2.3 Boundary Conditions: Income and Level of Economic Development

According to social structural determinism theory (Ng & Allen, 2005), individuals' perceptions of inequality are influenced by self-interest motives: members of advantaged groups tend to maintain vested interests and view existing distribution as legitimate, whereas members of disadvantaged groups are more likely to perceive current distribution as unjust (Xu, He, & Hu, 2020). During the process of expanding the middle-income group, higher-income individuals—as the relatively advantaged group—may report higher levels of perceived fairness. Two mechanisms may operate. First, based on social comparison theory, as more individuals enter the middle-income group, those in higher-income groups may experience stronger feelings of relative superiority, enhancing perceived fairness through elevated subjective socioeconomic status; meanwhile, lower-income individuals may experience heightened relative deprivation, reducing both subjective socioeconomic status and perceived fairness. Second, the tunnel effect suggests that lower-income individuals may feel more hopeful about upward mobility when observing others moving into higher-income categories, which increases perceived fairness; in contrast, higher-income groups may experience heightened fears of downward mobility and greater perceived constraints on further

upward mobility, thus reducing perceived fairness. These two mechanisms function in opposite directions, determining whether expanding the middle-income group strengthens or weakens perceived fairness among people at different income levels. Overall, structural determinism suggests that the higher one' s income, the stronger the positive effect of expanding the middle-income group on perceived fairness. Accordingly, we propose:

Hypothesis 3.1: The higher individuals' income, the greater the positive effect of expanding the middle-income group on their perceived fairness.

Hypothesis 3.2: For lower-income individuals, expanding the middle-income group enhances perceived fairness through increased perceived upward mobility and reduces it through decreased subjective socioeconomic status; for higher-income individuals, expanding the middle-income group enhances perceived fairness through increased subjective socioeconomic status and reduces it through decreased perceived upward mobility.

The level of economic development also moderates the relationship between expanding the middle-income group and perceived fairness. General Secretary Xi Jinping has emphasized the need to "enlarge the cake" while also "dividing the cake well." When economic development is higher and the "cake" is larger, more equitable distribution generally produces stronger perceptions of fairness. Thus, the higher the level of economic development, the stronger the positive effect of expanding the middle-income group on perceived fairness. Two counteracting mechanisms may operate. First, drawing on social comparison theory, when economic development is low and lower-income groups constitute the majority, comparisons with newly emerging middle-income groups may intensify feelings of relative deprivation, reducing subjective socioeconomic status and perceived fairness on average. When economic development is higher and higher-income groups form the majority, comparisons with middle-income groups are more likely to produce feelings of superiority, increasing subjective socioeconomic status and perceived fairness. Second, based on the tunnel effect (Hirschman & Rothschild, 1973), in early stages of economic development—when levels are low and lower-income individuals constitute the majority—expansion of the middle-income group may increase perceived opportunities for upward mobility, thereby enhancing fairness perceptions. However, once economic development reaches a certain level and higher-income groups become predominant, fears of downward mobility may become more salient, decreasing both perceived upward mobility and fairness. Accordingly, we propose:

Hypothesis 4.1: The higher the level of economic development, the stronger the positive effect of expanding the middle-income group on perceived fairness.

Hypothesis 4.2: When economic development is low, expanding the middle-income group enhances perceived fairness by increasing perceived upward mobility and reduces it by lowering subjective socioeconomic status; when economic development is high, expanding the middle-income group enhances fairness by increasing subjective socioeconomic status and reduces it by lowering perceived

upward mobility.

Income level and economic development level may function as dual moderators. When economic development is low and the "cake" is small, resources are limited and competition is intense; under such circumstances, expanding the middle-income group may primarily benefit higher-income individuals who occupy advantageous positions. When economic development is high and the "cake" is large, resources are more abundant and competition is less intense, facilitating mutual gains across social groups. Thus, income and economic development may exhibit an "OR" relationship: as long as one of the two conditions is met—high economic development or high income—expanding the middle-income group will enhance perceived fairness. If both conditions are low, the effect is weakest; if both are high, the effect is strongest. Again, two counteracting mechanisms operate. First, based on social comparison theory, when economic development is high, individuals who enter higher-income groups may experience stronger feelings of superiority, enhancing fairness perceptions via higher subjective socioeconomic status; meanwhile, low-income individuals may experience stronger feelings of deprivation, lowering fairness via reduced subjective socioeconomic status. Second, according to the tunnel effect, expanding the middle-income group may give lower-income individuals greater hope of narrowing income gaps and moving upward, thereby enhancing fairness. Yet, if economic development is accompanied by rising inequality (Kelley & Evans, 2017), lower-income individuals may feel anger. Under such conditions, efforts to reduce inequality through expanding the middle-income group may substantially increase their perceived upward mobility, thus improving fairness perceptions. Additionally, when economic development is high and social group boundaries become more rigid (Kelley & Evans, 2017), structural adjustments may heighten downward mobility fears among higher-income groups, reducing both perceived upward mobility and fairness. Accordingly, we propose:

Hypothesis 5.1: When economic development is low, expanding the middle-income group has a stronger positive effect on perceived fairness among higher-income individuals; when economic development is high, expanding the middle-income group enhances perceived fairness across all income groups.

Hypothesis 5.2: When economic development is high, expanding the middle-income group more strongly enhances perceived fairness among higher-income individuals by increasing their subjective socioeconomic status, but also more strongly reduces fairness by decreasing their perceived upward mobility; it also more strongly enhances fairness among lower-income individuals by increasing their perceived upward mobility, but more strongly reduces fairness by lowering their subjective socioeconomic status.

