The Transition of Gender Imbalance and Family Development in China: Findings Based on National Population Census and Public Data

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Introduction

The sex ratio at birth (SRB) in China has been abnormally high for over 40 years, posing significant risks and consequences to both individuals and families, with far-reaching implications for family development. However, current research lacks an interpretation of the evolutionary dynamics of these phenomena based on macro data.

Gender imbalance primarily refers to the disparities in rights and development resulting from gender inequality. It is seen in the measurable differences in the SRB and the sex ratio aged 20-49 (marriageable age, SRM) from the recommended levels. Given the ongoing decrease in SRB, scholarly focus on gender imbalance has progressively moved from investigating its origins and patterns to analyzing its consequences and governance. Among them, macro-level study specifically examines the influence of gender disparity on public safety, the macro economy, and the process of aging. Micro-level study specifically targets demographic groups impacted by gender imbalance, with a special emphasis on old bachelors residing in rural regions. Meso-level study chiefly concentrates on the particular challenges encountered by families experiencing gender imbalance, including marital strain, domestic violence, and the probability of divorce. Nevertheless, there remains a dearth of study on the present state, patterns, and correlations concerning the transition of gender imbalance and family development.

Understanding the relationship between gender imbalance transformation and family development at a theoretical level can be approached from the perspective of population and family

transformation. This article constructs the theoretical framework shown in Figure 1, based on the context of macro population and family transformation, to understand the relationship between gender imbalance and family development. It describes the manifestations of the consequences of gender imbalance at the family level as being influenced by deviations in SRB and SRM.
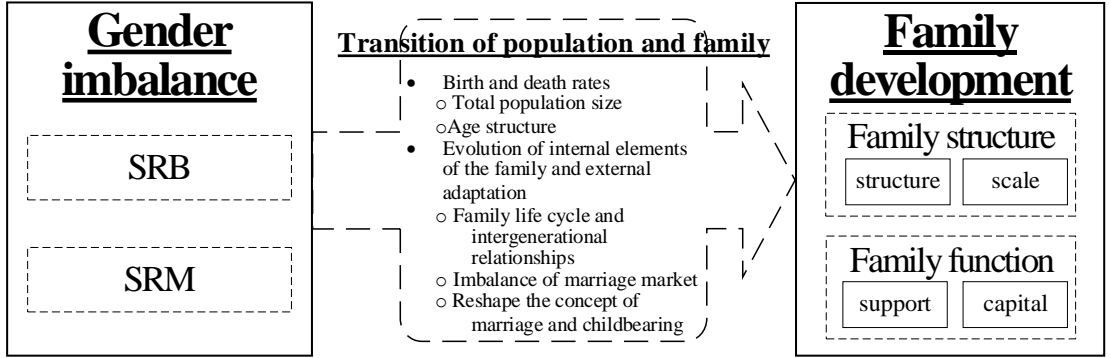

Figure 1 framework of gender imbalance and family development

Data and Methods

The data used includes census data from China since 2000, the China Statistical Yearbook, and provincial statistical yearbooks (2001-2021).

Implement the indicator system depicted in Table 1 to determine the degree of family development by employing the panel entropy weight approach to compute the weights of the indicators.

Table 1 Family development Index

Family development（F）	Family structure（F_1）	Average household size(x_1)
		Proportion of one-person household in all households(x_2)
		Proportion of one-generation households in all households (x_3)
		Proportion of households with 65+ elderly people in all households (x_4)
	Family function（F_2）	Child-dependent ratio (x_5)
		Old-age dependency ratio (x_6)
		Average housing area (x_7)
		Disposable income per capita (x_8)
		Engel coefficient of urban households (x_9)
		Engel coefficient of rural households (x_{10})