2.4 Theoretical and Analytical Framework

Drawing on social comparison theory and the tunnel effect, this study develops a theoretical framework to examine the mechanisms of subjective socioeconomic status and perceived upward mobility, as well as the boundary conditions introduced by income and economic development levels (see Figure 1 [Figure 1: see original paper]). Given China' s rapid development pace and substantial regional variation, we also conduct descriptive and heterogeneity analyses across periods and regions to assess the generalizability of our findings.

3.1 Survey Sample

Data for this study were drawn from the China General Social Survey (CGSS), a nationally representative household-based random sampling survey administered by Renmin University of China. To obtain sufficient provincial-level observations, we combined eight waves of CGSS data collected in 2010, 2011, 2012, 2013, 2015, 2017, 2018, and 2021. Considering potential influences of cognitive ability on survey responses, we restricted the analytical sample to respondents aged 18–70. Because calculating the proportion of the middle-income group required income information, we excluded respondents without household income data, those who reported "unclear," or those who failed to provide a specific income value. We further excluded cases with missing values on key study variables. The final sample included 61,751 respondents from 31 provinces (excluding Hong Kong, Macao, and Taiwan). Among them, 29,904 were men (48.43%) and 31,847 were women (51.57%); 23,548 lived in rural areas (38.13%) and 38,203 in urban areas (61.87%). Characteristics of the full sample and period-specific subsamples are presented in Table 1 .

3.2.1 Independent Variable

The independent variable was the proportion of the middle-income group. To ensure comparability across periods and regions, we adopted a relative standard. Li (2022) argued that an absolute standard reflects economic growth trends and is more suitable for developing or middle- and low-income countries, whereas a relative standard reflects changes in income inequality and is more appropriate for developed or high-income countries. Given that China has fully entered a moderately prosperous stage and that this study focuses on narrowing income gaps, the relative standard was more suitable. Following the OECD (2019) definition, individuals with annual household income between 0.75 and 2 times the provincial median income were categorized as middle-income; those below 0.75 times the median were categorized as low-income, and those above 2 times the median as high-income. Annual proportions of low-, middle-, and high-income groups were computed for each province.

3.2.2 Dependent Variable

The dependent variable was perceived social fairness, measured in CGSS using a single item: "Overall, do you think today' s society is fair or unfair?" Responses ranged from 1 = completely unfair to 5 = completely fair. "Don' t know" and "refuse to answer" were coded as missing. Higher scores indicated higher perceived fairness. This single-item measure has been widely used in other national surveys (e.g., Chinese Social Conditions Survey; Chinese Social Mentality Survey). Although debate exists about whether a single item can fully capture fairness perceptions, prior methodological research on subjective socioeconomic status suggests that a single-item measure may yield more stable results than multi-item scales (Diemer et al., 2013; Hoff & Laursen, 2019).

3.2.3 Mediators

The mediators were subjective socioeconomic status and perceived upward mobility. Subjective socioeconomic status was measured using a 10-rung ladder (1 = lowest; 10 = highest) in response to the question: "Where would you place yourself at present?" Future subjective socioeconomic status was measured with the same ladder using the item: "Where do you think you will be in 10 years?" Perceived upward mobility was calculated as the difference between future and current subjective socioeconomic status, with positive values indicating upward mobility and negative values indicating downward mobility.

3.2.4 Moderators

Two moderating variables were included: income and level of economic development. Income was measured as annual household income (log-transformed). Economic development was measured using the previous year' s provincial per capita GDP, drawn from the *China Statistical Yearbook*, and log-transformed; higher values indicated higher levels of economic development.

3.2.5 Control Variables

Control variables included both individual-level and provincial-level variables. Individual-level controls included gender, age, age squared, place of residence, years of education, minority status, Communist Party membership, self-rated health, employment status, and marital status. Provincial-level controls included variables potentially associated with both the proportion of the middle-income group and perceived fairness. Following Zhu (2024), we included the

share of social security expenditures in public finance spending (including social insurance, social assistance, and social welfare), which reflects the level of transfer payments that may benefit low-income groups and increase the likelihood of entering the middle-income category. We also included the share of tertiary-industry value added in GDP (post-industrialization level), the share of employees in urban private enterprises among total urban employees (marketization level), and the proportion of urban permanent residents in the total population (urbanization level), all of which indicate a province' s capacity to provide middle-income job opportunities. Additional controls included the sex ratio (gender structure) and the total dependency ratio (age structure), as both may affect the difficulty of expanding the middle-income group (Sun, 2024). Considering that provincial GDP growth rate and higher-education enrollment ratio (relative to same-year graduates) may also influence the size of the middle-income group and fairness perceptions (Zhang, 2024), these variables were added as controls. All macro-level data were taken from the previous year' s *China Statistical Yearbook*. Continuous variables were mean-centered, and categorical variables were dummy-coded.

3.3 Analytical Strategy

We used R 4.4.2 for all statistical analyses. Because the analytical model incorporated both micro-level and macro-level variables, we first estimated an unconditional (null) model including only the dependent variable to calculate the intra-class correlation coefficient (ICC). The ICC(1) was 0.029, below the commonly referenced threshold of 0.059. Nevertheless, given the theoretical distinction between individual-level and provincial-level variables, we proceeded with hierarchical linear modeling (HLM). Individual-level variables were treated as Level 1 predictors, and provincial-level variables as Level 2 predictors. Because the primary focus of this study was on fixed effects, we specified a random-intercept model without random slopes. The model can be expressed as follows:

Level 1 (Individual level):

$$Y_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + ... + \beta_{pj}X_{pij} + r_{ij}$$

Level 2 (Provincial level):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W_{1j} + ... + \gamma_{0q}W_{qj} + u_j$$

Here, Y_{ij} represents the fairness score of individual i in province j; β_{0j} represents the mean level of perceived fairness in province j (random intercept); β_{1j} through β_{pj} represent the fixed-effect coefficients for the p individual-level predictors; r_{ij} is the Level 1 error term, assumed to follow a normal distribution with mean 0 and variance σ^2. γ_{00} denotes the grand mean of perceived fairness; γ_{01} through γ_{0q} represent the fixed-effect coefficients for the q provincial-level predictors; and u_j is the Level 2 random effect, assumed to follow a normal distribution with mean 0 and variance τ^2.

3.4 Common Method Bias

Because perceived social fairness, subjective socioeconomic status, and perceived upward mobility were all self-reported variables, the possibility of common method bias warranted examination. We conducted Harman' s single-factor test by entering the three variables into an exploratory factor analysis. The first factor explained 3.08% of the variance, far below the critical threshold of 40%, indicating that common method bias was not a concern in this study.

4.1 Descriptive Analysis: Temporal and Regional Variations in the Proportion of the Middle-Income Group and Perceived Fairness

The proportion of the middle-income group in China was approximately 48% (Figure 2 [Figure 2: see original paper]), consistent with other studies using CGSS data under similar criteria (Li et al., 2023; Chen & Chen, 2024). Across the eight survey waves from 2010 to 2021, the annual provincial proportion of the middle-income group fluctuated but remained generally stable, suggesting that expanding the middle-income group—when defined using a relative standard—is challenging. On average, perceived fairness among the public was moderately high, with a mean of 3.09 ± 1.05. Over time, perceived fairness showed an upward trend, reaching its highest level in 2021 (3.42 ± 0.96). Examining trends jointly, the middle-income proportion and fairness levels moved nearly in parallel during 2010–2012 and 2015–2021, but diverged during 2012–2015, particularly in 2013 when the middle-income share peaked while perceived fairness was relatively low.

Regional comparisons (Figure 3 [Figure 3: see original paper]) show that the proportion of the middle-income group across eastern, central, and western regions ranged between 40% and 55%, fluctuating around 48% without a clear upward or downward trend. Between 2011 and 2018, the eastern region had a higher proportion of middle-income residents than the central region, which in turn was higher than the western region. Perceived fairness increased overall across all regions, with the central and western regions reporting higher fairness levels than the eastern region, although regional differences narrowed over time.

Overall, descriptive evidence suggests that trends in the proportion of the middle-income group and perceived fairness are not fully aligned. Specifically, the proportion of the middle-income group remained relatively stable while perceived fairness increased; and although the eastern region had a higher share of middle-income residents, the central and western regions reported higher perceived fairness. However, descriptive analysis alone cannot identify causal relationships. To enhance robustness, we next used the full sample to estimate hierarchical linear regression models linking provincial middle-income share to individual fairness, followed by analyses of temporal and spatial heterogeneity.

4.2.1 Relationship Between Middle-Income Proportion and Perceived Fairness

As shown in Table 2 (Model 1), after controlling for individual- and provincial-level variables, provinces with a higher proportion of middle-income residents reported higher levels of perceived fairness (B = 0.435, SE = 0.077, 95% CI = [0.284, 0.585], $p < 0.001$). A 10% increase in the provincial middle-income share was associated with a 0.044-point increase in perceived fairness. These results indicate that expanding the middle-income group significantly enhances perceived fairness, supporting Hypothesis 1.

4.2.2 Parallel Mediation Effects of Subjective Socioeconomic Status and Perceived Upward Mobility

Using Hayes' s (2013) PROCESS macro (bootstrap, 100,000 samples, Model 4), we tested mediation effects (Table 2, Models 2–4; Figure 4 [Figure 4: see original paper]). At the 95% confidence level, the middle-income proportion, subjective socioeconomic status, and perceived upward mobility all significantly predicted perceived fairness (Middle-income proportion: B = 0.403, SE = 0.076, 95% CI = [0.255, 0.551], $p < 0.001$; Subjective SES: B = 0.103, SE = 0.003, 95% CI = [0.098, 0.109], $p < 0.001$; Perceived upward mobility: B = 0.023, SE = 0.003, 95% CI = [0.017, 0.029], $p < 0.001$). The middle-income proportion significantly predicted subjective socioeconomic status (B = 0.316, SE = 0.115, 95% CI = [0.090, 0.542], $p = 0.006$), but did not significantly predict perceived upward mobility (B = −0.102, SE = 0.095, 95% CI = [−0.289, 0.085], $p = 0.287$).

Regarding mediation, the mediating effect of subjective socioeconomic status was significant and positive (B = 0.033, SE = 0.011, 95% CI = [0.013, 0.056], $p < 0.001$), accounting for 7.58% of the total effect. The mediating effect of perceived upward mobility was not significant (B = −0.002, SE = 0.002, 95% CI = [−0.006, 0.002], $p = 0.226$). Thus, expansion of the middle-income group enhanced fairness primarily through increasing subjective socioeconomic status rather than perceived upward mobility, supporting Hypothesis 2.1 but not Hypothesis 2.2.

4.3.1 Moderating Effects on the Total Effect

To test whether income moderated the relationship between the proportion of the middle-income group and perceived fairness, we constructed an interaction term between these two variables. As shown in Table 3 (Model 1), income significantly moderated the relationship at the 95% confidence level (B = 0.352, SE = 0.058, 95% CI = [0.239, 0.465], $p < 0.001$). As illustrated in Figure 5a [Figure

5: see original paper], as income increased, the effect of the middle-income proportion on perceived fairness shifted from significantly negative to significantly positive and continued to strengthen. These findings support Hypothesis 3.1.