Findings

1. Spatiotemporal analysis of gender imbalance transformation

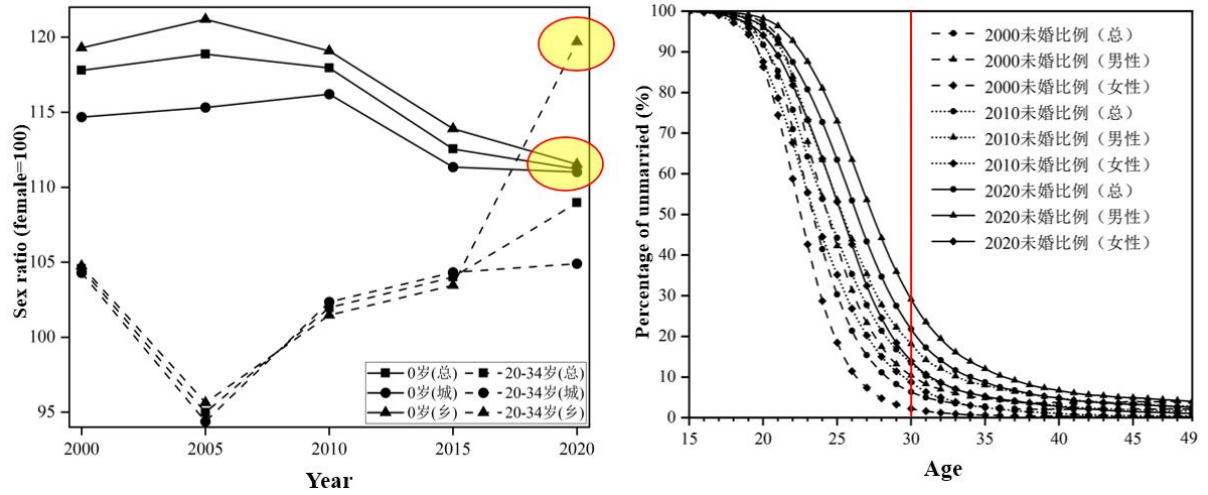

Figure 2 Changes in gender imbalance between urban and rural areas and the proportion of unmarried people aged 15-49 in China
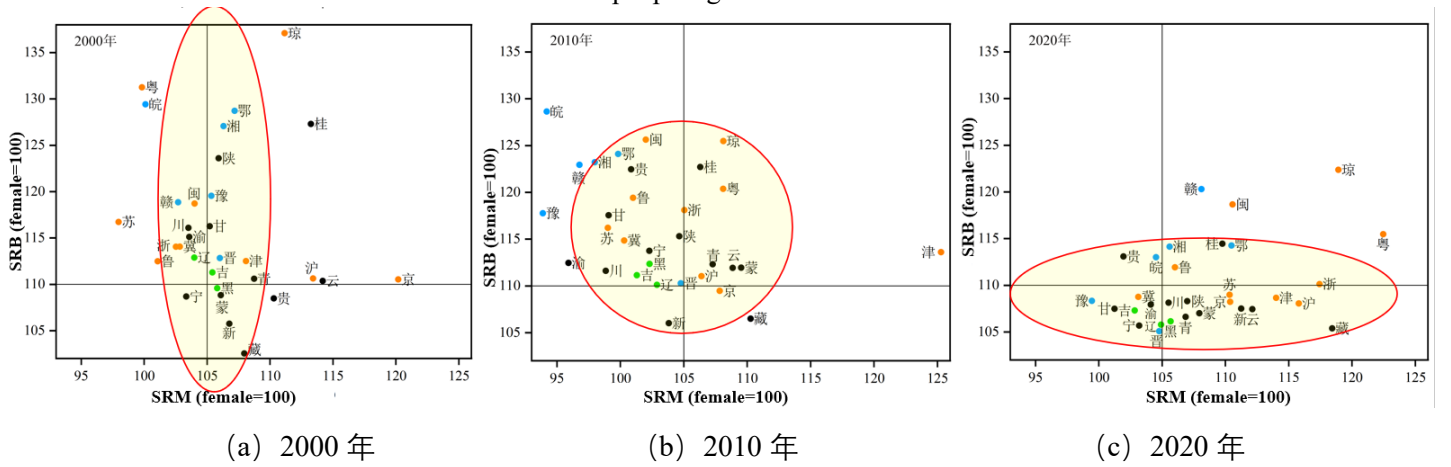

(a) 2000 年   (b) 2010 年   (c) 2020 年

Figure 3 Provincial distribution of sex ratio at birth and sex ratio of marriage (Socio-economic zones are represented by color, East (orange), Central (blue), West (black), Northeast (green))

2. Status and changes in family development

$$F_1 = 0.311x_1 + 0.219x_2 + 0.290x_3 + 0.179x_4 \tag{1}$$

$$F_2 = 0.093x_5 + 0.113x_6 + 0.212x_7 + 0.456x_8 + 0.089x_9 + 0.038x_{10} \tag{2}$$

$$F = 0.372F_1 + 0.682F_2 \tag{3}$$

Table 2 Changes in the Family Development Index in the Census Year (National)

Index	2000	2010	2020
Family structure	0.705	0.515	0.228
Family function	0.248	0.374	0.480
Family development	0.418	0.427	0.386

3. Gender imbalance transformation and family development

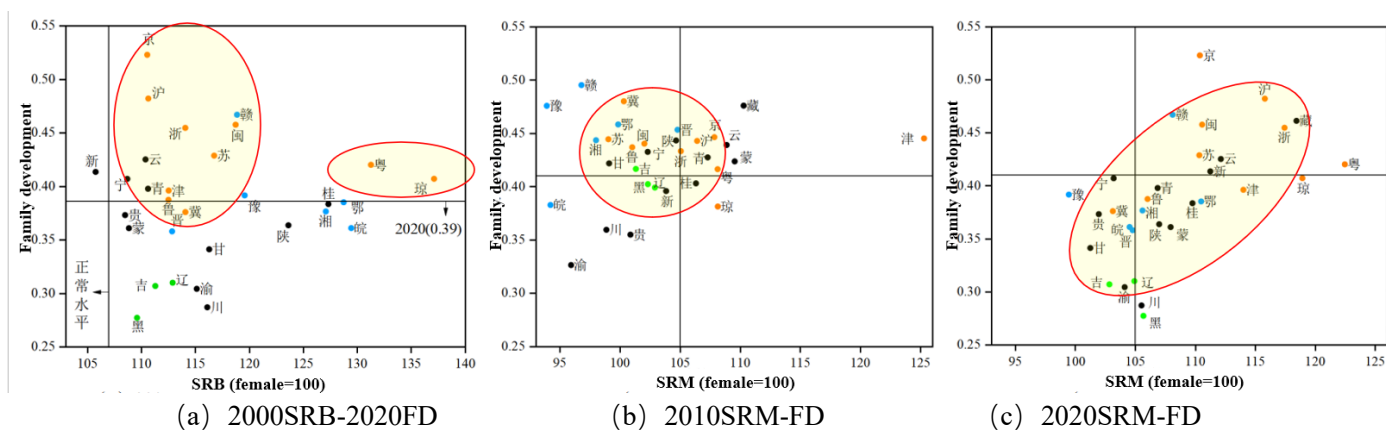(a) 2000SRB-2020FD   (b) 2010SRM-FD   (c) 2020SRM-FD

Figure 4 Gender imbalance and family development (Socio-economic zones are represented by

color, East (orange), Central (blue), West (black), Northeast (green))