Similarly, constructing an interaction term between the middle-income proportion and per capita GDP revealed a comparable moderation effect (Table 3, Model 2). At the 95% confidence level, per capita GDP significantly moderated the relationship (B = 0.814, SE = 0.157, 95% CI = [0.506, 1.121], $p < 0.001$). As shown in Figure 5b, as provincial per capita GDP increased, the effect of the middle-income proportion on perceived fairness shifted from significantly negative to significantly positive and increased in magnitude. These results support Hypothesis 4.1.

4.3.2 Moderating Effects on the Mediation Pathways

We next examined whether income moderated the parallel mediation effects (bootstrap = 100,000, Model 7). As shown in Table 3 (Model 3), at the 95% confidence level, the interaction between the middle-income proportion and income significantly predicted subjective socioeconomic status (B = 0.951, SE = 0.088, 95% CI = [0.779, 1.123], $p < 0.001$) but significantly negatively predicted perceived upward mobility (B = −0.306, SE = 0.073, 95% CI = [−0.448, −0.164], $p < 0.001$).

Specifically, as income increased, the effect of the middle-income proportion on subjective socioeconomic status shifted from significantly negative to significantly positive (Figure 5c), whereas the effect on perceived upward mobility shifted from significantly positive to significantly negative (Figure 5e). In terms of mediation effects (Table 4), for higher-income groups, expanding the middle-income group increased perceived fairness by elevating subjective socioeconomic status but decreased fairness by lowering perceived upward mobility. For lower-income groups, expanding the middle-income group increased fairness by enhancing perceived upward mobility but decreased fairness by lowering subjective socioeconomic status. These results support Hypothesis 3.2.

We then tested whether per capita GDP moderated the parallel mediation effects (bootstrap = 100,000, Model 7). The results mirrored those for income (Table 3, Model 4). At the 95% confidence level, the interaction between the middle-income proportion and per capita GDP significantly positively predicted subjective socioeconomic status (B = 1.877, SE = 0.235, 95% CI = [1.416, 2.338], $p < 0.001$) but significantly negatively predicted perceived upward mobility (B = −0.567, SE = 0.195, 95% CI = [−0.949, −0.184], p = 0.004).

As per capita GDP increased, the effect of the middle-income proportion on subjective socioeconomic status shifted from significantly negative to significantly positive (Figure 5d), while its effect on perceived upward mobility shifted from positive to significantly negative (Figure 5f). In terms of mediation effects (Ta-

ble 4), when per capita GDP was high, expanding the middle-income group enhanced fairness by increasing subjective socioeconomic status but decreased fairness by lowering perceived upward mobility. When per capita GDP was low, expanding the middle-income group enhanced fairness by increasing perceived upward mobility but decreased fairness by lowering subjective socioeconomic status. These findings support Hypothesis 4.2.

4.3.3 Moderating Effects of Income and Economic Development on the Total Effect (Three-Way Interaction)

We further constructed a three-way interaction term among the middle-income proportion, income, and per capita GDP. As shown in Table 3 (Model 5), the three-way interaction term was significantly negative (B = −0.236, SE = 0.117, 95% CI = [−0.466, −0.007], p = 0.043), indicating a dual moderating effect of income and economic development. Using polynomial surface modeling (Zhou et al., 2023), we generated a three-dimensional plot illustrating the dual moderation (Figure 6a [Figure 6: see original paper]). When both per capita GDP and income were low, the effect of the middle-income proportion on perceived fairness was more negative; when either per capita GDP or income was high, the effect became increasingly positive.

In other words, a high level of either income or economic development was sufficient for expansion of the middle-income group to increase perceived fairness; when both were low, expanding the middle-income group decreased fairness. These results support Hypothesis 5.1.

4.3.4 Moderating Effects of Income and Economic Development on the Mediation Pathways (Three-Way Interaction)

Constructing a three-way interaction term among the middle-income proportion, income, and per capita GDP (bootstrap = 100,000, Model 11), we found that, at the 95% confidence level, the three-way interaction term did not significantly predict subjective socioeconomic status (B = −0.086, SE = 0.178, 95% CI = [−0.436, 0.264], p = 0.631), but significantly negatively predicted perceived upward mobility (B = −0.553, SE = 0.147, 95% CI = [−0.842, −0.264], p < 0.001). According to the dual-moderation plot (Figure 6b [Figure 6: see original paper]), expanding the middle-income group significantly increased perceived upward mobility when per capita GDP was high and income was low, or when per capita GDP was low and income was high; however, when both were high or both were low, expanding the middle-income group significantly decreased perceived upward mobility.

The dual moderated parallel mediation results (Table 4) showed that when per capita GDP was low, expanding the middle-income group decreased fairness

among lower-income individuals by lowering their subjective socioeconomic status, but increased fairness among higher-income individuals by elevating their subjective socioeconomic status. When per capita GDP was high, expanding the middle-income group increased fairness among lower-income individuals by enhancing their perceived upward mobility but decreased fairness among higher-income individuals by reducing their perceived upward mobility. At the same time, expanding the middle-income group increased fairness among higher-income individuals by raising their subjective socioeconomic status—a stronger effect than when per capita GDP was low, as indicated by the non-overlapping confidence intervals.

Taken together, the results indicate that when per capita GDP was higher, expanding the middle-income group increased fairness among higher-income individuals primarily by increasing subjective socioeconomic status, but decreased fairness by lowering perceived upward mobility; and increased fairness among lower-income individuals by enhancing perceived upward mobility, without lowering fairness by reducing subjective socioeconomic status. Conversely, when per capita GDP was lower, expanding the middle-income group decreased fairness among lower-income individuals by reducing subjective socioeconomic status. These findings provide partial support for Hypothesis 5.2.

4.4 Temporal and Spatial Heterogeneity Analysis

To assess the generalizability of the theoretical framework and empirical findings, we conducted temporal and spatial heterogeneity analyses based on the full set of results. First, we constructed interaction terms between survey period (dummy coded) and the middle-income proportion. As shown in Appendix Figure 1, from 2010 to 2012, the middle-income proportion did not significantly predict perceived fairness; however, from 2013 to 2018, the middle-income proportion significantly and positively predicted perceived fairness. Based on these results, we divided the sample into two time periods—2010–2012 and 2013–2021—for heterogeneity analysis. Additionally, following conventional classification of eastern, central, and western regions, we performed region-specific heterogeneity analyses. The results for total effects, mediation effects, and moderation effects are presented in Table 5 .

Table 5 shows that the total effect of the middle-income proportion on perceived fairness primarily held for the 2013–2021 period and for the eastern region. The parallel mediation effects of subjective socioeconomic status and perceived upward mobility were consistent with the full-sample results only during 2013–2021. In the eastern region, although results were not identical to the full sample, expanding the middle-income group increased subjective socioeconomic status and decreased perceived upward mobility—patterns similar to those observed under conditions of high per capita GDP. In the central region, however, the mediation mechanisms were reversed: expanding the middle-income group

decreased subjective socioeconomic status and increased perceived upward mobility—patterns consistent with those found under conditions of low economic development. These results indicate that the robustness of the total effect and parallel mediation effects depends on the overall level of socioeconomic development in specific temporal and spatial contexts. Relative to 2010–2012 and the western region, the period from 2013 to 2021 and the eastern region exhibited higher levels of development, indirectly supporting the moderating role of economic development in both total and mediation effects.

Regarding the moderated mediation effects, Appendix Table 1 presents detailed results for the parallel mediation effects at $\pm$1 SD levels of income and economic development, and Table 6 summarizes pathways with significant effects. Two contrasting mechanisms emerged. First, for higher-income individuals, expanding the middle-income group consistently increased fairness by raising subjective socioeconomic status, particularly under higher levels of economic development or in more developed temporal and spatial contexts (e.g., 2013–2021 and the eastern region). For lower-income individuals, expanding the middle-income group decreased fairness in the central and western regions by reducing subjective socioeconomic status. Second, for lower-income individuals, expanding the middle-income group increased fairness by enhancing perceived upward mobility primarily in the central region. In contrast, for higher-income individuals, expanding the middle-income group decreased fairness by lowering perceived upward mobility mainly under high economic development conditions.

Overall, when interpreting results within a framework that views 2010–2012 or the western region as economically less developed, 2013–2021 or the eastern region as more developed, and the central region as intermediate, the temporal and spatial heterogeneity patterns align closely with the full-sample findings. These results provide additional support for the robustness and generalizability of the moderated parallel mediation effects.

5.1 Major Findings

Using data from the 2010–2021 China General Social Survey, this study examined the relationship between expanding the middle-income group and perceived fairness, proposing parallel mediating roles of subjective socioeconomic status and perceived upward mobility, as well as moderating roles of income and economic development level. Temporal and spatial heterogeneity analyses further demonstrated the robustness and generalizability of the findings. The major findings are summarized below.

5.1.1 Expanding the Middle-Income Group and Enhancing Perceived Fairness The proportion of the middle-income group in this study was approximately 48%, consistent with other CGSS-based studies adopting the same standard (Li et al., 2023; Chen & Chen, 2024). Under an "olive-shaped" dis-

tribution structure, the middle-income proportion can reach 60% (Li & Ren, 2023), suggesting that China' s current middle-income group remains insufficient. Moreover, the proportion remained largely stable from 2010 to 2021, indicating that expanding the middle-income group—when defined by a relative standard—is challenging. Income inequality narrows only gradually (Li et al., 2019). As general income levels rise, the median income also increases, making it difficult to expand the middle-income group without improving the income distribution structure (Li, 2020). Rising costs associated with housing, education, healthcare, and elderly care further constrain wealth accumulation among wage earners, limiting middle-income group growth (Yang et al., 2016). Therefore, targeted policy interventions are necessary at the current stage to achieve the national goal of doubling the middle-income group by 2035 (Liu et al., 2022).

It is noteworthy that the above proportion represents the annual provincial average. At the provincial level, expanding the middle-income group significantly enhanced perceived fairness. As China has transitioned into a middle- to high-income country, the government has increasingly emphasized the rationality of the income distribution structure and introduced multiple policies aimed at expanding the middle-income group (Han, 2022). As income distribution becomes more reasonable, public perceptions of fairness may continue to improve.

5.1.2 Parallel Mediation of Subjective Socioeconomic Status and Perceived Upward Mobility This study examined the parallel mediating effects of subjective socioeconomic status and perceived upward mobility, revealing important differences between these mechanisms. First, expanding the middle-income group increased fairness primarily through subjective socioeconomic status and did not significantly predict perceived upward mobility. This suggests that expanding the middle-income group enhances fairness mainly by improving subjective socioeconomic status through social comparison processes. Many scholars have observed that subjective socioeconomic status often remains low despite rising income, with social comparison theory viewed as a key explanation (Gao, 2018). The present study shows that social comparison theory not only explains low subjective socioeconomic status but also points to a pathway for improvement—optimizing the income distribution structure. Once an "olive-shaped" society is formed, both subjective socioeconomic status and perceived fairness may increase.

Furthermore, moderated mediation results indicate that the mechanisms of social comparison and the tunnel effect operate in opposition, with one mechanism buffering the negative effects of the other. For example, among lower-income individuals or under low economic development, the positive mediating effect of perceived upward mobility can buffer the negative mediating effect of subjective socioeconomic status; among higher-income individuals or under high economic development, the positive mediating effect of subjective socioeconomic status can buffer the negative mediating effect of perceived upward mobility.

5.1.3 Dual Moderation by Income and Economic Development Moderation analyses showed that expanding the middle-income group increased subjective socioeconomic status and perceived fairness among higher-income individuals or in regions with higher economic development, primarily by enhancing relative superiority. However, three-way interaction analyses revealed a simultaneous negative pathway among higher-income groups under high economic development: expanding the middle-income group decreased fairness by lowering their perceived upward mobility. This suggests that at advanced development stages, higher-income groups have a stronger tendency to maintain their socioeconomic position. Although Kuznets (1955) proposed that inequality naturally declines with development, Piketty (2014) showed using cross-national data that economic growth may instead exacerbate inequality. One possible reason is that higher-income groups are increasingly motivated to preserve their socioeconomic advantages (Ng & Allen, 2005). Thus, when expanding the middle-income group under high development, policymakers should also attend to downward mobility anxiety among higher-income groups.

For lower-income individuals or in regions with lower economic development, expanding the middle-income group more easily triggered relative deprivation, lowering fairness by reducing subjective socioeconomic status. This highlights a potential risk: when income or development levels are low, expanding the middle-income group may have unintended negative effects. In such contexts, prioritizing economic development and income growth is essential. The three-way interaction results also showed that under high economic development, expanding the middle-income group increased fairness across all income groups; under low development, fairness increased only among higher-income individuals but decreased among lower-income individuals. Importantly, contrary to Hypothesis 5.2, empirical results revealed that under low development, expanding the middle-income group reduced fairness among lower-income individuals by lowering subjective socioeconomic status, whereas under high development, the mediating effect of subjective socioeconomic status was significantly positive. This is consistent with evidence that economic development itself raises subjective socioeconomic status (Zhang, 2023). Compared with expectations, this outcome is more encouraging, indicating that economic development and income redistribution together benefit individuals across income groups.

On the other hand, expanding the middle-income group increased perceived upward mobility—and in turn fairness—among lower-income individuals or under lower development levels, consistent with the tunnel effect. Moreover, three-way interaction analyses showed that when economic development was high, expanding the middle-income group had an even stronger positive effect on perceived upward mobility and fairness among lower-income individuals. This suggests that for lower-income groups, perceived upward mobility can buffer the negative effects of low subjective socioeconomic status on fairness. Enhancing upward mobility channels is therefore particularly important for improving fairness among lower-income populations.

5.2 Theoretical Contributions

First, from a social psychological perspective, this study provides an empirical interpretation of the psychological implications of moving toward an olive-shaped society, offering a theoretical lens for understanding the meaning and value of the common prosperity agenda at the psychological level.

Second, by integrating social comparison theory and the tunnel effect, this study simultaneously examined the mediating roles of subjective socioeconomic status and perceived upward mobility and identified a pattern of antagonistic effects between the two mediators—an innovative theoretical integration.

Third, this study extends both theories. Regarding social comparison theory, findings show that relative comparison produces not only relative deprivation among lower-income groups but also relative superiority among higher-income groups. Concerning the tunnel effect, this study demonstrates how the impact of expanding the middle-income group differs across socioeconomic contexts, reinforcing the dynamic nature of the tunnel effect.

5.3 Practical Implications

The findings suggest that promoting common prosperity requires sensitivity to developmental stages. When the "cake" is still small, equal distribution may not promote fairness and may even undermine motivation and social development. When the "cake" becomes larger, however, policy focus should shift from enlarging the cake to dividing it well. Before the 16th National Congress of the Communist Party of China (CPC), distribution policies prioritized efficiency, whereas recent development strategies emphasize fairness (Zhang, 2024). In 2010, China' s per capita GDP surpassed USD 4,000, entering the ranks of middle-income countries (Liu, 2013). At the current stage, deepening income distribution reform and striving to build an olive-shaped society hold important social and psychological significance.

The study provides several implications for social governance and advancing common prosperity. First, sustained economic growth is a prerequisite for expanding the middle-income group, particularly as China transitions to high-quality development. Optimizing industrial structure, developing high-end technologies, and resolving bottleneck issues will be key. Second, China' s income distribution strategy should shift from "letting some people get rich first" to "solidly promoting common prosperity," making "common" the central goal—expanding the middle-income group to optimize the distribution structure, narrow income gaps, and prevent polarization. Third, development priorities across regions should remain differentiated: economically less developed regions should continue prioritizing growth, while more developed regions should place greater

emphasis on fair distribution. Finally, policies should focus particularly on lower-income groups—enhancing their perceived upward mobility, improving mobility channels, reducing relative poverty, and using future expectations to buffer feelings of relative deprivation. At the same time, for higher-income groups, policy communication should emphasize that common prosperity is about shared prosperity, not "robbing the rich to help the poor."Encouraging higher-income groups to adopt positive-sum beliefs and recognize that expanding the middle-income group ultimately benefits all can help alleviate downward mobility anxiety.

5.4 Limitations and Future Directions

This study has several limitations. First, due to temporal and data constraints, period variation was examined using provincial-level data, though CGSS lacks strong provincial representativeness. Future research should explore datasets with stronger representativeness at provincial, municipal, or county levels. Second, reliance on cross-sectional survey data precludes establishing causal relationships. Future studies should incorporate experimental or intervention-based research designs.

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6. Conclusion

Drawing on eight waves of data from the 2010–2021 China General Social Survey, this study found that the relationship between expanding the middle-income group and perceived fairness was jointly moderated by income and economic development level. Subjective socioeconomic status and perceived upward mobility served as antagonistic mediators: when income and economic development levels were low, expanding the middle-income group decreased perceived fairness, with subjective socioeconomic status showing a significant negative mediating effect and perceived upward mobility a significant positive mediating effect. When income or economic development was high, the predictive effect on fairness became significantly positive, with the mediating effect of subjective socioeconomic status turning positive and that of perceived upward mobility turning negative. Temporal and spatial heterogeneity analyses further supported the generalizability of the findings. Overall, results suggest that adjustments to the income distribution structure should prioritize economic development, and that moving toward an olive-shaped society is more conducive to enhancing fairness once economic development has reached a sufficient level. In short, "common prosperity" built on the foundation of "prosperity" is more likely to improve perceived fairness.

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Figure Legends

Figure 1. Theoretical Framework
Figure 2. Temporal Trends in Middle-Income Proportion and Perceived Fairness (2010–2021)
Figure 3. Regional Trends in Middle-Income Proportion and Perceived Fairness (2010–2021)
Figure 4. Parallel Mediation Effects of Subjective Socioeconomic Status and Perceived Upward Mobility

Figure 5. Johnson–Neyman Plots for Moderating Effects of Income and Economic Development

Note. Panels a and b show that as income or per capita GDP increases, the effect of the middle-income proportion on perceived fairness shifts from significantly negative to significantly positive. Panels c and d show that as income or per capita GDP increases, the effect of the middle-income proportion on subjective socioeconomic status shifts from significantly negative to significantly positive. Panels e and f show that as income or per capita GDP increases, the effect on perceived upward mobility shifts from significantly positive to significantly negative.

Figure 6. Surface Response Plots for the Dual Moderating Effects of Income and Economic Development

Note. The red surface represents the effect of the middle-income proportion on perceived fairness; the orange surface shows the upper bound of the 95% confidence interval; the blue surface shows the lower bound of the 95% confidence interval; the gray surface indicates regions where the effect is not statistically significant within the 95% confidence interval.

Appendix Figure 1. Regression Coefficients of the Middle-Income Proportion Across Different Periods.

Figures

Figure 1. Theoretical Framework

Figure 2. Temporal Trends in Income Proportion and Perceived Fairness (2010–2021)

Figure 3. Regional Trends in Middle-Income Proportion and Perceived Fairness (2010–2021)

Figure 4. Parallel Mediation Effects of Subjective Socioeconomic Status and Perceived Upward Mobility

B = −0.102; 95% CI [−0.289, 0.085]

Perceived Upward Mobility

B = 0.023; 95% CI [0.017, 0.029]

Expanding Middle-income Groups

Perception of Fairness

B = 0.316; 95% CI [0.090, 0.542]

Subjective SES

B = 0.103; 95% CI [0.098, 0.109]

B = 0.403; 95% CI [0.255, 0.551]

Figure 5. Johnson–Neyman Plots for Moderating Effects of Income and Economic Development

Note. Panels a and b show that as income or per capita GDP increases, the effect of the middle-income proportion on perceived fairness shifts from significantly negative to significantly positive. Panels c and d show that as income or per capita GDP increases, the effect of the middle-income proportion on subjective

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Appendix Figure 1. Regression Coefficients of the Middle-Income Proportion Across Different Periods.

Tables

Table 1. Sample Characteristics

Variable	Full Sample Characteristics	Period Mean
Individual Variables		
Perceived Fairness		
Gender	0=Female, 1=Male	
Residence	0=Rural, 1=Urban	
Household Annual Income (log)	4.61~16.12	
Years of Education		
Ethnicity	0=Ethnic minority, 1=Han	
Religious Belief	0=No, 1=Yes	
Party Membership	0=Non-member, 1=Communist Party Member	
Self-rated Health	0=No, 1=Yes	
Employment Status - Unemployed	0=No, 1=Yes	
Employment Status - Agricultural Work	0=No, 1=Yes	
Employment Status - Non-agricultural Work	0=No, 1=Yes	
Marital Status	0=Unmarried, 1=Married	
Subjective Socioeconomic Status		
Perceived Upward Mobility		
Provincial Variables		
Middle-income Group Proportion	0.28~0.81	
Per Capita GDP (log)		
Per Capita GDP Growth Rate	9.46~12.14	
Urbanization Rate	-0.02~0.29	
Gender Ratio (Female=100)	0.23~0.90	
Total Dependency Ratio	95.77~120.43	
Share of Social Security Spending	19.3~56.7	
Share of Tertiary Industry	0.06~0.28	

Variable	Full Sample Characteristics	Period Mean
Share of Private-sector Employment	0.32~0.83	
Higher Education Enrollment Ratio	0.08~0.73	
Sample Size	61,751	
Number of Provinces	31	

Table 2. Total Effects and Mediating Effects

Variables	Model 1: Perceived Fairness	Model 2: Perceived Fairness	Model 3: Subjective SES	Model 4: Perceived Upward Mobility
Intercept	0.369*** (0.063)	0.263*** (0.063)	0.504*** (0.081)	2.361*** (0.068)
Control Variables	Controlled	Controlled	Controlled	Controlled
Middle-income Group Proportion	0.435*** (0.077)	0.403*** (0.076)	0.316** (0.115)	-0.102 (0.095)
Subjective Socioeconomic Status		0.103*** (0.003)		
Perceived Upward Mobility		0.023*** (0.003)		

Table 3. Moderating Role of Income and GDP

Pathway	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Proportion × Income → Perceived Fairness	0.352*** (0.058)		0.951*** (0.088)		-0.236* (0.117)	

Pathway	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Proportion×GDP → Perceived Fairness		0.814*** (0.157)		1.877*** (0.235)		
Proportion×Income → Subjective SES			-0.306*** (0.073)			
Proportion×Income → Perceived Upward Mobility				-0.567** (0.195)		
Proportion×GDP → Subjective SES						
Proportion×GDP → Perceived Upward Mobility						
Proportion×Income×GDP → Perceived Fairness						
Proportion×Income×GDP → Subjective SES						-0.086 (0.178)
Proportion×Income×GDP → Perceived Upward Mobility						-0.553*** (0.147)

Table 4. Moderating Effects on the Mediating Path

Pathway	Income -1 SD	Income +1 SD	GDP -1 SD	GDP +1 SD
Proportion→SES→Fairness [95% CI]	[0.154, 0.254]	[-0.007, 0.039]	[0.096, 0.154]	[-0.137, -0.056]

Pathway	Income -1 SD	Income +1 SD	GDP -1 SD	GDP +1 SD
Proportion→Upward Mobility→Fairness [95% CI]	[0.001, 0.012]	[-0.006, 0.004]	[-0.014, -0.003]	[0.000, 0.013]

Table 5. Results of Temporal and Spatial Heterogeneity Analysis

Effects	All Samples	2010~2012	2013~2021	Western	Central	Eastern
Total Effects						
Proportion→Fairness	0.453*** (0.077)	(0.179)	0.347*** (0.099)	(0.204)	(0.172)	0.820*** (0.107)
Mediating Effects						
Proportion→SES→Fairness	0.315** (0.115)	(0.177)	0.281** (0.098)	(0.298)	-0.753** (0.261)	0.929*** (0.171)
Proportion→Perceived Upward Mobility→Fairness	-0.102 (0.095)	(0.254)	(0.124)	(0.261)	0.467* (0.212)	-0.547*** (0.137)
SES→Fairness	0.103*** (0.003)	0.100*** (0.004)	0.106*** (0.003)	0.080*** (0.005)	0.103*** (0.005)	0.119*** (0.004)
Perceived Upward Mobility→Fairness	0.023*** (0.003)	0.036*** (0.005)	0.014*** (0.004)	0.018** (0.006)	0.020** (0.006)	0.025*** (0.005)
Moderating Effects of Total Effects						
Proportion×Income→Fairness	-0.352*** (0.058)	-0.432*** (0.109)	-0.312*** (0.070)	(0.128)	(0.127)	(0.107)
Proportion×GDP→Fairness	-0.810*** (0.157)	-1.545*** (0.445)	-0.743*** (0.224)	-1.620*** (0.560)	-2.045*** (0.527)	-0.708* (0.302)
Proportion×Income×GDP→Fairness	0.236* (0.117)	(0.244)	(0.168)	(0.382)	(0.432)	(0.269)

Effects	All Samples	2010~2012	2013~2021	Western	Central	Eastern
Moderating Effects of Mediating Effects						
Proportion×Income→SES	0.951*** (0.088)	0.783*** (0.162)	0.770*** (0.108)	0.398* (0.195)	0.644*** (0.194)	0.880*** (0.165)
Proportion×GDP→SES	1.877*** (0.235)	(0.616)	0.937** (0.347)	2.966*** (0.806)	(0.801)	(0.481)
Proportion×Income→Perceived Upward Mobility	-0.306*** (0.073)	(0.137)	-0.338*** (0.088)	(0.166)	- 0.598*** (0.158)	-0.266* (0.134)
Proportion×GDP→Perceived Upward Mobility	-0.567** (0.195)	-0.567*** (0.195)	-0.731** (0.281)	1.451* (0.705)	-1.134† (0.081)	- 1.698*** (0.386)
Proportion×Income×GDP→Perceived Upward Mobility	-0.553*** (0.147)	(0.178)	(0.261)	(0.582)	(0.657)	- 1.265** (0.418)

Table 6. Results Summary

Sample	Low (-1 SD)	High (+1 SD)
All Samples		
2010~2012		
2013~2021		
Western		
Central		
Eastern		

Appendix Table 1. Temporal and Spatial Heterogeneity Analysis of Mediating and Moderating Effects

Subgroups	Income -1 SD	Income +1 SD
2010~2012		
Mediating Variables: SES [95% CI]	[-0.189, 0.009]	[-0.040, 0.180]

Subgroups	Income -1 SD	Income +1 SD
Mediating Variables: Upward Mobility [95% CI]	[-0.055, 0.004]	[-0.043, 0.021]
2013~2021		
Mediating Variables: SES [95% CI]	[-0.156, 0.008]	[0.013, 0.126]
Mediating Variables: Upward Mobility [95% CI]	[-0.002, 0.062]	[-0.021, 0.015]
Western		
Mediating Variables: SES [95% CI]	[-0.069, 0.038]	[0.050, 0.175]
Mediating Variables: Upward Mobility [95% CI]	[-0.002, 0.015]	[-0.010, 0.005]
Central		
Mediating Variables: SES [95% CI]	[-0.127, 0.015]	[0.127, 0.217]
Mediating Variables: Upward Mobility [95% CI]	[-0.004, 0.012]	[-0.018, -0.004]
Eastern		
Mediating Variables: SES [95% CI]	[-0.184, -0.031]	[-0.167, -0.014]
Mediating Variables: Upward Mobility [95% CI]	[-0.021, 0.007]	[-0.031, 0.005]

Note: Figure translations are in progress. See original paper for figures.